



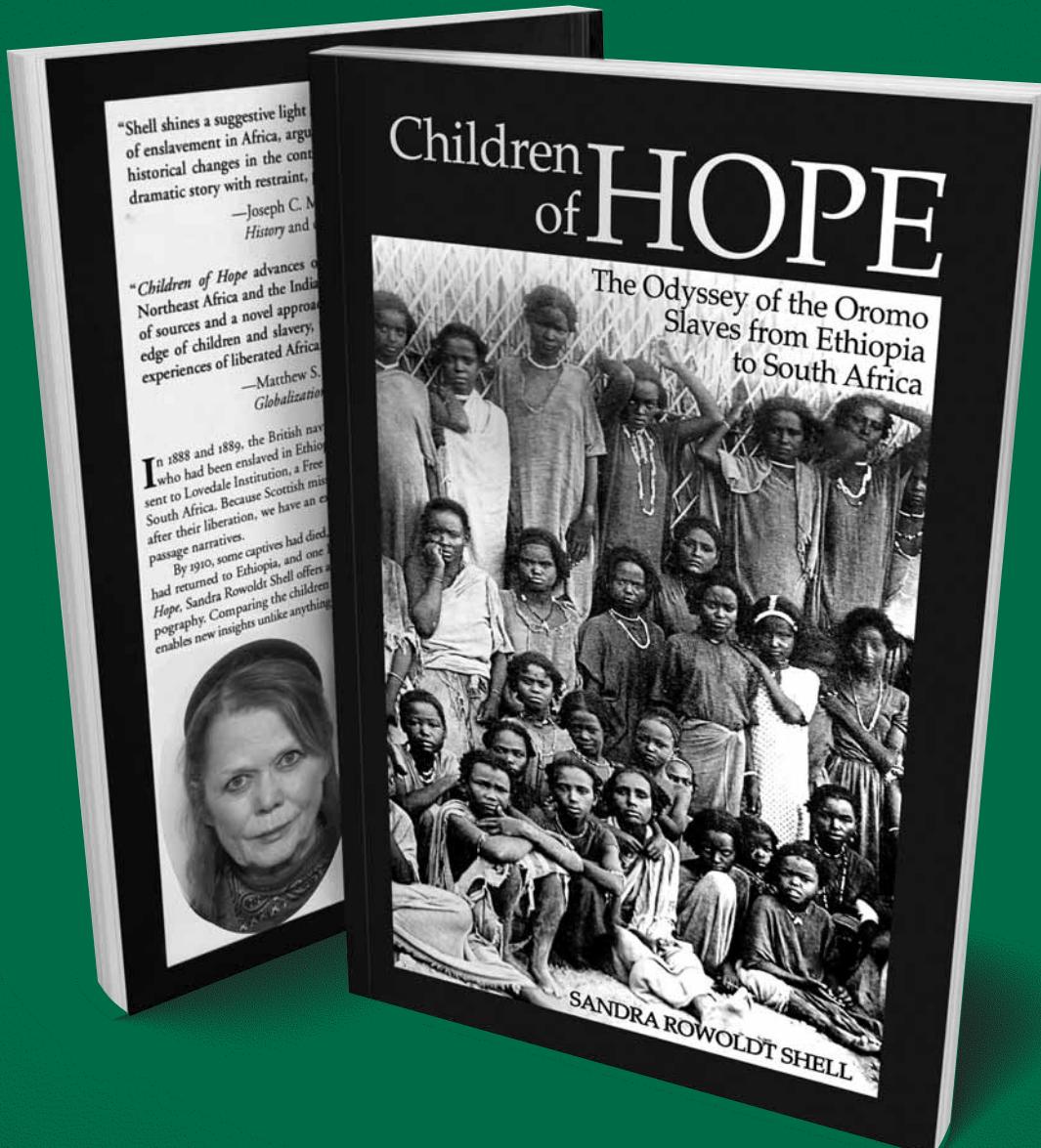
# RHODES UNIVERSITY

---

*Where leaders learn*

# 2020

# RHODES UNIVERSITY RESEARCH REPORT





RHODES UNIVERSITY  
*Where leaders learn*

RHODES UNIVERSITY

# 2020

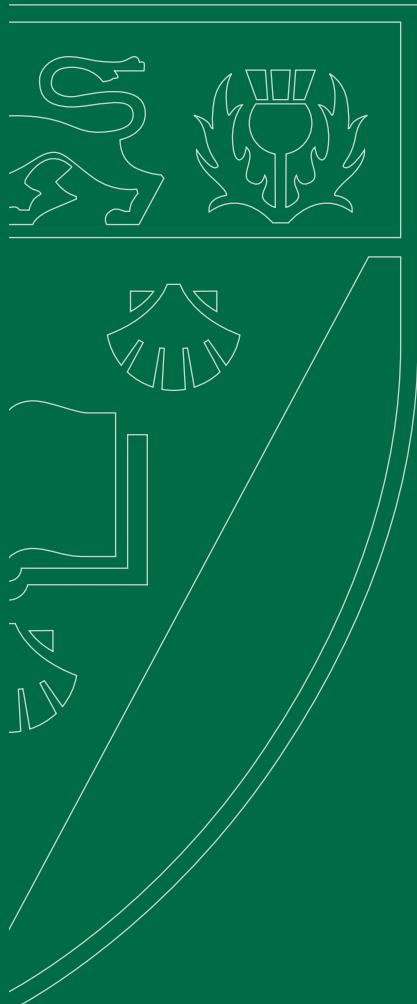
## RESEARCH REPORT

*Front Cover:* Vice-Chancellor's Book Award 2020 - Sandra Rowoldt Shell (2018), *Children of Hope. The Odyssey of the Oromo Slaves from Ethiopia to South Africa*. Ohio University Press, Athens, Ohio 45701.

*Back Cover: Galla oxen.* Source: Reproduction of engraving: *The Tourist* 1, no.35 (8 April 1833):281. Many of the Oromo children could give exact numbers of their family's prized cattle ranging from 20 to 100, used for ploughing, milk and meat.

**Bisho Jarsa** at Lovedale, ca 1898 (source: detail from BC 106, C.254.19, James Stewart Papers, University of Cape Town Manuscripts and Archives). In 1911 Bisho Jarsa married fellow Lovedalian Reverend Frederick Scheepers. Their daughter Dimbiti Bisho Scheepers, became a teacher as her mother had become, and married David James Alexander from Cradock. Their first son, born in Cradock on 22nd October 1936, was Dr Neville David Alexander.

Design: Sally Dore



# 2020

## RHODES UNIVERSITY RESEARCH REPORT

A publication of the Rhodes University Research Office, compiled and edited by Jaine Roberts, Thumeka Mantolo and Nichole de Vos.

---

### Research Office

Director: Jaine Roberts  
email: [j.roberts@ru.ac.za](mailto:j.roberts@ru.ac.za)  
tel: +27 (0)46 603 8756/7572

[www.ru.ac.za](http://www.ru.ac.za)



**RHODES UNIVERSITY**  
*Where leaders learn*

# TABLE OF contents

01	<b>Foreword</b>
	Dr Sizwe Mabizela, Vice-Chancellor
	Dr Peter Clayton,
	Deputy Vice-Chancellor: Research and Innovation
03	<b>Introduction</b>
	Jaine Roberts, Director: Research Office
05	<b>Top 30 Researchers</b>
07	<b>PhD Graduates</b>
14	<b>In Memoriam</b>
	The Legacy of Professor Olaf Weyl
20	<b>Vice-Chancellor's Distinguished Senior Research Award</b>
	Professor Özlem Tastan Bishop
23	<b>Vice-Chancellor's Book Award</b>
	Dr Sandra Rowoldt Shell
31	<b>From Mystery to Magic</b>
	The Cory Library for Humanities Research
37	<b>Radio Sky</b>
	Professor Oleg Smirnov
42	<b>The Secular and the Sacred</b>
	Associate Professor Helena van Coller
46	<b>Human Rights First</b>
	Associate Professor Eduard Jordaan
49	<b>Early Earth Research in Barberton</b>
	Dr Eugene Grosch

## EARLY CAREER SCHOLARS

53	<b>The Magic and Music in isiXhosa</b>
	Dr Hleze Kunju
55	<b>Mother Tongue</b>
	Dr Bulelwa Nosilela
57	<b>Making Sense of History</b>
	Dr Janeke Thumbran
60	<b>Invasion of the Trees</b>
	Dr Tiffany Pillay
63	<b>Swinging for the Fences</b>
	Dr Mandisi Majavu
67	<b>The Field of Dreams Water Strider</b>
	Dr Samuel Motitsoe
70	<b>The Human Geographer</b>
	Dr Sinehlanhla Memela
73	<b>Cutting the Cord of Academic Dependency</b>
	Dr Bongani Nyoka
75	<b>Copyright vs Human Right</b>
	Nomalanga Mashinini
77	<b>The Power of Citizen Participation</b>
	Lungile Penxa
79	<b>Sugar in the Blood</b>
	Dr Ntethelalo Sibiya
82	<b>Lawyer for the People</b>
	Dr Charlene Lubaale
84	<b>Theatre - Maker, Change - Maker</b>
	Selloane Mokuku
87	<b>The Colour Purple</b>
	Dr Thando Njovane
89	<b>Digital Transformation</b>
	Dr Gugulethu Baduza
92	<b>Art and Authorship</b>
	Mbali Khoza

## DEPARTMENTS

- 95** Centre for Higher Education Research, Teaching and Learning (CHERTL)
- 98** Community Engagement Division
- 101** Library Services
- 107** Department of Accounting
- 108** Department of Anthropology
- 110** Department of Biochemistry and Microbiology
- 115** Department of Biotechnology and the Biotechnology Innovation Centre (RUBIC)
- 118** Department of Botany
- 122** Department of Chemistry
- 128** Department of Computer Science
- 130** Department of Drama
- 134** Department of Economics and Economic History
- 136** Faculty of Education
- 148** Department of English Language and Linguistics
- 150** Department of Environmental Science
- 155** Department of Fine Art
- 160** Department of Geography
- 162** Department of Geology
- 165** Department of History
- 167** Department of Human Kinetics and Ergonomics
- 169** Department of Ichthyology and Fisheries Science
- 175** Department of Information Systems
- 178** School of Journalism and Media Studies
- 182** Faculty of Law
- 184** Department of Literary Studies in English
- 187** Department of Management
- 189** Department of Mathematics (Pure and Applied)
- 191** Department of Music and Musicology

- 193** International Library of African Music (ILAM)
- 196** Faculty of Pharmacy
- 200** Department of Philosophy
- 202** Department of Physics and Electronics
- 208** Department of Political and International Studies
- 210** Department of Psychology
- 214** Rhodes Business School
- 216** School of Languages and Literatures
- 219** Department of Sociology and Industrial Sociology
- 224** Department of Statistics
- 226** Department of Zoology and Entomology

## AFFILIATES & INSTITUTES

- 236** Albany Museum
- 240** Institute of Environmental Biotechnology (EBRU)
- 242** Institute for the Study of Englishes of Africa (ISEA)
- 244** Institute of Social and Economic Research (ISER)
- 247** Institute for Water Research (IWR)
- 251** Rhodes University Mathematics Education Project (RUMEP)
- 253** South African Institute for Aquatic Biodiversity (SAIAB)

# FOREWORD

## The Vice-Chancellorate

Dr Sizwe Mabizela,  
Vice-Chancellor



Photo: Simon Pamphilon

This was a year like no other in living memory. Since March 2020, our institution has been operating under COVID-19 pandemic conditions, in various levels of lockdown, with a blend on-line and physical activities. Research-based postgraduate students were amongst the first to return in May 2020, as lockdown levels permitted, particularly those whose work was dependent upon access to physical resources of the campus.

Getting field work back in place took a little longer, and has been particularly challenging for projects in the social sciences and education where community and classroom face-to-face engagements are an inherent part of the research. A number of innovative approaches have emerged to navigate the restrictive working conditions, and our researchers, students, and supervisors have shown remarkable resilience, tenacity, adaptability, grit and a can-do attitude. That our DHET accredited research output for 2020 exceeds that of 2019, is testament to the unyielding determination of our people. We are stronger for the experience, but it has been tough.

Along with the many forms of hardship, we have endured the tragic loss of several colleagues and students, as a result of the pandemic and other causes. One such colleague, who we pay tribute to in this report, is Olaf Weyl, SAIAB Honorary Professor and SARChI Chair in Inland Fisheries and Freshwater Ecology, who passed away tragically while on a field trip doing what he loved.

The achievements of our Postgraduates contribute much to our scholarly reputation. For the first time, the university held a special virtual Postgraduate graduation ceremony in October 2020, which highlighted the research-led nature of our university. Degrees were conferred on seventy-nine (79) masters and forty-six (46) Doctoral graduates. When these Doctoral numbers are added to the record one hundred and thirty (130) PhD candidates who graduated in the earlier

April ceremonies, 2020 is a very significant Doctoral graduation year for our University.

The degrees awarded in the remainder of the 2020 academic year were celebrated during a virtual graduation ceremony in April 2021, in which a total of 2204 students graduated, 40% of whom were postgraduates, 66% were women, and 16% were international students. The pandemic has robbed us of the opportunity to celebrate the achievements of our graduates in the festive way we are used to. We look forward to the day when the COVID-19 pandemic has receded, and we can invite our 2020 and 2021 graduates back to the campus to celebrate their accomplishments in person.

Many of our outstanding scholars attracted external acclaim during the year under review.

- Distinguished Professor Tebello Nyokong was honoured as a Fellow of the Royal Society of Chemistry, a measure of international recognition which she shares with only a handful of eminent scholars across the world.
- The Vice-Chancellor's Distinguished Senior Research Award for 2020 was awarded to Professor Özlem Tastan Bishop of the Bioinformatics Unit, Department of Biochemistry and Microbiology, for the volume and the impact of her scholarly activities over a sustained period.
- The Vice-Chancellor's Book Award for 2020 was made to Dr Sandy Shell of the Cory Library, for her book



## Dr Peter Clayton, Deputy Vice-Chancellor: Research and Innovation

Photo: Simon Pamphilon

"Children of Hope: The Odyssey of the Oromo Slaves from Ethiopia to South Africa", which incorporated 40 years of research.

- The 5-year NRF SARChI funding cycles of four (4) of our SARChI chairs were successfully reviewed and renewed by the NRF. Distinguished Professor Heila Lotz-Sisitka and Professor Melony Graven retained their Tier 1 budget status, while Professor Ruth Simbao and Professor Adrienne Edkins were moved up to a Tier 1 budget. All of these chairs received stellar feedback.
- Professors Rosemary Dorrington and Rui Krause, and their collaborators at Rhodes University, the University of Plymouth, and other universities, were awarded the highly competitive MRC-Newton Fund Antibiotic Accelerator Initiative grant. The first phase of this grant is for UK£1.5 million over three years, and it opens up new opportunities for Rhodes University to be a continental leader in harnessing natural product diversity to combat multidrug-resistant pathogens.
- Professor Janice Limson and colleagues were selected to host a Department of Science and Innovation Nano-Micro Manufacturing Facility. This will fund the establishment and running of a lateral flow diagnostics facility at Rhodes University, and is a very significant step for this University in transitioning toward the active technology transfer of research.

- Distinguished Professor Martin Hill was elected as President of the International Organisation for Biological Control (IOBC), a deserved acknowledgement of his international standing. He is the first person from the African continent to be elected to this role.
- Professor Di Wilmot was appointed to the Steering Committee of the International Geographic Union (IGU) Commission on Geography Education.
- The Department of Ichthyology and Fisheries Science (DIFS) was named as an African Union (AU) *Centre of Excellence* - a status that acknowledges the regional leadership role played by DIFS.
- The Institute for Water Research was chosen to host the ARUA *Water Centre of Excellence* involving a range of African partner institutions, and landed a UKRI:GCRF grant of UK£600 000 to support the establishment of this Centre.
- Professor Russell Kaschula and colleagues in the African Language Studies Section were selected as integral participants of the BAQONDE project, a multilingualism programme in collaboration with the University of Salamanca in Spain and three other collaborating universities, funded by the Belgium Government.
- Dr Ketiwe Ndhlovu and colleagues in the African Language Studies Section were awarded a R6 million grant by the Department of Sports, Arts and Culture to develop an English-IsiXhosa Bilingual Medical Dictionary.
- Professor Jen Snowball and Mr Delon Tarentaal were awarded a prestigious grant from the AHRC (Arts and Humanities Research Council of the UK) for a project on Future Festivals in South Africa in the Age of COVID-19, in collaboration with King's College London.
- Visiting Professor Thembela Kepe of the Geography Department was awarded the Fellowship of the South African Society of Geography, in recognition of his outstanding contribution to the discipline.
- Professor Sandile M. Khamanga who was elected to the Executive Committee of the Academy of Pharmaceutical Society of South Africa (APSSA).

Many other individual academics received widespread national and international acknowledgement of their work. Their fine accomplishments are contained within the pages of this report.

We extend our congratulations and thanks to all of our researchers, supervisors, collaborators, funders, donors, and partners who contributed to making 2020 a year in which research at Rhodes University flourished despite the challenging working conditions. Your expertise, integrity, dedication, rigour and generosity make Rhodes University the rich and distinctive intellectual space that it is. In our research endeavors, as in all else that we do, may we all continue to brighten the corner wherever we find ourselves.



Photo: Simon Pamphilon

# INTRODUCTION

## Jaine Roberts Director: Research

This year the Research Report 2020 has a focus on early career scholars and, alongside our other features on more senior researchers, sheds a little light on sixteen (16) young academics across all our Faculties.

We have three core funding streams for research support for early career scholars: substantial grants awarded to Rhodes University, on the basis of proposals submitted, by the Andrew W. Mellon Foundation; the portion of the University Capacity Development Programme (UCDP) for research development funded by the Department of Higher Education and Training (DHET); and the Next Generation of Academics Programme (nGAP). The nGAP programme started in 2015 and is also funded by DHET. The research development section of the UCDP resides within the Research Office. It runs in three year cycles, with the first cycle having started in 2018 and being completed end of 2020, with a new three year programme beginning in 2021. The UCDP provides for research development grants for post-PhD staff, as well as support for academic staff undertaking their Doctoral degrees.

Many of the featured scholars herein are part of the Andrew W. Mellon Foundation funded *Early Career Scholars in the Humanities at Rhodes University (ECS)*. This programme started in 2020 with an over twelve (12) million rand grant for a five (5) year programme awarded to Rhodes University. The *Early Career Scholars* programme followed the Andrew W. Mellon Foundation funded *Initiative to Advance an Inclusive Humanities Professoriate* which started in 2015, providing over eight (8) million rand over six (6) years to support Senior Lecturers and Associate Professors in the Humanities Faculty with research support and Postgraduate student scholarships to intensify their research and promotional prospects to either Associate Professor or Professor level. We then addressed the need for research development support at the Lecturer level amongst our academic staff and were awarded a new grant from the Andrew W. Mellon Foundation for 2020 to 2024. Both programmes are led and managed by the Director: Research.

The ECS programme supports ten (10) Lecturer level scholars across the Humanities Faculty with research development funds, conference attendance funding, scholarships for Postgraduate students within their research areas, as well as resources for either visiting or bringing to Rhodes University their selected mentors. There are additional resources for Writing Retreats and workshops on university administration, project management, and leadership development over the duration of the Mellon grant. Nine (9) of the Mellon supported scholars are featured in the following pages.

**Dr Hleze Kunju** (Page 53) is the Head of the Masters in Creative Writing programme in the School of Languages and Literatures. Dr Kunju wrote the first isiXhosa PhD thesis at Rhodes University, and was awarded *The Most Outstanding PhD Thesis Award* by the African Language Association of Southern Africa. **Dr Bulelwa Nosilela** (Page 55) is also in the School of Languages and Literatures and focused her Doctoral research on multilingualism across three universities - Rhodes University, the University of Kwazulu-Natal and the University of Cape Town. **Dr Janeke Thumbran** (Page 57) joined the Rhodes University History Department as a Lecturer in April 2018. Dr Thumbran's undergraduate and Honours degrees were undertaken at the University of Pretoria, and she completed her Masters at Indiana University and her PhD at the University of Minnesota.

**Dr Mandisi Majavu** (Page 63) of the Department of Political and International Studies had a long and arduous working life supporting his undergraduate studies before his journey saw the completion of his PhD at the University of Auckland, New Zealand, and the publication of his book *Uncommodified Blackness* (Palgrave McMillan) in 2017. Dr Majavu joined Rhodes University as a Senior Lecturer in

2020. Also joining the Department of Political and International Studies in 2020 was **Dr Bongani Nyoka** (Page 73) who has published two books: *Archie Mafeje: Voices of Liberation* (HSRC Press 2019) and *The Social and Political Thought of Archie Mafeje* (WITS University Press 2020).

We also feature **Lungile Penxa** (Page 77) of our Department of Sociology and Industrial Sociology who specialises in research on the relationship between government and citizens and the sociology of development. **Selloane 'Lalu' Mokuku** (Page 84) has been a Lecturer in Applied Drama in the Department of Drama since 2018, and is a theatre director, playwright and performer, who seeks to tell the stories of those "whose voices never get to be heard". She co-wrote *Dipalo* which won the Standard Bank Ovation Award and The International Association of Theatre For Children and Young Audiences African Playwriting Competition.

**Dr Thando Njovane** (Page 87), who started as a Lecturer in the Department of Literary Studies in English in January 2019, is a Rhodes University graduate awarded the Patrick and Margaret Flanagan Scholarship to undertake her Doctoral studies at the University of York. Dr Njovane's research areas are "speculative fiction and fantasy, cultures of violence and violation, feminisms, critical race theory, higher education and memory", and she will soon be publishing her first monograph. **Mbali Khoza** (Page 92) is a Lecturer in Art History and Visual Culture in the Department of Fine Art and is completing her Doctorate researching the historicity of Blackness and Black expressive culture, through the Wits Institute for Social and Economic Research (WISER).

As the Humanities Faculty is well supported through Andrew W. Mellon Foundation grants, the Research Development section of the University Capacity Development Programme (UCDP) has dedicated the available resources to all our other Faculties. A few of the academics supported by the UCDP, either in completing their Doctoral degrees or in expanding their research endeavours, are featured in the Research Report 2020.

**Nomalanga Mashinini** (Page 75), of our Law Faculty, will soon hear the outcome of the examination of her Doctoral thesis, "The Recognition of Image Rights in the Context of Social Media Memes". Her thesis focuses on the legal consequences of image rights violations in the boundless digital era where social media memes are used to generate commercial gain across jurisdictions, and her ongoing research addresses the infringement and commercial exploitation of image rights through artificial intelligence and social media technologies.

**Dr Tiffany Pillay** (Page 60) of the Department of Botany has received UCDP funding for her research on bush encroachment in the savannas and grasslands. **Dr Ntethelo Sibya** (Page 79) of the Faculty of Pharmacy, is researching new ways of delivering insulin via the skin to diabetics. **Dr Eugene Grosch** (Page 49) of the Department of Geology, while a Senior Lecturer, NRF Rated Researcher

and mid-career scholar, has also received UCDP funding to expand his geological research on tectonic processes.

**Dr Sinenhlanhla Memela**, Department of Geography (Page 70), **Dr Samuel Motitsoe**, Department of Zoology and Entomology (Page 67) and **Dr Gugulethu Baduza**, Department of Information Systems (Page 89) were part of the first cohort of the Department of Higher Education's (DHET) New Generation of Academics Programme (nGAP). These three scholars met all the timelines of the programme and are now considered nGAP 'Alumni'. Rhodes University's nGAP programme is co-ordinated and led by Dr Mandy Hlengwa of the Centre for Higher Education, Research, Teaching and Learning (CHERTL).

Dr Gugulethu Baduza is now a collaborating researcher in the SA-UK team that secured ESRC (Economic & Social Research Council) funding for research in ICT4D (Information and Communication Technologies for Development). Dr Samuel Motitsoe, with his mentor Professor Julie Coetzee, are team members of an international collaboration led by the Norwegian Institute for Water Research investigating the consequences of the mass development and removal of aquatic macrophytes (both native and alien populations) in freshwater ecosystems in the five countries of South Africa, Brazil, Norway, Germany and France. Dr Sinenhlanhla Memela is gaining recognition internationally and is one of the Steering Committee members representing Africa at the International Geography Union Young and Early Career Group (IGU-YECG). She is also an executive committee member of the Society of Southern African Geographers - Students and New Professionals (SSAG-SnP).

While this introduction to the Research Report 2020 highlights a few of our next generation of scholars, we must not forget the dedicated Research Office staff. The work of a Research Office is accomplished most effectively with collegial in-person team-work, with office doors open to academic and administrative staff seeking solutions and support of all kinds; the proverbial 'train station'.

The range of our portfolios stretch from the massive Publication Count, where an unrecorded single accredited journal paper translates to substantial lost income to Rhodes University (and here **Thumeka Mantolo**, Manager: Research Administration, must be acknowledged for her success in completing the Annual Publication Count, reflected in the Departmental section of this Report); to research grant management which includes all funders such as NRF; registration and administrative management of all Postdoctoral Research Fellows; research contracts, and Intellectual Property management; research capacity building; Ethical Review and clearance processes; and the large and ever-growing portfolios of Postgraduate Funding and Technology Transfer. Additionally, the Research Office manages an internally provided Rhodes University budget of over R25 million, which funds Research Committee (RC) small grants, conference paper presentations and many other areas too numerous to note. Appreciation is hereby extended to all Research Office staff.



2020  
RHODES UNIVERSITY  
RESEARCH REPORT

# TOP 30 RESEARCHERS

Distinguished Professor Tebello Nyokong.

Photo: Simon Pamphilon

# TOP 30 RESEARCHERS

# 2020

Rhodes University acknowledges and congratulates the following for their accredited research outputs (Journal Publications, Books & Chapters, and Masters/Doctoral students graduated) in 2020:

<b>01</b>	<b>Distinguished Professor Tebello Nyokong</b> Department of Chemistry, Rhodes/DST Institute for Nanotechnology Innovation	<b>16</b>	<b>Associate Professor Kenneth Ngcoza</b> Faculty of Education
<b>02</b>	<b>Professor Charlie Shackleton</b> Department of Environmental Science	<b>17</b>	<b>Associate Professor Julie Coetzee</b> Department of Botany
<b>03</b>	<b>Distinguished Professor Martin Hill</b> Department of Zoology and Entomology, Centre for Biological Control (CBC)	<b>18</b>	<b>Professor Oleg Smirnov</b> Department of Physics and Electronics, Rhodes Centre for Radio Astronomy Techniques & Technologies (RATT)
<b>04</b>	<b>Professor Özlem Tastan Bishop</b> Department of Biochemistry and Microbiology	<b>19</b>	<b>Associate Professor Michael Drewett</b> Department of Sociology and Industrial Sociology
<b>05</b>	<b>Associate Professor Adrienne Edkins</b> Department of Biochemistry and Microbiology	<b>20</b>	<b>Professor Heinrich Hoppe</b> Department of Biochemistry and Microbiology
<b>06</b>	<b>Professor Kirk Helliker</b> Department of Sociology and Industrial Sociology	<b>21</b>	<b>Professor Eureta Rosenberg</b> Faculty of Education, Environmental Learning Research Centre (ELRC)
<b>07</b>	<b>Distinguished Professor Heila Lotz-Sisitka</b> Faculty of Education, Environmental Learning Research Centre (ELRC)	<b>22</b>	<b>Dr Sheunesu Ruwanza</b> Department of Environmental Science
<b>08</b>	<b>Professor Rod Walker</b> Faculty of Pharmacy	<b>23</b>	<b>Professor Steven Flowerday</b> Department of Information Systems
<b>09</b>	<b>Professor Russell Kaschula</b> School of Languages and Literatures: African Language Studies	<b>24</b>	<b>Associate Professor Sally Matthews</b> Department of Political and International Studies
<b>10</b>	<b>Professor Mellony Graven</b> Faculty of Education	<b>25</b>	<b>Associate Professor Candice Christie</b> Department of Human Kinetics and Ergonomics
<b>11</b>	<b>Professor Ruth Simbao</b> Department of Fine Art	<b>26</b>	<b>Dr Samson Khene</b> Department of Chemistry
<b>12</b>	<b>Professor Olaf Weyl</b> South African Institute for Aquatic Biodiversity (SAIAB)	<b>27</b>	<b>Professor Keith Cowan</b> Institute for Environmental Biotechnology, Rhodes University (EBRU)
<b>13</b>	<b>Professor Sioux McKenna</b> Faculty of Education, Centre for Postgraduate Studies	<b>28</b>	<b>Professor John Mack</b> Department of Chemistry, Rhodes/DST Institute for Nanotechnology Innovation
<b>14</b>	<b>Associate Professor Helena van Coller</b> Faculty of Law	<b>29</b>	<b>Professor Makaiko Chithambo</b> Department of Physics and Electronics
<b>15</b>	<b>Professor Brett Pletschke</b> Department of Biochemistry and Microbiology	<b>30</b>	<b>Associate Professor Eduard Jordaan</b> Department of Political and International Studies

# PhD GRADUATES

# 2020

## FACULTY OF COMMERCE (4 PhDs)

### DEGREE OF DOCTOR OF PHILOSOPHY

**BADUZA, Gugulethu Qhawekazi**, MCom (Rhodes), in Information Systems, in the Department of Information Systems. Degree by thesis. Thesis: *A comprehensive approach to scalability assessment of ICTD Projects: a case study of ICT4RED*.

Supervisor: Professor C Khene.

**FRAUENSTEIN, Edwin Donald**, BTech (WSU), MTech (NMU), in Information Systems, in the Department of Information Systems. Degree by thesis. Thesis: *A personality-based behavioural model: Susceptibility to phishing on social networking sites*.

Supervisor: Professor SV Flowerday.

**FRIDERICHs, Tamaryn Jean**, MCom (Rhodes), in Economics, in the Department of Economics and Economic History. Degree by thesis. Thesis: *Human Capital in the context of high levels of inequality in South Africa*.

Supervisor: Professor GR Keeton.  
Co-supervisor: Professor M Rogan.

**MOSTERT, Tarita**, LLB (UNISA), LLM (Taxation) (NMU), in Accounting, in the Department of Accounting. Degree by thesis. Thesis: *An interpretation of deeming provisions in legislation, in the context of a framework of legal principles - a South African perspective*.

Supervisor: Professor EM Stack.

## FACULTY OF EDUCATION (15 PhDs)

### DEGREE OF DOCTOR OF PHILOSOPHY

**AGUNBIADE, Arinola Esther**, MEd (Rhodes), in Education, in the Department of Education. Degree by thesis. Thesis: *Exploring learners' evolving proficiency in stoichiometry and attitude towards science through process-oriented guided inquiry learning (POGIL) intervention*.

Supervisor: Professor K Ngcoza.  
Co-supervisor: Mrs J Sewry.

**BURT, Jane Caroline**, MEd (Rhodes), in Education, in the Department of Education. Degree by publication. Publication: *Cognitive justice and environmental learning in South African social movements*.

Supervisor: Distinguished Professor H Lotz-Sisitka.  
Co-supervisors: Dr L Price and Professor CG Palmer.

**DEEPAK MAVANI, Beena**, BSc, BEd, MA (Computer App) (Kerala), in Education, in the Faculty of Education. Degree by thesis. Thesis: *A critical analysis of how the potential of Dynamic Geometry Software as a visualisation tool may enhance the teaching of Mathematics*.

Supervisor: Professor M Schäfer.

**DIRWAI, Crispin**, Cert. (Education), BEd, in Education, in the Department of Education. Degree by thesis. Thesis: *Exploring social learning within the context of community-based farming: Implications for farmers' agency and capabilities*.

Supervisor: Distinguished Professor H Lotz-Sisitka.

**JULIUS, Lukas Homateni**, MEd (Rhodes), in Education, in the Centre for Higher Education Research, Teaching and Learning. Degree by thesis. Thesis: *An Investigation of the academic practitioners' conceptual and pedagogical practices of academic literacy at three higher education institutional types in Namibia*.

Supervisor: Professor S McKenna.  
Co-supervisor: Professor E Mgqwashu.

**LONG, Roxanne**, MEd (Rhodes), in Education, in the Faculty of Education. Degree by thesis. Thesis: *Investigating Grade R Teacher Institutional Identity Presented in Policy and Expressed Through Narrative in a Time of Transition*.

Supervisor: Professor M Graven.

**NCUBE, Kevin**, MSc (Hertfordshire), in Education, in the Centre for Higher Education Research, Teaching and Learning. Degree by thesis. Thesis: *In Marketing, it's either you have it or you don't: A study of knowledge and knowers legitimated in the Marketing diploma curriculum in South Africa*.

Supervisor: Professor S McKenna.

**BROWNING, Leanne Elizabeth**, MEd (UKZN), in Education, in the Centre for Higher Education Research, Teaching and Learning. Degree by thesis. Thesis: *Constraints and enablements on quality improvement in higher education*.

Supervisor: Professor S McKenna.

**HEATH, Gavin Edward Craig**, MCRP (UCT), in Education, in the Faculty of Education. Degree by thesis. Thesis: *Catchment and River Management in Graduate Teacher Education: A case study of student teacher learning and teaching in the Upper uThukela Valley, KwaZulu-Natal*.

Supervisor: Professor RB O'Donoghue.

**HOKONYA, Wellington Munetsi**, Dip (Education) (Zimbabwe), MEd (Zimbabwe), in Education, in the Faculty of Education. Degree by thesis. Thesis: *An exploration of the mathematical learner identities of high school learners who participated in after school mathematics clubs in primary school*.

Supervisor: Dr P Vale.

Co-supervisor: Professor M Graven.

**JEFFERY, Thomas Carnegie**, MA (Rhodes), in Education, in the Department of Education. Degree by thesis. Thesis: *Museums for the Planet: Dialectical Critical Realism and the Possibility of an Eco-decolonial Museology*.

Supervisor: Distinguished Professor H Lotz-Sisitka.

**MUKWAMBO, Robson**, MEd (Rhodes), in Education, in the Faculty of Education. Degree by thesis. Thesis: *Mediating and examining expansive learning in the context of multi-dimensional complexities affecting household food security activity systems in Nyanyadzi Irrigation Scheme in the Manicaland Province of Zimbabwe*.

Supervisor: Distinguished Professor H Lotz-Sisitka.

**MUTANHO, Chrispen**, BEdHons, MEd (Rhodes), in Education, in the Faculty of Education. Degree by thesis. Thesis: *Indigenisation of the Science Curriculum at a Higher Education Institution: Affordances and Hindrances*.

Supervisor: Professor K Ngcoza.

Co-supervisors: Distinguished Professor H Lotz-Sisitka and Professor E Mavhunga (Wits).

**NKHACHE, Lebona Jerome**, BSc (Lesotho), PG Cert. (UFS), BEdHons (UCT), in Education, in the Faculty of Education. Degree by thesis. Thesis: *Continuing teacher professional development in the Environment Sector: A case study of Fundisa for Change continuing teacher professional development programme*.

Supervisor: Distinguished Professor H Lotz-Sisitka.

Co-supervisor: Dr NZ Songqwaru.

**VAN BOREK, Sarah**, BMA (Emily Carr), MFA (UCT), in Education, in the Faculty of Education. Degree by thesis. Thesis: *Climate for Changing Lenses: Reconciliation through Site-Specific, Media Arts-Based Environmental Education on the Water and Climate Change Nexus in South Africa and Canada*.

Supervisor: Distinguished Professor H Lotz-Sisitka.

# FACULTY OF HUMANITIES

## (25 PhDs)

### DEGREE OF DOCTOR OF PHILOSOPHY

**CHIWANDIRE, Desire**, MSocSci (Rhodes), in Political and International Studies, in the Department of Political and International Studies. Degree by thesis. Thesis: *Social inclusion and students with disabilities in South African Higher Education. An ubuntu approach*.

Supervisor: Professor LD Vincent.

**DANTAS, Nancy Isabel**, MA (Contemporary Art) (Essex), in Art History, in the Department of Fine Art. Degree by thesis. Thesis: *An archive of upset: the shift from commissioning to curating through South Africa's representations at the Bienal de São Paulo and the interstitial Nexus of Leonard Tshehla Mohapi Matsoso*.

Supervisor: Professor R Simbao.

**HASELAU, Tracey Laura**, MA (Rhodes), in Psychology, in the Department of Psychology. Degree by thesis. Thesis: *Defended subjectivity in service learning: a psychosocial analysis of students' talk about service-learning in psychology*.

Supervisor: Professor L Saville Young.

**LEPHEANA, Jeremia**, Dip (Senior Primary Teachers) (UNITRA), BTech (Education) (Tshwane), BEdHons (UP), Dip (Senior Primary Teachers) (WSU), in African Language Studies, in the School of Languages and Literatures. Degree by thesis. Thesis: *The impact of translanguaging and acculturation towards implementation of the Incremental Indigenous African Languages programme in former Model-C schools (Alfred Nzo West District, Eastern Cape)*.

Supervisor: Professor RH Kaschula.

Co-supervisor: Professor D Nkomo.

**MABASA, Ignatius Tirivangani**, BA (Zimbabwe), Dip (Marketing) (London Chamber of Commerce & Industry), Dip (Media & Communications) (Zimbabwe), MPhil (Oslo), in African Language Studies, in the School of Languages and Literatures. Degree by thesis. Thesis: *Chave Chemutengure Vhiri reNgoro: Husarungano neRwendo rweNgano dzevaShona. (The folktale in confrontation with a changing world: a Shona Storyteller's auto-ethnography)*.

Supervisor: Professor RH Kaschula.

**MEMELA, Sinenhlanhla Truth**, MSc (UKZN), in Geography, in the Department of Geography. Degree by thesis. Thesis: *Land Use Decision-Making on Residential Plots in Fingo Village, Makhanda (Grahamstown), South Africa*.

Supervisor: Professor T Kepe (Toronto).

**MITCHELL, Julia Louise Gail**, MA (Rhodes), in Psychology, in the Department of Psychology. Degree by thesis. Thesis: *How Art-as-Therapy supports participants with a diagnosis of Schizophrenia: a phenomenological investigation.*

Supervisor: Dr T Meehan.

**MUCHABVEYO, Brenda Hamufari**, MSc (Sociology and Social Anthropology) (Zimbabwe), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *Maternal health care services in waiting mothers' shelters: the case of Mawadza Village in Bonda, Manicaland, Zimbabwe.*

Supervisor: Professor MD Drewett.

**MULENGA, Andrew Mukuka**, MA (Rhodes), in Art History, in the Department of Fine Art. Degree by thesis. Thesis: *Kuntanshi yamikalile (The future): speculative nonconformity in the works of Zambian visual artists.*

Supervisor: Professor R Simbao.

**NAIDOO, Lalithalakshmi**, MSocSci (UKZN), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *A critical analysis of the agricultural minimum wage on commercial farms in the Eastern Cape.*

Supervisor: Professor KD Helliker.

**ONOKWAI, John Chukwuemeka**, MSc (Political Science) (Nigeria), in Political and International Studies, in the Department of Political and International Studies. Degree by thesis. Thesis: *Accountability in the Global Health Regime: a critical examination of the institutional policy and practice of the Global Fund to fight HIV/AIDS, Tuberculosis and Malaria Partnership Programme in Ghana.*

Supervisor: Professor S Matthews.

**TANDIRE, Justin**, MSc (Sociology and Social Anthropology) (Zimbabwe), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *The influence of clientelism on the informal sector in Zimbabwe: a case study of Glenview 8 Complex, Harare.*

Supervisor: Professor JJ Roodt.

**TSOPE, Lindiwe**, MSocSci (Rhodes), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *A narrative study of students' and staff's experiences of living with HIV and AIDS at Rhodes University.*

Supervisor: Professor MD Drewett.

**AFOLABI, Abiodun Paul**, BA (Adekunle Ajasin), MA (Lagos), in Philosophy, in the Department of Philosophy. Degree by thesis. Thesis: *Ethics of Climate Change: A normative account.*

Supervisor: Professor B Uchenna Okeja.

**ALEXANDER, Graham**, BSocSciHons (Rhodes), MA (UCT), in Psychology, in the Department of Psychology. Degree by thesis. Thesis: *Schema therapy for anorexia nervosa: An intensive systematic individual case study.*

Supervisor: Professor D Edwards.

**BOBO, Azola Benita Dorothea**, MSocSci (Rhodes), in Psychology, in the Department of Psychology. Degree by thesis. Thesis: *A reflective multiple case study approach to understanding partner relationships within the context of community engagement at Rhodes University.*

Supervisor: Professor J Akhurst.

**BOWKER, Chantal Ann**, MA (Limpopo), in Psychology, in the Department of Psychology. Degree by thesis. Thesis: *Schema Modes in Eating Disorders: An interpretative phenomenological analysis.*

Supervisor: Professor D Edwards.

**CHADAMBUKA, Patience**, MSc (Zimbabwe), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *Interrogating the integration of former farm workers of foreign descent into Shamva's communal areas after the fast track land reform programme in Zimbabwe.*

Supervisor: Professor KD Helliker.

**HWAMI, Rudo Fortunate**, MSocSci (Rhodes), in Political and International Studies, in the Department of Political and International Studies. Degree by thesis. Thesis: *Traversing Doctoral Borderlands: Black doctoral students' experiences of identity construction in South Africa.*

Supervisor: Professor L Vincent.

**MTERO, Shingirai Betty Yananiso**, MA, PG Dip (International Studies) (Rhodes), in Political and International Studies, in the Department of Political and International Studies. Degree by thesis. Thesis: *Shifting Norms and Practices of International Criminal Justice: Exploring African State and Non-State Agency at the International Criminal Court.*

Supervisor: Professor P Bischoff.

**NJOKU, Obianuju Akunna**, BAHons (UNN), MA (Performing Arts) (UNILORIN), in Music, in the Department of Music and Musicology. Degree by thesis. Thesis: *Traversing Sonic Spaces: Expressions of Identity, Gender and Power in the Musical Traditions of the Nupe in Northern Nigeria.*

Supervisor: Dr L Watkins.

**SAVIC, Stefan**, BA (Belgrade), MA (Albert-Ludwigs), in English Language and Linguistics, in the Department of Linguistics and Applied Language Studies. Degree by thesis. Thesis: *Tense and Aspect in Xhosa.*

Supervisors: Professor SR Simango and Professor MA de Vos.

**SIBUYI, Lucas Nkosana**, BIS (UNIN), BAHons (Unisa), MPhil (NMMU), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *Competing Policy Imperatives in Post-Apartheid South Africa: An Analysis of the Effects and Larger Significance of ESKOM Restructuring on the South African Automotive Industry, 2005-2014.*

Supervisor: Professor LJW van der Walt.

**SIPUNGU, Thoko Andy**, BA, LLB, MA (Rhodes), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *Embodying difference in manhood: A sociological analysis of the intersection of visible physical impairments and manhood among Xhosa men in the Eastern Cape*.

Supervisor: Professor MD Drewett.

**VILJOEN, Jacobus Frederick**, MMus (Performing Arts) (NMU), in Music, in the Department of Music and Musicology. Degree by performance and mini thesis. Performance component: three public recitals. Mini thesis: *Gaze patterns of expert and amateur sight-readers with particular focus on the cognitive underpinnings of reading key and time signatures*.

Supervisor: Professor C Foxcroft.

## FACULTY OF LAW (1)

### DEGREE OF DOCTOR OF PHILOSOPHY

**KRUUSE, Helen Julia**, BA, LLB, LLM, PG HDip (Education) (Rhodes), in Law, in the Faculty of Law. Degree by thesis. Thesis: *The professional and ethical role of the legal practitioner in contemporary South Africa*.

Supervisor: Professor GB Glover.

Co-supervisor: Professor D Nicolson (Essex).

## FACULTY OF PHARMACY (5 PharmD and 2 PhDs)

### DEGREE OF DOCTOR OF PHARMACY

**ADAM, Bashira**

**KLOPPERS, Jean-Rial**

**MOODLEY, Seshnee**

**WILSON, Judith Gwen**

**FAKIR, Nazley**

### DEGREE OF DOCTOR OF PHILOSOPHY

**MAKONI, Pedzisai Anotida**, MSc (Pharm) (Rhodes), in Pharmaceutics, in the Faculty of Pharmacy. Degree by thesis. Thesis: *Lipid nanocarriers: a novel approach to delivering ophthalmic clarithromycin*.

Supervisor: Professor RB Walker.

Co-supervisor: Professor SMM Khamanga.

**MELAMANE, Siyabonga**, BPharm, MSc (Pharmacy) (Rhodes), in Pharmaceutics, in the Faculty of Pharmacy. Degree by thesis. Thesis: *Development and optimisation of a mucoadhesive chitosan-based intranasal microemulsion and nanomicelle solution for lamotrigine using artificial neural networks*.

Supervisor: Professor SMM Khamanga.

Co-supervisor: Professor RB Walker.

## FACULTY OF SCIENCE (52)

### DEGREE OF DOCTOR OF PHILOSOPHY

**AIGBEDION-ATALOR, Pascal Osabhaiemen**, MPhil (Ghana), in Entomology, in the Department of Zoology and Entomology. Degree by thesis. Thesis: *Unravelling and ameliorating the impacts of Tuta absoluta (Meyrick) invasion in eastern Africa: spread, socio-ecological impacts, and potential of a newly imported parasitoid for classical biological control*.

Supervisor: Distinguished Professor MP Hill.

Co-supervisor: Dr M Samira.

**AKAMAGWUNA, Frank Chukwuzouke**, MSc (Rhodes), in Zoology, in the Department of Zoology and Entomology. Degree by thesis. Thesis: Application of macroinvertebrate-based biomonitoring and stable isotopes for assessing the effects of land-use on river ecosystem structure and function in the Kat River, Eastern Cape Province, South Africa.

Supervisor: Professor NB Richoux.

Co-supervisor: Professor ON Odume.

**AMUSERGERI, Arnold**, MSc (Rhodes), in Bioinformatics, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Establishing computational approaches for the identification of allosteric modulators and elucidation of drug resistance mechanisms*.

Supervisor: Professor Ö Tastan Bishop.

**BREYTENBACH, Izak Johannes**, MSc (UP), in Geography, in the Department of Geography. Degree by thesis. Thesis: *The effects of aspect, directional heating and depth on bedrock temperatures and the potential relationship with thermal fatigue weathering*.

Supervisor: Professor I Meiklejohn.

**CHAKRABORTY, Abantika**, MSc (Calcutta), in Biochemistry, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Role of Hop in HSF1 related stress response*.

Supervisor: Professor A Edkins.

**EDWORTHY, Carla**, MSc (Rhodes), in Ichthyology, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Coastal pH variability and the eco-physiological and behavioural response of a coastal fish species in light of future ocean acidification*.

Supervisor: Dr N James (SAIAB).

Co-supervisor: Professor WM Potts.

**FAROUNBI, Adebayo Ibikunle**, BSc(Hons) (Lagos), MSc (Obafemi Awolowo), in Water Resource Science, in the Institute for Water Research. Degree by thesis. Thesis: *Evaluation of endocrine-disrupting compounds in the rivers and municipal wastewaters of Eastern Cape Province, South Africa*.

Supervisor: Dr NP Ngqwala.

Co-supervisor: Dr PK Mensah.

**GWAPEDZA, David**, BSocSciHons (Lupane State), in Hydrology, in the Institute for Water Research. Degree by thesis. Thesis: *The further development, application and evaluation of a simple sediment yield model (WQSED) for catchment management in data-scarce African catchments*.

Supervisor: Professor DA Hughes.

Co-supervisors: Dr AR Slaughter and Dr SK Mantel.

**KABUYA, Pierre Mulamba**, MTech (Hydrology) (Indian Institute of Technology Roorkee), PG Dip (Hydraulic Eng) (Hydraulic Research Institute, Delta), in Hydrology, in the Institute for Water Research. Degree by thesis. Thesis: *Constraining hydrological model's uncertainty within a combined modelling approach accounting for channel-wetland exchanges in the Congo basin*.

Supervisor: Professor DA Hughes.

Co-supervisors: Dr M Trigg and Dr R Tshimanga.

**KAJEWOLE, Deborah Ifeoluwa**, BSc (Obafemi Awolowo), MSc (Kent), in Biochemistry, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *An evaluation of the cytotoxic activities of novel artemisinin derivatives: towards targeted therapies for triple-negative breast cancers (TNBC)*.

Supervisor: Professor A Edkins.

Co-supervisors: Dr J de la Mare and Professor R Haines (NWU).

**KALINSKI, Jarmo-Charles Julian**, BSc (Christian-Albrechts Universität zu Kiel), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Mapping the pyrrolo-quinone diversity produced by latrunculid sponges using tandem mass spectrometry driven molecular networking*.

Supervisor: Professor RA Dorrington.

Co-supervisor: Professor R Krause.

**KORI VEERANNA, Soumya**, MSc (Karnataka), in Environmental Science, in the Department of Environmental Science. Degree by thesis. Thesis: *Demography, harvesting and value chain analysis of gum-resin from Boswellia serrata Roxb: a cultural non-timber forest product in Karnataka, India*.

Supervisor: Professor C Shackleton.

Co-supervisor: Dr S Setty.

**MAFUKIDZE, Donovan Musizvinoda Chidyamurimi**, MSc (UFH), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Evaluation of metallophthalocyanine functionalized photocatalytic polymer membranes for pollution control and antimicrobial activity*.

Supervisor: Distinguished Professor T Nyokong.

**MANONA, Siyabulela Sobantu**, BSocSci (Rhodes), BAHons (UFH), MPhil (Land and Agrarian Studies) (UWC), in Geography, in the Department of Geography. Degree by thesis. Thesis: *The role of open government data in the repurposing of Land Administration in post-apartheid South Africa: An exploration*.

Supervisor: Professor T Keep (Toronto).

**MKABAYI, Lithalethu**, MSc (Rhodes), in Biochemistry, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *An evaluation of synergistic interactions between feruloyl esterases and xylanases during the hydrolysis of various pre-treated agricultural residues*.

Supervisor: Professor BI Pletschke.

Co-supervisor: Dr BS Wilhelmi.

**MOLENAAR, Gijs Jan**, MSc (Amsterdam), in Physics, in the Department of Physics with Electronics. Degree by thesis. Thesis: *Design patterns and software techniques for large-scale, open and reproducible data reduction*.

Supervisor: Professor OM Smirnov.

**MPETA, Lekhetho Simon**, BSc (Lesotho), MSc (UJ), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Electrocatalytic response of metallophthalocyanines when clicked to electrodes and to nanomaterials*.

Supervisor: Distinguished Professor T Nyokong.

**MURATA, Chenai**, BAHons, M.Phil (UFH), in Environmental Science, in the Department of Environmental Science. Degree by thesis. Thesis: *Indigenous knowledge of ecosystem services in rural communities of the Eastern Cape, South Africa*.

Supervisor: Professor AR Palmer.

Co-supervisor: Professor G Thondhlana.

**RYAN, Bennett**, MSc (Rhodes), in Human Kinetics and Ergonomics, in the Department of Human Kinetics and Ergonomics. Degree by thesis. Thesis: *The application of human factors and ergonomics (HFE) to community-sport organisations in resource scarce contexts: a case study of grassroots football in Makana, Eastern Cape*.

Supervisor: Mr Al Todd.

Co-supervisor: Professor CJ Christie.

**SIBANDE, Rachel**, MSc (Mzuzu), in Computer Science, in the Department of Computer Science. Degree by thesis. Thesis: *Investigating the factors that influence use of ICTs for citizen participation in Malawi*.

Supervisor: Professor H Thinyane.

**SUTTON, Guy Frederick**, MSc (Rhodes), in Entomology, in the Department of Zoology and Entomology. Degree by thesis. Thesis: *Prioritisation of biological control agents for Giant Rat's Tail Grass*.

Supervisor: Professor I Paterson.

Co-supervisor: Dr K Canavan.

**SWART, Tarryn**, MSc (Rhodes), in Biochemistry, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *A novel ARF GTPase assay for antimalarial drug discovery*.

Supervisor: Professor H Hoppe.

**THORESEN, Mariska**, MSc (Rhodes), in Biochemistry, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *The effect of various substrate pre-treatment methods on the enzymatic degradability of a Eucalyptus sp. - a potential feedstock for producing fermentable sugars*.

Supervisor: Professor BI Pletschke.

**TSHISAPHUNGO, Mpho**, MSc (Rhodes), in Physics, in the Department of Physics with Electronics. Degree by thesis. Thesis: *The development of an ionospheric storm-time index for the South African region*.

Supervisor: Dr L-A McKinnell (SANSA).

Co-supervisor: Dr JB Habarulema (SANSA).

**ADEWUMI, Abosede Atinuke**, MSc (Ibadan), MEd (Lagos), MSc (Covenant), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Stable covalent pH-sensitive metallophthalocyanines thin Mmnlayer films for selective detection of neurotransmitters*.

Supervisor: Professor PN Mashazi.

**BLECHER, Tariq Dylan**, MSc (Rhodes), in Physics, in the Department of Physics and Electronics. Degree by thesis. Thesis: *Neutral atomic hydrogen in gravitationally lensed systems*.

Supervisor: Professor R Deane (Pretoria).

Co-supervisors: Professor I Heywood (Oxford) and Dr D Obreschkow (Western Australia).

**COSSA, Teresa Manuel**, DTech (CUT), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Green approach for the synthesis of symmetrical and unsymmetrical 1,2,4,5-tetraoxanes as anti-malarials*.

Supervisor: Professor R Klein.

Co-supervisor: Professor RWM Krause.

**DE VILLIERS, Deon Johan**, MSc (UNITRA), in Geography, in the Department of Geography. Degree by thesis. Thesis: *Biodiversity Conservation of South Africa's Wild Coast through the years: Exploring the tensions between western-style and local traditional conservation practices*.

Supervisor: Professor T Kepe (Toronto).

**DIALLO, Bakary Ntji**, MSc (Rhodes), in Bioinformatics, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Application of computer-aided drug design for the identification of Plasmodium falciparum inhibitors*.

Supervisor: Professor KA Lobb.

Co-supervisor: Professor Ö Tastan Bishop.

**ENOKENWA EPSE BAA, Ojongetakah**, BAHons (Wits), MSc (Bueau), in Environmental Science, in the Department of Environmental Science. Degree by thesis. Thesis: *Culture,*

*gender and forests: social differentiation in coping and adapting to climate change and other stressors in the south west and east regions of Cameroon*.

Supervisor: Professor SE Shackleton.

Co-supervisor: Dr K Coetzer-Hanack (Wits).

**ERASMUS, Victoria Ndinelago**, MSc (Namibia), in Fisheries Science, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Uncoupling the exploitation and climate change effects on the biology of Cape monkfish, Lophius vomerinus (Valenciennes, 1837) in Namibia*.

Supervisor: Professor WHH Sauer.

Co-supervisors: Dr A-R Childs, Professor I Meiklejohn and Professor WM Potts.

**FAURE, Sariana**, MScAgric (Stell), in Entomology, in the Department of Zoology and Entomology. Degree by thesis. Thesis: *Systematics of the Afrotropical Chalcidae (Hymenoptera: Chalcidoidea)*.

Supervisor: Dr S van Noort (Iziko South African Museum).

Co-supervisor: Professor S Compton. (Leeds).

**FIKIZOLO, Lisolomzi Assaph**, MPhil (Stell), in Ichthyology, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Towards effective monitoring, control and surveillance policy and implementation in South Africa and its relevance to other southern African States*.

Supervisor: Professor KL Cochrane.

Co-supervisor: Professor WHH Sauer.

**JIMOH, Taobat Adekilekun**, MSc (Rhodes), in Environmental Biotechnology, in the Institute for Environmental Biotechnology. Degree by thesis. Thesis: *Microalgal-bacterial flocs and extracellular polymeric substances for optimum function of integrated algal pond systems*.

Supervisor: Professor AK Cowan.

**KAMBIKAMBI, Manda Juliet**, MSc (Rhodes), in Ichthyology, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Taxonomic, ecological and biogeographic re-evaluation of temperate stream fishes in southern Africa: A case study of the Enteromius anoplus complex*.

Supervisor: Dr WT Kadye.

Co-supervisor: Dr A Chakona. (SAIAB).

**KEATES, Chad**, BAHons (Rhodes), in Zoology, in the Department of Zoology and Entomology. Degree by thesis. Thesis: *Integrative systematic structuring of the widespread psammophiid snakes (Psammophiidae): A multi-evidence species delineation approach*.

Supervisor: Dr S Edwards.

Co-supervisor: Mr W Conradie (Port Elizabeth Museum).

**KESHINRO, Muritala Olajide**, MSc (FUNAAB), in Environmental Biotechnology, in the Institute for Environmental Biotechnology. Degree by thesis. Thesis: *Plant-fungal mutualism as a strategy for the bioremediation of hydrocarbon polluted soils*.

Supervisor: Professor AK Cowan.

**KRUID, Jan**, MSc (Rhodes), in Biotechnology, in the Biotechnology Innovation Centre. Degree by thesis. Thesis: *Integration of dual metallophthalocyanine catalysis and green energy for sustainable oxidative removal of endocrine disrupting compounds*.

Supervisor: Professor JL Limson.

Co-supervisor: Dr R Fogel.

**LEHAVANA, Adolphe**, MSc (Antananarivo), in Entomology, in the Department of Zoology and Entomology. Degree by thesis. Thesis: *Distribution, and ecological and economic impact, of the invasive alien aquatic weeds Pontederia crassipes, Salvinia molesta, Azolla filiculoides and Pistia stratiotes in Madagascar*.

Supervisor: Distinguished Professor MP Hill.

Co-supervisors: Dr C Birkinshaw (Missouri Botanical Gardens) and Dr C Zachariades (ARC).

**MABASA, Nyiko Charity**, MSc (Rhodes), in Fisheries Science, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Mitigating salt accumulation in recycled brewery effluent through the integration of water treatment, agriculture and aquaculture*.

Supervisor: Professor CLW Jones.

Co-supervisor: Professor M Laing.

**MADZIVANZIRA, Takudzwa Comfort**, MSc (Zimbabwe), in Fisheries Science, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Evaluating and predicting impacts of Australian redclaw crayfish Cherax quadricarinatus and Louisiana red swamp crayfish Procambarus clarkii invasions*.

Supervisor: Professor OLF Weyl.

Co-supervisors: Professor T Nhitiwa and Dr J South (SAIAB).

**MANYUMWA, Colleen Varaidzo**, MSc (Rhodes), in Bioinformatics, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Computational analysis of alpha, beta and gamma carbonic anhydrases from hydrothermal vent systems as potential carbon dioxide sequestration agents*.

Supervisor: Professor Ö Tastan Bishop.

**MAPUKATA, Sivuyisiwe**, MSc (Rhodes), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Phthalocyanine-nanoparticle conjugates supported on inorganic nanofibers as photocatalysts for the treatment of biological and organic pollutants as well as for hydrogen generation*.

Supervisor: Distinguished Professor T Nyokong.

**MATSHITSE, Refilwe Manyama**, MSc (Wits), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *The construction of phthalocyanine-carbon nanoparticle conjugates for applications in photodynamic therapy and non-linear optics*.

Supervisor: Distinguished Professor T Nyokong.

Co-supervisor: Dr J Britton.

**MILLER, Jordan Katherine**, BScHons (Rhodes), in Geography, in the Department of Geography. Degree by thesis. Thesis: *Application of environmental magnetism to tracing sediment source contribution to Kruger National Park reservoirs*.

Supervisor: Professor K Rowntree.

Co-supervisor: Professor I Foster (Northampton).

**NAIDOO, Monogaran**, MSc (Unisa), in Applied Mathematics, in the Department of Mathematics. Degree by thesis. Thesis: *Modifications to gravitational waves due to matter shells*.

Supervisor: Professor NT Bishop.

Co-supervisor: Professor D Pollney.

**NDZABANDZABA, Coli**, MSc (Swaziland), in Hydrology, in the Institute for Water Research. Degree by thesis. Thesis: *Establishing a water resources assessment system for eSwatini (Swaziland) incorporating data and modelling uncertainty*.

Supervisor: Professor D Hughes.

Co-supervisor: Dr J Tanner.

**PARKER-NANCE, Shirley**, BSc (UP), PhD (UPE), in Ichthyology, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Baseline description of the benthic biotopes for two Long-Term Ecological Research (LTER) stations in Algoa Bay, Agulhas ecoregion, South Africa*.

Supervisor: Professor TL Bornman.

Co-supervisor: Professor WHH Sauer.

**SHAWA, Mark Musonda**, MSc (Rhodes), in Physics, in the Department of Physics and Electronics. Degree by thesis. Thesis: *On the gravitational dual to strongly coupled fluids*.

Supervisor: Professor AJM Medved.

**SMITH, Rosali**, MSc (Rhodes), in Entomology, in the Department of Zoology and Entomology. Degree by thesis. Thesis: *The biological control of Egeria densa Planchon (Hydrocharitaceae) in South Africa*.

Supervisor: Distinguished Professor MP Hill.

Co-supervisor: Professor JA Coetzee.

**VAN DER MERWE, Marcel**, MSc (Rhodes), in Microbiology, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *An investigation into yeast-baculovirus synergism for the improved control of Thaumatotibia leucotreta, an economically important pest of citrus*.

Supervisor: Professor C Knox.

Co-supervisors: Distinguished Professor MP Hill and Professor SD Moore (CRI).

**ZULU, Ayanda Ignatia**, MSc (Rhodes), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Synthesis, characterization and antiparasitic evaluation of chalcone hybrids based on bioactive scaffolds*.

Supervisor: Professor SD Khanye.

# In Memoriam

## The Legacy of Professor Olaf Weyl



Professor Olaf Weyl with  
a Bluegill Sunfish  
(*Lepomis Macrochirus*)

Photo: SAIAB

The sudden death of one of South Africa's most respected freshwater and invasive biology scientists in November 2020, came as shattering news to his family, friends and colleagues. Several of them have shared their memories of this 'giant of a man', along with their insights into the work and networks Professor Olaf Weyl left behind.

Professor Emeritus Tom Hecht says he will never forget the afternoon in late 1993 when a young Olaf Weyl applied to do his Honours degree at Rhodes University's Department of Ichthyology and Fisheries Science (DIFS).

"He was a big chap, and filled the doorway. He said to me 'Look, I'd like to do Honours next year, and incidentally, I'm damn sure I got Firsts for all the subjects that I did. Also, I have three majors. Is that all right?' I said, yes, sure, sounds okay."

Professor Hecht would become Weyl's first academic mentor. They had much in common. Both had been born in Germany, both came to Africa at a very young age, both were passionate about the continent in general and its fish in particular.

Professor Tom Hecht had established the Department of

Ichthyology and Fisheries Science at Rhodes University in 1982, and is credited with setting it on the path to becoming the world-renowned academic institution it is today. He later took early retirement in 2004.

### The Early Years

"During Honours, you get to know what kind of person you're actually dealing with," says Professor Hecht. "Olaf was super bright, but all his life he was a collaborator and a team worker. The first thing he did was to herd all the other Honours students together. If any of his fellow students slacked off or didn't quite understand something like population dynamics (which is basically applied mathematics), he would notice that. He would help get everybody up to speed. Within a very short time they made him class captain."

Olaf also liked to party, adds Hecht. But it didn't stop him from getting a First for Honours.

"Quite frankly, if it hadn't been for Olaf, I don't think the other students would have done as well as they did. A couple of them were lagging behind a bit and he really pulled them along. It was quite interesting to watch."

Weyl decided to plunge straight into this Masters, and knew exactly what he wanted to study - the fisheries of Lake Chicamba in Mozambique. His father Ulrich Weyl was with the German development organisation GTZ, which is how the young ichthyologist first encountered this freshwater lake. The governor of the Manicaland region was very keen on a management plan for the fisheries.

"It was what we call a multi-species, multi-gear fishery - seine netting, hook-and-line, boats and shore angling. So that made it very interesting to come up with some sort of mathematical model," says Hecht.

"I realised within about eighteen months that Olaf was doing stuff that went way beyond a Masters. The seriousness with which he approached his work was simply outstanding. You know, every now and then as a supervisor or academic you get a brilliant student, and he was definitely one of

#### Professor Olaf Weyl, releasing a fish.

Photo: SAIAB



those. I decided I'd write a motivation to Faculty to upgrade his degree to a Doctorate."

After graduating with his PhD just before the turn of the century, Olaf heard that Malawi was looking for a fisheries adviser, to be based at the old Fisheries Research building at Monkey Bay on Lake Malawi. Olaf applied and was appointed for a four-year contract.

"Did he turn that place around! It became an internationally recognised research organisation," says Hecht. "He got students registered at Rhodes for their Masters degrees, started creating a database management system for all fisheries in the lake. He absolutely just took it away, supervising students and writing dozens of reports and papers."

"Despite his size, he was such a gentle guy. He would always be helping people," he adds.

After his stint in Malawi, Dr Olaf Weyl headed back to do a Postdoctoral Research Fellowship at Rhodes University in 2004, and was soon appointed as Senior Lecturer at the Department of Ichthyology and Fisheries Science (DIFS).

#### A Growing Influence

In 2009 he successfully applied for the position of Senior Scientist at the South African Institute for Aquatic Biodiversity (SAIAB). He became Principal Scientist with the Institute in 2012, and Chief Scientist in 2017, the same year he was awarded the SARChI Chair.

**Dr Angus Paterson, Managing Director of SAIAB, says the Institute has seen real expansion in aquatic biodiversity research over the past ten years, and credits Olaf in large part for spurring its growth.**

"He was very much part of the DNA of this institute. He has played a pivotal role in growing the Postgraduate school."

Olaf's presence and influence were unmistakable, he adds.

"He was a very large man in every dimension. He wasn't scared to share his opinion, and he was driven in his work. Without even seeing him, you'd know he had entered the building. He built a big team round himself, very caring and loving. His death has left a huge gap."

Professor Tony Booth, now Dean of Science at Rhodes University, had started his Masters at the Department of Ichthyology and Fisheries Science (DIFS) when Olaf began his Honours year. While studying and out on field trips, they became great friends and fierce angling rivals. Olaf collected fishing gear the same way Imelda Marcos collected shoes, he recounts.

When Tony married in 2002, Olaf was his best man.

"We were known as Laurel and Hardy. I was the skinny one, he was the big one. We would always be squabbling about who had caught the biggest or the most fish."

"Olaf and I published 23 papers together, the first one in 1999. And one that he and I co-authored is just coming out now. It's going to feel so strange to see his name on the paper, with an asterisk next to it."

"If I had to use one word to describe him, it would be 'generous'. He would always give. I think he learnt that from his parents. Olaf came from a big family and they were generous with everything they had, including time and expertise. His father Ulrich was a very strong anti-apartheid activist from Germany. The drive to transform and to better the world he lived in has always been strong."

## Transforming Aquatic Biodiversity

SAIAB has a core mandate to transform the research landscape and redress the legacies of apartheid. Garth van Heerden in the Human Resources department headed up the initiative in SAIAB. It was not an easy task, he says, mostly because of the discipline itself.

"During the apartheid years, black South Africans were not allowed to enjoy or be on the beach. We were kept away from dams. We didn't grow up with that connection with the aquatic environment," says Garth. "But Olaf, like many other fisheries scientists I know, had grown up going fishing nearly every day when he was very young."

"As a foreign white male, he was probably the worst possible candidate in terms of equity. But he didn't see transformation as a barrier. He saw it as a necessity. As a child in Zimbabwe Olaf went to an all-African school, the only white pupil to attend. Because of his family, he had this very real appreciation for the lived experience of African students and the challenges they faced in rural areas."

It was something SAIAB Managing Director Angus Paterson also appreciated.

"He was an absolute son of the African soil, Africa through and through. Apart from his own academic excellence, his legacy includes a whole bunch of recent black South African PhDs. Since Olaf passed, they've stepped up to the plate, they're doing Postdoctoral Fellowships, and I think they will continue to play very dominant roles in the future."

## The Consummate Collaborator

Every person who has worked alongside Professor Olaf Weyl mentions his ability to connect with other people.

"Olaf never left a meeting without making a new contact," says Angus Paterson. "A major part of his international standing was built around the fact that he could network so well."

Professor Nicholas Mandrak of the University of Toronto

met Weyl in 2013, in the run-up to a fisheries conference in South Africa.

"He invited a small Canadian contingent to visit him before the conference. While at the airport, I wondered aloud if we would recognize Olaf and he us. One of my colleagues assured me that we would know Olaf when we saw him. On cue, Olaf appeared and welcomed us as if we were already the good friends we were to become."

Nicholas Mandrak was struck, as so many have been, by Olaf's approach to science and its practical application.

"He published a ton of papers, but I don't think publishing was his greatest motivation. What really drove him was how those papers were going to be used to inform management decisions. On my last trip to South Africa, we worked at Groenvlei, near Knysna. It had undergone a tremendous ecological change in a very short period of time and we were trying to figure out why. We had South African and Canadian students working side by side. The first thing we did was have a meeting with the local managers.

"It was really interesting, watching him getting a lay of the room and an understanding of the things they don't write about in textbooks. He excelled at that. He could talk to fellow scientists, he could talk to researchers, he could communicate with anglers and get them on board. He could adapt his message depending on who his audience was."

## Ten Questions

The very last paper Olaf Weyl worked on and submitted, literally days before his death, was probably one of his most significant. Titled *Ten Research Questions to Support South Africa's Inland Fisheries Policy*, it was published online in late November 2020 in the *African Journal of Aquatic Science*, barely a week after his death.

"Olaf was considering presenting it at the World Fisheries Congress in Australia in late 2020, but that was postponed and then he passed away. I ended up giving it at the virtual plenary on his behalf," says Professor Mandrak.

**"There's no doubt in my mind that he really moved freshwater fisheries research in Southern Africa forward tremendously. His contribution will be lasting thanks to all these people he trained, who will end up in positions where they can make a difference. Ultimately that was what he was most interested in."**

Nicholas Mandrak's conclusion is borne out by Professor Nico Smit of North West University in Potchefstroom. He co-supervised many Postgraduate students with Olaf, as well as collaborating on research papers, including *Ten Questions*.

Nico's fondest memories of Olaf revolve around their co-

mentorship of students, as well as Weyl's famous gregariousness and *joie de vivre*.

"When you were around Olaf, there would be serious academic discussions, but the moment we had finished, his facial expression would change and the fun Olaf came out. The whole package was so nice. The way that he lived his life and the way he saw things rubbed off on the people around him. There was a lot of laughter and it was like you became a better, more positive person simply by being in contact with a guy like Olaf. I think that was for me the thing that stood out," says Professor Smit.

**"Literally and figuratively, Olaf was a giant of a man who embraced the people that he worked with. One of the great things for me, also, was the way that he treated my students. We shared a passion for training young people."**

"My students always came back from Makhanda so positive, having gained so much from going on field trips and being in the lab with him. Olaf really took a hands-on approach to mentorship, being part of the research, going out with them, catching fish, dissecting them. The skills he taught them! He would always tell me he loved working with the North West University students. He said they had 'gees' (a special spirit). His contribution lies mainly in the students, and there are a huge number of them."

"He brought South African aquatic science into the international frame, represented on overseas journals and committees. Olaf and I also served on various bodies and the Southern African Society for Aquatic Scientists. It was planned that in 2021 he would have stepped forward as its president."

## The Network Reaches Out

With Olaf's sudden passing, it was left to his colleagues to pick up the reins. Many students that Olaf was supervising were nearing the end of their PhDs or Masters. Because of her seniority and teaching experience, Dr Josie Pegg, Postdoctoral Research Fellow from Bournemouth University, was asked to step into the position of Interim Research Leader: Research Chair in Inland Fisheries and Freshwater Ecology.

She has been handling much of Weyl's workload relating to students. It was a real challenge stepping into his shoes, she says.

"I honestly don't know how he had enough hours in the day and space in his mind to keep all these balls in the air."

"It has been so sad and so awful, but in a strange way losing him highlighted how to be a really good scientist and group leader. Science can be competitive and cold, but Olaf was collaborative and inclusive. That's how he had lived and how he worked as a scientist."

**"We have had emails, WhatsApps, phone calls from his connections all around the world, the best freshwater scientists from across the globe, reaching out to us and asking how they could help. This was the huge academic network that cared about Olaf, the group and the students."**

"They have helped by taking on projects, and supervising brilliant students like Takudzwa Madzivanzira who was so close to completing his doctorate."

"When we lost Olaf, we didn't lose our place in the scientific field. His network stepped forward and they have supported the students and all of us at the Institute. I do believe that if Olaf had been a more insular person, people's careers would have suffered far more with his passing."

"As it is, his students will be able to graduate well. Instead of stumbling, they have been able to soar. They are brilliant. In large part that is due to Olaf, who was so good at spotting and nurturing talent."

He was more than a supervisor to them, says Dr Josie Pegg.

"He was an amazing role model, really a kind of father figure."



**Professor Olaf Weyl with a Largemouth Bass (*Micropterus Salmoides*)**

Photo: SAIAB

Garth van Heerden's son is studying ichthyology and he regrets the fact that he will not be mentored by Weyl.

"Olaf had already told me he has a project for my son if he is interested. It would have been so amazing to learn from someone like that, just the mindset, the approach, work ethic, his thought processes. It would have been something of immense value."

Angus Paterson adds "Together, over the past 10 years, we have managed to grow SAIAB, and now without Olaf, it feels like half my team is not there. At 49, he had already achieved vastly more than many scientists do although he was really only halfway in his career.

"But he has left a legacy, and we'll drive it on."

**By Julienne du Toit**

## South African Institute of Aquatic Biodiversity (SAIAB) and the Department of Ichthyology and Fisheries Science (DIFS)

The reason Rhodes University has become synonymous with fisheries science and aquatic environments dates back to the 1950s and a certain Professor JLB Smith.

Rhodes University's Dean of Science, Professor Tony Booth explains:

"The Institute is a geographical and historical anomaly. It happened because we had a Professor of Chemistry who loved fishing and who was then alerted to this weird fish that had washed up in East London in 1938. After seeing it, he realised this was a Coelacanth, and spent the next ten years trying to find another. When he did, it was enough to place Grahamstown (now Makhanda) on the international scientific map."



Olaf Weyl and Nick Mandrak, Jonkershoek, SA, October 2017.

Photo by Becky Cudmore Williams

After what was termed 'the Find of the Century', Professor Smith moved from the Department of Chemistry to start the Ichthyology Department in the early 1960s. After he died, his wife Margaret Smith took over as director and a new building was named after him."

The JLB Smith Institute housed his collection after his death, and became a research department, funded for some time by the CSIR. But it was exclusively for Postgraduate students, most of whom came from a background of basic undergraduate zoology.

In the early 1980s, the Department and the JLB Smith Institute split, with the latter being funded by government, and ultimately becoming a National Facility, funded by the National Research Foundation (NRF). It was ultimately renamed the South African Institute of Aquatic Biodiversity.

Professor Tom Hecht vividly remembers the day in 1981 when Margaret Smith and then Rhodes University Vice-Chancellor Dr Derek Henderson contacted him. At the time, Hecht was heading up the University of Limpopo's Zoology Department in Polokwane.

"They said to me, 'Would you like to take over and run the Department of Ichthyology and Fisheries Science and turn this into a world class operation?' My reply was: I'll think about it. What a cheek. I called them back in under ten minutes and accepted."

**Professor Booth explains that DIFS and SAIAB have been in an unusual but highly effective marriage ever since. The two research facilities share a library and a fish collection, Postgraduates, and much else, but "remain fiercely independent in many other ways".**

# Olaf Weyl's Major Milestones in Brief

## 1972

Professor Olaf Weyl was born in 1972 in Giesen, Germany, but moved to Africa at an early age as a result of his father's work in international development. He completed his BSc at Rhodes University, South Africa, before embarking on an MSc, rapidly upgraded to a PhD, on *The dynamics of a sub-tropical lake fishery in central Mozambique* under the supervision of Professor Tom Hecht at Rhodes University.

## 1998

After completing his PhD, Olaf moved to Malawi where he worked as fisheries research and management advisor to the Department of Fisheries (1998-2002). During this period he learned much about interacting with experienced scientists and managers, something that characterised the rest of his career.

## 2003

He returned to South Africa in 2003 first as a Postdoctoral Fellow and then as Senior Lecturer in the Department of Ichthyology and Fisheries Science at Rhodes University (DIFS).

## 2009

In 2009, Olaf seized the opportunity to grow his research career and was employed by the National Research Foundation at the South African Institute for Aquatic Biodiversity (NRF-SAIAB), initially as a Senior Scientist in 2009, then Principal Scientist in 2012, and Chief Scientist in 2017.

This move to a National Facility allowed Olaf to grow his global network and build multiple collaborations with researchers from across Southern Africa and globally in the fields of fish ecology, invasion biology and inland fisheries management.

## 2017

In 2017 Olaf was awarded the South African Research Chair in Inland Fisheries and Freshwater Ecology, a testimony to his outstanding work.

## 2020

In November 2020, Professor Olaf Weyl died in Hogsback, doing what he loved most - research and fieldwork with students. He leaves behind his wife Michelle, their twin daughters Olivia and Phillipa, his parents Ulrich and Gaby, and four siblings.



Professor Olaf Weyl with students and Postdoctoral Fellows of the Inland Fisheries and Freshwater Ecology group.

Photo: SAIAB



## Vice-Chancellor's Distinguished Senior Research Award

Professor Özlem Tastan Bishop

Professor Özlem Tastan Bishop, who received the Vice-Chancellor's Distinguished Senior Research Award for 2020.

Photo: Chris Marais

### Computational Drug Discovery for Africa

The body has an internal biochemical language, with messages and commands made up of proteins - more than 20,000 of them. Professor Özlem Tastan Bishop has received the 2020 Vice-Chancellor's Distinguished Senior Research Award for her work in Bioinformatics, which seeks to understand and decipher the protein language of humans and pathogens at molecular level. The implications of her research could help transform Africa's health issues.

Although Africa makes up only 17% of the world's population, it carries 25% of the global disease burden. Because of inadequate healthcare provision for infectious and non-communicable diseases, this may well increase as the population grows.

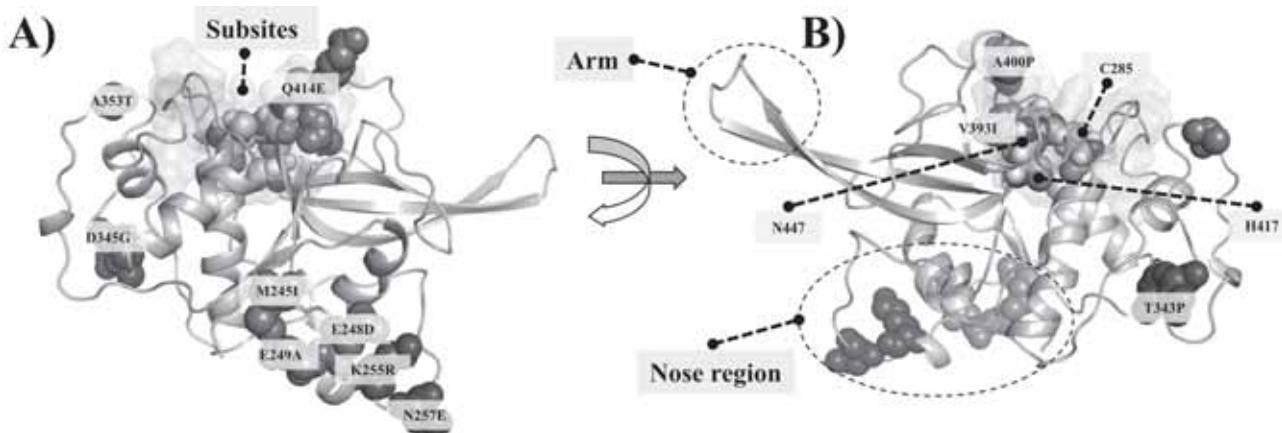
"Yet most treatments for human diseases originate from outside Africa, are too costly or are not designed for diseases common in African populations," says Professor Özlem Tastan Bishop. "We need initiatives to stimulate research, training and development of new medications for diseases relevant to this continent. These initiatives can lead to better healthcare and could stimulate economic growth."

### Evolutions and Mutations

Professor Tastan Bishop is the director and founder of Rhodes University's Research Unit in Bioinformatics (RUBi). Her research involves three different aspects of computational drug discovery.

"It is like a tripod," she explains. "One leg is for understanding protein changes during a pathogen's natural evolution to survive - like in SARS-CoV-2; one leg is for deciphering the drug resistance mechanisms of disease-causing pathogens at protein level - like malaria, TB and HIV; and the final leg is to understand how human proteins metabolise drugs, especially those linked to diseases such as cancer, TB and malaria."

"Proteins are made of amino acids, and sometimes even a single amino acid change (mutation) in the protein sequence can have drastic effects. Discerning the effects of mutations is the key aspect of this tripod research. Pathogens evolve and their proteins mutate. Evolution can be due to natural causes or drug pressure which leads to drug resistance. Drugs to beat the diseases can have different effects on different populations, again due to mutations but this time those in humans."



Structural representation of falcipain 2 protein of *Plasmodium falciparum* (malaria causing parasite). A) and B) show the protein from two different viewpoints. Functional sites and the catalytic residues ((C285, H417, N447) are labeled. The mutations including those linked to artemisinin (a malaria drug) resistance are shown in spheres. The figure is adapted from Okeke et al., 2021, *Computational and Structural Biotechnology Journal*.

Photo: Professor Özlem Tastan Bishop

## The Body Speaks Protein

Proteins are an inseparable part of the delicate biochemical functions that are happening in every human body every second of the day.

There are thousands of them, with specific combinations that make up the enzymes controlling our digestion, energy levels, muscle contractions and blood clotting, to mention just a few. Proteins are also part of the communication network of hormones that direct our sleep, growth, metabolism, the uptake of glucose, our reproductive urges and success, our response to stress and the invasion of disease-causing bacteria or viruses.

"I regard myself as a multidisciplinary scientist," explains Özlem. "I started with physics and mathematics, and then continued with molecular biology, genetics, biochemistry, structural biology and bioinformatics. When I eventually encountered proteins computationally in my research during my PhD, I simply fell in love with them."

"I am a very practical person, and being able to visualize, manipulate and change the proteins in a computer and to be able to see the potential effects attracted me. Further, I am very close to art and especially photography. I like to express things visually. The protein world was amazing for me, where I could combine science (mathematics and biology) and art."

"When I start working with a new protein, I love to visualise its three-dimensional structure and look at it for hours, until I see the structure in my mind's eye. This is the time, I believe, you know everything about the protein, and that is the time that you start talking in its language."

The specific proteins she works on are mostly enzymes from pathogens causing malaria and tuberculosis. These

enzymes are important to the pathogen's life cycle, and are thus potential drug targets. She also works on human enzymes involved in drug uptake, in particular for cancer, malaria, tuberculosis. And, of course, COVID-19 enzymes.

The virus SARS-CoV-2 has only 29 proteins, yet it has been devastating for humanity, she adds.

## The African Genome, Pharmacogenomics and Precision Medicine

It should come as no particular surprise that most medical trials and drugs are designed for and by Europeans and North Americans. And yet, points out Professor Özlem Tastan Bishop, these populations have different and probably less genetic variation than those of African people.

At a molecular level, even slight variations in the nucleotide sequence of DNA can make a massive difference when it comes to drug efficacy or toxicity.

Professor Tastan Bishop explains: "The human genome consists of about 20,000 protein-producing genes and over 900 million variants (mutations), also known as genetic polymorphisms. Systematic knowledge of the impact of genomic variations in humans is critical for the development of effective medicines. However, it is simply not feasible to study each and every one of these variants in detail in human clinical trials; hence the importance of computational studies in pharmacogenomics research - a field of study to understand how genes affect a person's response to particular drugs."

She continues: "The activity of drug metabolising enzymes (produced by pharmacogenes) is known to be affected by genetic polymorphisms. Drug metabolism and how drugs interact with each other in these enzymes (pharmacogen-

kinetics) is highly important when considering drug efficacy and safety. Thus, to minimise harmful side effects from drugs while maximising their therapeutic effectiveness in each patient, we would need to understand effects of population-specific genomic variation in pharmacogenes and drug-enzyme interactions.

“Sometimes a cancer drug or a malaria drug is not well metabolised in the human body because of a variation in the genome. It could even lead to toxicity and cause people to die from the drug instead of being healed by it.”

Most of the time these variations that can cause adverse drug effects would not affect the people in their daily life, until they get the drugs.

## Africa Can Innovate

“The idea of our research is to discern how mutations are affecting the metabolism of these drugs at molecular level, and to determine how enzyme-drug interaction is altered. Knowledge gleaned from our analysis, in the long term, will help us to design more efficacious and safe drugs or allow the safer use of current drugs”.

Precision medicine is the latest big trend, adds Professor Tastan Bishop. It is now a globally accepted approach.

“At a protein structural level, our Research Unit in Bioinformatics (RUBi) at Rhodes University is one of the leading groups, actually. There are not many people doing this, especially in Africa. We started looking at mutation analysis in proteins in 2017. Since then, my group has developed several novel approaches, and applied them to drug resistance-related research. We have set up computational pipelines and tools that are now being used by other researchers around the world. The best known one is the Dynamic Residue Network (DRN).”

This is a good time to be looking at the African genome, she points out. Nine years ago, money was invested to get genome sequencing in Africa.

“We are at the stage where we can take that information and analyse. Of course, everything is linked to money and grants and drug companies. But it is a very hopeful thing to be doing fundamental research for the future health of Africa. It is very exciting. There is so much to do.”

“I am very positive that Africa will innovate within the international pharmaceutical industry and discover its own drugs for its own problems.”

## The COVID Inflection Point

Being in the midst of a pandemic can sometimes feel like being like a science fiction movie, sighs Özlem.

“I used to teach about SARS (Severe Acute Respiratory Syndrome, which is also caused by a Coronavirus) in my lectures up until COVID-19, as a good case study of computational drug discovery and protein modelling. But it never occurred to me that this would happen again, and more severely.”

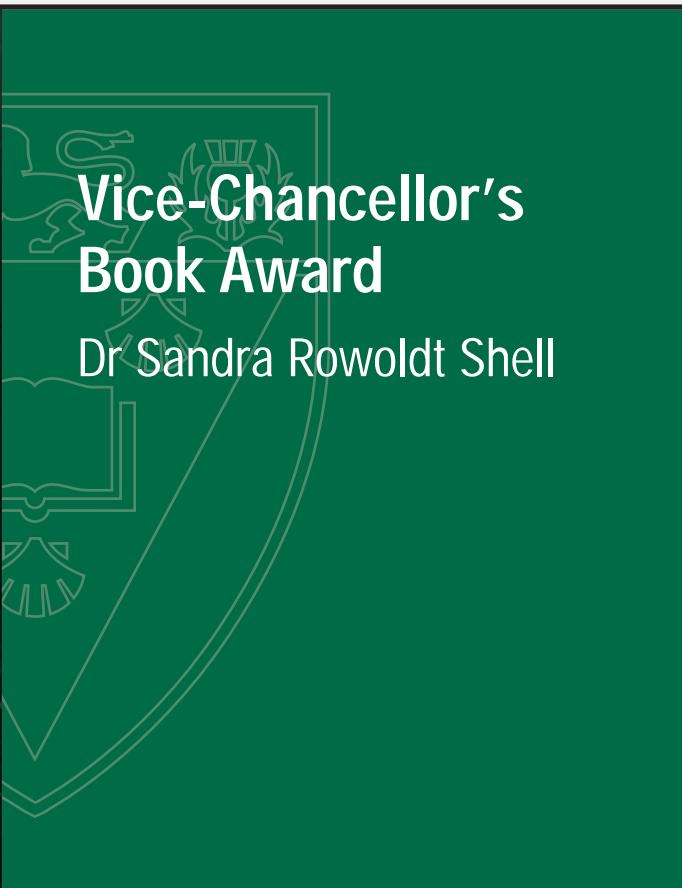
However, there is great benefit to be had in taking stock of what COVID-19 has meant for global medicine, and for academics, she says.

“The pandemic has proven the importance of science and how scientists can achieve a lot in a short amount of time - in large part thanks to cooperation and open sharing of data.”

“I regard COVID-19 as a turning point in the scientific world. Perhaps we are unable to travel, but we can be closer to each other than before. We can attend so many virtual conferences, and share information more widely than before.”

“We can get grants within a short return time and try to contribute as much as we can. We realise that all of us scientists should use our skills to help prepare, in many different ways, for future pandemics.”

## By Julienne du Toit



The Rhodes University Vice-Chancellor's Book Award for 2020 was awarded to Dr Sandra Rowoldt Shell, for *Children of Hope*.

Photo: Chris Marais

## A CURIOUS MIND

The achievements of Dr Sandra Rowoldt Shell, awarded Rhodes University Vice-Chancellor's Book Award for 2020, are an inspiration to librarians, researchers, social activists and non-fiction writers everywhere.

A Colonial-era chemist with a passion for history, a cluster of Oromo children rescued from slavery in the Red Sea and the life and times of a Scottish Glasgow Missionary Society missionary among amaXhosa of the Eastern Cape.

Those three historical subjects have focused and inspired Dr Sandy Shell's academic research and writing efforts for decades. One of them resulted in *Children of Hope: The Odyssey of the Oromo Slaves from Ethiopia to South Africa*, which was awarded the Rhodes University Vice-Chancellor's Book Award for 2020.

Her first book, published in 2017, was *Protean Paradox: George Edward Cory (1862-1925) - Negotiating Life and South African History*. As the former Head of the Cory Library at Rhodes, Dr Shell was a perfect fit for the task.

At the launch of *Protean Paradox* at the Cory Library, she said:

"I had come to know a fair amount about Cory the man while working in the Library, but when I began my research it didn't take long to discover how multidimensional, complex and frequently paradoxical this man was. My purpose in this study was to explore Cory's life in its entirety rather than to deliver a full historiographic critique of his work alone."

In his address at the event, Dr Peter Clayton, Deputy Vice-Chancellor: Research & Innovation, added:

"It is profound that we are launching a book by the former Cory Librarian, about Cory but also in Cory and that is highly significant because this is the legacy of the man that is being written about."

Dr Shell's third book was *Indoda Ebisithanda (The Man Who Loved Us): The Reverend James Laing among the ama-Xhosa 1831-1836*, published in Cape Town by Historical Publications Southern Africa in 2019.

## Children of Hope: The Odyssey of the Oromo Slaves from Ethiopia to South Africa

It was, however, her second book *Children of Hope* that resounded around the world and resulted in three published editions in three countries. In the USA, it was published by Ohio University Press, in South Africa by UCT Press/Juta and in Addis Ababa, Ethiopia by Shama Books.

The book received high praise from all quarters, and experts on the international slave trade were quick to realise that Sandra Rowoldt Shell had unearthed a trove of recorded accounts that would change the historical narrative of African slavery forever, particularly the period of the first passage in the slave trade of the Horn of Africa.

- “Shell offers an intriguing range of insights into the patterns of slaving in late-nineteenth-century Oromia. These shine a suggestive light into the great void of the actual experiences of enslavement in Africa, arguably the single most pervasive motivator of historical changes in the continent for up to three centuries. She tells a dramatic story with restraint, poise, and dignity.” – Joseph C. Miller, author of *The Problem of Slavery as History* and co-editor, *Children in Slavery around the World*.
- “Sandra Rowoldt Shell meticulously weaves together the narratives of the children with the detailed journals and documentation from the Royal Navy, the Mission archives at Sheikh Othman and the archives and journals from Lovedale. – Alexander Meckelburg, *Northeast African Studies*.
- “She explicitly challenges much of the Africanist scholarship on the interior slave trade, ... The real benefit of the stories, then, is their unique specificity. These are not anonymous, generalized experiences over an entire region and large span of time; they are the individual reflections reflecting slave trade patterns in central Ethiopia during the late 1880s. As a result, many significant patterns emerge. ... Most notably, her deeply analysed assessment of the first passage, and its impact on mortality and trauma, offers rich potential for historians of slavery across the continent.” – Lacy S. Ferrell, Central Washington University (H-Net Review).
- “The historiography of slavery in Ethiopia is still in an early stage, and many more questions - concerning the economic, political, and social implications of the trade in slaves and slavery itself - remain to be answered. Shell's book is an excellent and much-needed contribution for understanding various relating dynamics.” – Alexander Meckelburg, *Northeast African Studies*.
- “*Children of Hope* advances our knowledge of slavery and abolition in Northeast Africa and the Indian Ocean World, using a truly remarkable set of sources and a novel approach. Shell makes significant contributions

to the scholarly literature by filling gaps in our knowledge of children and slavery, the practice of slave trading, and the lived experiences of liberated Africans in the Red Sea region.” – Matthew S. Hopper, author of *Slaves of One Master: Globalization and Slavery in Arabia in the Age of Empire*.

— “This study is the fruit of a lifetime of deep scholarship and total immersion in the subject. Sandra Rowoldt Shell has lived with and through her subject - the slave children of Oromo, Ethiopia. Her book is important, because it is a story of human triumph, resilience and survival; it is a story of liberation and hope; it is a story that links the fortunes of South Africa to Ethiopia and it is one further strand in the struggle history of South Africa. This is a study of genealogy, history and economic history that uses sophisticated methods of quantitative data analysis (cliometric and prosopography methods) to draw out the cohort profiles and provide deep analysis of these groups of people. The appeal of this book is that it tells a human story of ancestors and roots in a very human way using the archives with sensitivity and focus.” – Kathy Munro, *The Heritage Portal*.

Ever alert for gripping non-fiction narratives, members of the documentary film industry have made approaches to Sandy. Two South African filmmakers have already contacted Sandy and there are scholars abroad pursuing possible international documentary opportunities-as well as the possibility of a full-length feature film. “Recently, I gave an online webinar attended by people from South Africa, Canada, Ireland and other parts of the world,” she says. “Several of them wrote to me afterwards commenting how filmic the story of the Oromo children is.”

### Sandra Rowoldt Shell

Sandy was born and raised in Zimbabwe of a German-born naturalised Britisher father and a Devonshire mother and is almost a second generation Zimbabwean. Her grandmother (Mabel Minnie Williams) sailed from Plymouth, Devon with her daughter Gladys Mabel, a babe in arms, in 1915 bound for Beira in Mozambique. From Beira, they proceeded by train then ox-wagon to Penhalonga in Manicaland (in Zimbabwe then Rhodesia) close to the Mozambican border

With her University of London A-level GCE under her belt, Sandy's father wanted to send her to the University of Geneva in Switzerland, to major in French and English with an eye to a United Nations post as an interpreter or, ultimately, a post in the diplomatic service. But her heart lay in Africa. She wanted to study social work at the University of Cape Town (UCT).

A little reluctantly, her father agreed, but with the following condition: “I will buy you an air ticket and you will fly down there on your own and you will make your way to the University and you will find the person called the Registrar

and the person called the Dean of your Faculty and talk to them and if you are happy with what you've found out, then you can go to UCT."

During her final two years at UCT, Sandy Shell drove back and forth from Bentree to Cape Town, a rough-and-tumble 5 000km round trip, in her little Austin Mini Station Wagon, "Pookie."

After graduation, Sandy found work as a social worker with the Community Chest in Cape Town for the first few months of 1967. Three months later, Sandy's father fell seriously ill. Sandy quit her job and flew home, leaving Pookie with a law student friend who would drive her up at the start of the university vacation. Meantime, Sandy's father was flown to London for throat surgery which was fortunately successful.

In Harare, Sandy was desperate for employment. This was the era of sanctions following Ian Smith's Unilateral Declaration of Independence (UDI) in 1965. There simply were no positions vacant that matched her qualifications. On a suggestion from Adrian, her brother, she phoned Central African Airways (later Air Rhodesia) and was told there was only one post available: that of air hostess and they would be interviewing the following Monday but the HR person felt she would find it boring. Sandy's interview was successful and her training began immediately.

"I threw myself into the job, flying in Dakotas and Viscounts, making some lifelong friends among the cabin crew and staff. I was not bored for an instant. I'm too curious ever to be bored."

After 18 months contracted to Air Rhodesia (1967-1979), Sandy set off from home to work in England before spending some time travelling around Europe. After some street pounding, she found a temp position in the textile fabrics division of Dupont in London. But this was only a three month appointment and it was time to travel.

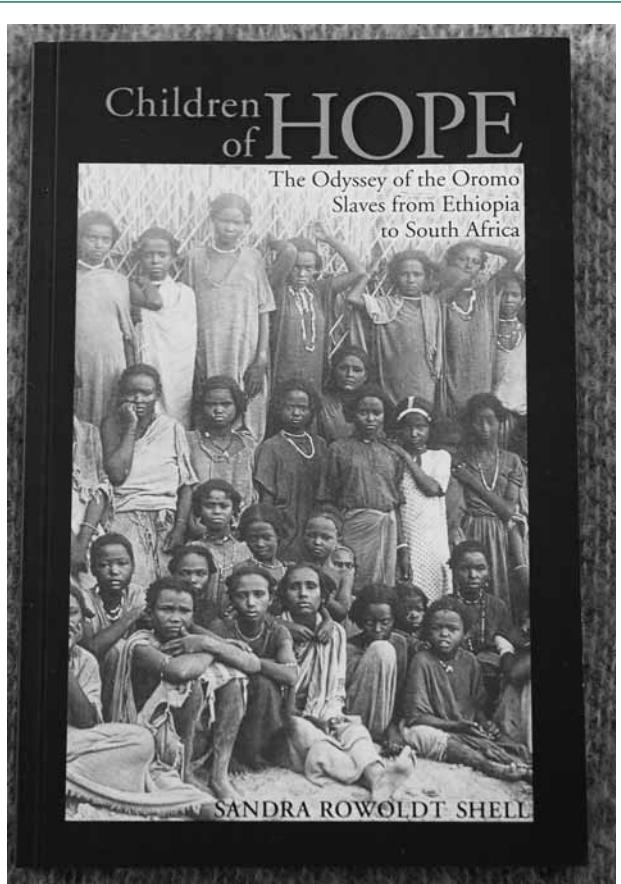
Existing on very little money, she travelled on her Eurail Pass, visiting places she had longed to experience - starting with Frankfurt-am-Main, her father's birth city - had many adventures, was ferried around Florence on a Vespa driven by a handsome young man with impeccable manners, had her bottom pinched while sleeping on a bench at the railway station in Milan, and watched the historic Moon Landing from a friend's apartment in Paris.

Unfortunately she fell ill and had to fly home. Within a month, she landed a job with Lever Brothers as a market research executive and was grateful for the grounding in statistics in her social work degree at UCT. Her new position gave her ample opportunity to develop those statistical skills.

At various points of her young life, Sandy's natural curiosity has led her to the world of books, and the pivotal role of librarian.

"Let me show you something," she says, retrieving a Mexican Peso banknote from her wallet. "Something I carry with me every day as a reminder. I was given that back in my air hostess days, by a passenger who had visited Mexico. I took it to the Queen Victoria Library in Harare and showed it to the reference librarian. I asked her about the meaning of the symbol in the middle of the banknote, and she said she would try to find out. Each day, the librarian would phone me, having found something new. She was excited about doing the research, and thrilled to discover that the design came from the Aztec Calendar. 'I commented, 'What you are doing must be utterly fascinating' and she responded 'Sandy, I love it. Every day, I learn something new.' I often wish I could contact her and say, 'Thank you. Your enthusiasm was inspirational. It gave me 30 years at Cory and then 10 years at the African Studies Library and Special Collections at UCT.' She, like me, was born curious - born with a ferret's nose."

In 1970 she married Zambian-born David Fold. As David's parents had purchased a farm in Martindale, a few kilometres outside Grahamstown, many years previously, he was able to attend Kingswood College during his high school years. He later enrolled at Cedara Agricultural College in KwaZulu-



*Children of Hope: The Odyssey of the Oromo Slaves from Ethiopia to South Africa* by Dr Sandra Rowoldt Shell.

Children of Hope resulted in three published editions in three countries: the USA, South Africa and Ethiopia.

Natal enabling him to work as a Conservation and Extension Officer in the Rhodesian Department of Agriculture followed by a sales position in Pfizer's veterinary section. His ambition was to study either veterinary science or pharmacy. Both fields were offered at university level in South Africa - but in Afrikaans - except at Rhodes University which offered pharmacy in English. David applied, was provisionally accepted and in 1972 the young couple moved south, settling in Grahamstown (now Makhanda).

Meantime, Sandy was looking for a part-time library job and was invited for an interview at the legendary Cory Library for Historical Research at Rhodes University. The late Cory Librarian Michael Berning conducted the interview and recalled:

"She arrived, wearing stockings, high heels and little white gloves. From her resume, I saw she had been an air hostess and a social worker. Nonetheless, I had no doubt in my mind: we had to have her. I asked her 'When can you start?' 'Tomorrow?' she responded. 'But tomorrow is Saturday' I reminded her. "That's just perfect. What time do we open?"

Michael showed her around the library, and the more she saw, the more she realised: "I'm home. My first thoughts were that it would be heaven to work here, amongst the books, the journals, the maps, the manuscripts, the photographs and the old newspapers."

## The Cory Library

Sandy began steeping herself in the historical environment of the Cory Library, and enjoyed dealing with the research needs of historians, journalists, political and social scientists among the academics and researchers from the general public. She developed a burning sense of curiosity about the history of southern Africa, particularly the history of the Eastern Cape and amaXhosa.

In 1973, Sandy was awarded her H.Dip.Lib. (with distinction) and by the following year she was promoted to the full-time post of Assistant Cory Librarian and soon advanced to Deputy Cory Librarian.

Shortly after taking up her new job in the Cory Library, Sandy was going through the subject card catalogue, familiarising herself with the contents of the library and came across a clutch of entries for "Galla Slaves." The entries indicated the material was housed in the rich and extensive Lovedale Institution archives held in Cory.

She did not realise this at the time, but that clutch of cards would be the gateway to a great and significant journey in her life.

## The Oromo Children

"Galla" is a pejorative term (outlawed in Ethiopia in 1974) for members of the East-Cushitic Oromo ethnic group, who occupied their Oromo lands to the west, south and east of



**Author, activist, educator and scholar Neville Alexander - the grandson of former Oromo slave Bisho Jarsa.**

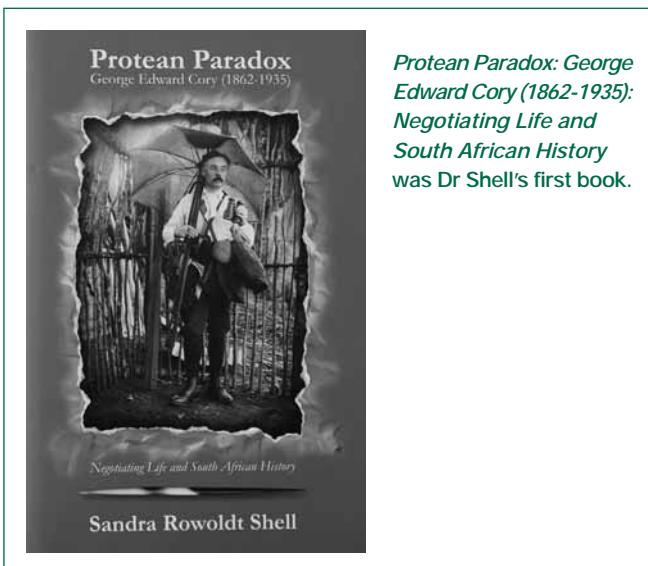
old Abyssinia. There had been enmity between the Oromo and the Abyssinians for five centuries or more.

In 1888-1889, a number of Oromo children were taken as slaves from their Oromo lands. Once at the Red Sea coast, they were loaded onto *dhows* headed for the slave markets on the opposite bank in what was known then as Arabia. In both 1888 and 1889, dhows carrying slaves were intercepted by British warships and the children taken Aden in Yemen, where each child was extensively interviewed according to the same formal questionnaire. Ultimately, a group of 64 Oromo children was sent to the healthier climate of Lovedale Institution in Alice, Eastern Cape, South Africa for their health, well-being and education. The transcripts of their interviews detailing, most significantly, their "first-passage" narratives, were lodged in the Cory Library where the archives of the Institution are held.

Their stories lit an ember within the young librarian, who, many years later, went on to explore these narratives for her PhD in Historical Studies in 2013.

In 2000, Sandy married noted quantitative historian, Cape slave historian, HIV/AIDS analyst and African historical demographer, Robert Carl-Heinz Shell and by 2002 they had moved to Cape Town. Sandy's formal employment as the head of Cory Library was over after thirty fruitful years.

After discovering the 64 children's narratives, Sandy had photocopied them intending to work on them when the



*Protean Paradox: George Edward Cory (1862-1935): Negotiating Life and South African History* was Dr Shell's first book.

time was right. She showed these copies to her (now late) husband, Robert.

"Robert read the stories through with gathering enthusiasm," she wrote. "He pointed out that, besides being a set of rare individual mini-biographies of slave children, they were clearly the result of consistent interviewing and lent themselves readily to systematic analysis.

"He told me that if I encoded these narratives, translating them into numbers, the children's stories would allow for, at the very least, an opportunity to glimpse trends in the patterns of slavery and the slave trade in the Horn of Africa - in addition to enabling the individual children to tell their own stories. Theirs were authentic African voices relating their first-passage experiences within weeks of their liberation. Till now, the first passage has been in the shadows of our knowledge of the slave trade. We know about the middle passage, that period from coast to coast e.g. across the Atlantic from West Africa to the Americas or Brazil or the Caribbean. But we know virtually nothing about those who were enslaved nor about their experiences from capture to the coast - their first passage." The ember of commitment to researching these narratives for her doctoral research was now burning brightly.

### The First Book: *Protean Paradox*

A few weeks after her doctoral graduation in July 2013, the former Chair of History at Rhodes, Professor Paul Maylam (who had been commissioned to write an updated, critical history of the University by the outgoing Vice-Chancellor, Dr Saleem Badat), contacted Sandy.

"As part of the project, Paul Maylam was to have in his team a Postdoctoral Fellow who would be required to write a meaningful legacy-appropriate book," said Sandy.

"We discussed a biography of George Cory one of the first four professors of the newly established Rhodes University College in 1904 who became better known as the historian

author of *The Rise of South Africa*. I was really the obvious person to pen a biography of him as I had worked for three decades in the library that bears his name and had gleaned much about the man in the process." So Sandy and Robert travelled to Makhanda/Grahamstown for her to sign the contract with Rhodes University on 30 September 2013.

"By this time Robert was clearly unwell, meaning that we unexpectedly had to leave Makhanda for Cape Town without delay. We both believed it was his heart. He had a major heart attack in December 2008 and life for him changed radically thereafter. In September 2014, we were totally unprepared for the diagnosis of what we believed was a pulled muscle in his back as Stage Four lung cancer. He was given 3 - 5 months to live. Work on the Cory volume became fitful and eventually, when he could no longer walk or talk and needed constant attention, it stopped altogether. I kept feeding Paul Maylam quarterly progress reports but there were quarters when pathetically little was possible."

"After Robert's death, working on *Protean Paradox* was what got me out of bed in the morning and I threw myself even more wholeheartedly into the research and writing. This may be viewed as self-imposed grief therapy through scholarship. Grieving makes different demands on individuals. I felt, even on the day after Robert died here at home, that I had to reinvent myself, and get back onto all the horses I had fallen off with his death when my life structure fragmented."

"I have always needed structure and self-discipline in my life so I set myself mini-goals and worked to my own step-by-step deadlines: bite-size pieces, short term goals, to prove to myself there was progress. I worked impossibly hard at least 11 - 12 hours a day consistently, with no breaks for weekends or socialising. Far from hankering to get away from the keyboard, it became addictive. Conversely, away from the keyboard, I was anxious only to return and I came to resent anything that interrupted the compulsive discipline of working on the publications sequentially."

"Dr Saleem Badat knew about Robert's death and kindly offered an extra year to complete the Cory book so it would be published in 2017 rather than the original, contracted year of 2016, thus starting the extraordinary annual sequence of all three books. Ohio University Press had already told me *Children of Hope* was planned for 2018 and at that time I had no idea that HiPSA would need to call on me to fast-track the final text of *Indoda* for its first volume in the new Third Series, in 2019."

The decidedly Settler-colonial bias in George Cory's *The Rise of South Africa* - a government-sponsored series of volumes he was commissioned to write-means his work has been largely ignored for many decades.

Sandy, however, had a more nuanced picture of George Cory having read his reminiscences, his letters and

particularly his oral interviews. He walked the length and breadth of the Eastern Cape interviewing elders drawn from the communities residing in the Eastern Cape including amaXhosa, amaNgqika, amaMfengu, amaGcaleka, amaGqunukwebe, amaMpondomise, Khoi, Griqua and settlers from Britain and Europe.

These interviews, and the boxes of early documents he discovered in the Drostdy building in Grahamstown while recuperating from a bout of mumps, inspired him to continue to seek out and preserve the history of the Eastern Cape before it risked destruction. "He was a chemist, with no background in historical studies," she said. "But his curiosity was aroused."

He needed research funding to continue his ferreting so he approached Leander Starr Jameson, Member of Parliament for Albany for assistance. He received the money but there were conditions. As Cory wrote: "I was given to understand that I should have to produce something-i.e. write a book or something of the kind ... So I decided to write a connected account of the history of the Eastern Province, making use of all the information I had collected." Further conditions emerged indicating the extent he was directed in what he

wrote. Cory was certainly not always free to express his own views.

Gradually, his hobby of history chewed up more and more of his time as he paid more and more attention to the history of the Eastern Cape than he did to his profession as first chemistry. Cory was curious, eccentric and a showman - and arguably our first public historian. In addition, his students loved him.

Paraphrasing a blurb on the cover of *Protean Paradox* this biography of Cory explores what motivated him, what he achieved, the tension between his professional chemistry and his (at first) hobby of history, his contribution to South African historiography and his enduring legacy culminating in the founding of the Cory Library for Humanities Research, at Rhodes University. "This engrossing story delivers a strong message of the importance of self-belief and self-determination. This protean man trod a path less trodden, as this biography demonstrates."

A month after signing the *Protean Paradox* contract at Rhodes in September 2013, Sandy was invited to deliver a paper at the annual African Studies Association conference in Baltimore, USA (all expenses paid).

"There, the chief editor of the Ohio University Press approached me saying she was keen to publish my thesis on the Oromo children in book form," she says. "The editor added that there was a five-year planning schedule for publications, which meant that the book would only be published in 2018. In the meantime, I could work on the Cory project."

### The Second Book: *Children of Hope*

A fascinating exemplar of the sixty-four individual narratives of the children is that linking the late Neville Alexander, a political prisoner on Robben Island in the 1960s, a leading educationalist and author. He was also the grandson of one of the young Oromo slave girls to arrive at Lovedale in 1890: Bisho Jarsa.

In 2007, more than 35 years since she first took note of the 'Galla Slaves' indexed in the Cory Library, Sandra Shell sat with Neville Alexander in UCT's African Studies Library (tragically destroyed by fire in 2021), listening "spellbound" as recalled his "frail, old Oromo grandmother."

"His mother (Dimbitti Bisho Alexander) told him about his Oromo origins but Neville thought she may not have known all the details. So he was engaged in trying to discover more about Bisho's childhood. Till then, he had no idea that I was working on the Oromo children and I had no idea of any link between them and Neville (who was then running PRAESA on the UCT campus). We discovered each other by pure serendipity," said Sandy. "My deep sadness is that he died in Germany only months before my PhD graduation. I had hoped he would sit with Robert when I was capped."



Bisho Jarsa, one of the Oromo slave girls to arrive at the Lovedale Institution in 1890.

Photo: Cory Library

The stories of the Oromo children began with the Great Drought and Great Famine (the worst drought and famine in Ethiopian history). The summer rains failed in 1887 and no rain fell until 1892. The crops withered away and the cattle died either of starvation or the newly introduced rinderpest. With the drought and famine came locusts, rats, bubonic plague and other diseases. Bisho and her two brothers were orphaned when both parents died as a result of the diseases and famine that covered the land. Bisho was cared for by one of their late father's slaves but he sold her to merchants engaged in the external slave trade for some scarce maize. Thus began her six-week journey to the Red Sea.

In 1807 the British outlawed the oceanic slave trade and the Royal Navy was mandated by parliament to police the oceans to intercept vessels suspected of carrying illicit cargoes of slaves. In September 1888, HMS *Osprey* intercepted three *dhow*s headed for the Arabian slave markets, liberated their cargo of slave children taking them aboard the naval vessel, and took them to Aden in Yemen. Those who were Muslim were adopted by local families, the Roman Catholic orphanage accepted a fair number and the Free Church of Scotland missionaries at Sheikh Othman took the balance.

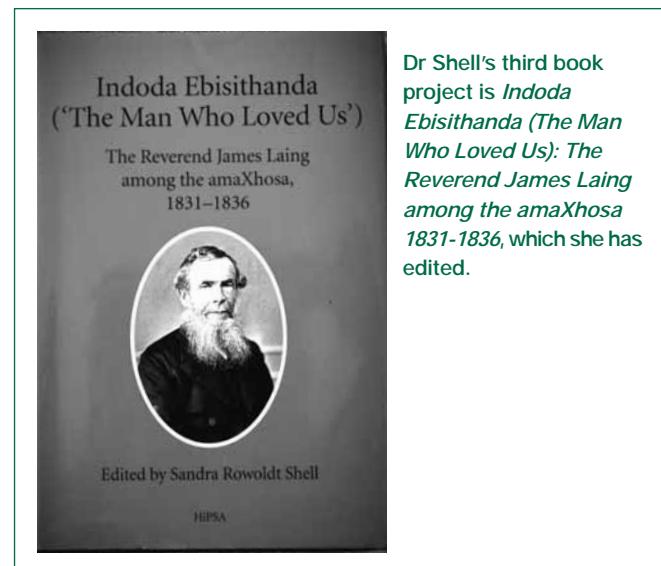
In August 1889, a small group of fourteen enslaved children (including Bisho) were put aboard *dhow*s also bound for the Arabian slave markets. Again the *dhow*s were intercepted and these Oromo children joined the larger group at the Keith-Falconer Mission at Sheikh Othman north of Aden. The children were chronically weakened by the rigours of their first passage and vulnerable to all diseases, in particular the different strain of malaria in Yemen against which they had no immunity. One fifth of the original number died within three months of arrival in 1888. Clearly they needed a healthier climate so the missionaries decided to send them to the Free Church's flagship educational institutions in non-malarial Africa: Lovedale Institution in the Eastern Cape of South Africa.

In 1890, Bisho Jarsa and the rest of her group arrived at the Lovedale Institution in the Eastern Cape of South Africa.

"The level of detail in their interviews is astounding including the identity of their captors and, subsequently, their successive traders and owners," Sandy says. "The children also gave details of the prices paid (or the commodities bartered for them) at capture as well as when and where they changed hands. They also produced incontrovertible evidence of commodity trading rather than kinship absorption at the time of capture and later during the children's often long periods of local servitude."

### The Third Book: *Indoda Ebisithanda (The Man Who Loved Us)*

In 2006, Sandy graduated with a Masters in Historical Studies with a thesis titled *A Missionary Life among the*



Dr Shell's third book project is *Indoda Ebisithanda (The Man Who Loved Us): The Reverend James Laing among the amaXhosa 1831-1836*, which she has edited.

*amaXhosa: the Eastern Cape journals of James Laing*. Shortly thereafter, she offered the text to the Van Riebeeck Society (now Historical Publications of Southern Africa or HiPSA) for publication and the VRS added it to their list of hopefuls. As the VRS/HiPSA publishes one volume per year and the list of previously accepted manuscripts covered several years, Sandy was in for a long wait. Meanwhile, the VRS was due to celebrate its centenary of publishing in 2018 and the Second Series of the VRS was due to reach its 50 volumes. This was an opportune moment to implement the long-awaited name change to HiPSA in 2018.

At the beginning of 2019, the year after the publication of Sandy's *Children of Hope*, *Indoda* was second in line for the Third Series under the new HiPSA brand name. Again, serendipity intervened. One of the two co-editors of the planned first volume under HiPSA colours fell seriously ill. At short notice, HiPSA needed a substitute volume. Could Sandy take this on and complete the editing of her *Indoda* volume in time? "Yes, of course," she responded. With the headlights of the deadline blazing in her eyes she worked incredible hours, indexed the volume herself and gathered all the illustrations together with permissions from the repositories where they were archived. And so *Indoda Ebisithanda* was privileged to lead HiPSA into their Third Series and second century with this volume at the end of 2019.

In February 2020, the Cory Library hosted the launch of *Indoda Ebisithanda (The Man Who Loved Us): The Reverend James Laing among the amaXhosa 1831-1836* in the Cory Library (where Laing's journal is housed in the Lovedale Collection).

The four volumes of Laing's diary cover his life from his departure from Scotland in 1830 to a week before his death in 1872. *Indoda* was compiled from the first of the four volumes, dealing with his time as a Glasgow Missionary Society missionary among amaNgqika at Mkhubiso/Burnhill in the Amathole Mountains of the Eastern Cape between

1831 and 1836. There are few published studies of the Scottish missionaries but Laing's Scottishness is significant. There are recognised parallels between the tribulations suffered by amaXhosa at the hands of the English colonial government and the sufferings the Scottish people experienced in conflict with the English. This Scottish-English conflict obtained not only on the battlefield but also in the contempt in which the English had long held their northern neighbours, regarding them as "barbarians," an easy parallel with Governor Benjamin D'Urban's contemptuous epithet for amaXhosa as "savages." Certainly, with Laing's insatiable interest, affection and compassion, came empathy and he deplored the aspirations, opinions and behaviour of the English colonisers in Grahamstown writing that: "The feeling in this town against the black and yellow people is bad indeed. Surely people so much under the influence of prejudice are unfit for the enjoyment of that power which they seek."

Following his enforced move to Grahamstown under military escort in 1835, he documented his increasing disquiet at the intransigence and misinformation informing colonial opinion and colonial military retributive responses meted out against amaXhosa, his disquiet culminated in a direct confrontation with Governor Benjamin D'Urban and a mercifully brief period of incarceration in the local prison for defending the rights of the amaNgqika mission people who had accompanied the Laing family.

"Laing was a gentle and loving man. He earned the trust of amaNgqika, and grew particularly close to the Great Wife of the late King Ngqika, uSuthu, and Ngqika's Right Hand son, Nkosi Maqoma. During the War of Dispossession of 1834-1835, this trust manifested significantly when Maqoma sent his wife, his children and his horses to Laing for safekeeping."

Fortunately for those interested in Eastern Cape history of this period, Laing was a quintessentially private man who wrote considerably less about himself than about those whom he served. He had an insatiable interest in their genealogy and history as well as in the customs and societal structure of amaNgqika and amaXhosa. Though he struggled to master isiXhosa, he persisted with considerable determination until it became his natural language alongside English. With his growing acquisition of the language, coupled with his hunger to learn and understand, came Laing's unparalleled insights into living among amaXhosa.

With his growing fluency in isiXhosa, came Laing's gradual acculturation into the societal microcosm he shared with amaXhosa. The full impact of the subliminal depths of this acculturation is evident from one of Laing's obituaries in which the writers describe a delirious Laing lying on his deathbed in January 1872, fancying he could see all his friends ranged around him. He babbled volubly to these friends-in isiXhosa.

Not a demonstrative man, Laing was nonetheless an affectionate man and after his death J. Masingata penned an obituary in *Isigidimi samaXhosa* referring to him as "Indoda Ebisithanda" - "the man who loved us." Laing was no firebrand. Instead he lit a small flame of peace, justice and gentleness among his volatile sector of society. Unusually (if not uniquely for a white missionary) his gravestone was inscribed - as had been that of his first wife Margaret in 1837-in isiXhosa.

It was gratifying that during a second Eastern Cape launch of *Indoda* at the Amathole Museum in King William's Town, the present King Ngqika, the royal women and his senior councillors arrived. It was a spine-tingling moment when the royal party entered the venue. Following Sandy's address, two of the King's sisters rose sequentially to voice their responses to the book. As they spoke, they both had tears on their cheeks-and so did Sandy. She had feared they might regard a missionary's views (even a missionary who demonstrably loved them) and his account of their ancestors with disdain or even anger, so she was relieved when they gave *Indoda* their fulsome blessing.

It is important to note that, without the valuable holdings of the Cory Library for Humanities Research particularly those in the extensive archives of the Lovedale Mission (established 1823), the Lovedale Institution (established 1841) and the Lovedale Press, Sandy would not have been able to write any of these books. The rich resources of Cory have drawn researchers to Makhanda from all corners of the world for decades, and have spawned countless theses, journal articles and books.

"It has been a great privilege to have the unexpected opportunity to work on these three books in quick succession (and at times alongside one another). It took a great deal of determination, self-discipline and sheer hard work to achieve the goals the publishers set but it has all been worthwhile. And I have not finished writing yet."

**By Chris Marais**



## From Mystery to Magic

### The Cory Library for Humanities Research

Dr Cornelius Thomas, Head Historian at the Cory Library for Humanities Research, Rhodes University.

Photo: Chris Marais

The Cory Library for Humanities Research at Eden Grove is successfully blending its online facilities with its traditional on-site hard copy, primary and other source materials.

There are many ways to tell the story of the Cory Library for Humanities Research at Rhodes University in Makhanda, Eastern Cape.

So why not start 366km to the west, with writer and activist Olive Schreiner in the little Karoo town of Hanover, on February 13, 1901?

The Anglo-Boer War is in its final stages. Hanover, in British hands and under Martial Law, lies in the cusp of the conflict. Olive writes to her friend Alfred Matisson:

*No one is allowed to be out of his house after 8 o'clock, all lights must be out at 9; & we are not allowed to stray out of the village not even to go for a little walk.*

*Cron (husband Cronwright Schreiner) asked for a pass from the military to come up from Cape Town but they will not give him one so I have not seen him for two months, nor any of my friends.*

*I have hired an empty room in a house here, & put in a stretcher & a table, & do my cooking on a spirit lamp, & I & my little dog Neta live together.*

*There are said to be 20,000 English soldiers within*

*a few miles of this place, & that de Wet with 3000 men is trying to come down & they are trying to surround him, & for ten days people have momentarily been expecting the village to be attacked. Troops with cannon are on the kopjes round, & there is a watch kept up all night. But what the future will bring no one can say.*

*One just waits week after week. Several people I know have lately been arrested, which is much worse than dying on a battlefield. It's all a funny world!*

*The military censor opens & reads all letters, but I'm glad to say he let yours come through all right.*

*I've often wondered why & how the Christians came to invent Hell. But last night when I was lying in bed it struck me that the early Christians lived in a time very much like this under the Roman Empire, during its decline & fall; & of course the poor things believed in Hell because they saw it.*

*Hell is Martial Law.*

*Give my love to Florence, & tell her that one day 'when the War is over' you & she must come out here, because I don't expect I shall ever be feel well*

*enough to go to England again.*

*Drop me a line soon. I hope Mr Censor will let this letter through.*

*Good bye,*

*Olive Schreiner*

This priceless slice of South African rural life during wartime just more than a century ago is part of the Gold Fields Collection, lodged with the Cory Library, a world-class repository where students, graduate researchers and public historians have on-site and on-line access to a vast and growing knowledge base.

Head Historian at the Cory Library, Dr Cornelius Thomas, captures its essence eloquently:

"Here we facilitate the process of moving scholars from mystery to magic."

Libraries are magical. They also have the potential to be dynamic in this digital age, where researchers can either choose quiet time in an assigned reading room, working through hard copies of relevant books or documents, or reach internationally across the ether for the digitised version of that content.

Libraries are also incubators of authors-in-waiting, providing information, inspiration and guidance that transform research material into a finely-crafted body of text which, in turn, joins the library catalogue.



**Distinguished Professor Paul Maylam, retired Head of the Rhodes University History Department, and author of *Rhodes University, 1904-2016: An Intellectual, Political and Cultural History*.**

Photo: Chris Marais

## The Legacy

The Cory Library for Humanities Research had its origins in a huge selection of documents, books, newspapers and photographs bequeathed by Sir George Cory, Professor of Chemistry at Rhodes University College.

While pursuing his professional career as first Professor of Chemistry at the College when it opened in 1904, Cory

made an important contribution to our knowledge of the rural Eastern Cape during his vacations. With the help of interpreters, he walked the length and breadth of the Eastern Cape gathering invaluable oral records from elders of all population groups including amaXhosa, amaNgqika, amaMfengu and other isiXhosa speaking leaders in their homesteads, Boers and 1820 settler families.

Cory also delved into local Grahamstown affairs at the Magistrates office and his collection has become invaluable to scholars investigating the history of the Eastern Cape in that era.

The photographic archive known as the Sir George Cory Slides are a highly prized selection of 270 lantern glass slides he used to accompany his public lectures. Covering early colonial life and rural settlements in the Eastern Cape, they have been digitised and made available to publishers and researchers worldwide.

## The Library Expands

"From that bequest grew the holdings we currently have in the Cory Library," says Dr Thomas.

In 1961, the Mission Council of the Free Church of Scotland deposited the historically significant Lovedale Collection (where Dr Sandra Rowoldt Shell came upon the 'Galla [Oromo] Slaves' entry that led to her landmark book). This institutional deposit initiated a major change in the nature of the collections held by the Library: from purely private papers Cory would henceforth include the deposit of large institutional holdings. Lovedale deposited further material reflecting the work of the Lovedale Mission (established in 1823), the Lovedale Institution (established in 1841) and the Lovedale Press.

The official archives of the Methodist Church of Southern Africa were initially deposited in the Cory Library in 1965, with documents going back more than two centuries and with successive deposits still ongoing. The Cory Library is recognised widely for its strong holdings of missionary, church and educational institution records.

Other institutional archives held in Cory include those of Gold Fields of South Africa Ltd, as well as the records of St Aidan's College, the Association of Round Tables of Southern Africa, and those of the Grahamstown Training College.

The diversity of the contents of the library, now called the Cory Library for Humanities Research, spreads from colonial and settler material to African (primarily isiXhosa) language and literature (published and unpublished) as well as strong holdings of the history of amaXhosa.

South African civic movements like the Surplus Peoples Project, the Black Sash and the End Conscription Campaign deposited their records with the library, widely broadening the institution's research ambit.

## Michael Berning Cory Librarian (1965-1988)

The late Michael Berning, the first professional Cory Librarian, was appointed in September 1965 until October 1988, when he was promoted to the post of Deputy University Librarian.

He researched and compiled a history of *The Cory Library for Historical Research: A Short History, 1931-2003*, printed and bound in-house in 2004.

The first section of this document adds detail to the nature of Sir George Cory's bequest, and the Library's growing reputation as a repository of Eastern Cape documents. As far back as the mid-1940s, the message went out to families resident in the region: keep all your letters and diaries and, if possible, leave them in the care of the Cory Library.

Encouraged by Dr Winifred Maxwell of the History Department, Una Long became the Library's first Historical Field Worker. Ms Long's interest lay in "retelling the story of the 1820 Settlers from the perspective of social history", much of it based on their family papers.

"Una Long had impressed Winnie Maxwell with the contacts she had already made, her business-like ability and her 'undoubted flair for making discoveries,'" wrote Michael Berning.

"The whole scheme, at least in Winnie Maxwell's eyes, went beyond the engaging of a field worker. She hoped to prevent the Eastern Province from being stripped of its private records as it had been of public ones and to counteract the excessive centralisation of records."

Soon enough, the Cory Library contents outgrew its allotted space and thus began a series of moves over the years. With Una Long working in the field, constantly unearthing Eastern Province material, Helen Barker became the first professionally trained librarian to be employed in the Cory Library.

In 1961, the new Rhodes University Library was opened, with the Cory Library included in its structures.

"No attempt was made to provide archival conditions for the Cory Library," said Berning. "Lighting, temperature and humidity, fire, pest and dust precautions were all as in the general library."

He continued:

"In the new location, original documents were stored in rather flimsy wooden cupboards in the general stack and reading area."

The space allocated to the Cory was to prove inadequate, so many parts of the Cory Collection were scattered to other sections of the building and elsewhere on campus.

In terms of the Cory Library and its stance towards the apartheid machine of the Nationalist Government of the

time, Michael Berning recounted an incident involving the then Deputy Cory Librarian, Sandra Rowoldt (Shell):

"Her standing is perhaps best symbolised by an incident during a time of campus unrest," he wrote. "She had returned to the Library from outside and found herself not greeted by a main library colleague who was leaving the building due to the prevailing unrest. When she asked another colleague why this should be, the answer was:

"'But Sandy, don't you know you are the Library's communist?'

"Such (a) view - 'communist' to be taken to refer to outspoken opposition to the Nationalist Government rather than Marxist ideology - attracted radical students, one now a distinguished judge, to Cory's casual staff, occasional visits from Lloyd Edwards, Grahamstown's best-known security policeman, and some deposits of illicit documents."

**Berning also paid tribute to the fact that "from the start, Sandy Rowoldt made clear that the needs of users were close to her heart and that the Cory Library was for all who needed it."**

In her Library Report for 1989, Sandra Rowoldt welcomed the increasing numbers of external and internal users.

"She went on to welcome the increasing numbers of teachers and scholars from local schools using Cory and saw a role for it in introducing library literacy and training in evaluating sources which could benefit the University if these school children chose it for their tertiary studies," said Berning.

Sandy's own professional research passion was the provision of climate-adaptive architecture for libraries and archives in developing countries which could not afford the high velocity air conditioning taken for granted in the libraries and archives of first world countries to the north. She devoted twelve years to researching the possibilities, knowing that Cory desperately needed more space and therefore a new, "green" building. Her conclusion was to house the Cory strongrooms below ground using the earth mass as primary thermal insulator. Fortunately, the architect of her choice was engaged by the University and, after months of working together closely on the design of a "green" library and archive, the Cory Library was relocated to the sloping site of the newly-built Eden Grove building in Lucas Avenue. The physical move took place between December 1999 and January 2000.

The Cory's new home provided much-needed space and, according to Sandy it was also not only "comfortable and congenial" but that the architectural principles incorporated into the planning worked in practice. She was able to comment that "Users frequently comment on the 'champagne' quality of the air and are astounded to discover that it is achieved through methods that are entirely but ingeniously structural".

## Rhodes University - the book

The Cory Library also holds the Rhodes University Archives, preserving the University's institutional memory.

Just before he retired at the end of 2012, Professor Paul Maylam, head of History at Rhodes, and Dr Saleem Badat, Vice-Chancellor, wrote a proposal to the Andrew W. Mellon Foundation, to research and write a critical history of the institution.

"Not for him a celebratory sanitised account of the university over which he presided as Vice-Chancellor for eight years," Professor Maylam says about Dr Badat in his introduction to *Rhodes University, 1904-2016: An Intellectual, Political and Cultural History*.

The story of this ever-changing academic institution in the heart of the rural Eastern Cape is well captured in this publication. It's not a book written or designed to gather dust in an academic back-room.

During his research period for the book, Professor Maylam was given an office in the library and full access to the university archives.

"There was a lot of material to work through," he says, in an interview at the Cory Library. "For instance, all the Senate minutes since 1904. I waded through about 50 volumes of 500 pages each, newspapers, private papers and records of all kinds."

"It had to be a selective history, so I made it fairly thematic, trying to bring in the student culture where I could. The most important thing, for me, was to track the changes over time."

We ask him who his 'ideal readers' are.

"The alumni group who were at Rhodes are the target readers," says Professor Maylam. "I've had good feedback from people who were students here, especially during the 1960s."

Paul Maylam was a Rhodes University undergraduate in the late 1960s, a time of momentous shifts in the world.

"The Paris student revolts, anti-Vietnam War protests, Kent State shootings, even Woodstock," he says. "A bit of that filtered through here, students became more militant and politically active, prepared to confront an administration in a way they'd never done before."

But that 'awakening' was a prequel to a period of administrative conservatism and student hedonism.

"If one was to base a general characterisation of a university on the stances adopted by its leaders, then Rhodes in the 1970s and 1980s could probably be classified as 'conservative-liberal,'" he writes. He then proceeds to

unpack the series of events and changes that transformed the essential nature of Rhodes University.

Dr Thomas adds:

"Two years ago, Paul Maylam released his book on the history of Rhodes University based on a lot of material here, material that was formerly mysterious or unknown. He came up with a wonderful book and shared it with the world - that's the magic!"

## Analog and Digital

There are still people who believe in the 'two worlds colliding' theory when it comes to hard copy text or its digital version. Some swear by words on paper, others are dedicated to screen reading. A good librarian sees the benefits of both formats.

"We all love hard copies, the feel of a paper book," says Dr Thomas. "Librarians are crazy about keeping things. We always have the term 'in perpetuity' in mind. We don't easily discard. If we decide to dispose of a book or collection, we first offer it to one of the libraries on campus, then to one of the departments and then we try to find out who the original donors were, and then who their living relatives are."

"But the digital revolution is with us, and it really helps in terms of serving remote researchers. Not everyone has to physically come to us anymore."

He says that members of the public are using the library in ever-increasing numbers to do genealogical research, mainly for ancestry visa purposes.

"We get a lot of requests for copies of baptism or marriage documents," he says.

In a talk he gave at the University of the Western Cape in October 2019, Dr Thomas suggested that librarians should re-skill themselves.

"Maybe it's time for reconceptualisation of the library," he said. "We have to ask big questions and have big dreams. We have to hasten to the past to find the resource material that will help create identity and restore the community history. That will inform us about our past, and we will create another 100 years of employment for ourselves."

## A Peek into the Cory

Dr Thomas and Professor Maylam take us on a short tour of the Cory Library, to get a brief taste of the treasures it holds.

"This is a library that serves the scholarly community and is open to the public on pre-arrangement," he says. "We are part of the University process of creating an intellectual culture by producing books, receiving our students here and enabling them to write their papers."

Professor Maylam adds some historical fact:

"At first, the Cory was not a library, it was just a collection of documents. In about 1960, when the southern half of the university library was built, the Cory was given a room. I remember going there in the 1960s - it was small, dusty and congested.

"Then 25 years later, this building (indicating the modernistic Eden Grove complex around us) was erected and incorporated the Cory Library."

We then proceed to visit various strongrooms where, apart from large stocks of printed books, we find a selection of memorabilia, like the painted portraits of the vice-chancellors of old, local newspapers, and even the bosun's chair used by Sir George Cory when he re-gilded the clock face of the St Michael and St George Cathedral on the High Street as well as his still-operational original slide projector.

Much of the material in storage comes from personal collections that have been donated to the Cory Library, including old monochrome photographic albums, farm diaries, telescopes and ship's registers.



The bosun's chair used by Sir George Cory while he re-gilded the clock face of the St Michael and St George Cathedral on High Street, Makhanda.

Photo: Cory Library

The library also holds the Lidbetter Photographic Collection. William Walpole Lidbetter was a Cradock-based photographer who covered the Karoo Midlands for more than 50 years. In March 1986, the late and legendary Professor Guy Butler facilitated the donation of more than 150 'Lidbetter negatives' to the Cory Library.

"We also hold the oldest complete Bible in isiXhosa," says Dr Thomas. "And each store is separated with thick walls and fire doors."

### Dr Cornelius Thomas

Back in his office, we discover that Dr Thomas, who holds a PhD from the University of Notre Dame in South Bend, Indiana, USA, is a multi-skilled man.

"I've been a bookshop owner, activist, published author of six books, independent publisher, lecturer, archivist, librarian and newspaper copy editor in my time," he says.

Dr Thomas was 20 years old in 1976, when Soweto erupted and lit the flame of nationwide revolt against the Apartheid government. He wrote a book about Western Cape student activist involvement in the unrest, called *Wakker, Wakker en Aan die Brand* (Awake, Awake and On Fire).

"I wrote that book in 56 days," he says.

After many publishers rejected his manuscript on the grounds that it contained prohibited material, he lodged his work with a friend and went to study in the USA.

In 1997, Dr Andre Odendaal, Director of the Mayibuye Centre for History and Culture in South Africa, based at Robben Island, read Cornelius' manuscript and agreed to publish it.

*Wakker, Wakker* was launched on Robben Island and sold out quickly. At the launch, Cornelius Thomas ended his speech with the simple, yet prophetic, words:

"Die Kat Kom Weer." The Cat Came Back.

*Die Kat Kom Weer* is the Afrikaans version of *The Cat Came Back*, composed by Harry S Miller and made famous by American children's entertainer Fred Penner. The Afrikaans version, however, has political undertones dealing with British colonialism and the Anglo-Boer War.

### By Chris Marais

# Working with the Cory Library

Some helpful hints on accessing material in the Cory Library:

- Link to the Cory Catalogue:  
<http://opac.seals.ac.za/search~S27#>
- Remote researchers should first email their requests to [cory@ru.ac.za](mailto:cory@ru.ac.za)
- The duty Librarian has an office at the main entrance to the library;
- All Rhodes staff and students using the library must complete a user's card on their first visit each year;

- Visitors wanting to access content must complete an application form requesting permission to use the Cory Library;
- Please bring some form of official identification;
- Heed the restrictions on what material may be copied;
- Consult the Head Historian at [c.thomas@ru.ac.za](mailto:c.thomas@ru.ac.za) for details of usage concerning copyright;
- The library has established a 'genealogy corner' with special focus on Eastern Cape families.

## Jeff Peires, Head of Cory Library (2010 - 2012)

Although Cory himself, both personally and in his historical writings, was extremely conservative from the political point of view, his interest in oral history led him to spend January 1910 in and around the town of Butterworth in the former Transkei, talking to knowledgeable old men, including Manxiwa, brother to the late great Xhosa King Sarhili.

Such resources lay dormant in the Cory Library until the late 1950s, when the Bantu Education takeover of Lovedale College prompted the Church of Scotland to transfer the records the Lovedale Press to the Cory Library for safekeeping.

Lovedale had, for more than fifty years, been the only press in the whole South Africa capable of publishing isiXhosa language materials and, as South African intellectual priorities gradually transformed, scholars discovered in its archives a treasure-trove of hitherto unpublished manuscripts and correspondence written by the earliest giants of isiXhosa politics and literature: Tiyo Soga, S.E.K. Mqhayi and Rev W.B. Rubusana to name but three.

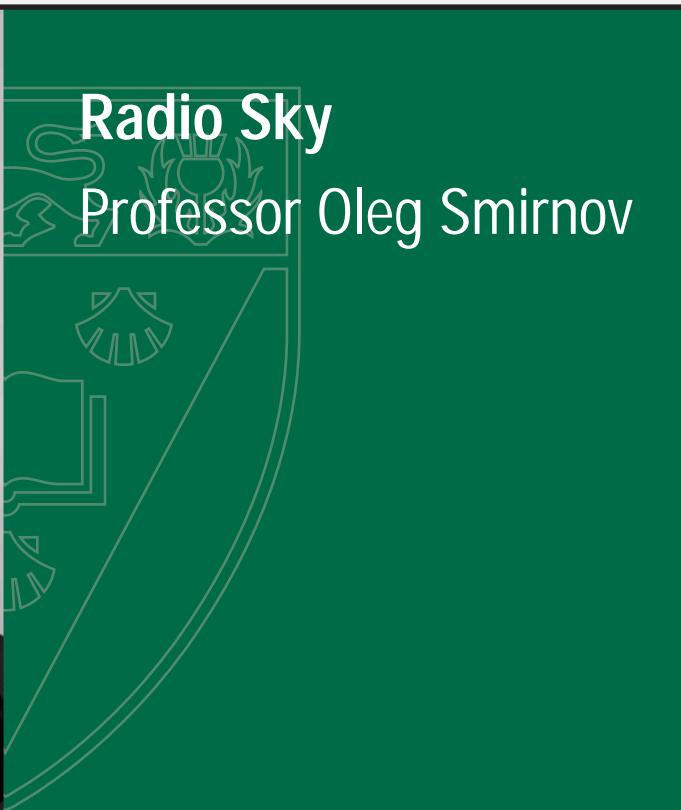
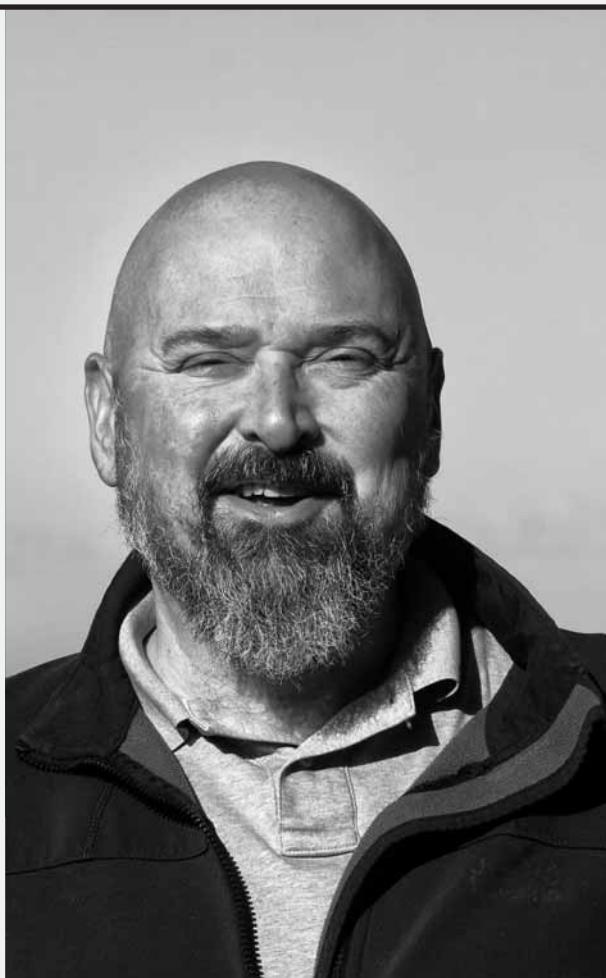
Two decades later, Rhodes Professor Jeff Opland, researching Xhosa oral poetry, recovered priceless isiXhosa-language manuscripts, including a history of the Thembu kingdom which Transkei President KD Mathanzima demanded back literally at gunpoint, not, however, knowing that the Cory staff had quickly made a photocopy.

Later still, during the repression of the 1980s, non-governmental organisations such as the Black Sash and the Surplus Peoples Project, researching the living conditions of the rural poor, also deposited their detailed interview transcripts and fieldwork questionnaires into the Cory Library, another priceless and politically neutral body of raw information preserved nowhere else.

As the smoke of domestic conflict cleared in the years after 1994, increasing numbers of relatively affluent isXhosa-speakers began to pursue research into their personal heritage, more especially genealogies and family trees.

People who ran successful logistics operations in Gauteng, staff members from the Cape Town office of the Auditor-General, people like that. They used to come into the library, saying things like 'I know who I am, but I don't know where I come from,' things like that. And we showed them how to use the same tools that had been employed by 1820 settler descendants for generations past. And these tools worked for them as well.

Lawyers too, cases involving land claims and chiefly succession, sometimes advocates on both sides of the fence came into the library wanting the same materials on the same day. We tried to help everybody on an equal basis.



Professor Oleg Smirnov holds the Square Kilometre Array (SKA) SA Research Chair in Radio Astronomy Techniques and Technologies (RATT) at Rhodes University.

Photo: Chris Marais

Professor Oleg Smirnov is on the forefront of cosmic science, able to turn the faint celestial radio frequencies received by the MeerKAT radio telescope into extraordinary images. These illuminate the mysterious processes happening in distant galaxies. They sometimes also uncover the odd celestial enigma.

On 21 December 2020, our solar system's two largest planets, Jupiter and Saturn, were closer to one another than at any other moment in the past four centuries. The event caused a ripple of excitement among amateur and professional astronomers hoping to capture clear images of this Great Conjunction.

Deep in the Karoo, the MeerKAT radio telescope also focused on this sector of the sky as the two planets edged closer and closer. Unbeknown to anyone involved at the time, the footage captured a puzzling distant transient. It beamed with faint but discernible radio energy for an hour, then blinked off and vanished.

## A Riddle, Wrapped in a Mystery

In May 2021, Professor Oleg Smirnov, Rhodes University's Square Kilometre Array (SKA) SARChI Chair, started assembling the footage as a movie, showing the planets approaching one another over nine hours.

Within the slow-motion footage of the conjunction was the best gift he had received in decades: a mystery.

"A lot of what we do as radio astronomers is quite routine. Finding something incomprehensible is actually quite a treat," explains Professor Smirnov.

One of his special skills is developing software that translates the faint radio frequencies captured by radio telescope dishes into visual images. Because of this, Oleg had been headhunted to join the MeerKAT and Square Kilometre Array (SKA) academic team. He arrived in 2012, just before the announcement that South Africa had won the SKA bid.

Smirnov's life before then had been dominated first by a passion for computers and astronomy, five years of theoretical mathematics at Moscow University and a PhD at the Institute of Astronomy of the Russian Academy of Sciences, followed by a career in software and radio astronomy at the famous Netherlands Institute for Radio Astronomy (ASTRON).

"I was born in Moscow, and mostly educated there, except for two years in Vancouver when I was nine to eleven years old. My dad was posted there via his job in the Foreign

Trade ministry. It was 1982, a few years before Gorbachev came to power, the height of the Cold War. I could stay only two years. The Soviet State did not want impressionable kids being abroad too long, because they thought it would corrupt them. They were right!"

Oleg returned to Russia and his grandparents, leaving his parents and baby sister behind. He plunged back into Soviet schooling system, first at an English school to hone the language he had picked up in Canada, then a final two years at a school that specialised in mathematics.

## Software and Hard Maths

During his two years as a preteen in Canada, Oleg had become fascinated by computers.

"I came back with a Commodore 64. Everything was integrated into the one unit, including the keyboard. It was an interesting thing to get into. Once I was back in Moscow, a friend of the family, who happens to be an astronomer, invited me to have a look at the computers at the Institute of Astronomy. So I started going there and gradually got roped into it."

After school, Oleg enrolled to study at the University of Moscow's Faculty of Mechanics and Mathematics.

"The general standard of education in Russia at that stage was very high. I think it was a lot more pressured and demanding than the West, at university especially. Burnout and other mental health issues were very much a thing. Up to a third of our class was affected at some point or other. Our undergraduate degree was five years.

"By the middle of it, we'd have up to three lectures of an hour and a half each, plus three seminars of the same length in a day. We started at nine in the morning, ended at six in the evening, and had theoretical mathematics crammed into us all day long. Meanwhile, I was working at the Institute of Astronomy part time. That was far more fun because it was practical. I was writing software to make pretty images which corresponded to things out there in the universe."

## Supporting a Science Habit

In the middle of his undergraduate degree in the early 1990s, the Soviet Union collapsed, but the education system remained mostly stable. From his gruelling undergraduate course, Oleg was able to go straight into his PhD, which focused on the photometry of globular clusters.

By the time he graduated though, funding for Soviet science had hit a dead end.

"The salary you'd get as a scientist was ridiculous. You could live on it for five days or something. In the nineties, everything was in ruins. Science became almost like an old-school gentlemanly pursuit. It was a luxury you could only afford if you had independent funding. So, either your

parents had to be well off, or you needed to be married to someone who could support the family, or you needed to have a second, lucrative job to support your science habit. It was almost a hobby, not a career."

But Oleg decided that he wanted to do science full time. He left Russia to accept a Postdoctoral Fellowship position at ASTRON, the Netherlands Institute for Radio Astronomy.

## Switching on Radio

Creating images from radio signals is completely unlike the skillset needed when using optical telescopes.

"The stuff I'd published and built up for my PhD, that hardly counted any more. All the software was different. Careerwise, I had to start from scratch. But I got into this for the computers and the programming, and basically problem-solving. I suppose it's mostly curiosity that drives all of us.

"In terms of imaging, optical astronomy is a more obvious process. The telescope is essentially a huge digital camera. You look up, you have a Charge Couple Device (CCD) that registers the image, and then you process the image to take care of some distortions. But it's really a direct process.

"Whereas the way a radio telescope works is completely different. You just have a stream of voltages, essentially, from each dish. These go into a massive machine called a correlator, which converts them into complex numbers. You collect that for a few hours and then the mathematics starts. You do things like Fourier transforms and whatnot and eventually an image comes out. But there are a lot of steps involved. The signal is never perfect. It is corrupted by the atmosphere, by the dish itself. There are all sorts of things that happen to it on the way, before you actually register it, so initially you get complete garbage. When you start cleaning up the artefacts and the corruptions, the faint stuff starts coming out."

Oleg had been working at ASTRON for 12 years when South Africans came to recruit him for the position of Square Kilometre Array (SKA) Research Chair in Radio Astronomy Techniques and Technologies (RATT) at Rhodes University.

## MeerKAT, SKA and Petanque

By then Professor Smirnov was known for his development of radio calibration and interferometric techniques (correlating the signals from several telescope dishes for greater resolution) as well as ionospheric modelling.

He was also well acquainted with the radio astronomers who approached him with the offer back in 2010.

"Compared to optical astronomy, radio astronomy is like a small village. Everyone pretty much knows everyone else. I'd met Professor Justin Jonas from Rhodes University

before, at meetings and conferences. I remember once I had an open-door barbecue at my house in the Netherlands and a bunch of astronomers showed up. Justin was there.

"I met others when I came to a conference in Cape Town in 2006 as well. When Rhodes University came to speak to me in 2010 or so, the first seven Karoo Array Telescopes (KAT-7) were already operational. I have lots of photographs from that time, a bunch of us radio astronomers playing petanque in the desert, around the telescope dishes.

"I am a city boy, so I'd never seen scenery like that in my life before. I loved it. I wish I could go there more often."

**By then MeerKAT, the array of 64 radio telescopes that would follow the building of KAT-7, was being planned, and South Africa had put in a bid to host the prestigious Square Kilometre Array.**

"They made the announcement that South Africa had won the bid shortly after I arrived. It was great, like the Wild West being explored. Radio astronomy was really expanding everywhere, at all the universities. So to get the bid on top of that was just confirmation we were on the right track. But I had made the decision to come knowing that MeerKAT would be built anyway, whether South Africa won the bid or not. For me it was a no-brainer.

"Because of MeerKAT, because of SKA, radio astronomy has actually overtaken optical astronomy in South Africa."

He sees SKA and MeerKAT as having great benefits for the host country.

"Just trying to do radio astronomy creates a pool of skilled people who are good at solving complicated technical problems. Because if you are good at building radio telescopes, which are just about the most complicated machines you can imagine, you're also going to be good at building other machines - like ventilators for hospitals."

## Fireworks in Space

Optical and radio astronomy complement one another well. The one sees the lights from stars and galaxies, while radio telescopes capture the energy or "the fireworks", as Oleg puts it.

"Different processes produce visible light and radio waves. So if you look at a galaxy in an optical telescope, you will see a pale smudge, which is the combined light of all the stars in the galaxy. Whereas if you look with the radio, you see the gas in between the stars and you start seeing jets of plasma from black holes at the centres of galaxies - what we call active galactic nuclei (AGNs)."

"For nature, it seems to be a normal, mundane thing to form supermassive black holes a billion times bigger than the sun, shooting out jets of plasma at close to light speed.

They are to be found everywhere we look. But I find it utterly wonderful that it's so commonplace."

A galaxy called *Cygnus A* is one of the best examples of the difference between optical and radio astronomy. Visually, it looks completely unexceptional, a modest smear of light just like hundreds of thousands of other galaxies. Yet it is one of the brightest objects in the radio sky, sprouting enormous lobes like butterfly wings, with bright spots on the outer edges.

"The jets of plasma that the black hole is shooting out are completely invisible in optical, but they emit radio. We say space is a vacuum, but it's not quite empty. It's just very low density. What you are looking at here is half a million light years across. And in half a million light years, you're going to hit something. At the speed this plasma is travelling, empty space is not empty at all. So you get a shock wave at the front, where the plasma is hitting the intergalactic medium, slowing down and spreading out."

## Giant Magnet in the Sky

Another favourite target for amateur and professional radio astronomers is the planet Jupiter, 300 times larger than the Earth.

"There is plasma, or charged particles, around it, as there is around Earth and other planets with atmospheres. This is because the Sun ionises the outer envelope of the atmosphere with ultraviolet light. Then there's the solar wind, which consists of more charged particles.

"Jupiter generates very strong radio signals because it has such a powerful magnetic field. It's a giant magnet, essentially, but the magnetic axis is not aligned with the rotation axis. It's spinning pretty fast and the tilt of the axis brings the magnetic field booming round - a full rotation every ten hours. The powerful magnetic field then accelerates these particles of plasma, forcing them to emit radio waves."

At first it seemed fitting that the 'mystery transient' was captured with Jupiter itself putting on a show in the foreground, says Oleg.

"That's because the 'giant spinning magnet in space' model is very likely the key to understanding what is going on with the Mystery Transient."

## Failed Stars and Brown Dwarfs

One of the first working theories was that this flashing enigma was a small dim star - something astronomers call a brown dwarf, which Jupiter could have become had it been a few dozen times larger.

"Stars form like this: you start with a clump of gas, hydrogen mostly, and then slowly, slowly, gravity makes it coalesce, so then you end up with a ball of gas. The more massive the ball, the hotter it's going to get at its centre. If it gets



**Professor Oleg Smirnov in his home office.**

Photo: Chris Marais

hot enough to start hydrogen fusion reactions, then you get a star. The source of energy is in the fusion reaction at the centre, and it will slowly burn through its hydrogen, taking billions of years in the case of the Sun.

"It's very elegant and pretty much inevitable. If you start with smaller amount of gas, it will end up something like Jupiter - you get a planet-sized object, not hot enough to start fusion.

"Brown dwarfs are in between. Smaller than the Sun, bigger than Jupiter. They're not quite hot enough to burn hydrogen but they do start burning an isotope of hydrogen called *deuterium*, which will fuse at a lower temperature.

"If you saw one up close, it would be a dim, brownish-reddish and somewhat warm thing. More of a slow ember than a star."

Brown dwarfs can also be highly magnetic and can rotate rapidly, so for a while there was a theory that the mystery object was essentially Jupiter on steroids, says Oleg.

But here lay another puzzle. Dim as they are, dwarfs can be seen by powerful optical telescopes if they are moderately close. But there was no known optically-detected object at the position of the transient. This meant that the hypothetical 'dwarf' had to be out of sight of optical telescopes. If that were the case, then the radio emission had to be unusually powerful for it to be detected at such a distance.

## Perhaps a Pulsar?

"A back-of-the-napkin calculation showed that if this object was as close to Earth as Jupiter, it would be a billion times 'louder'. And to be this powerful, it needed to be staggeringly magnetic, or much more massive, or

both. But anything that much bigger than Jupiter would already be big enough to form a star, burn hydrogen and be visible to optical telescopes. So where was the light?

"Unless, that is, we were looking at the remains of a massive star."

Professor Smirnov explains that a star ten times heavier than our Sun - or more - would burn through its fuel quickly. Such a star does not fade out peacefully at all. Once fusion reactions stop, there is nothing to counter-balance the force of gravity pulling the star inwards. The core of the star then collapses into a super-dense object called a neutron star or even a black hole if the star was particularly massive. Its outer layers are thrown off in one last spectacular burst of fireworks astronomers call a supernova.

"Neutron stars are small (around 10km in diameter), but extremely dense. A tablespoon of neutron star matter weighs as much as Mount Everest. Like a figure skater pulling in her arms to generate more rotation, all that mass collapsing into a small dense neutron star spins it up to fantastic rates of rotation, and endows it with an extremely powerful magnetic field."

When this happens, it becomes an object known as a pulsar. Pulsars were first detected in 1967 by Dame Jocelyn Bell Burnell, then an MSc student at Cambridge, who spotted unexpected radio pulses on the strip charts coming off a telescope.

A neutron star gives off very little light, if any, but as its magnetic field sweeps through the surrounding plasma, it creates powerful radio signals.

"If that sounds familiar, it is because we've already seen what a spinning magnet can do, except that this one is far more powerful and spins more rapidly. A pulsar's radio

emission shines out in a tight beam, like a searchlight. If the Earth happens to be in the path of this beam as it sweeps around in a circle, we will see a pulse of radio emission every time, as often as every few milliseconds or seconds."

So was the too-powerful dwarf a pulsar instead? There was one problem. Pulsars are normally detected by their rapid signals. They do not usually shine steadily, and then fade out, as was the case with the Mystery Transient.

"When you have something that walks like a duck and meows like a cat, then you have either a very odd duck or a very cool cat."

It is perfectly possible that objects like the Mystery Transient are commonplace and we just haven't been looking for them in the right way, concedes Professor Smirnov.

"Most of the time, when you make images, it's like long exposure photography, not a movie. A typical observation would just stare at that one spot for nine hours. But by the end of it, you wouldn't know that anything blinked on and off. You'd just see a fainter source of energy."

"So, it's quite possible that these mysterious things are everywhere and we don't normally see them because we don't usually make movies."

### The Great Conjunction Photobomb

Thanks to MeerKAT and the growing number of academics studying its signals, it seems that there is news of another

ethereally beautiful celestial body being seen in the radio every other week.

To the untrained eye, they look like fantastical wormholes through space, giant squids trailing delicate tentacles, ghost butterflies, ribbons, rings, spinning tops shooting out beams of energy and wildfires millions of light years across.

**Each one reveals a little more about the inner workings of the cosmos.**

"I am supervising six Postdocs in radio astronomy at the moment, with another two coming in. There are a growing number of Masters and PhD students - about 25 at this stage. MeerKAT has turned out to be twice as good as any other radio astronomy imaging device in the world. But don't let the Americans know I say that!"

*\* Just as this article was being finalised in late September 2021, MeerKAT detected another burst of pulses from the Mystery Transient.*

"This is the smoking gun, suggesting we are observing a pulsar or a Rotating Radio Transient (RRAT), a term reserved for pulsars that behave in very odd ways. If it is a RRAT, with pulses bright enough to form a twinkling point in the image, then it remains to be seen why it fades in and out so spectacularly. And even though pulsars are quite common celestial objects, not even professional astronomers expect them to photobomb a Great Conjunction!"

**By Julianne du Toit**

## Radio Astronomy Oddments and Artefacts

- The first person to detect radio energy in the universe was American Physicist Karl Jansky, who had been asked to investigate a persistent static hiss by the Bell Corporation in 1931.
- The first radio telescope dish was built by amateur astronomer Grote Reber, who erected the parabolic reflecting antenna in his mother's back yard in Illinois, USA, in 1937. With it, he was able to map the broad outlines of the Milky Way, and also detect the radio galaxy *Cygnus A*.
- Radio astronomy really only took off after World War II. Famous radio astronomers of that era cut their teeth developing radar techniques during the war, trying to detect faint reflected radio signals from enemy aircraft. Some even managed to re-purpose the actual radar dishes into telescopes post-war. ASTRON, the Netherlands Institute for Radio Astronomy, started in exactly this way.
- Astronomers can use the planet Earth as a giant gantry, deploying individual radio telescopes very far apart and synchronising their signals. The larger this distance (called the 'baseline'), the finer the resolution of such a 'synthesised' telescope.
- All the radio energy collected by the world's radio telescopes since the 1950 would barely amount to the weight of two snowflakes falling to earth, or looked at another way, enough to power a lightbulb for less than a second.
- The first image produced by MeerKAT was of the Black Hole at the centre of our own galaxy.
- WiFi is probably the best-known byproduct of radio astronomy. It was invented by a team led by Australian physicist John O'Sullivan while at ASTRON in the Netherlands in the 1990s.



## The Secular and the Sacred

### Associate Professor Helena van Coller

Associate Professor Helena van Coller: Rhodes University Faculty of Law Researcher of the Year (2020).

Photo: Chris Marais

Associate Professor Helena van Coller has received the Law Faculty's inaugural 'Researcher of the Year' award for 2020. Her area of interest touches our everyday lives.

Big churches with loud bells are a common feature of small South African towns. Some people, like the late Ouma Theron of Richmond, Northern Cape, loved the hourly peals of the nearby Dutch Reformed church. When the clock stopped working she begged a newly-arrived artisan to fix them - which he duly did. A grateful Ouma Theron finally had her bells back.

However, some years ago, there was a totally different reaction down in the Western Cape town of Paarl when a man and his wife moved in next to the local Dutch Reformed church. The couple were happy at first, mainly because the broken church bells were silent. But once they were repaired and ringing again, they found them to be unreasonably loud. A lively court case ensued.

### The Bells are Ringing

"Now you have the situation of: what is unreasonable?" says Associate Professor Helena van Coller, Acting Deputy Dean in the Rhodes University Faculty of Law. "Other Paarl residents said they loved the sound of the church bells. Eventually, the municipal bylaws were consulted, and the bells were tested to see if the chimes rang within volume

regulations. They were compliant during daytime hours, but found to be too loud at night.

"The bells were adjusted and slightly muted to bring their sound back within the limits and there was a compromise reached between all parties concerned."

Drawing from her landmark book, *Regulating Religion: State Governance of Religious Institutions in South Africa* (Routledge), Helena van Coller writes in *The Conversation*:

"As a general principle of law, a property owner has the right to freedom to enjoy his property free from a noise nuisance. However, there also rests a duty on an owner to exercise his powers within the normal and acceptable limits of reasonableness and not to infringe on other owners' right of enjoyment of their property. Where any landowner exceeds this reasonable exercise of ownership rights, the conduct creates a nuisance to his neighbour that is actionable in accordance with the principles of neighbour law."

## The Charter

The relationship between church or religious law and common law has always been a dynamic one that shifts in emphasis from era to era, community to community. In 2010, the SA Charter of Religious Rights and Freedoms (SACRRF) was drawn up by signatories that included human rights organisations, media bodies, academic entities and a vast array of groups and organisations representing the estimated 10.5 million religious believers of South Africa.

"The Charter expresses what freedom of religion means to those of religious belief and religious organisations within a South African context and the daily rights, responsibilities and freedoms that are associated with this right," Helena van Coller states in her book.

"These include the right to gather in community to observe religious belief, freedom of expression regarding religion, the right of citizens to make choices according to their convictions, the right to change their faith, the right to be educated in their religion...and the right to refuse to perform certain duties or assist in activities that violate their religious beliefs."

She continues later:

"The passing of the SACRRF into law will mean that religious believers have legal impartiality and protection to practise all elements of religious belief under the Constitution. The Charter gives content to the right to freedom of religion and is therefore instrumental in regulating the relationship between church (religion) and state in South Africa."

## Growing Up

Helena van Coller comes from a family of academics, teachers and poets. Her grandfather (she has a bust of him in her office) was Hendrik Petrus van Coller, first Headmaster of the Ben Viljoen High School in Groblersdal, Limpopo Province. Her father is Professor Hennie van Coller, who specialised in Afrikaans and Dutch Law. He is also a published Afrikaans poet.

"My mother and my two sisters are all teachers," she says. "However, I liked the law. At first, the prospect of being in a courtroom was exciting, but it's something I never did. I discovered I would be too emotional, too attached to a case to successfully do court lawyering. I chose academia instead."

After high school, Helena "took a gap year and joined the Defence Force" at the Army Women's College in George, Western Cape.

"The experience had been presented to me as something like a camp," she says. "Then I went down and found out it was army basic training, but at that stage I was too embarrassed to quit and go home. Many of the girls with me joined the Permanent Force, but I only stayed for a year."

She also has some fond memories of that time.

"The movie *GI Jane*, starring Demi Moore, was all the rage back then. Our Colonel at George always insisted that we look 'feminine'. Then some of the girls went off to Armour in Bloemfontein for a course and came back with shaved heads, a la *GI Jane*. He was furious."

## University Studies

Helena then studied at the University of the Free State (UFS) and obtained her LLB and LLM in four years.

"I always wanted to study overseas," she says. "So after Bloemfontein I was awarded a scholarship to the University of Utrecht in the Netherlands. Although there was a large international community on campus, I wanted to 'live local', so I stayed privately with a Dutch family. It was a great way to experience a foreign country."

While in Holland at the beginning of 2005, Helena applied for a post in the Faculty of Law at Rhodes University.

"I had never been to the Eastern Cape, let alone Grahamstown (now Makhanda)," she says. "And here I am, 16 years later."

Helena wanted her PhD studies to focus on law and religion.

"And because my principle supervisor (law) was at the University of Johannesburg (UJ), I did my PhD there. My co-supervisor (theology) was based in Stellenbosch. Rhodes University, however, covered a large portion of my PhD study fees, which was about Religious Institutions and Public Law."

## An Ancient Debate

Although she teaches Administrative Law at Rhodes University, Associate Professor van Coller's research field is firmly fixed on the legal ambit of state and religion.

It's an ancient discussion point that has its Christian roots in the New Testament of The Bible, in which Jesus says "Render to Caesar the things that are Caesar's, and to God the things that are God's" (Mark12:17).

But religious groups in South Africa also embrace a variety of belief systems like Islam, Hinduism, Buddhism, African Traditionalism and a number of Interdenominational Ministries. Not to mention the Rastafarian community that is spread across the entire country. Hence the need for an all-embracing Charter.

## Reflecting the Community

"I research a lot of topics around freedom of religion," says Helena. "At one stage I worked on the debate about whether Dutch Reformed ministers could conduct same-sex marriages.

"In the Dutch Reformed Church, we have the General Synod, which makes church orders binding throughout. But when the General Synod decided not to allow ministers to conduct gay marriages, some of the ministers objected. For instance, I heard of a gay couple who got married in the Dutch Reformed church in Plettenberg Bay, whereas in other congregations that would not happen. It boils down to this: your church reflects its community."

**"Take our church in Makhanda, for example. We've officially amalgamated with the Uniting Reformed Church, so we have a large community of people of colour. In Makhanda, all the different churches support each other. We pray together and attend each other's bazaars."**

Helena van Coller's brother in law is a Dutch Reformed minister in the agricultural town of Greylingstad, in Mpumalanga.

"He's the community dominee," she says. "And that's what it's supposed to be about."

## **Witchcraft and the Law**

In terms of the use of 'spells and potions', the South African legal system is armed with the Witchcraft Suppression Act of 1957. However, it does not provide a definition of what a witch is.

"So communities have had to use their own definitions based on their understanding of witchcraft," says Professor van Coller.

She says the unpublished Draft Mpumalanga Witchcraft Bill of 2007 defines witchcraft as "the secret use of muti, zombies, spells, spirits, magic powders, water, mixtures, by any person with the purpose of causing harm, damage or sickness to others or their property".

However, the South African Pagan Rights Alliance (SAPRA) defines witchcraft as "an ancient religio-magical technique and modern Pagan spirituality that employs the use of divination, sympathetic magic and Pagan ritual practices."

In her book, Helena van Coller quotes Professor Theodore Petrus of the Department of Anthropology at UFS in this regard:

"The term 'witchcraft' means different things to different people. Differences in the perception of witchcraft are largely based on differences in context. In the case of Wicca, witchcraft is viewed as something positive, as witches are practitioners of 'white' or good magic.

"However, in the African context, witchcraft is viewed negatively as witches are seen as practitioners of 'black' or evil magic."

The South African Law Reform Commission (SALRC) has issued a paper "emphasising the fact that the practice of witchcraft can no longer be seen only through the lens of



**Associate Professor Helena van Coller in her office in the Law Faculty.**

Photo: Chris Marais

indigenous communities, where it is necessarily associated with evil," writes Helena van Coller.

"The practice of witchcraft should also be seen as an exercise of the right to religion, practised by other sections of the community. In the light of the constitutional protection of the rights of religious minorities, the religious rights of these groups cannot be ignored."

## Animal Rites vs Animal Rights

In past decades, there have been many reports in the media about South African suburbanites being shocked by their neighbours' ritual backyard slaughter of animals. But possibly the most definitive South African case that highlights conflict areas between various belief systems and animal rights groups is the case of *Smit vs King Goodwill Zwelithini*, as cited by Helena van Coller in her book:

"The Zulu King decided to revive the First Fruits Festival with the ritual of bull slaughtering," she says. Animal activists were incensed and tried to get an interdict preventing this. But the two parties' versions presented in court were found to be in dispute, so the application was dismissed.

The court also requested that the issue of religious slaughter should be discussed and resolved in Parliament.

"Religious slaughter is an important component of the right to freedom of religion," writes Professor van Coller. "The practice of ritual slaughter can be justifiably limited and regulated through legislation and municipal bylaws as an alternative method to a total ban of the practice."

## Student Plagiarism

The intersectionality of religious law and common law is at the core of Associate Professor van Coller's research. And apart from her regular lecturing duties, as a senior staffer in the Faculty of Law, she is also involved in issues of plagiarism.

"I do not, however, have anything to do with disciplinary procedures," she says.

"When students plagiarise their assignments or their PhD submissions, it amounts to academic dishonesty. It happens more frequently with online examinations. Students sometimes 'copy and paste' from the Internet without referencing, they copy from each other and it's not always easy to detect."

There are, however, certain detection software programmes that can be used to check content for similarities in text and possible conclusions of plagiarism.

"I believe in the power of a telephone call or a face-to-face chat before resorting to lawyers," she says, referring not only to the issue above but in general conflict resolution

areas as well. "When an attorney gets involved, things can get derailed. I always tell my students not to look for technical loopholes in the law, but to look at resolving the issue. That's the substance of what it means to be a good lawyer."

## An African Affair

Associate Professor van Coller is a member of the African Consortium of Law and Religious Studies, which hold an annual conference at a selected venue somewhere on the continent.

"It's an exclusively African conference, a mix of all kinds of disciplines discussing law and religion," she says. "Within that general field, we deal with a different theme every year. The next conference (2022), planned for Nairobi, Kenya, will have 'health and healing' as its central topic."

## The Book

"I researched and wrote the book on the South African regulation of religion, which came about after a series of reported incidents where pastors made their congregants drink petrol and sprayed insecticide in their faces. There were also cases involving pastors offering suspect financial advice to their followers."

For her efforts, Associate Professor van Coller received the Law Faculty's inaugural 'Researcher of the Year' award for 2020. It represents a significant milestone in her career and longstanding relationship with the University.

## Life in Makhanda

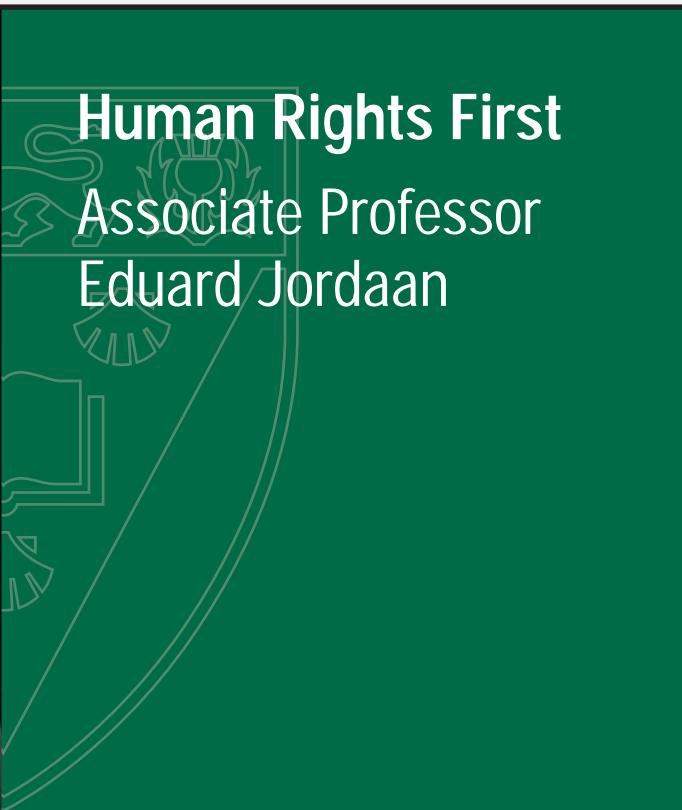
"When I first came here, I was the outsider," says Professor van Coller. "Being the only staff member who had not studied at Rhodes University, being Afrikaans and coming from Bloemfontein. I could speak English, but I had to learn academic English, to publish and to teach. Then we started welcoming new staff members from all over the country."

"We have two tea or coffee sessions in the day, interacting with colleagues. You're often not a member of a committee, you *are* the committee. And here, when you publish, you bring cake!"

She remembers when a fellow Faculty member left Rhodes University for a larger big-city campus, he telephoned her a few months later and said:

"There's no tea in the morning, and no one asks me how I am. I really miss that."

## By Chris Marais



Associate Professor Eduard Jordaan, Department of Political and International Studies.

Photo: Chris Marais

Eduard Jordaan, Associate Professor in Political and International Studies at Rhodes University, has written a significant book on South Africa's often confusing dealings with the UN Human Rights Council in Geneva.

Associate Professor Eduard Jordaan describes himself as an "academic, permanently curious and somewhat unrooted, trying to be a citizen of the world." He adds: "I have always been fascinated - and disturbed - by extreme inequality, by the existence of unimaginable wealth alongside so much life threatening poverty." His passport is well stamped: a year of high school in Canada, three months hitchhiking around Europe as a young man, nine years' lecturing in Singapore, and many research trips to Switzerland.

### Travels, Studies and More Travels

"When I was 19, I bought *The Hitchhiker's Guide to Europe* (now long out of print) and it gave me an idea of how to travel with very little money. After my military service, I spent three months criss-crossing Europe, sleeping rough, stopping off with friends to do my laundry, eat something decent and telephone my parents - then I would move on."

In 1994, Eduard went to the University of Stellenbosch, where he completed his BA, Honours and Masters - all in Political Studies. "This was my second stint at Stellenbosch,"

he says. "I had been there just before my army call-up, for only a few months, doing Accounting - it wasn't for me." The focus of his Masters' research was the decline of international food aid since 1993. There was so much food in the world - why were we not able to feed everyone?"

Eduard's findings, published in his Masters thesis, stated:

"The decline of food aid occurred because agricultural surplus availability has remained the most important factor determining food aid levels, with food aid consequently declining as cereal prices increased after 1993.

"Furthermore, the food aid regime has proved too weak to enforce a severing of the link between food aid and agricultural surplus for most states, particularly the largest food aid donor and hegemon, the United States."

After his Masters, Eduard Jordaan went travelling once more, working at ski resorts and golf courses in Canada. He then crossed over to the United Kingdom and took up a job as a security guard, mainly on the night shift.

## Ethics and Morality

"I liked the idea of having time to read a lot - and getting paid in pounds while doing it," he says. "I felt strongly about injustice, was interested in international relations and, quite early in my academic life, began to study the work of the French philosopher Emmanuel Levinas in that regard."

"I guess the big question I had at that time was how to understand our indifference to, for instance, the fact that at the time about 30 000 people were dying daily for preventable, poverty related reasons."

"What kind of thinking allows us to turn away from these issues?"

When Eduard began to read Levinas' work, what struck him was Levinas' description of the ambiguous relationship we have with other people.

"On the one hand, we are equal," he says. "They've made their choices and I've made mine. At some point, indifference to them is justified. At the same time, every person is a vulnerable human being for whom I have an open ended responsibility. The other person always disturbs and puts in question my indifference. Levinas' contribution is to draw attention to the relationship of responsibility, which political philosophy has tended to overlook."

Returning to Stellenbosch after his travels, Eduard Jordaan began to work towards his D.Phil degree, using the ideas of Levinas to show how political and moral philosophy contain elements that allow for indifference to the distant poor.

## The Singapore Years

In 2007, Jordaan landed a job as an Assistant Professor of Political Science, School of Social Sciences, Singapore Management University. That would be his academic home for the next nine years.

"Singapore was fantastic," he says. "The facilities were very good, and the students were committed. The classes ran to more than three hours - back in Stellenbosch, for instance, classes were usually 50 minutes long."

"One day in my first year in Singapore, it was mid-afternoon, I was tired and wrapped up the classroom session with 12 minutes to spare. Most of the students started packing up but one of them put up her hand and asked:

"I see we have a couple of minutes left, do you mind if we discuss this topic a bit more?" I said 'of course', but I still could not believe the work ethic."

In 2011, he applied for a research grant that would take him to Geneva and back to South Africa for his interviews.

"I wanted to study South Africa's role in the United Nations Human Rights Council," he says. "I did not know much about the subject at first, but then as I spent more time on

it, I realised what South Africa was getting up to and became fascinated."

In January 2018, Eduard Jordaan joined Rhodes University as Senior Lecturer in Political Philosophy, and now lives in Makanda with his wife Margaret and their children, Faye, Gustav and Rose.

## UN Human Rights Council

The United Nations Human Rights Council's stated charter is as follows:

"The Human Rights Council is an inter-governmental body within the United Nations system responsible for strengthening the promotion and protection of human rights violations and make recommendations on them. It has the ability to discuss all thematic human rights issues and situations that require its attention throughout the year. It meets at the UN Office at Geneva."

The Council consists of 47 UN member countries, elected by the UN General Assembly. Replacing the UN Commission on Human Rights, the HRC was launched in 2006.

Associate Professor Jordaan's interest is in the future of human rights amidst the "decline of the West and the rise of the rest" and questions about the survival of the liberal international order.

## The Liberal International Order

"After World War II, the USA was dominant and commanded a great sphere of influence," he says. "Some of its elements included democracy, human rights, free trade and a rule based international system. After the Cold War ended, leaving the USA as the only superpower, the liberal order was in its heyday."

It was also supported and promoted by America's allies - mostly from the so-called West.

"But now, with the USA in decline and the rise of countries like China, the West is not as dominant as it used to be. It is less able to impose itself and force other countries to play by its rules, as it did in the past."

"My thinking was: would the liberal order then be supported by a developing-world democracy like South Africa?"

## The South African Stance

The more he observed South Africa's positions on various international human rights issues, the more Dr Jordaan was troubled by what he saw.

His findings were published by Routledge in 2020 in a book titled *South Africa and the UN Human Rights Council: The Fate of the Liberal Order*.

"While always critical of Israel's actions, South Africa shielded repressive governments like Sudan, the Democratic Republic

of Congo and Sri Lanka after its civil war, when the authorities were bombing indiscriminately and cutting off aid to Tamil areas," he says. "South Africa was preventing any scrutiny of these actions."

Ms Navi Pillay, the highly respected South African activist and lawyer who served as UN High Commissioner for Human Rights from 2008 to 2014, seems to share this view.

In a May 2021 lecture at Stellenbosch University, she said:

"South Africa's record of interventions for the protection of human rights within UN bodies is inconsistent and often at odds with our constitutional principles of human rights and justice for victims. South Africa has resorted to avoidance tactics such as 'non-interference in the internal matters of states' or claiming that to promote human rights would risk 'creating dangerous precedents'.

"It was painful for me, as High Commissioner, to watch South Africa's failure to react to the extensive investigations and reports from my office of massive civilian killings, sexual violence and forced displacement during armed conflict in countries like Syria, Iraq, Sudan and Sri Lanka."

## Why the Inconsistency?

"The story of democratic South Africa and its approach to human rights in the rest of the world is a tale of woe," writes Eduard Jordaan in an article published by *The Conversation*. "For two-and-a-half decades, its foreign policy mostly failed to defend internationally - and quite often contradicted - the human rights principles contained in its Constitution."

Looking at possible reasons for this contradictory stance, he continues:

"It appears that South Africa sees the world in terms of a conflict between the West and the developing world. When this 'anti-imperialist' struggle and human rights conflict, the latter must be sacrificed."

He adds, in a later interview:

"It also occasionally has something to do with personalities, who the SA Foreign Affairs ministry (Department of International Relations and Co-operation) personnel are at the time. A lot of the issues are quite technical. Ambassadors change regularly, they are not so on top of the detail to do with international human rights law or, say, specific Human Rights Council resolutions.

"This gives room to the specialists, the bureaucratic experts, to manipulate where SA stands."

## Positive Signs

"In 2019, however, an improvement became detectable," he continues in the *Conversation* article. "South Africa, for the first time ever, supported imposing Human Rights

Council investigations on countries that did not want them, Israel excluded.

"It backed two resolutions on Myanmar, both of which urged criminal prosecution of alleged perpetrators of human rights crimes. Then, after an abstention on a similar resolution in 2018, it supported extending an investigation into human rights violations related to the Yemeni Civil War."

## South Africa and the UN Human Rights Council

Associate Professor Jordaan's book has been hailed by the publishers as "the most detailed and comprehensive study of any country's record on the UN Human Rights Council to date".

Its contents include the following chapters:

- South Africa, liberal order, and the future of human rights
- The West, liberal order, and human rights
- Country-specific human rights situations
- The Universal Periodic Review
- Civil and political rights
- Gender, race, and sexual orientation
- Economic rights and the right to development

His initial intention was to write a short book on the topic, but given the broad front on which South Africa was undermining international human rights, it became necessary to write a much longer book.

"It doubled in length," he says.

In his Introduction, Jordaan states:

"While the recent economic success of a number of developing countries has lifted millions out of poverty, the growing wealth and power of the developing world amount to an erosion of the hierarchical foundations of the liberal international order..."

"The future world will certainly be less Western. Will it also be less liberal?"

This leads him to ask "whether democracies from the developing world are likely to support international human rights in a world less dominated by the United States and its Western partners."

In his Conclusion, he says:

"If South Africa's record on the UN Human Rights Council since 2006 is anything to go by, then the answer is a resounding 'no'. Liberal principles form the foundation of South Africa's domestic politics and economics but are largely absent in South Africa's human rights foreign policy."

**By Chris Marais**



## Early Earth Research in Barberton

### Dr Eugene Grosch

Dr Eugene Grosch's research into Early Earth processes within Barberton's Greenstone range is proving useful in recognising possible signs of life on other planets, notably Mars.

Photo: Chris Marais

Dr Eugene Grosch of Rhodes University's Geology Department has been mapping and studying Africa's oldest rocks preserved in the Barberton Mountain Land in Mpumalanga since 2008. Studying these rocks, he says, helps us to understand tectonic processes and potential habitable environments on the early Earth 3 500 million years ago - as well as potential life on other planets.

The Archaean Eon of Earth's history, 4 000 million to 2 500 million years ago, has fascinated Eugene since his undergraduate years.

Growing up in Mitchell's Plain and later Grassy Park in Cape Town, the middle brother among three, Eugene remembers being a curious child.

"I was interested in chemistry and understanding how things worked in nature. Then I discovered the link between chemistry and rocks."

He twinned his passion for geology and chemistry, successfully applied for bursaries, and plunged happily into his undergrad years, Honours and then Masters in Geology at the University of Cape Town (UCT). His MSc degree involved a three-month expedition to Antarctica to investigate the metamorphic rocks of Western Dronning Maud Land.

There was a break from academia when Eugene was hired by a consulting company involved in environmental projects

and remediation. This is where he gained valuable experience in geological rock drilling.

When Eugene contacted Professor Maarten de Wit at UCT about undertaking a PhD, De Wit alerted him to a group of Norwegian scientists from the University of Bergen who were planning a scientific drilling project in Barberton.

### Barberton's Ancient Mountains

"I ended up being the on-site manager of the first scientific drilling project in the Barberton Mountain Land. The international project involved scientific drilling under strict environmental conditions - no chemicals were to be used, only clean water. It was quite a technical challenge as the rock layers were vertically oriented, so we had to drill in at a 45 degree angle.

"We drilled through a range of rock types, including a major tectonic boundary. These formed the basis of my PhD research."

## For Eugene, it was the beginning of a scientific passion for the Barberton Mountain Land and what it reveals about Earth's evolution during its turbulent teenage years.

"The Barberton Mountain Land is so special because it has the oldest rocks in Africa, the most ancient traces of life, and a diverse range of rock formations. These include felsic rocks which represent some of the earliest microcontinents, pillow basalt lava formed by volcanic lava that erupted into the Archaean ocean, and seafloor sedimentary rocks, which are silicified.

"And the amazing thing is that these rocks record geological processes on the Earth 3 500 million years ago, and are the best preserved rocks from that particular time of Earth's history, providing a unique window into understanding our planet's early formation history."

After completing his PhD at the end of 2011, Eugene joined the Department of Earth Science at the University of Bergen, Norway, where he worked as a Postdoctoral Fellow and Researcher over a period of four years.

## Tectonics and Metamorphic Rocks

Eugene is currently a National Research Foundation Y-Rated (Young Researcher) scientist and has funded his research via an NRF Thuthuka Grant, Incentive Funding for Rated Researcher Grants and Rhodes University Capacity Development Grants since starting at Rhodes in 2015. He is currently undertaking high-resolution geological mapping in the Barberton greenstone belt and has successfully supervised a number of Postgraduate students in his field area.

As a petrologist Eugene studies rocks from a wide range of localities around the world. These include metamorphic rocks from Greenland, Pilbara Craton in Western Australia, Egypt, Sinai, and Antarctica to understand the conditions of rock formation. In 2019 Eugene co-authored three papers which mainly focussed on low temperature metamorphic processes related to gold mineralisation, the metamorphic evolution of the Barberton Greenstone Belt and potential traces of early life in a Martian meteorite. (In the case of the latter, he found none.)

Together with international colleagues Dr Pierre Lanari, Dr Silvio Ferrero and Dr Philippe Goncalves he co-edited a book volume entitled *Metamorphic Geology: Microscale to Mountain Belts* in the *Journal of the Geological Society*, London, Special Collection.

"Editing a book volume was a lot of work and the project took three years, but the final product is very interesting reporting on the metamorphic geology of a wide range of field areas and modern petrological techniques."

Recently Eugene has presented evidence for 3 300 million year old oceanic crust preserved in the Barberton Greenstone

Belt. In 2020 he published a paper in the international journal *Precambrian Research* together with now graduated MSc student Sibusisiwe Ndlela and Professor Giulio Viola (University of Bologna, Italy) entitled "Geological record of Paleoarchean oceanic flake tectonics preserved in the c. 3.3 Ga Kromberg volcanic type-section, Barberton greenstone belt, South Africa".

This paper presented a novel geodynamic model for the formation and destruction of oceanic crust on a hotter early Earth. In the same year he co-authored a paper that investigated the evidence for early life in basalts from the Euro Basalt Formation in Pilbara Craton, Australia. The paper published in *Geobiology*, was led by Dr Nicola McLoughlin and co-authored by his Honours student Siyolise Phunguphungu.

"Understanding tectonic processes on the early Earth is one of my main research areas. I look at the structure and microstructure of the rocks I collect in the field."

Komatiites are a unique type of rock that was discovered 50 years ago in the Barberton Greenstone belt and record hot volcanic processes on the early Earth. These are still yielding new information to Dr Grosch and his colleagues. In collaboration with Dr Jiri Slama (Czech Academy of Science), Eugene published a paper in the *South African Journal of Geology* on 3.48 billion years old komatiite rocks called "On the volcanic architecture, petrology and geo-dynamic setting of the 3.48 Ga Barberton komatiite suite, South Africa".

This paper casts light on the geology of this famous section of rocks and how the early Earth has cooled down in the last 3.5 billion years.

## Early Earth and Modern Mars

Eugene has also been collaborating with Dr Janice Bishop of the Search for Extraterrestrial Intelligence (SETI), and NASA's Ames Research Center.

Their paper, entitled "Early Archean alteration minerals in mafic-ultramafic rocks of the Barberton greenstone belt as petrological analogues for clay mineralogy on Mars" was published in the journal *American Mineralogist*.

"My aim is to test if plate tectonic processes were in operation on the early Earth, or if some other modes of geodynamic process were operating. This is still an open question. Many of the rocks I have been studying are relevant to planetary science and the search for life beyond earth, so-called astrobiology, because they contain low-temperature clay minerals in them, like serpentine, chlorite and also evidence for early microbial life."

"I did a study with a group at the Carl Sagan Institute (SETI), where we did hyperspectral imaging and analysis (visible and near infrared absorption spectra) of the clay minerals in a range of altered Barberton rocks because they are



Dr Eugene Grosch standing on a 3.1 billion-year-old granitoid intrusion, namely the Boesmanskop syenite, Mpumalanga Province, Barberton Greenstone Belt, South Africa.

Photo: Dr Nicola McLoughlin

similar in age and composition to some of the rocks on Mars. If you can find clay minerals on Mars, there must have been water."

"As we are speaking, the Perseverance Mars Rover is busy drilling samples in Jezero Crater rocks, and our data will be used to ground what NASA finds there.

"It's all about looking for evidence of water and traces of life in rocky planets in the solar system."

## Africa's Fascinating Minerals

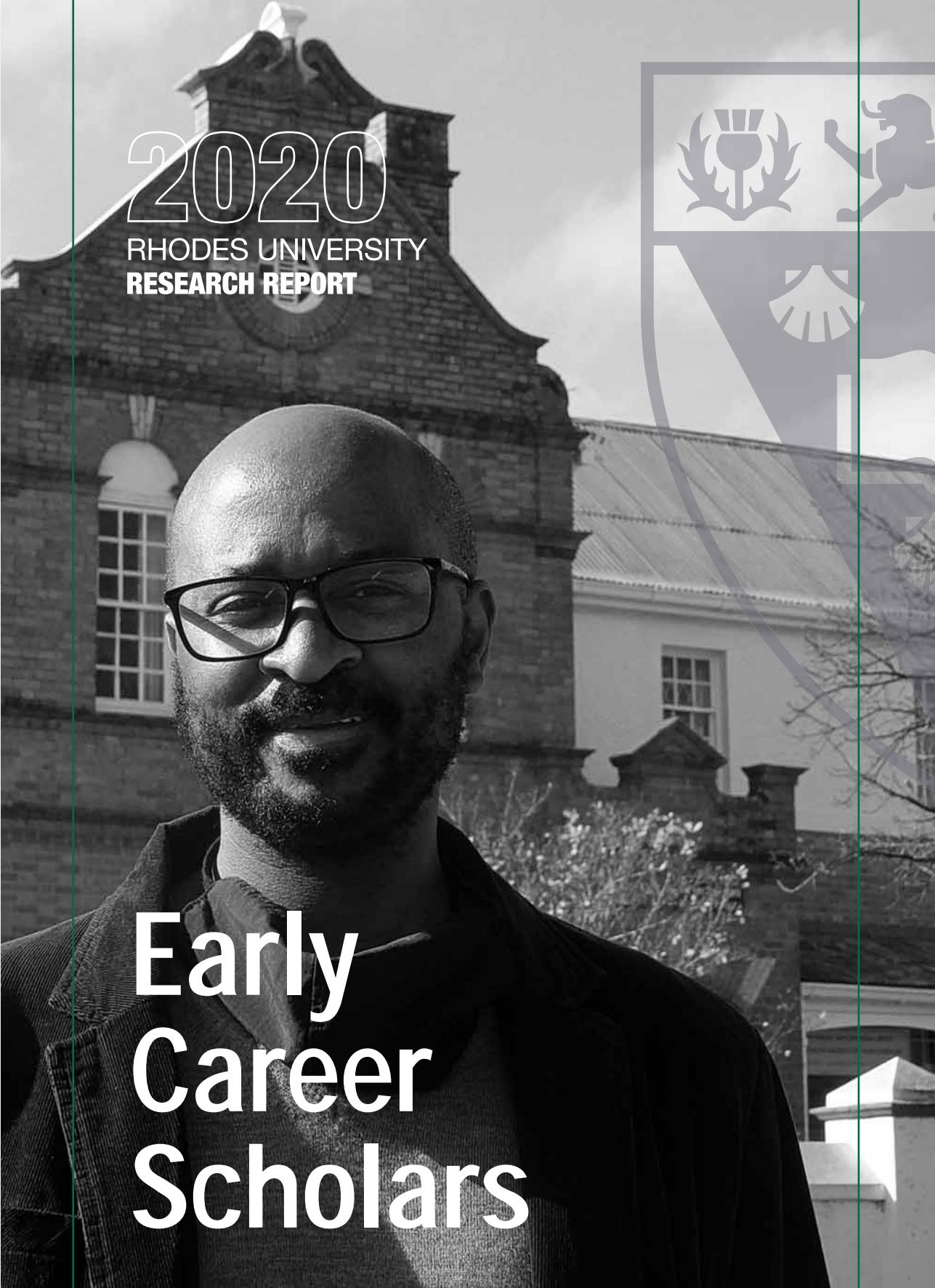
"I also want to understand the redox state of Earth's early atmosphere. We are not sure if it was oxidised, or if it had no oxygen, or lots of oxygen, or if oxygen levels were fluctuating. There may even have been pulses of oxygen. I am working with a Swedish group where we analyse tiny pyrite 'fools gold' minerals in sedimentary rocks, and then we look for sulphur isotope atmospheric signatures in those pyrites. So that's the next push, to see what the Archean atmosphere was like."

Dr Eugene Grosch is lecturing in metamorphic petrology and mineralogy to second years, third years and Honours students.

"I try to bring my research into my teaching. Africa as a continent has the most diverse mineral endowment and we need to develop an African framework for teaching mineralogy to make it more accessible as a subject to a diverse student body. Not just minerals on a shelf collecting dust, but in the mining sector and in terms of socio-economic impacts too."

"I teach students about a theory called Mineral Evolution, where they learn about the first mineral that formed in the universe (microdiamond) to the 4 300 minerals today that have formed over geological time. South Africa is blessed to have such a rich and diverse mineral and rock record, spanning some 3 600 million years of Earth history."

**By Julienne du Toit**

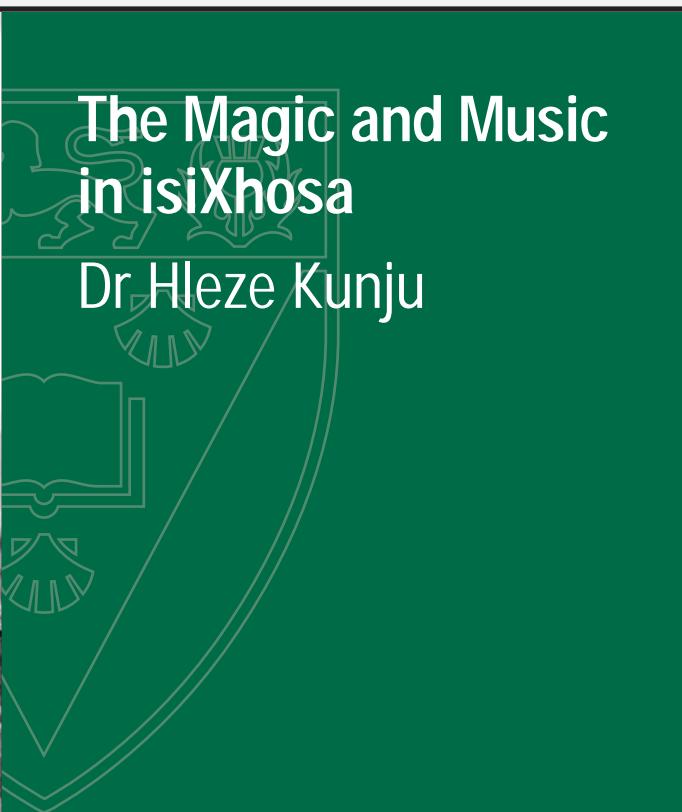


# 2020 RHODES UNIVERSITY RESEARCH REPORT



## Early Career Scholars

Dr Mandisi Majavu of the Rhodes University Department of Political and International Studies.  
Photo: Chris Marais



Dr Hleze Kunju, School of Languages and Literatures.

Photo: Chris Marais

## The secret to writing a well-read PhD thesis.

Dr Hleze Kunju, the Head of Rhodes University's Creative Writing Programme, was only four years old when he went to school in his home village of Mqanduli, Eastern Cape.

"Back then, no one asked for birth certificates," he says. "If you put your arm over your head and you could reach your ear, you were ready for school. I was a big kid with long arms."

His early start in learning life came in handy years later, when the 15-year-old wrote Matric at high school in Cala. His father was not happy with Hleze's results.

"So he sent me to St James Secondary School in Cofimvaba to re-do much of my high school, from Grade 10 to Matric," he says. He remembers that, at the time, his first love was choral singing.

### A Language Barrier

"But the education in general, for me, was more a case of memorising than learning," says Hleze. "Even though I had learnt English, I was unable to make conversation in the language."

Nevertheless, Hleze Kunju made his way with his father to Rhodes University in 2005, attempting to register at the Music Department.

"We registered at Eden Grove, and there I figured out where the toilets were," he says. "But I could not ask for directions to the bathroom in English, so when I was somewhere else on campus and Nature called, I would have to run all the way across to Eden Grove. It was a bit of a nightmare at first, not being fluent in an English-speaking environment."

### The Singer

And even the registration process presented hurdles, because young Hleze had had no formal music training, and could not read or write music.

"As a kid, I used to think that music sheets were for wrapping Christmas presents," he laughs.

"But I had kept all my Eisteddfod certificates, and they could see, for instance, that I had performed, and been commended for, singing a Mozart aria. I was eventually admitted to the Department, where I spent many nights learning how to read and write music."

Then the world opened up for Hleze Kunju. He passed his BA degree with a distinction in Music and carried on to do his Honours, majoring in Classical Voice and Orchestral Conducting.

## A Zimbabwean Detour

"When I finished my Honours, I was looking for an orchestra to conduct," he says. "I knew that in Zimbabwe, they're very serious about their classical music, so one of the schools I sent my CV to was Peterhouse School in Mashonaland East."

Hleze was accepted by Peterhouse and spent two years there, working with the school choir and a full orchestra. He learnt the basic Shona language within six months and picked up on the Suzuki method of music teaching.

But it was the amazing story of a transplanted amaXhosa community living in Zimbabwe that captured his imagination, and would later play a major role in helping Hleze Kunju make education history.

## Back to Rhodes

Hleze returned to Rhodes University and began studies for his Masters thesis, which explored the world of isiXhosa opera.

"There are quite a number of operas composed in isiXhosa, but they still follow the Western opera frame, complete with overtures and arias. That's how Bizet's Carmen was translated and adapted to *Carmen e Khayalitsha*."

He also studied *Temba and Seliba*, South Africa's first Xhosa opera, composed by Bongani Ndodana.

"I also did an analysis of an isiXhosa opera called *The Moon Prince*," he says. "Written by Gwynneth Lloyd, it's a folk tale turned into an opera. This king has eight wives, the second being jealous of the first and wanting her own son to be heir. So, to escape the second wife, the child is raised in the wild, first by crabs and then by all sorts of other animals."

Hleze's Masters thesis (which he passed with distinction) was written in English and, he says, it was consigned to gather dust in a library. As he told the *Mail & Guardian* newspaper in an interview:

"About 80% of the Eastern Cape's population are isiXhosa mother tongue speakers, yet this is not reflected in schools, libraries, bookstores or education institutions. Even tombstones of people who never spoke English in their lives are inscribed in English 'rest in peace'."

Initially, Hleze Kunju was supposed to take the subject matter of his Masters into his PhD. But he wanted his work to reach a larger, more relevant audience - like the isiXhosa-speaking community.

## The amaXhosa Settlers

First, he needed the right subject matter, and that lay in the story he had picked up during his stay in Zimbabwe.

In the final decade of the 19th Century, more than 500 Mfengu families relocated from what is today known as the Eastern Cape to what was then Southern Rhodesia. They were to occupy various positions in the colonial infrastructure initiated by Cecil John Rhodes' British South Africa Company.

Hleze Kunju's Doctoral thesis concentrated on the 200 000-strong community living in Mbembesi, about 45km east of Bulawayo.

"I collected their songs, their poetry and their stories," says Hleze. "One group that came up together by train brought their livestock and their dogs with them. To this day, they still have phrases and idioms relating to that time, like 'Things are as difficult as loading a dog on a train.'

"My research revealed that land, culture, songs, religion, literature, technology and social media are tools that have played a role in the survival and maintenance of isiXhosa in Zimbabwe."

Asked if the 'Zimbabwean isiXhosa' was any different from the classical language, he said:

"I remember the first time I spoke to one of them, it was like speaking to the great-great-great grandfather I had never met," he says. "The language was arcane, but is rapidly changing now."

## Crossing the Language Divide

Hleze Kunju proceeded to write his Doctorate, entitled *isiXhosa as a Minority Language in Zimbabwe: Survival and Maintenance*, in his mother tongue. It was Rhodes University's first isiXhosa-authored PhD thesis, and was viewed by the national academic community as an educational milestone.

"We need to tell our own stories in our own languages and allow our own people to tell the stories," says Dr Kunju. "And I know that my PhD is not sitting around gathering dust. Almost every household in Mbembesi has a copy of it. I felt the best way to honour these people was to write their story in a language they understand and have access to."

And more students are to follow in his footsteps. As part of his teaching curriculum, Hleze supervises Masters and PhD students who are writing their theses in indigenous languages. It is academic decolonisation and transformation at work, in keeping with Rhodes University's new language policy that allows students to use their mother tongue for learning.

**By Chris Marais**



# Mother Tongue

## Dr Bulelwa Nosilela

Dr Bulelwa Nosilela, School of Languages & Literatures.

Photo: Chris Marais

### The African Languages teacher who learns from her students.

When Bulelwa Nosilela registered for a BA in Linguistics and African Languages with Rhodes University at the beginning of the 1990s, all she wanted to do was become a schoolteacher. At the time, she had no idea she would fall in love with phonetics, phonology and orthography, taught in tertiary institutions.

Under the mentorship of Professor Peter Mtuze, head of department of African Languages in the early 1990s, Bulelwa attained a distinction in her final exams and was awarded a scholarship to do her Honours in African Languages at Rhodes.

That done, Professor Mtuze advised young Bulelwa to go and study under Professor Justus Roux at Stellenbosch University, then the top academic in the fields of phonetics and phonology. By the end of it, she had become Professor Roux's research assistant, and a career path opened up for her there.

"But Professor Mtuze asked me to come back to Rhodes to start work as a lecturer, and that's where I felt I belonged, with my original mentor. Plus, I didn't want to do a PhD then. I just wanted to teach. That has always been my true passion."

### Bucking the Trend

When Bulelwa first started her undergraduate degree at Rhodes, she studied isiXhosa through the language medium of English. As an African student, she was also in the demographic minority at the time.

But by the time she began her career as a young lecturer teaching isiXhosa second language in early 2000, demographics were changing in every South African university.

This did not necessarily correlate with the fortunes of African language departments in tertiary institutions. With the focus on mastering and using English, many African language courses experienced dwindling numbers of students and several departments were shuttered.

### Rhodes University Bucked the Trend

At this time Bulelwa's mentor had taken a post of becoming a Deputy Registrar at Rhodes and African Languages was no longer a free-standing department but was located within the School of Languages. It was a Section alongside five other languages - Afrikaans, French Studies, German Studies, Classical Studies, and later, Mandarin.

When Bulelwa became the Section Head of African Language Studies, the University was teaching isiXhosa as a second language.

It was in 2008 that isiXhosa first language was re-introduced under Bulelwa's leadership, but she readily credits the efforts of other staff members.

"Professors Maseko and Kaschula helped immensely in the resuscitation of African Languages at Rhodes," she says.

"For African scholarship, we need to have mother tongue speakers. It cannot just be a matter of teaching second language; we need to have mother tongue speakers learning about their language *in* their own language."

Bulelwa and colleagues also broke with the traditional ways of teaching only through grammar and literature.

"Rhodes University, I am delighted to say, has been a pioneer. We developed different, innovative modules that appealed to the students - translation studies, lexicography, second language learning, socio-linguistics, language and society and human language technology for first language speakers.

"We also introduced discipline-related courses such as IsiXhosa for Journalism (Beginners, Intermediate and Mother Tongue), as well as for Law, Pharmacy and Education. These courses started as electives in the different Faculties but now IsiXhosa for Journalism and isiXhosa for Pharmacy are a full year and a semester course respectively under our African Languages Section.

"Our student numbers are rising. In 2020, we had 600 African Language students enrolling for our courses. We even have a course of isiXhosa for University staff members. So there is a big teaching workload."

## Teaching Like a Mother

Bulelwa's social and academic background gave her real insight into the issues faced by her young students.

"I also had that real culture shock of coming to Rhodes, having to learn and use the English language, and struggling. When I got to Rhodes, I had such a culture shock and felt so frustrated. My first Linguistics assignment was just covered in red marks with the lecturer telling me about my lack of academic writing skills. I felt so small. I had thought I was a student that excelled, but then this. I was tripped up by my lack of knowledge.

"But it also made me determined to succeed."

Bulelwa had also seen how the isiXhosa-speaking forestry students from the Ciskei and Transkei - offered bursaries at Stellenbosch University in the early 1990s - had also struggled with Afrikaans.

"They were always carrying around these big Afrikaans-English dictionaries. It was hard for them. This was a lesson that nothing came easy and through hard work you are bound to succeed."

Bulelwa is convinced that these observations and first-hand experiences made her a better teacher.

"I think the students that did not do English first language (language of teaching and learning at Rhodes) at school feel safe with me. The fact that I also come from a similar education background helps me to understand their problems. The students take me as a mother - my office is their home away from home. They tell me how comfortable they feel in our department because they are using their home language to learn."

"While I was still in school, I told my mother, who has a PhD in Nursing Sciences, that I wanted to be a social worker. She dissuaded me, and told me that my personality would make this a difficult profession for me because I tend to take on other people's problems too much. She said it would damage me. When I think back, I know it was the best advice. But that tendency in me became an asset."

"I feel you should understand the background of the students and the issues they are dealing with, as well as what needs to be imparted to them."

This knowledge was hard won.

"What I'm teaching students now is not something I was taught; it's what I taught myself."

Bulelwa feels that her students help her teaching.

"I love teaching because of the students and the interaction with them. I love it that I am always learning from them, and improving on how to impart knowledge better."

"I think that was what has been hardest teaching through the COVID-19 lockdown. We had to change to distance teaching communicating with the students using Zoom or WhatsApp. The students have missed the contact and so have I."

In 2020, Bulelwa was awarded her PhD, and like many of her students, she could not attend a graduation ceremony.

Her doctorate, enabled in large part by the South African Norwegian Tertiary Education Development, focused on multilingualism within three universities (Rhodes, the University of KwaZulu-Natal and the University of Cape Town).

"I know Rhodes is among the leading universities in isiXhosa language teaching. We have been instrumental in the development of African language teaching, learning and scholarship. I am very proud to say that."

**By Julianne du Toit**



# Making Sense of History

Dr Janeke Thumbran

Dr Janeke Thumbran of the Rhodes University History Department lectures on the history and development of South African universities.

Photo: Chris Marais

The way South African universities constructed their knowledge base in the past - often helping to craft official race theory - has been a major research focus for Dr Janeke Thumbran of the Rhodes University History Department.

Janeke Thumbran was raised by her mother in Eersterust, a so-called coloured township in the eastern sector of Pretoria.

Eersterust was a 1960s apartheid-era creation, sited next to the black township of Mamelodi, near the city's eastern industrial district. Most of its residents had been forcibly relocated from the bustling and culturally diverse inner-city precinct of Marabastad, in a local government effort at separation according to designated race groups.

"I'm the youngest sibling," she says. "My brother is a professional ballet dancer in London and my sister is a teacher in Germany."

## University of Pretoria

Janeke signed on for a Bachelor of Education degree at the University of Pretoria (UP), with History as a major.

"Always aware of financial pressures, I couldn't really go into a field that would not immediately translate into a job after graduation," she says. "Besides, I come from a family of teachers."

After completing her Undergraduate degree, Janeke taught at Loreto Convent School in Pretoria while studying for her Honours in History.

"It consisted of coursework and a mini-dissertation," she says.

"A lot of the coursework involved Methodology and Historiography - how you 'do' History. It was a study of how historians have approached a particular debate in South African history, for example, who wrote on slavery and what were their key arguments? I also did a course in Latin American history - which I loved."

When Janeke began her studies at the University of Pretoria in 2004, student and faculty demographics were markedly different to what they are today.

"The University was very white and Afrikaans," she says. "I felt like an outsider, most of the time. The worldview of my peers and some of my lecturers was conservative and steeped in stereotype. Classmates asked me if I participated in *Tweede Nuwe Jaar* festivities and whether I had family

in Cape Town. Some even said, 'But you don't look coloured.'

"I had to tell them I didn't identify with the Cape Minstrel stuff, not all coloured people come from the Western Cape and that we didn't all speak exclusively Afrikaans. A lot of the time I would have to educate them and say:

"Listen, everything you think you know about black, coloured or Indian people is wrong. You need to stop, because you don't really know. You just can't organise everybody into specific race categories like this."

## Studies in the USA

Life changed radically for Janeke Thumbran once she had successfully applied for a Fulbright Scholarship, which then found her studying for a Masters in History at Indiana University in the US town of Bloomington.

"Indiana University offered a Top Ten programme in African History," she says. "I did a two-year coursework Masters. I got to read widely, learn from my peers and become part of a broader community of Fulbright Scholars from all over the world - I even met someone from Turkmenistan!"

"They were teaching at least ten different African languages, including Zulu, Swahili and Wolof, the official language of Senegal.

"About eight months before completing my Masters, I applied for a number of PhD programmes with the help of some of my professors, who wrote letters of recommendation. I was accepted at the University of Minnesota in the Twin Cities of Minneapolis - Saint Paul."

Janeke says the North American universities that specialise in African History are mostly in the Midwest - and rich in reference material. And, despite its challenging winter conditions, she was drawn to the University of Minneapolis because of the presence of two eminent academics who specialised in African History: Professor Allen Isaacman and Professor Helena Pohlandt-McCormick, who is now in the Rhodes University History Department.

Professor Isaacman is the co-author (with his wife Barbara) of *Mozambique: From Colonialism to Revolution (1900-1902)* and Professor Pohlandt-McCormick (who spent much of her childhood in South Africa and Namibia) is the author of a dissertation titled *I Saw a Nightmare: Doing Violence to Memory - The Soweto Uprising, June 16, 1976*.

## Forced Removals and Identity

"At that stage I was really interested in the forced removals during apartheid South Africa," says Janeke. "I was thinking about forced removals and the reinforcement of coloured identity. What is the relationship between people made to live in a segregated area and what does it do to the way they see themselves, and thus identify themselves?"

Her PhD programme (supervised by Professor Pohlandt-McCormick) began with three years of coursework.

"It's a great model, very time-intensive, but it prepares you to be an expert teacher," she says. "At the end of it, I had a very good overall understanding of African History."

Her thesis eventually centred on how South African universities produced knowledge that enabled the apartheid government to carry out actions like forced removals.

"I chose to concentrate my work on the University of Pretoria for a number of reasons. One was that, having studied there, I had something of a personal insight. The other was that the University had been using Eersterust as a research site for a long time.

"This dissertation is about a historically white university's engagement with what is called the 'coloured question', Dr Thumbran writes in her Introduction. "It explores how the University of Pretoria grappled with the question of where 'coloureds' belonged politically, socially and economically in apartheid South Africa - specifically through the disciplines of sociology and social work.

"In doing so, this institution produced knowledge that would shape and inform this racial category - not only through writing, teaching and curriculum development - but also by appropriating the segregated township of Eersterust as a site of disciplinary intervention, from the time of this coloured community's creation during apartheid in 1962, to the post-apartheid and neo-liberal present."

In both her interview and PhD thesis, Dr Thumbran relates the story of how a group of Eersterust women, desperate to turn their volatile neighbourhood around, were taken by a University of Pretoria Community Engagement worker on a field trip to the Northern Cape Afrikaner enclave of Orania in 2008.

"The intention was to expose the Eersterust women to a self-reliant community so they could empower themselves and take control of their own situation," she says.

"The Community Engagement worker did not see the irony of taking coloured women to learn self-reliance from a group of whites who did not want to live alongside people of colour."

## The Book Project

Dr Thumbran is currently working on a book, which she says is an expanded version of her PhD dissertation, with a study on the University of Stellenbosch and the University of the Western Cape included.

"I'm trying to see how all three of these universities, at different points in time, were quite important in producing specific racial knowledge. Even prior to the apartheid era, the South African government was finding it very hard to



Dr Janeke Thumbran.

Photo: Chris Marais

define exactly who was white and who was coloured.

"There's a 1930s study, for instance, from Stellenbosch, in which a group of coloured men were measured to find their 'observable characteristics'.

"At the University of Pretoria, they studied the social problems thought to be peculiar to coloured people. I wondered how university disciplines like social work and sociology could cut their teeth on this kind of knowledge."

## The PUTCO Bus Study

Dr Thumbran's postdoctoral research project has been to study the PUTCO bus service between Pretoria and the former Bantustan of KwaNdebele as part of the apartheid infrastructure.

"The article I wrote discusses the arduous conditions of this daily commute, as well as the ways in which PUTCO buses became central to mobilising against KwaNdebele's independence in 1986," she states in the abstract to *Bus Stop Republic: Resilience and Apartheid's Transport Infrastructure, 1979 to Present Times*.

"More specifically, this article demonstrates how the daily exhaustion of commuters, the poor design of these buses, their lack of safety and high fares in the 1970s and 1980s have continued into the post-apartheid present. Not only does this demonstrate the resilience of apartheid infrastructure - seen as a form of resoluteness and resistance to change - but it also highlights the resilient citizenship required from commuters in the post-apartheid period."

## SA Universities

As part of her course on South African History, Dr Thumbran presents an overview of how universities developed in South Africa.

"We look at how our universities were shaped, and how they were instrumental in shaping certain aspects of South African life," she says. "We begin with how SA universities were initially envisioned as part of the colonial project, then part of the apartheid structure, moving into student activism in the 1970s and the Black Consciousness movement.

"Towards the end of the course, we deal with more contemporary issues like the Rhodes University Reference List case in 2016, in which the names of alleged sexual offenders on campus were made public and serious protests against sexual assault at Rhodes University were staged.

"Other current issues we cover include struggles over language policies, where the University of Stellenbosch becomes a viable case to look at."

Dr Thumbran hopes that her work will encourage others to consider universities and the material world as incubators and makers of knowledge production, put to nefarious ends in the past.

"It is by addressing these histories that new forms of knowledge can be produced and can be put towards the ends of transformation."

By Chris Marais



# Invasion of the Trees

## Dr Tiffany Pillay

Dr Tiffany Pillay of Rhodes University's Botany Department is researching woody plant encroachment within savannas and thickets. She also lectures in restoration ecology and invasion biology.

Photo: Chris Marais

Bush encroachment in South Africa's savannas is causing serious problems for livestock farmers. Dr Tiffany Pillay has devoted many years of research to uncovering the underlying reasons and processes, with the hope that practical management tools and critical thresholds can be discovered.

Of all South Africa's many plant biomes, the savanna is arguably the most charismatic and productive. Covering just under half of the country's land surface, it is immediately recognisable, with sweeping grasslands interspersed with tall, often flat-topped trees.

It supports high biodiversity and is critical for agriculture and eco-tourism.

But when Tiffany Pillay headed out into this particular ecosystem to do fieldwork on alien plant invaders for her Honours course at the University of KwaZulu-Natal, she noticed something strange going on in the savannas of the province.

Some indigenous trees were starting to act like invaders themselves, and seemed to be crowding out the grassland. This is a process called bush encroachment, and it is very bad news for livestock farmers. Their beasts need grasses, not woody shrubs.

"I realised our native species like *Vachellia karroo* and *Vachellia sieberiana* (previously *Acacia karroo* and *A. sieberiana*) were actually decreasing our biodiversity even more than the invaders were. It happened that my supervisor Professor David Ward, who supervised me for my Honours, Masters and PhD, was very interested in bush encroachment. He told me that if this is what appealed to me, he had a few study projects around the issue. So that's how it started."

### A Spark Ignites

Tiffany remembers always being a curious person, even as a young child. She always wanted to know how and why, she says. Her school career had been characterised by good teachers and a solid upbringing at Deccan Road Primary and Raisethorpe Secondary in Pietermaritzburg. There was a strong leaning towards pushing learners into technocratic careers, like medicine, law and accountancy, she adds.

"But very early on I knew that was not what I wanted to do. I thought something to do with biology, although we never went out on field trips or anything like that. There was literally one microscope in my high school, and it was locked in a display case. Even so, I believe that my passion for science and teaching were sparked by the excellent teaching at these schools."

When she signed up as a Biological Science undergraduate with the University of KwaZulu-Natal, Tiffany was thrilled to find out she would have her very own microscope.

"That was when the spark ignited."

Reluctant to specialise too early, Tiffany opted for a broad-based undergraduate degree. By the end of it she received recognition as the best third-year student in Plant Systematics, in Plant Ecology and in Zoology in 2008.

"That broad focus actually worked in my favour. It's not usually the combination you'd get if you did specialise early on. It has helped me to have an understanding of entomology, especially useful since I am teaching biocontrol and alien plants. So it's not ever wasted. And when you're quite young and you don't have much experience, you just give yourself more opportunities by not specialising too early."

Although she received an award for being the top entomological student in her joint Honours degree, it was plant ecology that intrigued her more - especially the vexed issue of bush encroachment in the savannas and grassland.

Why is it happening, and what are the long-term consequences?

## Trees can be a Bad Thing

"The reasons for bush encroachments can vary," explains Tiffany. "On the one hand it can be land-use change, inappropriate land-use management practices like overgrazing and either not burning, or burning at the wrong time or frequency.

"With overgrazing, you remove the competition from the grass layer so then the trees have an opportunity to proliferate. And they can have high reproductive rates, with seeds that can remain dormant and viable for a long time. So there are really strong contenders for this niche space.

"Parallel to that is the problem of climate change. There is less frost. You have increased frequency and intensity of drought periods, which also kills off your grass layer. Woody plants are hardy and have deeper roots so they can access groundwater. Also, higher carbon dioxide concentrations in the air actually favour the photosynthetic pathways typical for trees. These make the threat of bush encroachment such a dire one for the world."

For her Masters research, Tiffany focused on particular species that occur in the mesic humid savannas of KZN and looking at the pattern of this in the ecosystem in a localised area, using spatial statistics and mapping.

Her PhD carried on with the same theme, but went more deeply into the long-term effects of woody plant encroachment.

"I measured soil, plant and litter dynamics across a rainfall gradient in adjacent areas that were encroached, and that were original grasslands or savannas, to see what the effect of woody plant encroachment is having on soil organic carbon, for example, litter composition and forb diversity."

## Life Outside Academia

Halfway through her PhD, Tiffany's supervisor emigrated and she had no funding to carry on her research. She opted to carry on with her doctorate part time and found a job with an environmental consultancy firm.

"It was actually a really good experience, because I saw how all the research that we do is actually translated into legislation, into policy documents, into development plans for conservation areas because as part of my work, we would review those documents."

But going from academia into the 'real world' came with some serious challenges.

"When I walked into that consultancy in 2015, I had the highest qualifications of anyone, including management. I got my PhD while I was there. But I knew nothing about how the business worked.

"I had to learn simple things, like invoicing. Producing a budget. Filling out tender documents. Learning how to quote correctly. It was a very steep learning curve at times. But being in the private sector for three years gave me good work habits, I think. I learnt about filling out a time sheet, being responsible with my time. There were definite benefits.

"But by the end of three years I longed for teaching and research, the opportunity to directly give back to the youngsters in lecture halls."

It was while Tiffany was in hospital after giving birth to her second child in late 2018 that she saw an advert for a Lecturer position at Rhodes University's Botany Department. The post required an academic familiar with terrestrial ecology, with interests in climate change research.

"I thought, this advert was written for me!"

Part of the attraction was Rhodes University's Elevated CO<sup>2</sup> Facility, which is the largest in Africa.

It has open top chambers where carbon dioxide concentrations can be manipulated, along with a full irrigation

system and instruments to measure temperature and relative humidity.

"That was a huge attraction for me, having that research facility here because as part of my PhD actually did a smaller scale experiment looking at climate change. These chambers were an upgrade of note, so yes, having that research infrastructure here was a huge calling card."

## A Botanist's Dream

Moving to Rhodes also meant encountering entirely new ecosystems and dynamics.

"I think it's any botanist's dream to live here in the Eastern Cape. The plants you see here are so uniquely adapted to this sometimes hostile terrain. So my research shifted here from purely savanna encroachment to looking at the ecotone between thicket and savanna, and trying to understand whether it is a gradient of encroachment that eventually leads to the loss of the grass layer, or if they are distinct states."

Tiffany says the Rhodes University Botany Department has a dedicated team of scientists "who have taught me so much".

In particular, she singles out Professor Susi Vetter.

"She is brilliant and my mentor. We are also collaborating with Dr Andrew Davies of Harvard University, who has use of the LiDAR (Light Detecting and Radar Sensor) which gives us high resolution hyperspectral imagery. We were able to do 700 hectares of data collection in two days, from which we were able to get the canopy structure in detail. I compare that to my far smaller scale study for my Masters where I had to map the trees with a tape measure and a GPS and get the XY cartesian plane coordinates of every tree. It took absolute ages."

Tiffany has teamed up with colleague Professor Bradley Ripley for the physiological part of her research, looking for the distinctive isotope signatures that would indicate what kind of water the plants are using. Are the deeper-rooted *Vachellia karroo* trees lifting up groundwater that can then be used by thicket pioneers? What drives the clumping of thicket species and where are the thresholds, beyond which grass loss is inevitable?

Dr Pillay was very happy with the first year of her new teaching career and her research. But then came the COVID-19 pandemic and lockdown in 2020.

## The Switch

"In 2019, I arrived here with my husband and my two children, one of them a three-month-old baby and I just put my head down and started working. And then came 2020, and everything had to be done differently."

"I went from being this hardworking academic to Mommy Fulltime, stuck at home. COVID really changed the academic trajectory and progression for many academics, particularly for women. We couldn't go out to any field sites for a lot of the year, and during the times that we could, it was not in the growing season, or it was not in the time we could take proper measurements. I'm lucky that I even have publications coming out."

Dr Pillay has poured much of her energy into effective online teaching. In an interview posted on the NRF website she reported:

"This difficult time called for innovation and commitment to upholding high standards of education. Indeed, a mantra at RU was that 'no student will be left behind'.

"Using a range of online learning platform tools, pre-recorded videos and supplementary materials, I was able to successfully teach a class of approximately 400 first-year science students. While face-to-face teaching is something I dearly miss, I am pleased that I am now able to confidently facilitate online courses, especially with the ongoing uncertainty of the pandemic."

Tiffany was thrilled to be honoured as part of a teaching team for the Vice-Chancellor's Distinguished Teachers Award.

"My teaching philosophy is to get students to think about what they are doing and how are they going to translate it into some solution to a real-world problem. That will be beneficial to our students as well as us, as we train them for life beyond the curriculum."

## By Julienne du Toit



## Swinging for the Fences

### Dr Mandisi Majavu

Dr Mandisi Majavu of the Rhodes University Department of Political and International Studies is the author of *Uncommodified Blackness*, published by Palgrave MacMillan.

Photo: Chris Marais

Dr Mandisi Majavu, Senior Lecturer in the Rhodes University Department of Political and International Studies, works at the cutting-edge of South Africa's long-overdue discussions on race.

In his studies and teachings, Dr Mandisi Majavu tackles what he describes as the "biggest elephant in the South African room": an open discussion of race, with a particular focus on the historical and philosophical origins of anti-black racism.

What distinguishes his scholarship is the global reach that undergirds his research.

Dr Majavu explains that living in New Zealand for seven years where he did his PhD was pivotal in developing his international conceptual framing of anti-black racism, and "race-making" in general. His PhD researched the lived experience of black immigrants in Australia and New Zealand. In 2017, he adapted his PhD thesis into a book, which is titled *Uncommodified Blackness*, and is published by Palgrave MacMillan.

The Publisher's Summary describes it thus:

"This book is a study of the lived experience of African men in Australia and New Zealand. The author employs a relational account of racism which foregrounds how the colonial shaped the contemporary, with the settler states of contemporary Australia and New Zealand having been moulded by their colonial histories."

Charles W. Mills, the late Distinguished Professor of Philosophy at City University of New York Graduate Center wrote the following about Majavu's book:

"The long outrageous history of racist discrimination against Africans in the U.S., Canada, and South Africa, whether through slavery, Jim Crow, or apartheid, is a familiar story, if one that requires constant retelling. But the two other Anglo white settler states-Australia and New Zealand - have not been a part of this narrative. Now, in this important addition to the literature on comparative global racism, Mandisi Majavu provides a devastating picture of the everyday harassment faced in these societies by African refugees. It is a book we urgently need to add to our libraries."

"Charles Mills' scholarship has greatly inspired my research," says Dr Majavu. He says in South Africa research on race and racism is not encouraged largely because post-apartheid academic institutions promote non-racialism.

"Non-racialism has engendered a post-apartheid intellectual climate in which race as analytical category is devalued."

Although it is not always easy going against the intellectual current, Dr Majavu's research takes race as a serious analytical category. His work traces the history of racism

in the modern world to the middle ages. He employs a Black Atlantic frame to outline the long, albeit, non-linear history of anti-black racism which ultimately became the ideological foundation for black enslavement, colonialism, apartheid, and Jim Crow.

## In the Beginning

"My intellectual journey is slightly different to the journey of most people," says Mandisi.

"I grew up in Mdantsane, East London. My father worked on the assembly line at the old Daimler-Chrysler plant and my mother had a job in a nearby textile factory in Fort Jackson. As a little boy, I spent a lot of time with my grandmother and cousins in Kwrakwra, Alice. But I grew up in Mdantsane where I did most of my schooling, finishing Matric in 1995."

After a few minutes of chatting to Mandisi Majavu, it is clear that he possesses a rare self-effacing sense of humour, and can easily laugh at himself.

"I was going to join my dad at the factory, but the work was too physically demanding. I was a very thin young man and climbing roofs and lifting heavy machinery was beyond me. I quit after four days in the job."

He says he had ambitions to attend university, but that his high school grades were "terrible".

"So Steers hired me to be a cashier," he says. "There, too, I was just terrible. Coming from an old apartheid-era Bantu Education system, I could speak very little English. The Steers branch where I worked was in Gonubie, East London, and the clients were mostly white and English-speaking. I used to mess up orders all the time, and often had to ask people to repeat themselves so I could understand. And when it came to taking orders on the telephone, I was a disaster."

Mandisi joined the East London Library to improve his command of English, and began to read extensively.

"I'm mad about big dogs, so I read all the dog-books I could find," he says. "Then I moved on to biographies, and started selecting from other peoples' reading lists. That exposed me to philosophical and political concepts. During the 12 months I worked at Steers, I educated myself by reading - and that's how I began to love academia."

Mandisi Majavu was keen to live in Cape Town and expand his options. Staying with a friend in Langa Township, his initial Cape Town job was as a waiter in Marco's African Place in Kloof Street.

"It was the first black-owned restaurant in the City Bowl," he recalls. "We served a mix of traditional African and Mediterranean food and offered live entertainment. It was a good job, the tips were decent and I could afford to rent a room in the Bo-Kaap district.

"I was then hired at a V&A Waterfront hotel, where most of the guests were foreign and very generous. I was there for five years, and at one stage I thought I would never leave."

## The Academic Life

By this stage, Mandisi Majavu had become a voracious reader and was finally ready for the formal academic step.

He enrolled for a Bachelor's degree (majoring in Philosophy and Psychology) at the University of South Africa (UNISA).

"I heard about philosophers like Jean-Paul Sartre and Simone de Beauvoir, did some reading and realised there was an interesting conversation going on there. So that's how I went down the rabbit hole of Philosophy, and pursued it at UNISA. A French philosopher who grabbed my attention at the time was Jean-Jacques Rousseau. Back then I didn't understand half of what his work was about, but his idea that 'Man is born free but everywhere is in chains' kept me coming back to his work."

Mandisi paid for the course out of the tips he had earned from his job at the Waterfront hotel.

"Then I got lucky," he says. "I met Professor Patrick Bond, who was then the Director of the Centre for Civil Society (CCS) at the University of KwaZulu-Natal (UKZN) and he hired me as an Outreach Officer in Durban. The CCS worked with civil society movements and other activist organisations. My role was to liaise with them on behalf of the CCS, writing up profiles on the movements and looking after the Centre library. I really enjoyed that job."

Finishing his BA in 2006, he applied successfully for a Steve Biko Foundation Postgraduate Fellowship grant and returned to Cape Town to complete his Honours and then his Masters degrees in Social Psychology at the University of Cape Town (UCT).

"But it's not about good grades and degrees for me," says Mandisi. "It's really about what motivates me at the time, where my interests lie. All those years I had spent self-educating had taught me a sense of independence and self-reliance. Although I'm aware that I can learn a lot from people, I also know that if I want to gain knowledge, I just have to put in the effort and the time."

"I read somewhere that the qualities of a first-rate scientist include her/his ability to judiciously disregard received wisdom and a willingness to gamble. I would like to think that the aforementioned qualities are the defining features of my scholarship."

## Australia and New Zealand Research

"My cross-disciplinary research investigates race and anti-black racism in South Africa, as well as in the diaspora. My cross-disciplinary approach allows me to engage in a historical and theoretical transnational comparison of the

ways in which race and anti-black racism developed in the Atlantic world."

According to Mandisi, one of his research findings about anti-black racism in Australia and New Zealand is the colonial view that African migrants residing in these two countries come from "a primitive and backward jungle of Africa, and hence are regarded as 'unfit' for 'modern life' in the West."

"Anti-black narratives about African migrants in Australia and New Zealand are inflected by anti-black racist ideas that have been circulating in the Atlantic world since the sixteenth century. To give these racializing ideas local flavour, whites in both countries have historically advocated for racial states in the form of a White man's country and White labourism".

According to Mandisi, the "white man's country's discourse was used to justify not only the colonial project in Australia and New Zealand, but it was also utilised to rationalise racist immigration policies that were designed to legislate against immigrants of colour throughout the twentieth century. It is against this historical backdrop that I make sense of anti-black racism in Australia and New Zealand."

"My research shows that in both Australia and New Zealand, Black Africans are routinely described as not fitting in socially, and through the media as deviant and criminogenic."

In November, 2018, Dr Mandisi Majavu had a paper published on the subject, called *The 'African Gangs' narrative: associating Blackness with criminality and other anti-Black racist tropes in Australia*.

"The dominant narrative about Black Africans in Australia portrays Black Africans as perpetrators of crime and violence," he writes. "This finding is consistent with Australian studies which show that to date the Australian media narrative about Black Africans 'has tended to be highly negative, focusing on African migrant communities as a 'problem group' that is represented through racializing tropes and discourses.'"

Discussing the Western-born ideology of anti-black racism, he argues:

"Australian mainstream discourse casts Black African men in Australia, particularly South Sudanese men, as towering seven feet 'brutes' who symbolize backwardness, primitiveness, danger and crime. In Australia, African Blackness induces fear in some Whites."

"The defining feature of the media stories about 'African gangs' in Australia resembles the narrative formula of children's books, and that is, 'life is simple when there are heroes to admire and love, and devils to fear and despise'. The so-called 'African gangs' have become the devils to fear and despise."

"In 2018, the Victorian Crime Statistics Agency showed that the top offenders by country of birth are Australians, New Zealanders, people born in India, or people born in the UK or Ireland. And yet Black Africans in Australia are unfairly targeted by the police, overly-policed, constantly monitored and surveilled, and harshly punished at the slightest infraction of the law."

Dr Mandisi concluded that anti-black racism was a "shared Western project in modernity", and that the White Australia policy, preferring white immigrants to those of colour, was "a product of that long history of racism which was developed as a shared Western project."

## Back to South Africa

Near the end of 2018, Dr Majavu took up a new post at Nelson Mandela University (NMU) in Gqeberha (formerly Port Elizabeth) in the Sociology Department.

Early in 2020, he joined the Rhodes University Department of Political and International Studies, where a big focus of his lecturing revolves around the study of racism in SA.

"The dominant narrative of mainstream historians is that, in the first days of colonisation, there wasn't a fully formed race ideology," he says. "I don't agree with this."

"To begin with, the Cape of Good Hope was a slave society. And we know from the works of academics like Gary Taylor that from the 16th century, whites in the Atlantic world accepted and practised slavery based on the racialising logic that created boundaries between 'those who could and those who could not be enslaved'. And those who were enslaved were blacks and other people of colour. Whites were slave owners. In the Cape of Good Hope, All the slaves were people of colour, either from south-east Asia or other parts of Africa."

"Academics like Robert Shell who have studied slavery in the Cape of Good Hope conclude that the racial ordering of slaves superseded all the other ranking systems in the Cape of Good Hope. Shell's research has shown that 'half breed slaves of European descent' were racially ranked higher than any 'full-breed slave' from any region."

Using deep archival research, official documents and explorers' notebooks, Dr Mandisi tracks the history of South African racism through the colonial period, the trekboer era and conflicts with hunter-gatherer San Bushmen and the pastoralist Khoikhoi, 19th Century Frontier Wars, the 20th Century pre-apartheid period, the half-century of apartheid and the post-apartheid period so far.

## Whiteness/Blackness

"For the past twenty years I have been trying to make sense of race, anti-black racism, and whiteness in South Africa and globally. And to be honest with you, it is since I arrived at Rhodes that I feel like I've hit my stride."



**Dr Mandisi Majavu outside the Department of Political & International Studies.**

Photo: Chris Marais

*In Colour-blind ideologies: the whiteness of liberalism and socialism*, a chapter that Mandisi contributed to the forthcoming anthology titled 'Routledge Handbook of Critical Whiteness Studies', he critically engages with non-racialism:

"My contention is that not only have the progressive projects of White missionaries, Cape liberals and White socialists downplayed and in certain instances outrightly denied White racism, they have historically refused to acknowledge that Whiteness is a normative value that underwrites them. These projects have historically been framed, consciously or not, within the 'White saviour' narrative."

In an unpublished journal article that is currently going through a review process Mandisi argues that:

"Biko's political definition of blackness seems to have been impregnated by non-racialism. Biko was thinking about blackness in a political climate that was saturated with non-racialism, and therefore, instead of using the history of blacks as an organising frame to interrogate the differing racialisation processes that Blacks, Coloureds, and Indians

were subjected to by the white colonial project, and the ways in which those racialisation processes shaped and continue to shape racial relations between these social groups, Biko prematurely sought historical closure."

Mandisi describes his current research on race, anti-black racism, and blackness in South Africa by echoing Gary Younge: "Biko is not beyond criticism, neither is Blackness beyond further investigation and rearticulation."

**By Chris Marais**



## The *Field of Dreams* Water Strider

### Dr Samuel Motitsoe

Dr Samuel Motitsoe, lecturer within the Department of Zoology and Entomology and the Centre for Biological Control (CBC), specialises in freshwater environments.

Photo: Chris Marais

One practical session in the field during third year changed the course of Dr Samuel Motitsoe's professional life. Bugs and beetles never lie, he found. Invertebrates are particularly useful as biological indicators of ecosystem health and water quality. They also underpin important environmental support that is crucial for human and other life.

In February 2020, South Africa became the second largest citrus exporter in the world after Spain. It is an agri-business that generates billions of rands and supports hundreds of thousands of jobs.

"But it all depends on insect pollinators such as bees, flies, beetles and others," points out Dr Samuel Motitsoe of Rhodes University's Department of Zoology and Entomology.

The range of ecosystem services offered by insects is quite astonishing, and Dr Motitsoe loves revealing them to astonished first year Life Sciences students.

"It really blows them away," he says. "From the dung beetles who bury nutrients underground and protect us from fly-borne diseases to pollinators to beetles and other insects that indicate water quality. And then there is forensic entomology as well, which helps investigators solve murder cases."

### A Very Hard Gap Year

Samuel Motitsoe was raised by his grandparents in Kroonstad, where he finished his Matric in 2006 with good marks for Biology, Chemistry and Mathematics. But no one

had advised him he should have applied to a university long before final exams.

Faced with an empty gap year and no money, Sam decided to join his parents in Johannesburg where his mother was a domestic worker and his father a mechanic and panel-beater.

"I joined a garden service in the East Rand, filling in with other odd jobs in between. It was really tough. The average wage back then was R50 a day, so I was bringing in about R600 a month. There was stiff competition for that money, everyone looking for piece-work. That really gave me a wake-up call. I realised I had to make the most of my good Matric results and take every opportunity that came my way very seriously."

This time Sam sent his applications through on time, and was delighted when he was accepted for a Bachelor of Science at the University of Free State's QwaQwa campus outside Phuthaditjhaba, with NSFAS funding.

By the end of his undergraduate degree, Sam was fired up to do Honours in Chemistry, inspired - as many students at the QwaQwa campus were - by a charismatic lecturer.

But the competition for a slot was too fierce, and he ended up with his other favourite, Zoology.

## Caddisflies and Mayflies

"There was one practical that had made a real impression on me. We had gone out on a third year excursion to do biomonitoring, using aquatic insects to reveal water quality. I decided that was what I'd like to research further - looking at the composition and diversity of aquatic invertebrates in high altitude wetlands and comparing them to those in lower areas, close to human settlements."

"In between coursework, that year was spent in the Drakensberg mountains around Golden Gate Highlands National Park and the wetlands around Harrismith and Phuthaditjhaba, getting samples and heading back to the lab."

"I got quite fit with all that walking! I also developed a love for nature, exploring and seeing all these undisturbed areas with high composition and diversity of aquatic invertebrates. In the mountain wetlands you get a lot of caddisflies, mayflies, diving beetles and so on. All of them tend to vanish if oxygen levels in the water slip, or if there is any pollution or change in the water chemistry. In the water bodies closer to human habitation, I'd mostly find biting midges, leeches and other flatworms."

While doing research, Sam Motitsoe noticed something else.

"Judging by the literature, I could see that entomology and aquatic science research was well established in South Africa. But I could also see that it was mostly being done by older professors, most of them white. There seemed to be very few young scientists coming into the field, so it was a niched discipline but with a lot of potential."

"I saw a window, and a possible career path."

Sam badly wanted to continue studying in the aquatic sciences or entomology for Masters, but hit a dead end in terms of funding. Meanwhile, his family was starting to apply gentle pressure.

"They were saying, okay you've got your Honours, what's the story? What's the plan? What about a job?"

## Duck Weed and Macro-Invertebrates

Then came an email that would change the course of his academic life.

"It was from Dr Jaclyn Hill, at Rhodes University's Department of Zoology and Entomology. She said they were looking for Masters students for a project tracking nutrient dynamics in rivers in the Eastern Cape, using macro-invertebrates and aquatic plants as indicators. I applied and could not believe it when I was accepted. This was exactly what I had been looking for."

Sam arrived in Grahamstown during the chilly midwinter of 2013.

"It was initially difficult for me to settle in. Obviously QwaQwa had been a comfort zone for me, all black students, all speaking my home language. This was different. There was a lot of diversity, including international students. The whole department was so welcoming, though. I loved the culture, the diversity and oneness, and how easily I could settle in. Lovely faces, warm environment, tea every morning with colleagues, a lot of laughter."

The Masters project, supervised by Dr Jaclyn Hill and Professor Martin Hill from the Centre for Biological Control, went very well.

"I figured out a technique to trace excessive nutrients as they entered the system. Are they used up or depleted downriver? Where do they end up? What happens with water quality? We used aquatic invertebrates and duck weed as indicators. I'd transplant duckweed on all the sites where I was working, and then I'd send it to Pretoria to check the carbon and nitrogen stable isotope values. As these nutrients were flushed in, you could see a clear peak in the nitrogen isotope values. That was amazing, to use these natural indicators acting as early warning signs of eutrophication."

**"I found myself in a very enabling environment. I was able to attend conferences, present findings and meet leaders in aquatic science. These platforms opened my eyes and I could see how much there is to study. These contacts and all these ideas, that was really amazing."**

In August 2015, Sam received the news that his Masters was accepted, and had received good reviews. He was able to publish a paper on it in the *Water Research Journal*.

"That's my pride, my first authored paper, and I got it into an international, reputable journal."

## What comes after Weevils?

A few months later, Sam heard about a new position being offered in the department for an nGAP Lecturer (New Generation of Academics Programme, an initiative of the Department of Higher Education and Training), which allowed him to do his PhD over six years while establishing himself as an early career academic.

"I'd wanted to do a PhD anyway. This way, I could get job security and my Doctorate, so how brilliant is that? I was really amazed and excited about the opportunity, and was ready to start a whole new chapter. It was next level."

His PhD topic drew on Sam's passions: aquatic entomology and limnology. It had been well-established that specific weevils could demolish the growth of alien invasive aquatic plants like *Salvinia molesta* (Kariba weed) on open water. But once gone, what happened to the water quality and the general health of these previously alien-invaded freshwater systems. Were there benefits?

"If the surface is covered with these floating aquatic weeds like water hyacinth or Kariba weed, it's like a blanket. There is less light coming in, so less photosynthesis and less oxygen. As a result, life underwater becomes degraded. What happens after you clear it using biological or mechanical control? The entire system is revived. More light, plants, photosynthesis, oxygen, more food for aquatic invertebrates and therefore more food for fish. So I wanted to quantify and put this into perspective.

"I call it the **Field of Dreams** principle: if you build it, they will come. We see systems recovering nicely following aquatic weeds control using weevils and other methods. There is recruitment on many levels and the diversity of the system comes back, contributing to freshwater biodiversity and conservation. But we really need to keep an eye because our systems are so disturbed, they can suffer secondary invasions."

## Bugs Don't Lie

Dr Samuel Motitsoe graduated in 2020, and has found that he loves teaching, and making entomology 'fashionable' by opening the eyes of young students to the wonders of insects.

"Some people say well, you can dip a pH stick into the water, or you can measure the temperature. But insects can tell you more than just this snapshot. Insects are the inhabitants. They will tell you what happened five or six months ago. And they are more reliable. If industries dump their pollutants into the water at night, you won't be able to trace it the next morning. But if you look at the aquatic invertebrates and they'll definitely tell you there's a shift here and that the system is not coping."

He also loves doing outreach to schools, and as a result was a Rhodes Community Engagement Award finalist for taking science from the bench to the people, as he puts it.

Now Dr Samuel Motitsoe is enthused about the other water champions he is meeting - the residents who are protecting their aquatic environments near Xolobeni on the Wild Coast, and the protectors of South Africa's natural lakes in Limpopo and Mpumalanga.

"They are champions wanting to protect their own water resources, and they want to find out more about them. So those are some of my future projects. I will also be revisiting the Drakensberg region with a couple of my colleagues from my old Alma Mater, the University of Free State's Qwa-Qwa campus, to fully explore and document the exquisite aquatic biodiversity of the region.

"Restoring previously disturbed freshwater systems in an arid country like South Africa is very important. My PhD research clearly shows that systems do respond positively following aquatic weeds control. Over the next few years I will be further documenting reliable bioindicators that are crucial for re-establishing ecosystems processes, production and services, further contributing to freshwater ecosystem management."

**By Julienne du Toit**



# The Human Geographer

## Dr Sinenhlanhla Memela

Dr Sinenhlanhla 'Sine' Memela of the Rhodes University Geography Department specialises in human settlement and migration.

Photo: Chris Marais

Sinenhlanhla 'Sine' Memela is a Lecturer in the Rhodes University Geography Department, specialising in human mobility, land use, gender and urban geography, who is gaining recognition as an internationally recognised researcher.

As a young learner completing her Matric year in the rural KwaZulu-Natal community of Harding, Sinenhlanhla 'Sine' Memela was already intrigued by the world at large - and the movement of people in it.

The study of human geography, how we relate to place and environment, can take many forms of research. Some studies, like the worldwide migrant crisis, reveal hard truths about human life on the planet. Others offer lighter, often entertaining, insights.

Sine Memela's academic studies thus far have investigated both sides of the human geography scale.

### Home Life

Sine's mother is a professional nurse at a clinic that is administered by the larger St Andrew's Hospital in Harding. Her father, now retired, was a Correctional Officer based in the nearby coastal town of Port Shepstone.

"At first, they wanted me to choose from professions like nursing, social work or teaching," she says. "But even though I had not taken high school geography as a subject, that is what I really wanted to study at university. So they said 'OK, you can have one year on us.'"

Speaking to Sine, one gets the sense that there were some strong characters in her family - including herself.

"I was accepted at the University of KwaZulu-Natal (UKZN), doing Political Science, Sociology and Geography," she says. "Sometimes, I would phone home and complain about how hard the Geography was, because the subject was new to me. My mother would say, 'What did I tell you?'

"But the longer I spent in the world out there beyond Harding, the more my passion for human geography grew."

### The Mentor-Professor

At UKZN, Professor Brij Maharaj became Sine's mentor and, eventually, supervisor for her Masters degree.

Professor Maharaj is a senior academic in the UKZN Department of Geography (part of the University's School of Agricultural, Earth and Environmental Sciences) and is well-known for his work on urban politics, segregation, local economic development, xenophobia and human rights and the revival of civil society.

Seeing his young student's potential, he even met with Sine's parents to persuade them that their daughter should pursue an academic career in human geography.

"He told them he wanted to be my 'life-long mentor', that I was a good student and that they should encourage me to keep studying," she says.

"Back home, there is this thing: when you finish your degree, you graduate and buy a car. So when I wanted to study further, people thought that being a 'student for life' was not progress. I didn't really mind, because I knew deep down that they were proud of me. And besides, by now I had my own funding."

## 'Flight Testimonies'

Sine Memela's research for her Masters degree took her deep into the migrant community of Albert Park in Durban. While interviewing a large selection of migrant women originally from Burundi, Rwanda and the Democratic Republic of Congo (DRC), she recorded the heart-breaking stories of their homeland trauma that had caused them to make the often-dangerous journey, hopefully to a better life in post-apartheid South Africa.

"The responses from female refugees revealed that during violent conflict in their home countries, they experienced physical and sexual violence, and many lost their loved ones," she writes in her Masters thesis, titled *Vulnerabilities of African Female Refugees in South Africa: A Case Study of Albert Park Area*.

"They were persecuted to threaten family members who supported opposition political parties, or to redraw ethnic boundaries and perpetuate social control.

"During conflict, women were likely to be raped, especially those from the DRC. They were raped by both rebels and government military officers."

In another section, she continues:

"Many refugee women lost their loved ones and experienced physical violence. Youths were kidnapped during the conflict in Goma, DRC. Boys were kidnapped in order to force them to join the rebels. Women had to protect their sons. Sometimes they let their boys wear dresses so that the rebels would not recognise them."

"Young women were also kidnapped by the rebels, who took them to their forest camps. They were required to engage in forced labour and were also subjected to sexual harassment."

The 'flight testimonies' gathered by Sine Memela were but a background prelude to what befell the refugee women once they arrived in South Africa, specifically Albert Park in Durban.

## A Crisis in Albert Park

"The experiences of many women suggested that South Africa has failed to adhere to the principles of the country's Constitution," Sine Memela states in her thesis.

"This has resulted in female refugees being denied their rights. They were denied access to: refugee status permits; freedom and security; property; employment; education; social grants and health care services. Failure to access these rights has increased the vulnerability of refugee women in the Albert Park area. They were subjected to domestic violence at the hands of their husbands and family members.

"In some cases, female refugees got jobs and became heads of households, while men were jobless and spent most of their time at home. The family structure changed. This frustrated men who believed that their authority had been undermined, and led to domestic violence, divorce and abandonment.

"The women were also subjected to verbal abuse and harassment perpetrated by local people, police officers and foreigners."

Sine Memela says that the way the SA government was issuing refugee status documents also disadvantaged the women, because they were registered as "appendages to their husbands", giving male partners all the power in the household.

"My work on refugee women made a huge impact in the field. I have been invited to develop and coordinate programmes for refugee women. I have also been invited to be an independent peer reviewer on scientific journals."

## Land-mapping in Limpopo

After completing her Masters degree, Sine Memela decided it was time to "go out there and find a job". She landed a post in the Planning branch at the Office of the Premier in Limpopo.

"I was hired as the Geographic Information Systems (GIS) Officer," she says. "I was part of many projects, one of my highlights was working with the Lephala municipal GIS team and also being part of a task team discussing development of Lephala town into a city."

Lephala used to be called Ellisras, a once-quiet Bushveld town near the Botswana border. In 2006, national energy supplier Eskom announced plans to construct the massive Medupi coal power station near Lephala.

This led to massive infrastructure investment and business development in the area, combined with an influx of people from other parts of SA and abroad.

## Back to Academia

"However, after joining the Limpopo Premier's office, Professor Maharaj contacted me about a post available at the Rhodes University Geography Department," says Sine. "He told me it was time to get back to the academic life."

Sine was appointed to a lecturing post funded by New Generation of Academics Programme (nGAP) which allowed her to lecture in population geography, spatial planning as well as power and space while undertaking her Doctoral research titled *Land Use Decision-Making on Residential Plots in Fingo Village, Makhanda (Grahamstown)*. Professor Thembela Kepe, Professor of Human Geography at the University of Toronto and Visiting Professor at Rhodes University was appointed Sine's official nGAP Research Mentor, and was her PhD Supervisor, hosting her in a Visiting Research Position at the University of Toronto towards the end of her Doctoral work.

"My study critiqued the economist point of view that if you owned land, it would generate a livelihood strategy that would automatically make you prosperous. This economist perspective presents a narrow view of what influences of land use decisions, especially in developing countries where people who hold land have limited economic opportunities to increase its value or generate income from it" she says.

### Fingo Village Street Names

In one of the Fingo Village studies titled *Navigating Community and Place Through Colloquial Street Names in Fingo Village, Makhanda*, Sine collaborated with Philippa Irvine, Zandile Dlongolo and Professor Thembela Kepe.

This paper discusses the British Colonial-era street names given to Fingo Village, the post-apartheid names that are now official and the special street-naming system that long-time residents use to get around their neighbourhood.

Colloquial versions, mostly in isiXhosa, range from Cabbage Tree Street, Place of Business Street, Wood Street, and Place of Fleas, which either refers to an infestation of biting insects or the gatherings of local children playing in that particular street.

"In addition to colloquial street names, an informal system of taxi stops has been developed in order to navigate the space," state the authors. "With no formal public transport system, privately owned minibus taxis provide the primary

means of mobility for the majority of people living in the township area as a whole.

"Like the colloquial street names, these names are also often inherited, and many refer to landmarks that no longer exist. For instance, one of the stops, *ezibokhweni*, refers to a house that used to be owned by an old man who kept goats. Neither the old man or the goats remain at this address."

### Offshore Extensions

Sine Memela is one of the Steering Committee members representing Africa at the International Geography Union Young and Early Career Group (IGU-YECG). She is also an executive committee member of the Society of Southern African Geographers - Students and New Professionals (SSAG-SnP).

"Through the IGU - YECG, I help to encourage young researchers and academics to network globally by attending international conferences and workshops," she says.

"I've been to conferences in China, and the United Kingdom. Networking and travel are both essential in the field of human geography, which continues to fascinate me.

"In fact, there is no time in my life for extra-mural interests. This is an all-consuming subject."

### By Chris Marais



# Cutting the Cord of Academic Dependency

## Dr Bongani Nyoka

Dr Bongani Nyoka, Department of Political and International Studies.

Photo: Chris Marais

### The ongoing quest to “decolonise knowledge”.

The best way to decolonise knowledge in the South African academy is to “tap into the African knowledge archive”, writes Dr Bongani Nyoka in the respected online publication, *New Frame*.

“I use the term to mean generating theoretical insights from the lived experiences of the African people, rather than importing theory in order to understand them,” he continues.

“A critique of Eurocentrism and coloniality is necessarily built into the process of tapping into the African knowledge archive and engaging with the ontological narratives of African people.”

Born and raised in Mdantsane, Eastern Cape, Bongani Nyoka came to Rhodes University in 2005 to study for a BSocSc in Political Studies.

“The year before, I was still wondering what course to do. A friend, who was studying at the University of Sheffield in the UK, told me about Political Science,” he says.

The subject appealed to Bongani, so he signed up for Political Studies, Philosophy and Industrial Sociology, completing his Honours in Political Studies in 2008.

The following year, he was employed at the Human Sciences Research Council (HSRC) in Pretoria as a Junior Researcher.

In 2011, Bongani left the HSRC to work on his Masters in General Sociology at the University of the Western Cape. It was titled *Social Curriculum in a South African University: A Case Study*.

“This study sought to investigate the alleged problem of ‘academic dependency’, on the part of South African sociologists, on western scholarship,” he says in the MA abstract. “The stated problem is said to undermine South African sociologists’ ability to set their own intellectual and epistemological agenda.”

Enter the late Archie Mafeje, one of Dr Nyoka’s chief inspirations and a leading Black intellectual, both in his time and up to the present day.

Archie Mafeje was born on 30 March 1936 in the village of Engcobo, in what was then the Cape Province (now part of the Eastern Cape). He studied at the University of Cape Town (UCT) from 1957 to 1963 and left South Africa in April 1964 with a Master’s degree in Social Anthropology to pursue doctoral studies at the University of Cambridge. He

completed his PhD in Social Anthropology in 1968 and applied for a teaching position at his alma mater, UCT.

"He got the job on merit, but could not take up the offer because the Apartheid government exerted pressure on UCT to rescind his appoint - the government said a Black man could not teach at a 'white' university," Dr Nyoka writes.

"This became a cause célèbre, the 'Mafeje Affair', which led to student protests in South African universities and in other parts of the world. He became a wandering exile, living in The Hague, Dar es Salaam, Copenhagen and Rome, before settling in Cairo.

"In the 1970s, he married the Egyptian feminist intellectual Shahida El-Baz and taught sociology at the American University in Cairo from the 1970s until he retired in the mid-1990s. He returned to South Africa in 2002 and died in 2007 in Pretoria. His life in exile meant that his work was not known or read in the country of his birth and he is much better known in other parts of the world."

In his Master's thesis, Bongani Nyoka used the writings of Archie Mafeje for his theoretical framework. In August, 2014, he went to work at the Archie Mafeje Research Institute at the University of South Africa (Unisa), where began his PhD studies.

"It was based on an intellectual biography of Archie Mafeje," he says.

Bongani Nyoka decided to keep his focus on Archie Mafeje and his work as the subject matter of his PhD, which he completed in 2017.

In 2019, his first book, *Archie Mafeje: Voices of Liberation* (HSRC Press) was published, followed the next year by *The Social and Political Thought of Archie Mafeje* (Wits University Press).

His second book was reviewed on the Creamer Media Polity website:

"Nyoka begins with an evaluation of Mafeje's critique of the social sciences; his focus then shifts to Mafeje's work on land and agrarian issues in sub-Saharan Africa, before finally dealing with his work on revolutionary theory and politics.

"By bringing Mafeje's work to the fore, Nyoka engages in an act of knowledge decolonisation, thus making a unique contribution to South African studies in Sociology, History and Politics."

Unisa's Professor Jimi Adesina also lauded the book:

"...a brilliant and systematic exposition of the scholarly works of Archibald Monwabisi Mafeje. As far as I can tell, this is the first book-length effort to drill deep and unpack Mafeje's scholarly works. At a time when 'decolonisation' of knowledge is stranded at the level of protest scholarship, Nyoka's scholarly interrogation of Mafeje's oeuvre is a welcome departure. We are introduced in a rich, in-depth, and critical way to the abundant resources that one of Africa's most creative social scientists produced. Nyoka's book deserves to be read; it should occupy a space on the shelf of every library".

Says Dr Nyoka:

"What makes Mafeje's ideas so powerful and original is the fact that he was not content with reiterating received or orthodox theories. In all aspects of his work he avoided giving ready-made slogans and easy solutions to complex problems. His ability to combine his political commitment with his intellectual work is what makes his ideas so enduring. Archie Mafeje was in a category by himself."

By 2020, however, the Archie Mafeje Institute was closed down and Dr Nyoka and his colleagues were transferred to Unisa's Department of Developmental Studies. He stayed on for only three months before transferring briefly to the University of Johannesburg as a Postdoctoral Fellow and then to Rhodes University, where he took up his current post as Lecturer in the Department of Political and International Studies.

Apart from his teaching duties, Dr Nyoka is also working on his third book, based on the works of Professor Bernard Magubane, a major force in the anti-Apartheid movement and author of *The Political Economy of Race and Class in South Africa* (1979).

In his time overseas, in other African countries and back home, Professor Magubane (cousin of photographer Peter Magubane) was deeply involved in the establishment of a democratic South Africa.

In his landmark book, Professor Bernard Magubane re-analyses and re-interprets a number of historical epochs in South Africa and the impacts that various waves of colonialism and resultant race laws had on local African societies. Most importantly, he portrays South African history through African eyes, and not through a Eurocentric lens.

**By Chris Marais**



# Copyright vs Human Right

Nomalanga Mashinini

Nomalanga Mashinini, Faculty of Law.

Photo: Chris Marais

## Navigating the tricky world of deepfakes, drones and digital media.

What interests Nomalanga Mashinini most about her legal work is the vast and growing grey area between peoples' rights, privacy and freedom of expression. Also, when it comes to image rights and intellectual property, who owns what?

In an increasingly complex world of social media, 'phishing', 'catfishing', 'deepfakes', smartphone photographers constantly recording millions of images around the world every second and, lately, the widespread use of photographic drones, people are struggling to retain their image rights and privacy.

In an era of authoritarian regimes and government censorship, however, freedom of expression is a right to be jealously guarded.

"That's the gist of my research," says Nomalanga, who was busy finalising the draft of her Doctor of Laws (LLD) at the time of this interview.

### Early Days

Nomalanga Mashinini grew up in the Northwest Province town of Matlosana, formerly known as Klerksdorp.

"I went to a crèche known as *Snip en Wip*," she says. "Apparently, there was a stage in my young life when all I spoke was Afrikaans."

She went to Strathvaal Primary School in Stilfontein. Later, at Milner High School in then-Klerksdorp, she became fluent in English.

Nomalanga says:

"If I had to comment on my journey between primary and high school and how it contributed to my academic career, I would say I had the advantage of being taught by really good English teachers."

"I've seen how it has improved the way that I communicate, even in my writing. I realised this while I was writing my LLD thesis."

### Parental Guidance

Her father had been in the health profession.

"He worked at the local public hospital as a registered nurse in the operating theatre and then in many other departments," says Nomalanga. "He retired in a management position."

Her mother, also in health, eventually became a lecturer at a nearby nursing college. She retired as the Head of the Department of General Nursing Sciences.

"My three siblings and I all avoided a career in nursing," says Nomalanga. "At first, my parents wanted me to become a doctor. Then they warmed to the idea of my studying law, hoping I would become an advocate."

"But I didn't go into practice, because once I began the final year research of my undergrad LLB at the University of Pretoria, I realised this was what I preferred. My father wasn't too happy with my decision not to practise law, but my mother was quietly pleased I had chosen academia."

## Law Library

After successfully completing her LLB, Nomalanga stayed on at UP for her Masters, working at the university's OR Tambo Law Library.

"My time at the Law Library extended my research capabilities," she says. "In law, finding sources is crucial."

She then became an Assistant Lecturer in the Department of Mercantile Law at UP.

"There, we deal with things like contracts, information and communications technology, banking, insolvencies and company law," she says. "But, more recently, it's been a combination of commercial and private law, because my LLD deals with interests that relate to personality, and how they are commercially exploited."

## The PhD Journey

After a seven-year stint in Pretoria, Nomalanga came to Rhodes University in 2017 as a Lecturer at the Faculty of Law, concentrating the Law of Persons, Company Law and Commercial Law.

Her LLD thesis was registered under the Private Law Department at UP, and her supervisor is in Pretoria.

"It's about image rights related to social media memes and freedom of expression," she says.

"There's never a one-size-fits-all solution in Personality Law - it's always about the facts and circumstances of a case. I've seen cases where using someone's image in an advertisement would be considered an infringement of image rights, but using the image of Bheki Cele (SA's Minister of Police) in a caricature is not considered infringement."

"So the courts consider whose image it is; is he or she a public or a private figure, how is it used, to pass comment for public interest or to make money? All these considerations will shift the liability."

"In product endorsements, covers of a magazine or in the pages of newspapers, there has been this long-standing

debate: if someone uses your image without permission, does it violate privacy primarily, or your image rights?

"The courts acknowledge that the debate exists, but none of the courts that have heard these matters has taken a decisive stance."

## Online Complications

"Now take the context of memes (images re-purposed from those posted online) - when you upload a selfie, you relinquish your privacy," says Nomalanga. "However, it would be easy to prove image rights infringement, because there are businesses actually buying memes for advertising purposes. So there is a commercial aspect to the use of your image."

She says that with the digital arrival of 'the influencer', the distinction between a private and a public person is becoming blurred.

"If you are the one who initially uploaded your image and made it available on social media, how do you prove a right to privacy? Your only recourse then is to claim image rights. One of the aspects that I cover in my thesis is that a lot of people aren't aware of their image rights."

In a document prepared for the 16th International Conference on Cyber Warfare and Security, Nomalanga Mashinini explores the South African legal aspect of 'deepfakes', in which a person in an existing image or video is replaced with someone else's likeness. The victim of a 'deepfake' typically suffers an impairment of dignity in the public sphere, due to the "unauthorised use of their likeness in a way that misrepresents their true image.

"The common law protection is broad enough to treat personality impairment using criminal liability," she states, "but it may not be sufficient to address cybercrimes relating to the infringement of identity through deepfakes."

Another paper Nomalanga wrote was titled *The processing of personal information using remotely piloted aircraft systems in South Africa*.

Typically called 'drones', the use of this equipment presents new challenges to the right to privacy under SA law, she says.

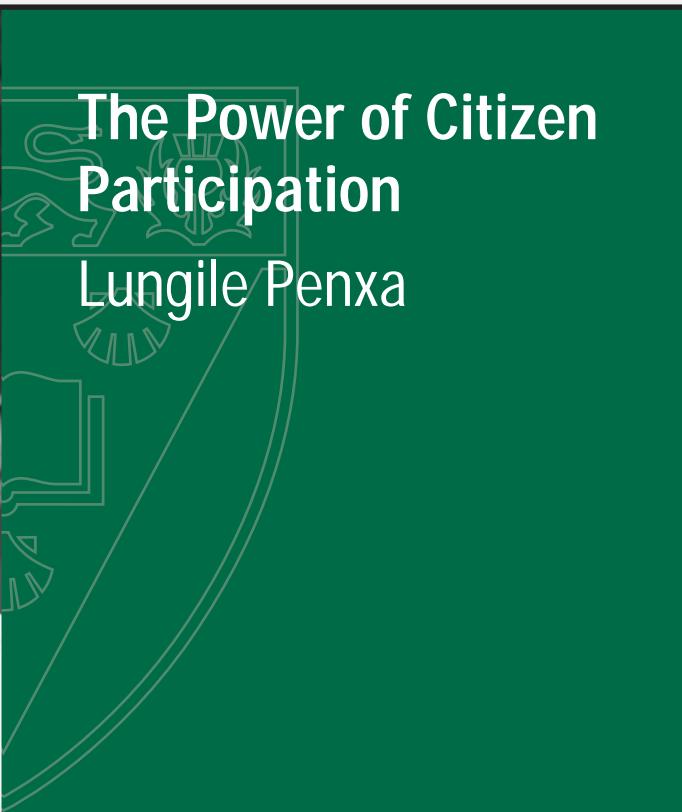
"The paper was a critical analysis of whether the existing data protection and civil aviation laws could withstand the invasion of remotely piloted aircraft systems in South Africa."

One of Nomalanga's Postgraduate students is presently studying a new aspect of digital piracy called 'catfishing'.

"That's when someone goes online pretending to be you," she says.

In the sphere of cyber behaviour, it seems, there's a new crime born every day.

**By Chris Marais**



Lungile Penxa, Department of Sociology.

Photo: Chris Marais

## Working in the space between people and power.

When Lungile Penxa lectures his students in the Rhodes University Department of Sociology and Industrial Sociology, he brings not only the theory but also hard-won experience in the field.

Lungile's passion has always been for what happens in the space between people and their society. In a national and grassroots context, the relationship between government and citizens has been of special interest to the young man from Whittlesea in the Eastern Cape.

"I came to Rhodes for a degree in Law, but became interested in Sociology," he says. "In my third year, I did isiXhosa for first years and was interested in the Honours programme from the Department of African Languages.

"I did my Honours at the Department of African Languages, and it was a fascinating course that involved Language Policy and Planning, Translation Studies, isiXhosa Literature, African Linguistics and Sociology of Development from the Department Sociology."

But the developmental side of sociology was still his main focus, so Lungile Penxa did his Masters in the subject through Nelson Mandela Metropolitan University (now Nelson Mandela University).

"I was working in Pretoria at the time as an Assistant Researcher, on a one-year contract with the Department of Rural Development and Land Reform," he says. "There, my research focussed on indigenous knowledge systems and rural development through technology.

"I could do my Masters studies from a distance because the programme was flexible - it had coursework and a thesis."

The research topic for his Master's degree was community participation in the creation of sustainable human settlements in his home town of Whittlesea. His focus was the Whittlesea Mabuyaze Housing Project.

"Citizen participation is about power and its exercise by different social actors in the spaces created for the interaction between citizens and local authorities," Lungile states in his Master's thesis.

"However, the control of the structure and processes for participation - defining spaces, actors, agendas, procedures - is usually in the hands of governmental institutions and can become a barrier for effective involvement of citizens."

"The decision to do research in this area came after the realisation that there is still a shortage of houses in the Eastern Cape, and when the government does deliver these houses in a particular area people still have complaints regarding the new houses delivered to them. Then a question that came to mind was whether people are consulted or not before these houses are constructed during the planning stages so that they can give their own views or ideas on houses."

Lungile Penxa went on to get a bursary from the University of the Western Cape to begin his PhD, on the same research area.

"In the meantime, I had a family to support," he says. "My wife wanted to return to Rhodes to complete her PhD studies and I was employed as a local government researcher with the Public Service Accountability Monitor - known as PSAM."

PSAM forms part of the Rhodes University School of Journalism and Media Studies. Its stated mission is:

"Social accountability places an explicit duty on members of the executive arm of governments, public officials and private service providers to justify their decisions and performance regarding the manner in which their use of public resources has affected the progressive realisation of socio-economic rights."

"PSAM's activities include research, monitoring, advocacy and capacity building. Working through southern Africa, PSAM generates and shares knowledge about social accountability and the monitoring and advocacy tools that can build more open, participatory and accountable governments."

Lungile's work involved doing local government monitoring, research and advocacy (through analysing municipal budgets, strategic plans, expenditure reports, performance management reports, and directly engaging local government stakeholders) to improve local government transparency, accountability, and the use and management of public resources to enhance good governance

Lungile also found himself in the boiler room of local politics.

"Because I was from PSAM and perceived to be neutral, I was party to a lot of the political discussions in various municipalities," he says.

**He gained deep insight into the political influences that guide the fortunes of a municipality, and often stand in the way of meaningful service delivery.**

"Working in a municipality can also be a dangerous space," he says. "Most people in municipalities are also members of political parties and sometimes they are unable to differentiate between being a politician in the workplace and being an employee."

"We have councillors, political office bearers, who are doing an oversight role. Then we have the staffers, who are supposed to deliver services. But those people are also aligned to political parties and that can negatively affect their performance."

Lungile had an insider's view of dysfunctional and corrupt local government, and was often called on by the media to express his views on the subject.

One of the articles he penned (and which was taken up by the local Grocott's Mail) was titled *Councillors and the Community: A Partnership of Equals*:

"Ward Councillors are citizens' politically elected representatives," he writes.

"Councillors are the link between the public and the municipal council and owe their primary loyalty to their public. Councillors are required by law to support public participation and to represent the interests of their communities. Councillors are mandated to carry out their duties in an accountable and transparent way."

"Citizens have a responsibility to hold councillors accountable on their duties of serving the interests of the electorates or citizens."

The article drew some lively public comment from Makhanda (Grahamstown) residents, like Jock McConnachie:

"Based on my experience, accountability is a hollow concept and a blunt tool because public representatives simply refuse to be held to account by ordinary citizens," said McConnachie.

"My own Ward 8 Councillor has himself stated that he is accountable to his political party and not to the constituents and he was never challenged on this matter."

Although he has left PSAM for the academy, Lungile Penxa says he learned an immense amount from the experience.

"And what I really loved about my time at PSAM was working closely with civil society," he says.

His PhD, meanwhile, has been completed and he is now teaching an Introduction to Sociology and Social Research at undergraduate level. His research areas include Participatory Development, Local Government, Small Towns Development and Human Settlements Development.

"I am focusing on research which I can eventually publish," he says. "At the moment, I'm trying to strike a balance between teaching and research, in order to grow in this field."

**By Chris Marais**



## Sugar in the Blood

### Dr Ntethelo Sibiya

Dr Ntethelo Sibiya, lecturer at the Faculty of Pharmacy, has a special research interest in natural and synthetic compounds potentially useful for diabetes mellitus.

Photo: Chris Marais

There was a time when Type 1 diabetes was literally a death sentence. But in a century, things have changed dramatically. Dr Ntethelo Sibiya is part of cutting-edge research to make life easier for diabetics.

The discovery of insulin is one of the most lovingly retold histories in the annals of medical history, especially in Canada's scientific literature.

The short version is that Frederick Banting, a struggling young doctor from Ontario, teamed up with assistant Charles Best in 1921 to research a theory he had about the pancreas and its link to diabetes.

It is hard to overstate what a horrible and merciless disease this was. Before the discovery of insulin, diabetes mellitus (Type 1) typically struck down children or teens. They almost always died within a year of diagnosis. There was only one way for diabetics to live a little longer: to eat less and less, to the point of literal starvation.

Unlike the more common Type 2 diabetes, which is often brought about by diet and lifestyle, Type 1 is mostly an inherited condition, although it can have other triggers, including autoimmune disease.

### The Lazarus Cure

Banting had absolutely no experience in the field of medical research, and neither, for that matter, did Best. But with the help of Professor JJR McLeod at the University of Toronto and biochemist JB Collip, they managed to isolate insulin in dogs. This discovery came after many missteps, not helped by the fact that the four researchers mostly did not get on well at all. It was a partnership characterised by sniping and squabbling. At one stage Banting had to be restrained from physically assaulting Collip.

The first clinical human trials were on Leonard Thompson, a 14-year-old boy dying from diabetes in a Toronto hospital. The first dose, in January 1922, did not work. Collip did some tweaking to concentrate the insulin and they tried again. Within 24 hours, Leonard Thompson's dangerously high blood glucose levels dropped to near-normal levels.

News of the discovery spread around the world.

Insulin was hailed as the Lazarus cure. People hovering on the brink of death were returned to vitality and health within weeks. Banting and Macleod received the Nobel Prize in Medicine in 1923, which they shared with Best and Collip. The four ended up hating one another, but the world had insulin, and diabetes mellitus was no longer a death sentence.

To this day, every Canadian 100 dollar note has a vial of insulin etched on it. It was one of the great medical breakthroughs of the last century.

## Delivery of Insulin

There remain, of course, many challenges. Insulin, being a delicate protein, cannot survive the stomach acids, so it cannot be given orally. It has to go straight into the bloodstream, preferably by injection - several times a day, according to food input, activity and even emotion.

A typical Type 1 diabetic must test their blood sugar first thing in the morning, before meals, which means drawing a drop of blood. Then the insulin dose is adjusted in the dose administered via a thin needle, up to five times a day. It is a finicky, time-consuming and sometimes painful procedure.

But there are other ways potentially promising antidiabetic drugs and ways of administering insulin. One of the scientists researching these methods is Dr Ntethelo Sibiya of Rhodes University's Pharmacy Department.

Dr Sibiya has a very personal link to the disease: his beloved grandmother died of diabetes, months before he graduated with his PhD in Human Physiology from the University of KwaZulu-Natal in 2017. He started work as a Lecturer in Rhodes University's Pharmacy Department the next year. It is the culmination of a lifelong fascination with the human body.

"When I was growing up, my family believed in me and helped to motivate me. They had the idea I wanted to be a medical doctor, but that wasn't really the case. I just had this curiosity when I was still a young boy. I wanted to understand the functions of the human body - specifically the fact that you could feel sick, then swallow a pill and be okay. How did that happen?"

## Candles and Responsibility

Dr Sibiya ("call me Lelo") was raised in a tiny village called Bhamshela in rural KwaZulu-Natal, by a single mother who ran a spaza shop from their home an hour's drive from Tongaat.

"When I think back, we were disadvantaged, but we did not realise it at the time because everyone around us was also disadvantaged. The greatest problem for me in terms of education was the English language. We had very little exposure to it. We had no electricity, so there wasn't even exposure via television."

The standard of education at the local school was also poor. But his mother found ways of teaching Lelo and his elder brother some unconventional lessons.

"In her shop at our home, my mother was selling small items like bread, sweets, cigarettes and basic groceries. She allocated part of the stock to my brother and me. Whatever profit we made would come to us. I had the candles, and my brother had the table sugar. Neither of us became entrepreneurs or businessmen - my brother is a teacher - but she taught us responsibility."

There were no funds to go to a good school, so Lelo went to the local high school, where he matriculated in 2008.

"The school had a very bad pass rate, quite honestly. I think because so many people believed in me that I pushed hard to study. In the end, I didn't get great marks, but they were the best the school had ever delivered and they were enough to get me registered for a Bachelor of Medical Sciences degree at the University of KwaZulu-Natal (UKZN)."

"My mother had saved up enough for the registration fees, but we had no money for tuition or anything else. Fortunately, I was funded by NSFAS throughout my undergraduate years, and because my marks remained high, the funding was converted to a full bursary. My Postgraduate studies from my Honours year onwards were supported by the National Research Foundation (NRF)."

By then, Lelo had begun to focus on diabetes, inspired by a professor he encountered in third year, and his sick grandmother. During his Masters research he began screening a number of promising antidiabetic synthetic molecules as well as natural products using in vitro models - basically human cells in a petri dish.

## Glucose Uptake

"We cultivate them, and then challenge them with high sugar content. Then we would add insulin as a reference, and for test purposes, we would add a synthetic molecule. If less sugar is left on the medium, that means the substance was able to stimulate glucose uptake."

"For my PhD studies, my supervisor had a very big project, a plan to find another way of delivering insulin into the body via the skin, using transdermal patches. My particular focus was to optimise that patch and increase the insulin concentration. Unfortunately, three months into my PhD, my supervisor passed away. That was a massive setback. So I was 'inherited' by another supervisor. However, I was able to carry the study through to completion."

**Injection of insulin, imperfect a solution though it is, remains the primary way of administering the medication. There is a pulmonary spray, a bit like an asthma pump, but there are still some safety concerns.**



**Dr Ntethelelo Sibiya in the Faculty of Pharmacy.**

Photo: Chris Marais

"There is also a kind of patch you hold against the inside of your cheeks where it slowly dissolves. It is not very popular here, but it is available in other countries."

## The Deep End

Dr Sibiya stayed on for a Postdoctoral Research Fellowship at UKZN, where he gained valuable experience teaching and tutoring. In 2018, he successfully applied for the position of lecturer at Rhodes University.

Teaching in front of a lecture hall of students not very much younger than him was initially a bit of a nightmare, admits Dr Sibiya. Now he enjoys it, and is particularly fond of the first cohort to whom he taught Anatomy & Physiology.

"If it wasn't for those guys I wouldn't be so confident now. It was a two-way thing, a relationship. They really trusted me. Fitting into the culture at Rhodes University was the same. They threw me in at the deep end, and I had to swim my way up, but the department was so welcoming. They have given me the latitude to make my own decisions and

it has helped me in terms of my own development. I was able to find my own way."

In terms of research, Dr Sibiya has carried on collaborating with his peers from UKZN, has recently been given a space to set up his own research laboratory at Rhodes University and was awarded a University Capacity Development Programme (UCDP) Grant by the Research Office.

**By Julianne du Toit**



# Lawyer for the People

## Dr Charlene Lubaale

Dr Charlene Lubaale, Faculty of Law.

Photo: Chris Marais

### Bridging the 'Justice Gap' between the rich and the poor in society.

When Charlene Lubaale was growing up in Jinja, Uganda, she experienced the lack of access to justice at close hand.

"I had relatives who lost land; I interacted with women who suffered violence in silence and played with children who were seen but not heard when violence was meted against them. Many around me were convinced that justice was for the rich and wealthy, and because they did not fall within that category, they didn't even bother consulting a lawyer. That sparked my interest in law."

Her parents were schoolteachers and didn't see the point of having a television when there were so many unread books in their possession.

"Often people say they study law because they watched a legal drama on TV or something to that effect. That wasn't the case for me, as there was no TV to speak of. With injustice playing out like a movie right before my eyes, a question that gave me sleepless nights was: How can I contribute to addressing the challenge of access to justice by those around me?"

After completing secondary school, Charlene went to study law at Makerere University in Kampala, where she also did her Honours studies before heading off to do her articles. She was appointed as a State Attorney with the Uganda Human Rights Commission where she practised law for some years.

"I desired to see the vulnerable in my society being able to access justice. I wanted to be able to offer a service at little to no cost if possible, and in a manner that was not only humane but respectful of the dignity of the most vulnerable in my society. It was quite fulfilling, really beautiful, to walk someone through the journey of accessing justice. The fulfilment for me was the contribution to society, however little."

### Coming to South Africa

Charlene also realised that, like her parents, she loved teaching.

"That's when I came to South Africa to do my next degree. I obtained a scholarship to go to the University of Pretoria (UP). They have a very robust Master's programme in Human Rights and aspects of criminal justice. Then it was just natural for me to go on and do my doctorate there too."

Her LLD was titled: "Bridging the justice gap in the prosecution of acquaintance child sexual offences: A case of South Africa and Uganda". It engaged with the evidentiary and procedural barriers to accountability for this kind of offence. The theme fascinated her, but as any doctoral student can attest, this can be a long and lonely academic journey.

"Normally, as an undergraduate student, you're sitting in a class interacting with colleagues. But with a PhD or LLD, it's just you and your supervisor. I didn't realise what a toll that would take on me. I didn't have a social life. I had no friends. It was just me trying to finish my thesis."

But a long time ago, Charlene had found a way to decompress and put the world into perspective: long distance running. Five times a week, she runs 10kms a day. Every once in a while, she runs a marathon just so she can be part of the bigger community of runners.

"I love running. I have been running all my life. It keeps me alive. It is one of the things I do before the day starts. It gives me a chance to reflect, unwind, just be away from my laptop."

Charlene went on to do a Postdoctoral Fellowship at UP, before heading off to the University of Venda where she was offered a Senior Lecturer post at the end of 2017. Here she taught aspects of criminal law, focussing specifically on women and children's access to justice.

## Rhodes and the Research Office

Charlene carried on researching on women, children, criminal law and international criminal law. In January 2020, the National Research Foundation appointed her to its Standing Panel for Humanities and Social Sciences from 2020 to 2023. Around the same time, she received a Y-rating by the National Research Foundation. It was also around this same period that she applied for the position of Associate Professor at Rhodes University.

"I moved to Rhodes in May 2020, under lockdown. I didn't know anyone. I'm just so thankful to the RU support structures and the Faculty of Law, where the staff did their best to help me make the transition."

Because of the Covid-19 Lockdown, all teaching was fully online, and Charlene relied heavily on the tech department to bring her up to speed.

"During that time, I went through a lonely patch, questioning whether I'd made the right decision, why I had left a place where I was comfortable at a time of uncertainty. I expressed my feelings to colleagues at Rhodes and my loved ones, and they helped me realise I was not alone, and that exclusive online teaching was a daunting task for many. That helped a lot."

In between teaching the Law Evidence and Criminal Procedure courses, marking and trying to establish a bond with students digitally, Charlene connected with the Rhodes Research Office.

"I love teaching, but I am also passionate about research, specifically in the fields of criminal law from a domestic perspective, international criminal law, women's and children's rights.

"The Rhodes Research Office staff went to so much trouble, and acted so quickly to help me with my book project on *Criminal Justice for Women in Africa* (co-edited with a colleague at UP). It has been great to see the support that RU offers to young academics. The university is really working on helping established and newer researchers to grow."

Between May and December 2020, Charlene and the co-editor from UP were able to attend a three-day writing and editing retreat. Charlene's trip was supported by the Research Office and the time devoted to the project during this period saw them finish the book in time for submission to Springer for publication in 2021. She then began working on another book on international crime prosecutions, which she is editing with another professor at UP.

"Of course, exclusive online teaching took its toll on me. It was indeed uncharted waters but I soon realised that if you plan well, you can dedicate some time, however little, to research. There is no denying that 2020 was a strange year, but looking back, there was some time at our disposal to take advantage of as researchers. For example, it was during this strange year that I worked on two books to be published by Springer Nature. Again, thanks to Rhodes' Research Office and the support structure at the Faculty of Law."

Charlene is a member of the Organisation for Women in Science for the Developing World, The South African Young Academy of Science, the Network on International Law and Policy in Africa and is a Fellow with the African Science Leadership Program. She has also served as a law reviewer for several publishers. These include Palgrave Macmillan, Springer Nature, Pretoria University Law Press, *South African Journal of Criminal Justice*, the *Journal of Sexual Aggression*, *Speculum Juris*, *De Jure*, *South African Crime Quarterly* and the *Journal of Law, Society and Development*.

## By Julienne du Toit



# Theatre - Maker, Change - Maker

## Selloane Mokuku

Selloane 'Lalu' Mokuku teaches Applied Theatre at the Rhodes University Drama Department. Photo: Chris Marais

Selloane 'Lalu' Mokuku, of the Rhodes University Drama Department, lectures in the most versatile, adaptive and socially relevant performance area of them all: Applied Theatre.

The lingering COVID-19 pandemic has had a disastrous effect on traditional building-bound theatre worldwide. However, the practice of Applied Theatre in all its many forms is stronger than ever before, especially in the digital space.

Lalu Mokuku, who lectures in Applied Theatre at the Rhodes Drama Department, is also a storyteller, director, academic and performer. But above all, she is a theatre-maker.

Duška Radosavljević, author of *Theatre-Making: Interplay between Text and Performance in the 21st Century*, speaks of traits like "self-determination, inter-disciplinary ambitions, collaboration, operating in a globalised workplace, performance-oriented playwriting, empowered directing and audience activation."

### Her Mother's Stories

These are all qualities that one picks up in Lalu Mokuku's colourful career thus far, going right back to when she was a child, spellbound by her mother's stories.

"She would be able to paint the context," says Lalu. "My mother had a way of building the imagination of those who were listening to her."

"For example, there's this story told of a girl who was in love with a horse. My mother would tell this story, and her voice would be so inviting that sometimes you felt you

could just sing along, like when the horse signals to the girl: 'Hey, I am here!'"

Lalu Mokuku initially studied Accounting and Development Studies at the National University of Lesotho.

"Although I was an A-student in Accounting, my first love became Drama. So I dropped it all in favour of theatre. And when I found out about the University of Cape Town (UCT) Drama course, I applied and was accepted."

### From Satire to Street Life

The highlights of her time in Cape Town were performing in two plays: *The Trials of Brother Jero* written by Wole Soyinka and *Suip!*, devised by Heinrich Reishofer and the cast.

*The Trials of Brother Jero* is comedic satire about religious hypocrisy, in which the central character is a preacher who ruthlessly manipulates his followers.

"It was intellectually fascinating," says Lalu.

*Suip!* is a play about the lives of Cape Town's bergies, homeless people, that centres around issues of politics, social exclusion and compassion - or the lack of it.

"To research this one, we would go out on the streets of Cape Town from about 7pm to midnight," she says. "I

played the character of 'Sofia', constantly fighting with the father of my son, who was exhausted by living rough. The dramatic finale to *Siip!* had the audience gasping."

## Brave New Theatre

Applied Theatre (or Drama) can be used for therapy, community work and education at all levels. Its mission is some form of social change through awareness. It can be staged in prisons, schools, informal venues - in fact, anywhere.

The main element of Applied Theatre that separates it from its older, more tradition performance counterparts is that it sets new levels of relationship between the actors and their audience by amongst other things, enabling dialogue.

Under the umbrella term of Applied Theatre is Theatre of the Oppressed, systematized by Brazilian Augusto Boal. It was Lalu Mokuku's exposure to the Theatre of the Oppressed that inspired her work in the decades that followed.

Theatre of the Oppressed has its own variations and terminology, including Forum Theatre (in which the audience members become "spect-actors", join the production and customise the dialogue and action) to Analytical Theatre, Image Theatre, Invisible Theatre, Newspaper Theatre, Photoromance Theatre and productions using rituals and masks.

Boal's theatrical concepts have gone global, from New York City to Berlin, and from the Bay of Bengal (Jana Sanskriti) to a theatre group in Mozambique called Grupo de Teatro dos Oprimidos.

Sophie Coudray, writing about the Theatre of the Oppressed in *Culture Matters (UK)*, describes it as "a set of dramatic techniques whose purpose is to bring to light systemic exploitation and oppression within common situations, and to allow spectators to become actors."

After graduating at UCT, Lalu worked with various organisations that needed the skills of a theatre-maker for the purpose of healing, education or transformation.

"For me, the highlight of that period was the use of dramatic processes to enable children to have input on legislation regarding them," she says. "The children would create plays, themes would emerge and they would be submitted for consideration to inform and this led to Lesotho's Children's Protection and Welfare Act of 2011 (Act No. 7)".

## Inspiring the Young

Lalu Mokuku further worked with Nobulali Productions (fondly known as ShakeXperience™), an arts based company that used applied arts to facilitate healing, education and transformation.

"One of my most memorable project stories from ShakeXperience™ was collaborating with Tshwane University

of Technology's Faculty of Arts and Design as well as Tsoso Consultancy working at Mpingana Senior Secondary School in Lusikisiki, Eastern Cape," says Lalu. "By 2010, the school had a very low pass rate. Once we'd finished our programmes of using the arts in education (Applied Theatre form) approaches to facilitate learning of English, Mathematics and Science, the pass rate increased from 0% in 2010 to 97.4% in 2018."

Lalu Mokuku is the South African Chairperson of the International Association of Theatre for Children and Young People (ASSITEJ) and also an Executive Committee Member of ASSITEJ International.

The stated aim of ASSITEJ (SA) is to be "a transformational force in the lives of young people, inspiring imaginations, shifting perceptions, teaching empathy and building our nation".

Lalu Mokuku is a Drama For Life alumni specialising in Applied Theatre, and is dedicated to utilising arts for social transformation and healing.

"If, for instance, we're talking about food security, we have to undertake an extensive research to create a play that would enable a dialogue on the subject matter," she says. "It's not a sit-back-and-applaud situation".

Her other passion is languages as well as translanguaging. In 2016, she directed a purely-Sesotho-language play for the Market Theatre called *Mosali Eo O'Neilleng Eena* penned by Masechela Khaketa

## Coming to Rhodes University

In 2018, Lalu was invited down to Rhodes University, Makhanda, for a job interview in the Drama Department. She tells the story of checking in at Johannesburg Airport for the flight to Gqeberha (formerly Port Elizabeth) with great flair:

"I'm not a morning person, I can tell you. Anyway, there I am at the airport at 6 a.m. and I'm very tired. But the woman behind the ticketing counter wants to talk.

'Where are you going, Sisi?'

'I'm going to Port Elizabeth and then up to Grahamstown.'

'Sisi, what are you going to do in Grahamstown?'

'There's a job interview.'

'And they paid for your flights and your accommodation? No, Sisi, they want you! This is your job!'

An everyday South African exchange with many layers of meaning...

The woman behind the counter was quite right. Lalu Mokuku replaced Professor Alex Sutherland, who was leaving the

academic side of Applied Theatre "to work more fully in social justice settings", joining the Tshisimani Centre in Cape Town.

### *Ukunuka*

In 2019, Lalu co-directed *Ku Nuka Phi?* (Ukunuka Forum Theatre Project) with Luvuyo Yanta. It is a social justice play initiated in collaboration with the Department of Journalism and Media Studies as well as *Grocott's Mail*, South Africa's oldest independent newspaper. The play was scripted by Anton Krueger, acting head of the Drama Department. The play was launched on March 20 in the department's outdoor amphitheatre on World Day for Theatre for Children and Young Audiences, and funded by the Open Society Foundation.

Journalist Sue MacLennan had this to say about the production:

"Featuring ghost workers, undrinkable water and rivers of poo, among other things, the interactive play is a chance for its intended audience of ordinary Makhanda residents to 'question, laugh, reflect and offer solutions'.

"The play puts on stage the characters - or rather the stereotypes - we're so familiar with. Audiences will recognise the reflex narratives from social media diatribes, braai conversations or even our own sitting rooms: overpaid employees who've never met the people they represent; disgruntled municipal workers who take three-hour lunch-breaks and work after-hours to score overtime; and people who don't get jobs at the municipality because they're Coloured."

Lalu told Sue MacLennan at the time:

"What Ukunuka Forum Theatre endeavours to do, is to break that passive-aggressive cycle and encourage citizen audiences to engage in a very direct way with the issues."

### *Dipalo*

On the same day, ASSITEJ SA announced Mokuku as the winner of their second African Playwriting Competition for *Dipalo*, a piece she had co-written with Ginni Manning.

It was presented as an audio version at the virtual National Arts Festival in 2021 and is described by its producer Yvette Hardie as "an important and timely audio-only play exploring the agency of young people in an exploitative world".

Hardie adds:

"The play deals with the pervasive threat of gender-based violence against the backdrop of charismatic religion. In a space that preaches safety and solace for lost souls, the dangers of the predatory and ruthless can be obscured from view. In finding one another, two young people are able to build a solidarity which strengthens them to deal with the challenges and lies that the adult world has fashioned."

### A New Digital World

During the 'Lockdown Year' of 2020, Applied Theatre became particularly innovative in the digital space.

For instance, WhatsApp became a significant theatre platform, being reasonably cheap and accessible to large distance-audiences.

The 2020 National Arts Festival featuring a WhatsApp play called *The Shopping Dead*, was written by Ncumisa Ndimeni, directed by Lesego Chauke, produced by Faye Kabali-Kagwa, and described by critics as a "new sensation - theatre in your palm".

It was carefully crafted, using text messages, GIF images, still photographs and memes to expose the narrative.

"So now at the Rhodes Drama Department, we're working on a WhatsApp forum theatre play (*No Mask, No Soup*) about food security," says Lalu Mokuku.

### Finale

Summing up her dramatic ambitions, Lalu says:

"I want to continue that tradition of storytellers like my mother, but I also feel I have to take the stories out of the small bedrooms of households and put them out there, using the different skills that theatre offers. I want to address matters of concern and enable others, especially those whose voices never get to be heard."

### By Chris Marais



# The Colour Purple

## Dr Thando Njovane

Dr Thando Njovane, Department of Literary Studies in English.  
Photo: Chris Marais

### Studies on memory, trauma and the African experience.

Dr Thando Njovane, Lectures in the Department of Literary Studies in English at Rhodes University.

She joined Rhodes as a first-year student in 2005, and majored in English, Philosophy and Instrumental Studies in Music.

### Out of the Comfort Zone

Her Masters, with distinction, under Dr Sue Marais' supervision, focused on trauma theory and short fiction in Africa, and led to an ongoing academic curiosity.

"Trauma theory first emerged in the aftermath of the Vietnam War, when returning American servicemen experienced symptoms such as nightmares and flashbacks, which were officially recognised as the diagnosis for Post-Traumatic Stress Disorder (PTSD) by the American Psychological Association in 1980," she explains.

"At the time, people began to reflect on the memoir boom of the 1950s in America, and accounts from World War II Holocaust survivors, and how that experience changed the ways we think of the human and the humane. The field of trauma theory arose mainly from the Yale School of Holocaust studies in the late 1980s and early 90s. Since then, it has become increasingly relevant to our thinking about contested pasts. But it still remains largely Euro-American in its ontological foundations."

Thando applied for the Patrick and Margaret Flanagan Scholarship in 2014, was successful and flew off to the UK's University of York to begin her PhD on trauma theory and childhood in African fiction.

During her UK stint, she met some of her favourite literary figures, including the then Poet Laureate Carol Ann Duffy, British writer Clare Wigfall, anti-apartheid activist and poet JC Driver, and the award-winning South African author Ivan Vladislavić.

While in York, Thando started a group called Finding Africa.

"The forum, focussing on interdisciplinary Postcolonial African Studies, became a means of creating an academic community where people could share their research and collaborate," she says. "The network spans continents and we've organised a number of events over the years. We're currently in our seventh year, of which we're all very proud."

### Dealing with Trauma

Thando opted to finish her PhD at Rhodes, continuing her research into psychoanalysis, memory, childhood and trauma theory, where she was formally capped as Dr Thando Njovane in 2019.

Thando's Rhodes University profile notes that her work spans Early Modern, Modern and Romantic literature and culture, "speculative fiction and fantasy, cultures of violence

and violation, feminisms, critical race theory, higher education and memory".

The courses she teaches focus on collected memories, historical fiction and narrative, traumatic pasts, colonial violence in Africa and notions of the self. The writings and writers she is currently immersed in include Julian Barnes, Haruki Murakami, William Shakespeare, Andrew Marvell, Yvonne Adhiambo Owuor, Gabeba Baderoon, K. Sello Duiker, Oscar Wilde, Jean-Paul Sartre, Ivan Vladislavić and Novuyo Rosa Tshuma.

In 2020, Thando and a number of other scholars at Rhodes, and six other universities were awarded large grants over five years from the Andrew W. Mellon Foundation. The Rhodes University grant for Early Career Scholars in the Humanities aims to "provide the resources necessary to ensure that ... potential in terms of their scholarly track record is achieved".

Thanks to the Andrew W. Mellon Foundation, Thando has been able to devote time to writing her first monograph. She has also been working on a long-term project convened by Stellenbosch University's Centre for Historical Trauma and Transformation.

She is working as a researcher and Gender and Diversity Officer in the African Study Centre at Rhodes, which exposes her to academics, knowledge production and studies from the University of Beirut, Joseph Ki-Zerbo University (Burkina Faso), Moi University (Kenya), and the Institute of African and Diaspora Studies at the University of Lagos (Nigeria).

To examine South African trauma is to nearly drown in it. All around are different versions of it, causes and triggers. There were the atrocities of apartheid, the atrocities of the colonisation that preceded it, daily discrimination between colours, genders and sexual orientation; even post-apartheid disillusionment.

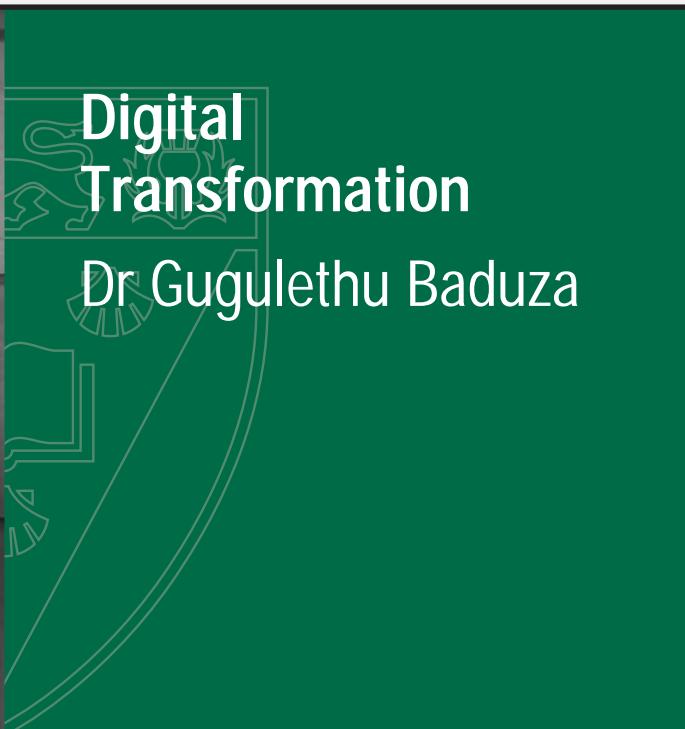
Possibly as a balancing act to that and the new strains of living in a pandemic world of online teaching, she is practicing Yoga and is reconnecting with her music by teaching herself the acoustic guitar.

### By **Julienne du Toit**



**Dr Thando Njovane at a Writing Retreat in Hogsback.**

Photo: Chris Marais



Dr Gugulethu Baduza, lecturer at Rhodes University's Department of Information Systems, researches the ways rural communities can benefit from computer technology.

Photo: Chris Marais

South Africa has the apps, the algorithms and the data to solve service delivery problems, says Dr Gugulethu Baduza. What is needed is a more holistic approach that aligns human needs with technology.

Sometimes Dr Gugulethu (Gugu) Baduza has a kind of waking dream. In it, there is a massive command centre with a giant screen, with hard-working Government people rushing around with clipboards and cell phones, trying to solve South Africa's challenges.

The information flickering on the huge screen - a kind of national dashboard - displays where there are concentrations of complaints from citizens. If more than ten citizens in certain towns have contacted authorities with water quality problems, say, those particular municipalities flash red on this imaginary giant dashboard. Calls are made, a team of experts is despatched, and they don't leave until it is fixed.

It is a lovely dream, and completely feasible, says Gugu.

## Needs and Possibilities

She first became passionately interested in rural development issues and possible solutions offered by Information Communication Technology during her Honours year at Rhodes University.

"The research we did really resonated with me because of where I come from."

The daughter of a teacher and a businessman, Dr Gugu Baduza has been a witness to the patchiness of Government service delivery in the Eastern Cape all her life. During her school career, she commuted between Whittlesea and the Queenstown Get Ahead Project, finally matriculating at Queenstown Girls High. Simply travelling the 70km to school and back every day using public transport was a challenge.

In 2006, Gugu headed off to her first year of accountancy at Rhodes University, imagining that she might become a chartered accountant. But that particular dream derailed in her second year, "when I bombed out of accounting".

After spending "one entire vac feeling sad", Gugu switched courses to computers, which she was finding increasingly interesting.

It was a fortuitous change.

In her Honours year, Professor Caroline Khene revealed a whole research path on what Information and Communications Technology (ICT) could mean for development, says Gugu.

"You could see the need for it! And the possibilities. Especially once I really got into the research and I could see how

people in rural communities could benefit by so much online."

Towards the end of that year, software company SAP in Gauteng put out an advertisement, seeking people with an interest in ICT4D (Information and Communications Technology for Development) who wanted to study towards their Masters or PhD.

## Living Labs

Gugu applied, was successful and moved to Pretoria, splitting her time between working for the software company and doing research for her Masters on the Siyakhula Living Lab. Professor Khene remained her supervisor.

Living Labs have been defined by the Human Sciences Research Council (HSRC) as "community-based tech hubs that gather resources, expertise and community knowledge to devise solutions to local problems. The model positions community members as co-creators as well as beneficiaries of innovations."

Gugu explains that she was examining whether community needs could be matched with what ICT has to offer, a process termed 'Business/IT Alignment'.

"My focus was on target groups, like the youth, the elderly, teachers and so on, using the Siyakhula Living Lab in the Dwesa and Cwebe areas of the Eastern Cape as my case study.

"I was also involved in other projects at SAP. They had Living Labs around the country with similar needs, in that they all needed access to information technology. For example, the Limpopo case study was focused on entrepreneurs. We developed an app where they could order all the items they needed before they went to town, so these businessmen could save on time spent at bulk retailers.

"For Dwesa, though, the needs were more educational. The teachers needed the students to be exposed to ICT so they could do research on everything from how crops grow, to electric circuit boards and so on. Their needs were different, but both groups needed access to ICT. They all could all benefit from digital information and knowledge.

"I got my Masters with Distinction there, and SAP offered me a PhD scholarship."

Shortly after that, though, the corporate began restructuring and shifted away from ICT4D.

## The Next Opportunity

That's when Professor Khene contacted Gugu and alerted her to a new Government-initiated academic programme called the Next Generation of Academics Programme (nGAP). The Department of Higher Education and Training (DHET) would provide funding over six years to build a new

generation of black South African lecturers to step up, as older academic staff began retiring.

The idea is to hire academics as staff members and allow them to finish their research and PhDs within six years while slowly taking on lecturing commitments until the new recruits were shouldering a full teaching load.

*"I started in January 2016 with Dr Sine Memela and Dr Sam Motitsoe. We were the first cohort of three nGAP academics at Rhodes University. There was a bit of trial and error, but because we had a support system and our mentor, Dr Mandy Hlengwa, it gradually became an easier road to walk."*

Gugu's PhD focused on a project that was launched by the Department of Science and Technology in the Cofimvaba area, including two dozen schools that were supplied with electronic tablets, WiFi via satellite dishes, agricultural support and a nutritional supplement for the children in class.

"I was looking at the scalability and sustainability. Although it succeeded, there were some major problems. More than 100 tablets were stolen one night and only 10 were ever recovered. Many were broken. Satellite dishes blew off in heavy storms. But the project also trained teachers to use ICT. That was probably the real lasting legacy of the project."

"It's a holistic approach that needs to be taken," explains Dr Baduza. "It's not about the latest apps or algorithm that you can use to solve this problem or that. It's about people."

## Holistic Knowledge

Now that Dr Gugu Baduza is a fully-fledged lecturer, her focus and courses are taking shape. And she keeps coming back to data and how to analyse it for business and development.

"It's not about the technology, it's about how we can integrate the technology. I'm looking at all the facets. Culture is the biggest of them all."

She likes to use case studies that are current and relatable.

"Can you imagine the amount of data being captured by Google, for example? Even if you have disabled the locator on your phone, they can still capture your location and preferences through Google services, if you do something as simple as click 'Like' on Facebook."

"That in turn generates structured and unstructured data. What can be done with that information? It's a scary and a beautiful thing. Government is the single entity that produces the greatest amount of data. And yet they are sleeping. They are not using it."



Dr Gugulethu Baduza in her office.

Photo: Chris Marais

"They could use that information to solve the social ills that we are currently facing. If people are complaining about one thing over and over and over again, why does it take so much time for you to resolve that?"

## The Scalability of Hope

"I always make the example of the National Health Insurance (NHI). Government conducted a series of pilot projects around South Africa, but what were the outcomes? This has not been revealed, even though the Department is pushing ahead. What elements worked and did not work?"

"And what would need to be fixed in the system first before you start replicating it on a bigger scale? If a clinic is still struggling to obtain resources or attract skilled people in rural areas, how can you scale it up without fixing that particular problem?"

"We have the apps, we have the ability to solve the problems, but it's not being done. It's a holistic thing. It's a systemic problem. It's the culture that our country has gotten used to, and culture is such a powerful thing to try and change."

"And yet, look at how we've adapted to online work during this lockdown. People can change."

**By Julianne du Toit**



# Art and Authorship

## Mbali Khoza

**Mbali Khoza, Department of Fine Art.**

Photo: Chris Marais

### Investigating the media of expression used by black artists.

There was no television in Mbali Khoza's home when she was a child growing up in Bramley, Johannesburg.

"To entertain ourselves, my brother and I used to draw. When I went to school, I studied art too. It seemed like I was good at it, and it relaxed me. So did music. I was drawn to arts right from the beginning."

By High School, almost no other subject was as appealing.

"During class I would be sketching on the economics books. Fortunately at Edenglen High I could study Fine Art and Art History. I was an A student in those subjects, average at everything else."

Mbali's mother, a secretary, made a point of buying the *Business Day* newspaper which regularly featured profiles on notable artists.

"It helped me to envisage a career for myself."

Mbali registered for Fine Arts at the University of the Witwatersrand, did well, and proceeded through Honours and Masters. By then she had become fascinated by authorial identity.

"For my Masters, I was looking at the idea of an artist as an author. How do artists speak? What does authorship look like from an artistic context? Artists place objects in a particular way in a certain space. In a performance work,

certain gestures would be authorship, because artists are making deliberate decisions about how they choose to create and place an artwork, and how they speak as the authors of their work.

"To me, that is their voice. And how does that voice come through? I was grappling with that, specifically focusing on language, and in particular, English. The expectation that we as black people have had with this language is that if you can't speak English properly, you're marked. If you do speak it properly, you're a coconut."

### An Artist in the World

Mbali's art has expanded into multimedia, specifically video and audio.

"I would call myself a conceptual artist. I work with installations, video, sound, performance and text."

She has participated in many exhibitions in South Africa and internationally. These include the National Gallery of Zimbabwe's Gwanza Photography in 2011, Rechewed at the Centre of Historical Reenactments (CHR) in the same year, Out of Thin Air at the Michael Stevenson Gallery in Cape Town in 2012, After-after Tears with the CHR the next year at New Museum of Contemporary Art in New York, and Poetics of Relations in Geneva, Switzerland.

Mbali Khoza knows from first-hand experience that the real world, can be an indifferent place for an artist if he or she does not know how to navigate it.

"The fine art is just one side of it. That was never a problem. My struggle was the transition from undergrad to professional life. Literally, how do you live and work as an artist? Because technically, artists don't have jobs. You are your own business, which is very tough."

It was this world that Mbali confronted during a year at the prestigious Stevenson Gallery in Johannesburg. It and sister gallery in Cape Town both showcase contemporary art from South Africa and Africa. It has international connections with participation in international art fairs in Basel, Paris, New York, Berlin and Miami.

"I worked at Stevenson as an intern. My job was to reject portfolios because that's not how they work. Your work has to be exhibited at an established art space first, even collective open spaces. Typically, if someone from a gallery is there, sees and likes your work, then they might say, oh, that's interesting, I'd like to see more."

Mbali Khoza began teaching through UNISA and is now lecturing in Art History and Visual Culture at Rhodes University.

"Students come to me for career guidance and advice. I encourage them to think about their careers early on. In the art world, you need to start making yourself visible at a very young age."

"When people know you and your work, then galleries approach you and invite them to join their stable. That's why I encourage my students to curate exhibitions or have group shows, maybe write something in an arts publication."

"In a place like Grahamstown (Makhanda), there are no galleries, so I encourage them to go to the Jo'burg Art Fair or Cape Town Art Fair over the holidays, just to know what's going on there and get a sense of what their peers are up to."

## Teaching and Doctoral Studies

As a lecturer at Rhodes during COVID-19, Mbali confesses that she has missed contact teaching and interaction.

"In the Fine Art Department we used to have crits, get togethers, events with other staff members, we'd discuss each other's work. I've been missing that interaction, having someone respond to my work and giving me comment or pointers."

But it has given her space and quiet to work on her Doctorate, which Mbali is doing through the University of Witwatersrand's Wits Institute for Social and Economic Research (WISER). She is researching the historicity of blackness, black expressive culture and black existence.

"I am looking at how black artists image blackness visually and textually. I am researching four artists - one uses photography, one uses painting, one uses objects and another one uses video art."

"I am also looking at four writers who have written nonfiction and am interested specifically in the differences of blackness in time and space, how these writers think about blackness and deal with the politics of blackness in their own communities. Who is black enough and who is not? What does it mean to be black? What kind of behaviour should you exhibit?"

"I'm trying to have a conversation with my own community and ask them, how are we thinking about our blackness?"

## By Julianne du Toit



2020  
RHODES UNIVERSITY  
RESEARCH REPORT

# Departments



Photo: Simon Pamphilon

# Centre for Higher Education Research, Teaching & Learning (CHERTL)

Professor Jo-Anne Vorster  
Head of Department

## Introduction

The Centre for Higher Education Research, Teaching and Learning contributes to the academic project of Rhodes University through offering a range of staff and student development programmes. In addition, CHERTL staff supervise Postgraduate scholars whose projects focus on critical issues in the field of Higher Education. Centre staff conduct research in the fields of academic staff development, educational technologies, knowledge in the curriculum, social justice in higher education, and student access to knowledge practices in higher education.

## Postgraduates / Graduations

### Doctoral graduations:

1. Dr Lukus Julius: *Conceptualisations and pedagogical practices of academic literacy in Namibian higher education*
2. Dr Kevin Ncube: *In Marketing, it's either you have it or you don't: A study of knowledge and knowers legitimated in the Marketing diploma curriculum in South Africa*

### Postgraduate Diploma in Higher Education (PGDip (HE))

In 2020 twenty-three (23) PGDip (HE) scholars completed the course successfully. Eight (8) academics completed the course for lecturers, two of them with distinction. Fifteen (15) candidates completed the course for academic developers, with eight (8) achieving distinctions.

## Distinguished Visitors / International Visits

Professor Karl Maton (University of Sydney, Australia) was due to visit the Centre in March 2020, but his visit was cancelled at the last minute due to the outbreak and spread of COVID-19 and South Africa's imminent lockdown.

## Significant Research Aligned Events

The Social Justice and Quality in Higher Education PhD project was launched in 2020 (<https://sites.google.com/ru.ac.za/sjqlnhephd>), thanks to funding from the DHET's University Capacity Development Grant initiative aimed at improving the qualifications of academics in South African universities. The Social Justice and Quality in Higher Education PhD project comprises thirteen (13) PhD and three (3) Pre-Doc students, ten (10) of whom are funded through the project. In 2020, the

candidates completed four (4) taught modules, all of which are designed to ensure a solid theoretical foundation for their studies. The HEQS (2012) stipulates that credits may not be awarded for coursework at the PhD level, despite this being increasingly the norm internationally. Therefore, the coursework is not for credits, but the assignments are designed to enable the candidates to make good progress in their studies. The use of a supervision team comprising academics from both Rhodes University and the University of Venda is another innovation in this project. Colleagues from the University of Lancaster also support the project through offering seminars and participating in giving feedback to student presentations. While COVID significantly reduced the planned activities in 2020, we were able to go ahead with all the modules online and hold weekly Zoom sessions. It is with much sadness that we note the death to COVID of one of the supervision team members from the University of Venda. Professor Nancy Humbulani Mutshaeni was a teacher on the modules and a team supervisor. She will be greatly missed.

On 23 July 2020, during the Higher Education Studies 'Doc Week', Professor Sioux McKenna (CPGS) and Dr Kirstin Wilmot (CHERTL), along with co-editor Professor Christine Winberg (Cape Peninsula University of Technology), launched their book, *Building Knowledge in Higher Education: Enhancing Teaching and Learning with Legitimation Code Theory*. This is the second book in the *Legitimation Code Theory: Knowledge-Building in Research and Practice* series published by Routledge. The book boasts a collection of 16 chapters that enact Legitimation Code Theory to address various challenges in teaching and learning across international higher education contexts. The edited collection includes individual chapters by CHERTL and CPGS colleagues, including Sioux McKenna, Kirstin Wilmot, Jo-Anne Vorster, Lynn Quinn, and Sherran Clarence. The virtual launch included guest speakers, Professor Steve Kirk (Durham University) and Professor Karl Maton (University of Sydney), and was attended by 125 scholars from approximately seven (7) countries around the world. For more about the book, visit: <https://www.routledge.com/Building-Knowledge-in-Higher-Education-Enhancing-Teaching-and-Learning/Winberg-McKenna-Wilmot/p/book/9780367463335>

## 2020 Doc Weeks

Our March Doc Week was centred around the theme 'Who gets what knowledge and why that matters', using Legitimation Code Theory. Professor Karl Maton, the architect of the theoretical framework, had planned to join us to run seminars and workshops but unfortunately could not attend due to the outbreak of COVID-19. He generously provided access to his resources, and Kirstin Wilmot was able to facilitate most of the sessions on his behalf. The July Doc Week was run in collaboration with the Education Department and adopted a 'Researcher Challenge' structure. Scholars spent the week interrogating key issues to do with quality in Postgraduate research, including ethics, positionality, and use of theory. Our October Doc Week programme was designed to encourage independent but supportive reading and writing opportunities. Given scholars' Zoom fatigue, we adopted a reading and writing 'boot camp' programme where we ran online 'Pomodoro' sessions where scholars could read or write as a community in order to make progress in their own work.

Roxana Chiappa co-organised two webinars in an International Series, "Committing ourselves to Social Justice: Doctoral Education for Complex times" On 20 April, the focus was on "Practicing Social Justice in Engineering and Physical Science". Colette Patt, the Science Diversity Programs director at UC Berkeley, and Khalid Kadir, lecturer in the College of Engineering at the same institution, shared how they practice social justice in their respective professional arenas. In July, Professors Sioux McKenna (Rhodes University) and Barbara Grant (Auckland University) discussed the vision that inspired them and their teams to launch doctoral programmes in education with a focus on equity and social justice in their respective countries in a webinar entitled, "Beyond Theory: Practicing social justice in the design and implementation of doctoral education".

# PUBLICATIONS

## Books/Chapters/Monographs

### Clarence, S.

Clarence, S. and van Heerden, M. (2020) Changing curriculum and teaching practice: a practical theory for academic staff development. In: Winberg, C., McKenna, S. and Wilmot, K. (eds.). *Building knowledge in higher education: Enhancing teaching and learning with Legitimation Code Theory*. London: Routledge. p.145-161. ISBN: 9780367463335.

### Chiappa, R.

Chiappa, R. & Nerad, M. (2020) Doctoral Student Socialization. In: David, M. E. & Amey, M. J. (eds.). *The SAGE Encyclopedia of Higher Education* (p. 392-395), Thousand Oaks: SAGE <http://dx.doi.org/10.4135/9781529714395.n154>.

### Knowles, C.R.

Knowles, C.R. (2020) South Africa's student movement: A Rhodes perspective. In: Tella, O. and Motala, S. (eds.). *From Ivory Towers to Ebony Towers: Transforming Humanities Curricula in South Africa, Africa and African-American Studies*. South Africa: Jacana Media (Pty) Ltd - Fanele. p.118-135. ISBN: 9781431429554.

### Maton, K.

Maton, K. (2020) Semantic Waves: Context, Complexity and Academic Discourse. In: Martin, J.R., Maton, K. and Doran, Y.J. (eds.). *Accessing Academic Discourse: Systemic Functional Linguistics and Legitimation Code Theory*. London: Routledge. p.59-86. ISBN: 9780367236083.

Martin, J. R., Maton, K. and Doran, Y. J. (2020) Academic discourse: An inter-disciplinary dialogue. In: Martin, J.R., Maton, K. and Doran, Y.J. (eds.). *Accessing Academic Discourse: Systemic Functional Linguistics and Legitimation Code Theory*. London: Routledge. p.1-32. ISBN: 9780367236083.

Maton, K. and Chen, R.T.H. (2020) Specialization Codes: Knowledge, Knowers and Student Success. In: Martin, J.R., Maton, K. and Doran, Y.J. (eds.). *Accessing Academic Discourse: Systemic Functional Linguistics and Legitimation Code Theory*. London: Routledge. p.35-58. ISBN: 9780367236083.

Martin, J.R., Maton, K. and Doran, Y.J. (eds.) (2020) *Accessing Academic Discourse: Systemic Functional Linguistics and Legitimation Code Theory*. London: Routledge. ISBN: 9780367236083.

### Pallitt, N.

Romero-Hall, E., Correia, A.P., Branch, R., Cevik, Y.D., Dickson-Deane, C., Chen, B., Liu, J.C., Tang, H., Vasconcelos, L., Pallitt, N., and Thankachan, B. (2020) Futurama: Learning Design and Technology Research Methods. Research Methods in Learning Design and Technology. In: Romero-Hall, E. (ed.). *Research Methods in Learning Design and Technology*. New York: Routledge. p.206-227. ISBN: 9780429260919.

### Quinn, L.

Quinn, L. (2020) The role of assessment in preparing academic developers for professional practice. In: Winberg, C., McKenna, S. and Wilmot, K. (eds.). *Building knowledge in higher education: Enhancing teaching and learning with Legitimation Code Theory*. London: Routledge. p.255-271. ISBN: 9780367463335.

McKenna, S. and Quinn, L. (2020) Misconceptions and Misapplications of Student-centered Approaches. In: Hoidn, S and Klemencic, M (eds.). *The Routledge International Handbook of Student-centered Learning and Teaching in Higher Education*. London: Routledge. p.109-120. ISBN: 9780367200527.

### Vorster, J.

Musara, E., Grant, C. and Vorster, J. (2020) Inclusion as Social Justice: Nancy Fraser's Theory in the South African Context. In: Mullen, C. A. (eds.). *Handbook of Social Justice Interventions in Education*. Springer International Handbooks of Education. Cham: Springer. p.1 - 20. [https://doi.org/10.1007/978-3-030-29553-0\\_107-1](https://doi.org/10.1007/978-3-030-29553-0_107-1).

Vorster, J. (2020) Academic Development: Autonomy pathways to gaining legitimacy. In: Winberg, C., McKenna, S. and Wilmot, K. (eds.). *Building knowledge in higher education: Enhancing teaching and learning with Legitimation Code Theory*. London: Routledge. p.272-289. ISBN: 9780367463335.

### Wilmot, K.

Winberg, C., McKenna, S., and Wilmot, K. (2020) 'Nothing so Practical as Good Theory': Legitimation Code Theory in Higher Education. In: Winberg, C., McKenna, S. and Wilmot, K. (eds.). *Building knowledge in higher education: Enhancing teaching and learning with Legitimation Code Theory*. London: Routledge. p.1-16. ISBN: 9780367463335.

Wilmot, K. (2020) Learning How to Theorize in Doctoral Writing: A Tool for Teaching and Learning. In: Winberg, C., McKenna, S. and Wilmot, K. (eds.). *Building knowledge in higher education: Enhancing teaching and learning with Legitimation Code Theory*. London: Routledge. p.126-141. ISBN: 9780367463335.

Winberg, C., McKenna, S., and Wilmot, K. (eds.). (2020) *Building knowledge in higher education: Enhancing teaching and learning with Legitimation Code Theory*. London: Routledge. ISBN: 9780367463335.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

### Clarence, S.

Clarence, S. (2020) Making visible the affective dimensions of scholarship in Postgraduate writing development work. *Journal of Praxis in Higher Education*. 2 (1). p.46-22.

### Chiappa, R.

Chiappa, R. (2020) Seeking Faculty Jobs: Exploring the Relationship Between Academic's Social Class of Origin and Hiring Networks in Chilean Universities. *Calidad de la Educación*. 52. p.205-238. 10.31619/caledu.n52.760.

### Kramm, N., Pallitt, N.M. and Solomon, K.M.

Czerniewicz, L., Agherdien, N., Badenhorst, J., Belluigi, D., Chambers, T., Chili, M., de Villiers, M., Felix, A., Gachago, D., Gokhale, C., Ivala, E., Kramm, N., Madiba, M., Mistri, G., Mgqwashu, E., Pallitt, N.M., Prinsloo, P., Solomon, K.M., Strydom, S., Swanepoel, M., Waghid, F and Wissing, G. (2020) A Wake-Up Call: Equity, Inequality and Covid-19 Emergency Remote Teaching and Learning. *Postdigital Science and Education*. 2. p.946-967.

### Pallitt, N.M.

Belluigi, D., Czerniewicz, L., Khoo, T.L., Algers, A., Buckley, L.A., Prinsloo, P., Mgqwashu, E., Camps, C., Brink, C., Marx, R., Wissing, G. and Pallitt, N.M. (2020) "Needs Must"? Critical reflections on the implications of the Covid19 'pivot online' for equity in higher education. *Digital Culture & Education*. ISSN: 1836 - 8301.

### Vorster, J.

Vorster, J. (2020) SOTL: A mechanism for understanding and finding solutions to teaching and learning challenges. *Scholarship of Teaching and Learning in the South*. 4(2). p.6 - 21.

## Peer Reviewed Subsidy-Earning Journal Research Publications

### Wilmot, K.

Wilmot, K. (2020) Building knowledge with theory: Unpacking complexity in doctoral writing. *Critical Studies In Teaching and Learning (CriSTaL)*. 8 (2). p.18-38.

## Peer Reviewed Proceedings

### Pallitt, N.

Pallitt, N., Gachago, D. and Bali, M. (2020) No Size Fits All: Design Considerations for Networked Professional Development in Higher Education. Proceedings of the Networked Learning Conference. *Networked Learning 2020*. Online. May 2020.



Photo: Simon Pamphilon

# Community Engagement Division

Diana Hornby  
Director

## Introduction

The year 2020 was unprecedented, changing the way everyone deals with their work and their personal life. The COVID-19 pandemic hit South Africa in early March, and the Rhodes University Community Engagement (RUCE) Division joined forces with other departments and institutions to share information and build capacity throughout our Makhanda.

Despite the challenges brought by the pandemic, the Division maintained its programmes and activities, working with our community partners through the unchartered waters of a global pandemic. RUCE not only kept the student volunteers involved in Community Engagement, but we, together with the students, used creative ways to innovate, maintain and strengthen relations.

In 2020 RUCE accumulated: two graduations, a Masters student in Pharmaceutical Chemistry and an Honours Sociology student supervised by one of the staff; one book chapter; seven workshops and presentations; one popular piece; six peer reviewed journal research publications (one non-subsidy-earning); one peer-reviewed proceeding; and one paper presented at a scientific conference.

## Postgraduates / Graduations

Nqowana, T. (2020) Masters in Pharmaceutical Chemistry. *"Monitoring of microbiological water quality in Makhanda with Grade 9 learners."* Supervisors: Professor Tandlich and Dr Paphitis.



RUCE (Nosipho Nkwinti, Thandie Nqowana & Joanna Bezerra) during level 5 in 2020.

Photo: Community Engagement



Mentor and Mentee having a session in 2020.

Photo: Community Engagement



Nosipho Nkwinti distributing seedlings.

Photo: Community Engagement



Alex and Lukhanyiso Cezula recording videos.

Photo: Community Engagement



RUCE Writing Retreat.

Photo: Community Engagement

De Kort, J. (2020) Honours in Sociology "What is the experience of community members in Knysna regarding plastic pollution and their perceptions of their role in solving it?" Supervisors: Dr Bezerra and Dr Mokhatla.

## Distinguished Visitors / International Visits

Due to the COVID-19 pandemic, RUCE did not have any visitors in 2020.

## Significant Research Aligned Events

Joana Carlos Bezerra spoke at the Creativity in Engaged Participatory Research in March 2020. It was in this workshop that she became aware of the DEEP Ocean call on creative ways to capture people's connection with the ocean. Later in 2020, Joana and a colleague applied for the funding, and their project was successful.

RUCE organised its first writing retreat in November 2020. Six staff members and two students were present. Everyone present was working on a writing piece. The writing retreat was a success and, if funds allow, we will organise it every year.

# PUBLICATIONS

## Books/Chapters/Monographs

Paphitis, S.A.

Paphitis, S.A. (2020) The possibility of addressing epistemic injustice through engaged research practice: reflections on a menstruation related critical health education project in South Africa. In: Reynolds, L and Sariola, S (eds.). *The Ethics and Politics of Community Engagement in Global Health Research*. New York: Routledge. p.110-120.

## Concerts, Exhibitions, Performances, Workshops, Events

Carlos Bezerra, J.

Carlos Bezerra, J. Speaker. Connecting through images. *Creativity in Engaged Participatory Research Workshop*. Rhodes University, Makhanda. South Africa. 10 - 11 March 2020.

Carlos Bezerra, J. Speaker. An Introduction to Service-Learning. *Webinar: An Introduction to Service-Learning*. Online, University of Zululand, Durban. South Africa. 2 September 2020.

Matyobeni, T. and Talbot, A.L.P.

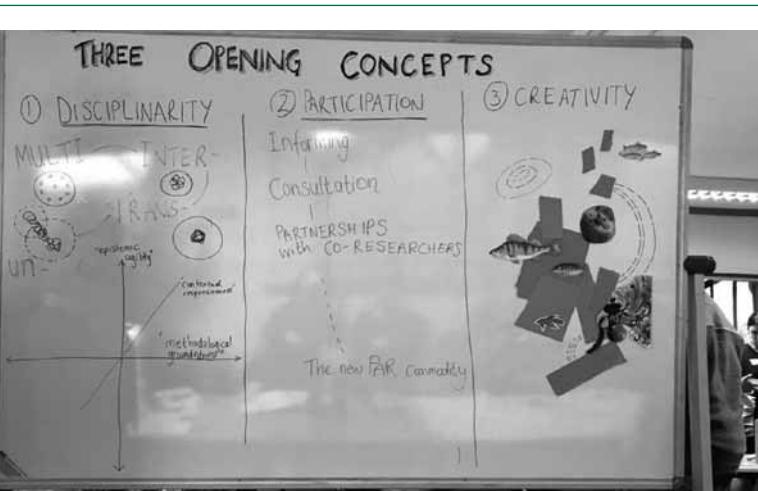
Matyobeni, T. and Talbot, A.L.P. Organiser, Facilitator. *Digital Storytelling Workshop - Train the Trainer*. Rhodes University, Makhanda. South Africa. 19 - 21 February 2020.

Matyobeni, T. and Talbot, A.L.P. Organiser, Facilitator. *Digital Storytelling Workshop - Train the Trainer*. Rhodes University, Makhanda. South Africa. 11 - 13 March 2020.

Matyobeni, T. and Talbot, A.L.P. Organiser, Facilitator. *Digital Storytelling Workshop - Train the Trainer*. Rhodes University, Makhanda. South Africa. 17 - 19 March 2020.

Matyobeni, T. and Talbot, A.L.P. Organiser, Facilitator. *Digital Storytelling Workshop - Red Cross Southern Africa*. Online, South Africa. 27 July - 7 August 2020.

Matyobeni, T. and Talbot, A.L.P. Organiser, Facilitator. Digital Storytelling - *Online Short Course*. Online. South Africa. 13 July - 7 September 2020.



First day at the Creativity Workshop.

Photo: Community Engagement

## Other Publications

Carlos Bezerra, J.

Mograbi, P.J., De Vos, A., Shackleton, C.M., Clements, H., Carlos Bezerra, J., Coetzer, K. and Maciejewski, K. (2020) *South Africa's land reform policies need to embrace social, economic, and ecological sustainability*. The Conversation. <<https://theconversation.com/south-africas-land-reform-policies-need-to-embrace-social-economic-and-ecological-sustainability-145571>>

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Paphitis, S.A. and Carlos Bezerra, J.

Duxbury, T., Paphitis, S.A., Carlos Bezerra, J. and Tandlich, R. (2020) Understanding Critical Concepts in Engaged Research: The Case of a Rural Health Development Project in South Africa. *New Trends in Qualitative Research*. 1 (1). p.81-103.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Carlos Bezerra, J.

Clements, H.S., De Vos, A., Carlos Bezerra, J., Coetzer, K., Maciejewski, K., Mograbi, P.J. and Shackleton, C.M. (2020) The relevance of ecosystem services to land reform policies: Insights from South Africa. *Land Use Policy*. 100. 104939.

Adam, I., Walker, T., Carlos Bezerra, J. and Clayton, A. (2020) Policies to reduce single-use plastic marine pollution in West Africa. *Marine Policy*. 116. 103928.

Clayton, A., Walker, T., Carlos Bezerra, J. and Adam, I. (2020) Policy responses to reduce single-use plastic marine pollution in the Caribbean. *Marine Pollution Bulletin*. p.111833.

Paphitis, S.A.

Macleod, C.I., Du Toit, R.R., Paphitis, S.A. and Kelland, L. (2020) Social and structural barriers related to menstruation across diverse schools in the Eastern Cape. *South African Journal of Education*. 40 (3). p.1-9.

Paphitis, S.A. and Hornby, D.

Kalyatanda, G.S., Archibald, L.K., Patnala, S., Paul-Satyaseela, M., Kiran, P.R., Srinivas, S., Byrne, A., Lin, Y., Chekuri, V.N., Ramphal, R., Shiffrin, A., Shankaran, S., Cho, J.J., Abbott, A., Edwards, M., Urbine, D., Lekharu, D., Moussa, H.M., Limson, J.L., Paphitis, S.A., Tandlich, R., Hornby, D. and Southwick, F. (2020) No human exists in isolation or as an island: the outcomes of a multidisciplinary, global, and context-specific COVID-19 consortium. *American journal of disaster medicine*. 15 (3). p.219-222.

## Peer Reviewed Proceedings

Duxbury, T., Carlos Bezerra, J. and Paphitis, S.A. Duxbury, T., Tandlich, R., Carlos Bezerra, J. and Paphitis, S.A. Building health resilience: An engaged, systems analysis and epistemically just approach to rural health development. *4th World Conference on Qualitative Research*. Lusofona University of Porto, Porto. Portugal. October 2019.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Hornby, D.

Hornby, D. The challenge of community based participatory research and learning cities. *UNESCO GLC/PASCAL Webinar*. Online. November 2020.



Photo: Simon Pamphilon



## Introduction

In 2020 the Library made gigantic strides in an effort to support a transition from onsite to online learning environments. The Library partnered with various divisions and support units to provide seamless access to resources and services in support of the teaching, learning, and research endeavours of the University. This report gives an overview of the research-related activities and engagements with students, academics and researchers.

## Significant Research Aligned Events

### 1. Digital scholarship Services

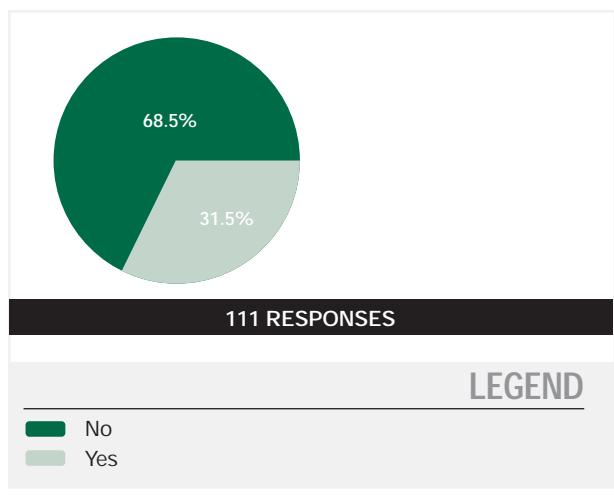
#### 1.1. Research Data Management survey

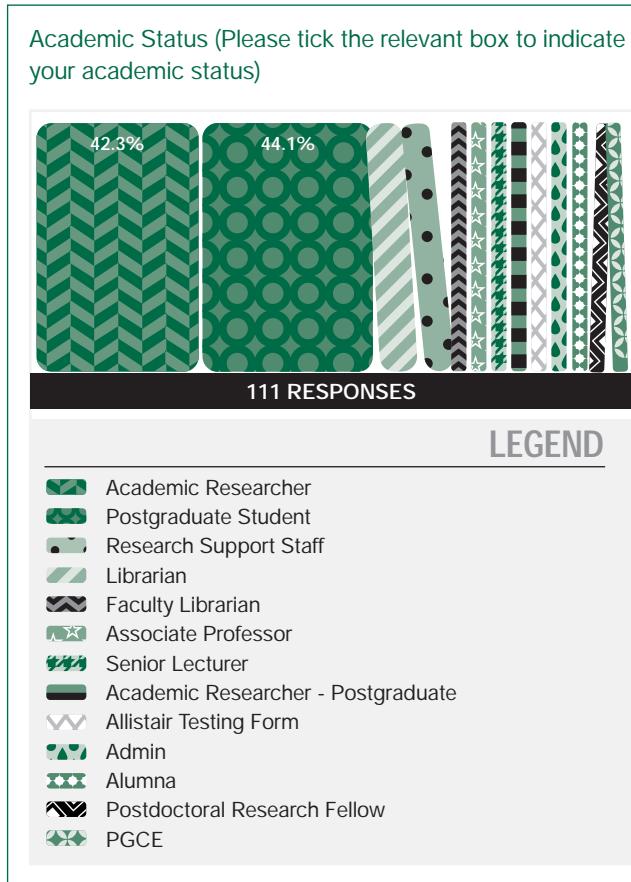
Subsequent to the official launch of the Figshare platform for storing and sharing research data and open educational resources, the Library conducted a survey to get an overview of data management practices, ascertain levels of awareness regarding different data management topics such as automatic data backups, data ownership, the relevance of data management plans, awareness of FAIR data principles and usage of research data repositories and most importantly, to identify the Research Data Management (RDM) needs of the Rhodes University Research Community.

Our RDM survey of 111 participants included Postgraduate students, academic researchers, research support staff, librarians, Associate Professors, and Senior Lecturers. As indicated in the figure below, Postgraduate students are leading by 44.1%, followed by academic researchers at 42.3%.

For noting is the finding reflected on the figure below, where 68.5% of respondents were not aware of the platform. This preliminary finding on awareness of the platform is a reason for concern and a need for a vibrant strategy to market the platform.

Are you aware of this institutional Figshare service?





## 2. Rhodes Digital Commons (RDCs)

A key focus of collection development via the RDCs is to ensure optimal visibility of research outputs as produced by Rhodes scholars. As part of the Rhodes Digital Commons project, there were 206 objects uploaded to the Rhodes Digital Commons by Debbie Martindale.

### 2.1. Archiving of the RU Research Output

In 2020 the following researchers now had their total institutional research output archived on the RDC: Professor Ros Dowse, Professor Fred William Ellery, Professor Shankar Aswani, Professor Sam Naidu, and Professor Anthea Garman, Professor Paul-Henri Bishoff, Professor Özlem Tastan-Bishop, Professor Makaiko Chitambo and Professor Adrienne Edkins. The researchers have been notified of this progress.

The researchers have extended thanks to the Library and showed their support in that they provided more research output to ensure the collection is as complete as possible. Below is a message from one of the prominent partners of the Library in the management of research data and objects:

*"A massive thank you with all this, you have been extremely helpful to us. I will also admit that I like the new system of lodging our publication data with our own institutional repository; handling data - and sometimes large volumes thereof - for publication*

*purposes is quite a nuisance these days, so knowing that we have such an efficient way of archiving makes the lives of all involved (authors and editors alike) much easier and smoother." - Professor Harilaos Tsikos (11 March 2020)*

Other institutional deposits to the RDC include 2020 research outputs as and when Web of Science and Elsevier new publication alerts are e-mailed to the Scholarly Communication Librarian. As a result of these alerts, two institutional research data objects were uploaded to Figshare:

**Professor Christopher McQuaid:** the article citation is archived on the repository, and the open data set is archived on Figshare

**Distinguished Professor Tebello Nyokong:** the open access article is archived on the repository, and the open data set is archived on Figshare

The Scholarly Communications Librarian tweeted all our Figshare deposits in September 2020 to create an altmetric for them. All subsequent submissions have been tweeted since. As part of the Rhodes Digital Commons project, our Scholarly Communications Librarian, Debbie Martindale, declined 1 Figshare submission by a Postdoctoral Fellow on the basis that it is better suited to be archived on the Rhodes Digital Commons repository.

### 2.2. Rhodes Research Data

Since the launch of Figshare as a research data management and Open Educational Resources platform at Rhodes mid-2020, nineteen (19) datasets, as well as twenty-two (22) Open Educational Resources, have been deposited. The submissions are directly due to the service being marketed and scholars having to comply to make datasets accessible for publication purposes.

Exposure of research outputs hosted on the Rhodes Research Data platform is considerably high as integration with academic interfaces, e.g., Google Scholar, and harvesters are optimally configured. The international exposure can be assessed based on the countries interacting with objects held on the platform. The following figure illustrates the top 25 countries interacting with the Rhodes Research Data platform, based on the local and global Internet traffic as shown here below:

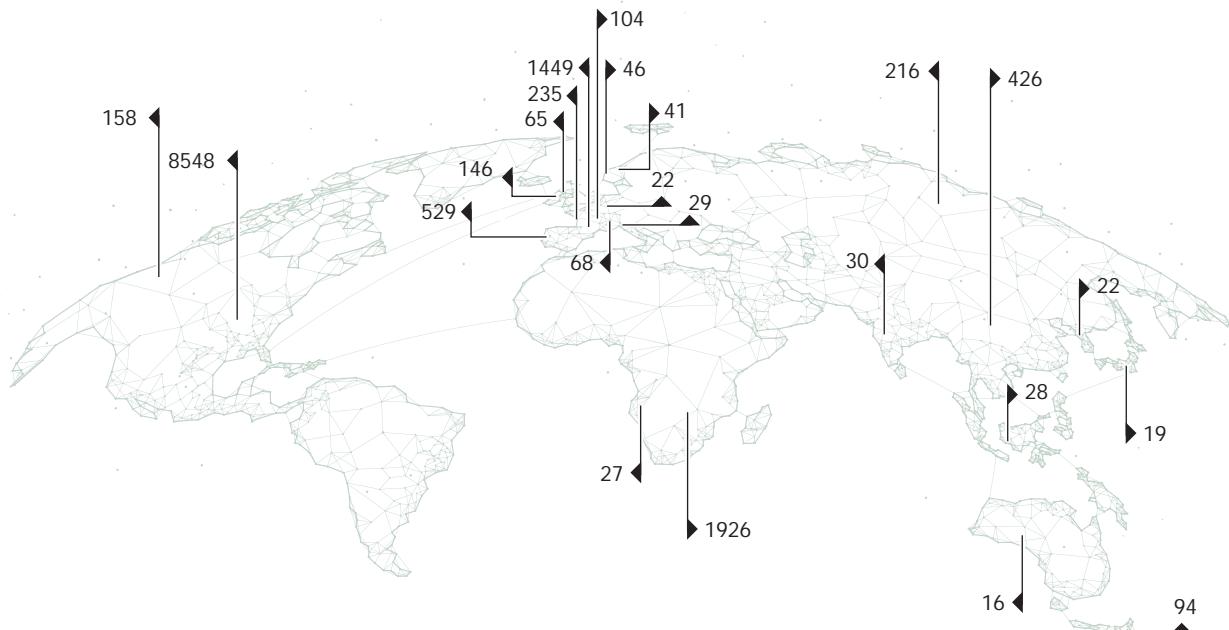
## 3. Scholarly Communication Services

A webinar presentation was held on 8th September, which was co-presented by Suzanne Wolhuter (Tech Transfer from the Research Office) and D Martindale (Figshare and Open Access) from the Library; it is accessible at, <https://www.youtube.com/watch?v=63V2wnXFfrU&feature=youtu.be>.

### 3.1. Researcher Profile Development and Management

ORCID Registrations and Profiles

## Top 25 Countries interacting with the Rhodes Research Data platform



United States (8548), South Africa (1926), Germany (1449), France (529), China (426) Netherlands (235), Russia (216), Canada (158), United Kingdom (146), Austria (104), New Zealand (94), Romania (90), Unknown (88), Turkey (68), Ireland (65), Finland (46), Norway (41), India (30), Ukraine (29), Indonesia (28), Namibia (27), Poland (22), South Korea (22), Japan (19) and Australia (16)

The Librarian: Scholarly Communication assisted 64 researchers and Postgraduate students with their ORCID registrations. Researchers must build their online researcher identity through building their ORCID researcher profile. To this end, the Librarian: Scholarly Communication assisted the following in building comprehensive ORCID profiles:

- Professor Graham Glover (Law Faculty)
- Ignatius Mbasu (School of Languages)
- Taryn de Vega (School of Journalism and Media Studies)
- Donna Mokoe (Postgraduate student)
- Lloyd Chigowe (Postgraduate student)
- Stefan (Postgraduate student)
- Zikhona (Postgraduate student)
- Vuyo Jamieson (Postgraduate student)
- Professor Ros Dowse (Pharmacy Faculty)
- Distinguished Professor Tebello Nyokong

During COVID-19 Lockdown, the need for virtual assistance in building ORCID profiles was identified. The Librarian: Scholarly Communication developed the following short How-To videos, which are accessible via the Library webpage under Tutorials:

- ORCID 1 Researcher ID Management
- ORCID 2 How to register for your ORCID number
- ORCID 3 How to build your ORCID Curriculum (CV) profile
- ORCID 4 How to link your other online researcher IDs to your ORCID
- ORCID 5 How to add research works to your ORCID profile

### 3.2. CrossRef Participation

The Rhodes Library Services is a CrossRef member (prefix 10.21504) since 2018, which allows for the registration of Digital Object Identifiers (DOIs), enhancing the exposure of research outputs within a community of more than 13000 organisations internationally.

The following material types are registered with CrossRef and DOIs assigned accordingly:

- Journal titles, issues, and articles on our journal hosting platform (OJS)
- Reports, working papers, and occasional papers as published by Rhodes entities
- Doctoral theses & dissertations

### Rhodes Digital Commons - Collection Growth

Materials	Material Type	2020 Additions	Year to date Additions
Digital Collections	Institutional Repository	2635	23616
	Rhodes Journal Services (articles)	0	980
	Research Data Sets	19	19
	Open Educational Resources	22	22

## 4. Reference Management tools (RMTs)

Reference Management Tools (RefWorks, Zotero, and Mendeley) store and manage references, insert citations, and create bibliographies in word documents. Rhodes University also uses Paperpile (a Google product) and Endnote (via the Clarivate Web of Science platform).

### 4.1. Researcher Assistance in using (RMTs) and research tools

- Zotero software installations and use instruction: This assistance was provided face-to-face with five researchers during the first quarter. During COVID-19 Lockdown, the Librarian: Scholarly Communication assisted six researchers via WhatsApp messages & calls and two home visits (COVID-19 protocols were practised).
- Mendeley software installations and use instruction: During COVID-19 Lockdown in the last quarter, the Librarian: Scholarly Communication assisted Yolisa Bomela (PhD candidate) face-to-face in the Library (with COVID-19 protocols followed).
- Citation Analysis: The Librarian: Scholarly Communication assisted Professor Ruth Simba to collate a comprehensive Citation Analysis in preparation for the renewal of her SARCHI Chair: Geopolitics and the Arts of Africa. (12 - 15 May 2020).

### 4.2. Other Research Support Tools

The Library facilitates access to the following research support tools:

- Google Scholar is used to broadly search for scholarly literature across a wide variety of disciplines and sources: articles, theses, books, conference proceedings, and our Rhodes Digital Commons. The software is also used for a more comprehensive citation analysis across publisher platforms. Other search engine and citation analysis tools used at Rhodes University are Dimensions (a Digital Science product) and Microsoft Academic.
- Clarivate Web of Science: a powerful research engine that provides discovery and access to peer-review publications and citation data. INCITES (a product of Clarivate Analytics) is a benchmarking & Analytics

customisable web-based research evaluation tool that helps researchers and institutions develop research strategies.

- ResearcherID is the software used for citation analysis.
- Publons is a service for researchers who wish to track, verify, and showcase their peer review and editorial contributions in academic journals.
- Endnote is the free version reference management tool
- SCOPUS: a comprehensive, curated abstract and citation database with enriched data and linked scholarly content. Scopus AuthorID is the software used for citation analysis. (Rhodes University does not subscribe to Scival (the benchmarking and analytics tool) by Elsevier.

The value of research support tools is difficult to ascertain, more so as the reason for use may be a requirement within a department beyond the Library Division, such as the Research Office. A key concern is the cost of InCites for 2020 versus its actual use; determining the availability of an alternative tool is vital if we are to continue subscribing to it. The continual subscription requires a conversation with relevant stakeholders on campus.

## 5. Research related projects

### 5.1. African Multiple Cluster Centres of Excellence (AMCCE)

The Library, as one of the key role-players in the University-wide collaboration with the University of Bayreuth (UBT) in the AMCCE project, met with a delegation of representatives of the project from 4 to 8 March 2020. The delegation consisted of the UBT Vice-Dean: Internationalisation, Professor Ute Fendler, the Vice- Dean: Research, Professor Erdmute Alber, and the Director: International Office, Dr Armin Heinemann. This opportunity focused on how the Library can facilitate outcomes as specified by the project, including hosting research data outputs, technical infrastructure, policies, and procedures.

In a meeting held on the 3rd of August, the various stakeholders agreed to the following groups and coordinators to facilitate several aspects of the development of the African

### Multiple Centres of Excellence:

- The Data Management, including metadata and catalogues Working Group (WG), will be organised by Anja R. Dreiser, University of Bayreuth.
- The Taxonomy and Ontology WG will be organised by Jonas Huisl, University of Bayreuth.
- The Technical Compliance WG will be organised by Wynand Van Der Walt, Rhodes University Library.
- The Copyright and Rights Management WG will be organised by Dr Petra C. Steiner, University of Bayreuth.

Elijah Madiba (ILAM) and Wynand van der Walt (RUL) represent Rhodes University on these working groups (WG). In preparation for the coordination of the Technical Compliance WG, a request was submitted to all participating institutions to provide extensive details of the current environment, including repository details, data types, metadata schemas, etc. The aim of this is to consider the possibility of a federated search and harvesting approach, as opposed to the need to host all the data at a specific institution.

A Copyright and Rights Management meeting, held on the 14th of December, highlighted the challenges of rights management and how the General Data Protection Regulation (GDPR) in the European Union affects research data management. The meeting, however, indicated through the discussion that the respective Ethical Clearance Committees need to be requested to address issues of data protection within the research processes. Dr Sulayman Sowe (Bayreuth), coordinator of the project, will discuss with the project managers at each institution.

The **Cory Library for Humanities Research** has engaged in a few critical research enhancing projects in 2020. Amongst these are:

### 5.2. Scramble for Africa Collaborative

The 'Scramble for Africa' project is a major digital project run by Adam Matthew, a specialist publisher based in the UK and Chicago that produces customised digital resources

based on the holdings of museums, art galleries and archives around the world. Rob Kinsey of Adam Matthew approached Rhodes University Library to consider participating in this project, which entails the selection and digitising of selected materials that are particularly relevant to the project. The proposed selection of material includes the Goldfields Collection, Mining and the economic situation in South Africa, material related to Cecil Rhodes and a selection of diaries from the Cory Library collections. Examples of diaries include the Diaries of Walter Carmichael, Sir George Edward Cory, Eadie David and George Murray amongst others.

The project is at a stage of entering into a signed memorandum of understanding with the publisher pending conclusions of deliberations on identified areas of concern. The issues include openness versus the commercialisation of the collection, ownership and copyright issues and embargo periods.

### 5.3. African vernacular project

A delegation from the Thabo Mbeki Foundation, led by Dr Barney Pityana, visited the Cory Library for Humanities Research on a fact-finding mission about primary manuscripts in the African vernacular. The foundation hopes to transcribe and prepare manuscripts in the African vernacular for publication. The project will be followed up in 2021.

### 5.4. Zietsman/Cradock 4 Inquest

The murders of Matthew Goniwe, Fort Calata, Sparrow Mkhonto and Sicelo Mhlauzi, known as the Cradock Four, have received renewed national attention. The Cory Library has been approached by national entities, including the National Prosecuting Authority of South Africa and the Human Rights Commission, involved in the inquest to make accessible the Zietsman/Goniwe Inquest documentation at Cory Library. The 27-volume collection, deemed the only known full archive of the previous inquests, has been digitised and will be processed to make it accessible to the public as part of our national heritage collections.

### "The People Versus The State - The Cradock 4"

RU Cory African Heritage Collections

RU Cory Andrew W. Mellon Foundation

RU Cory Apartheid, the Struggle and Anti-Apartheid Movement and Act

- Coloured National Convention
- Cory Rosemary Smith Collection
- Miscellaneous Acts of Defiance
- Apartheid - Legal Frameworks (1)
- Forced Removals and Evictions (1)
- Klipfontein, Cape Province - F
- Oxton and Zweedinga, Cape
- The People versus the State (3)
- RU Cory Churches Collections (29)
- RU Cory Diaries and Letters Collection
- RU Cory Family Trees and Genealogies
- RU Cory Fauna and Flora of the Eastern Cape
- RU Cory Finding Aids & Selected Inventories
- RU Cory Frontier Collections (255)
- RU Cory Gold Fields (582)
- RU Cory Grahamstown Collections (3)
- RU Cory Grahamstown Training Collection

Visit the COVID-19 Corona Virus South African Resource Portal on <https://sacoronavirus.co.za/>



The People versus the State - The Cradock Four: In June of 1985, Matthew Goniwe, Fort Calata, Sparrow Mkhonto and Sicelo Mhlauzi were arrested just outside of Port Elizabeth, South Africa. On route to Cradock, the four anti-apartheid activists were brutally murdered by the South African security police. The Foundation for Human Rights states that: "In 1987, a first inquest concluded that the Cradock Four had been killed by 'unknown persons'. Therefore, no one was prosecuted for assault or murder. A second inquest in 1989 found that the Cradock Four's deaths had been caused by the police. However, no individuals were named responsible. Again, no one was prosecuted. In 1999, six former police officers involved in the Cradock Four's arrest and murder appeared before the Amnesty Committee of the Truth and Reconciliation Commission (TRC), but none of them were granted amnesty." The initial inquest from 1987 to 1989, presided over by Magistrate E de Beer, concluded that the Cradock Four were killed by "unknown persons". A second inquest into the deaths of the Cradock Four was ordered in 1992 by the then President of South Africa, President FW de Klerk. This inquest presided over by Judge Neville Zietsman, came to the conclusion that the South African Police was responsible for the deaths, but no individual was implicated.

## 6. Postgraduate Support

**6.1. The Library participated in the Centre for Postgraduate Studies (CPGS) Postgraduate support programme online.**

- The Principal librarians, Linda Cartwright and Jill Otto, presented to the forum on 4th June a video entitled: *Postgraduate Orientation 2020* covering the following topics: Research Support, My Library Account; Interlibrary loans; accessing e-books; search databases; Creating search alerts; Rhodes Digital Commons
- The Principal Librarian, Thandiwe Menze, presented on Systematic Review on 5th August
- 38 Postgraduate students received assistance in different ways: in submitting their theses, some in registering their ORCID IDs
- The Librarian: Scholarly Communication also presented a ZOOM webinar on ORCID, social media and widespread research dissemination on 13th August

**6.2. The National Review of Doctoral Programmes:**

The Library participated in the various stakeholder interviews conducted by the Council on Higher Education (CHE) panel during a virtual site visit from the 26 - 30 of October. The Scholarly Communications Librarian, Debbie Martindale, assisted the narrator and film crew during their filming of the interview and the tour of Postgraduate spaces in the Library on 23rd October.

## 7. Distinguished Visitors / International Visits

### 7.1. Cory Library for Humanities Research

During the 1st term of 2020, Cory Library continued to assist high-profile/prominent “in-house” and international researchers, and also distinguished researchers from other universities as follows:

- **Distinguished Professor Paul Maylam**, Rhodes University Historian
- **Professor Julia Wells**, Rhodes University Emeritus Professor
- **Professor Jeff Peires**, Senior Research Associate, Cory Library
- **Emeritus Professor Dan Wylie**
- **Emeritus Professor Pat Irwin**
- **Dr Sandra Shell**, Senior Research Associate, Cory Library
- **Luvuyo Jacobs**, Rhodes University Communications Division

- **Professor Ncedile Saule**, University of Fort Hare
- **PhD candidate Stephanie Victor**, Amathole Museum
- **Professor Nomalanga Mkhize**, Resident Scholar
- **Professor Brian Willan**, University of London
- **Professor Kirk Helliker**, Rhodes University
- **Dr Janeke Thumbran**, Rhodes University

International visitors taken on guided tours during the 1st term of 2020:

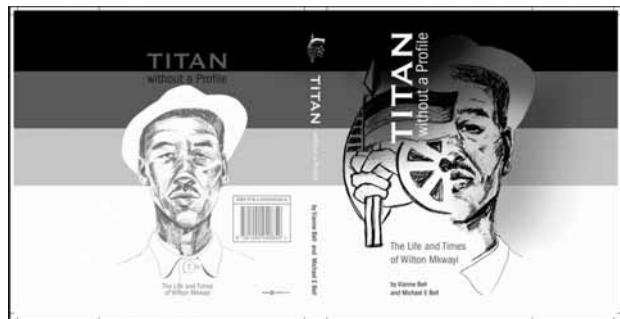
-	2
- Germany	1
- Egypt	4
- United Kingdom	3
- Caribbean	25
- International Researchers	42
- Local Postgraduate Researchers	2

## PUBLICATIONS

### Books/Chapters/Monographs

Bell, V. and Bell, M.E.

Bell, V. and Bell, M.E. (2020) *Titan without a Profile: The Life and Times of Wilton Mkwayi*. Makhanda: Cory Library for Humanities Research. ISBN: 9781990940859.



“The Life and Adventures of Eli Wiggill: 1820 Settler and Latter-Day Saint” (Work on Fred Woods’ manuscript). Brigham Young University indicated that it would contribute to the printing of the book.



Photo: Simon Pamphilon

## Department of Accounting

Associate Professor Kevin Maree  
Head of Department

### Introduction

The primary research stream in the Department of Accounting remains the Master of Commerce degree, specialising in Taxation. This programme continues to be led very successfully by Professor Lilla Stack. Six (6) students graduated with a Master of Commerce (Taxation) degree in 2020. In addition, Professor Stack also graduated a PhD candidate in 2020.

Professor John Williams contributed to a textbook and also co-authored a journal article as listed below.



**Professor John Williams.**  
Photo: Department of Accounting



**Professor Lilla Stack.**  
Photo: Department of Accounting

## PUBLICATIONS

### Books/Chapters/Monographs

Williams, J.M.

Williams, J.M. and Skae, F.O. (2020) *Principles of Management Accounting: The Question Book*. 3rd Ed. South Africa: Oxford University Press. ISBN: 9780190750596.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Williams, J.M.

Asah, F.T., Louw, L. and Williams, J.M. (2020) The availability of credit from the formal financial sector to small and medium enterprises in South Africa. *Journal of Economic and Financial Sciences*. 13(1). p.1-10. <https://doi.org/10.4102/jef.v13i1.510>.



Photo: Simon Pamphilon

# Department of Anthropology

Associate Professor Michelle Cocks  
Head of Department

## Introduction

The Department of Anthropology research engagements were severely impacted and compromised by the COVID-19 global pandemic.

During the Level 1 COVID-19 lockdown, Dr Dominique Santos undertook research funded by the Centre for African Studies to explore the experiences of subsistence fishers and their access to water commons at Kenton-On-Sea.

Dr Santos also undertook a curatorial role for the National Arts Festival Department of Arts and Culture funded *Ways of Listening* project together with sound artist James Webb working with community members to reimagine the role and purpose of the 1820 Settler's Monument in Makhanda.

Together with *Ingcungcu Community Development* and *Return to Origin*, she also coordinated workshops and an exhibition to explore the intersections of sustainable food systems, land & water, belonging and memory in the township of Ekuphumleni, Kenton-On-Sea. These activities were supported by a grant from the Goethe Institute and the British Council. Her reflections on these engagements will contribute to a number of various research outputs.

Professor Shankar Aswani's research activities carried out in coastal communities of East Africa, and the Solomon Islands had to be abandoned due to travel restrictions imposed for most of 2020.



Kariega Estuary, Kenton-on-Sea, Eastern Cape. These waters were the focus of conflict and discontent between subsistence fishermen and authorities when access to these commons was prevented during the Level 5 lockdown during the COVID-19 pandemic in South Africa.  
Photo: Department of Anthropology

## PUBLICATIONS

### Peer Reviewed Subsidy-Earning Journal Research Publications

De Wet, C.

De Wet, C. and Mgujulwa, E.A. (2020) Innovative reworkings of ancestor ritual as a response to forced villagisation: an Eastern Cape example. *Anthropology Southern Africa*. 43 (4). p.246-258.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Aswani, S.

Aswani, S., Ferse, S.C.A., Stabler, M. and Chong-Montenegro, C. (2020) Detecting change in local ecological knowledge: An application of an index of taxonomic distinctness to an ethno-ichthyological classification in the Solomon Islands. *Ecological Indicators*. 119. p.106865.

**Food & Flower Garden replanted after site move at Community Kitchen, Horseplain Informal Settlement, Kenton-on-Sea, Eastern Cape.** Existing informal community projects adapted during the COVID-19 pandemic to provide essential food preparation and distribution to shack dwellers whose precarious livelihoods were abruptly disrupted by lockdowns to control the spread of the virus. Establishing food gardens became a key strategy for long-term sustainability, but one that was difficult to sustain as new municipal ERF boundaries were laid over existing structures to accommodate the need for more low-cost housing. This community kitchen was one of those that had to relocate and start again.

Photo: Department of Anthropology



Sekadende, B., Scott, L., Anderson, J., **Aswani, S.**, Francis, J., Jacobs, Z., Jebri, F., Jiddawi, N., Kamukuru, A.T., Kelly, S. and Kizenga, H., Kuguru, B., Kyewalyanga, M., Noyon, M., Nyandwi, N., Painter, S.C., Palmer, M., Raitsos, D.E., Roberts, M., Sailley, S.F., Samoilys, M., Sauer, W.H.H., Shayo, S., Shaglude, Y., Taylor, S.F.W., Wihsgott, J. and Popova, E. (2020) The small pelagic fishery of the Pemba Channel, Tanzania: What we know and what we need to know for management under climate change. *Ocean & Coastal Management*, 197, p.105322.

**Aswani, S.** (2020) New Directions in Maritime and Fisheries Anthropology. *American Anthropologist*. 122 (3). p.473-486.

Malherbe, W., Sauer, W.H.H. and **Aswani, S.** (2020) Social capital reduces vulnerability in rural coastal communities of Solomon Islands. *Ocean and Coastal Management*. 191. p.105186.

Hayward, J.M.

Hayward, J.M., Komanisi, M.P. and Ngqila, K.H. (2020) Canasseus Masilo Lamla (1943 - 2019). *Anthropology Southern Africa*. 43 (1). p.43-47.



**Traditional stone technology for grinding maize, Bulungulu, Eastern Cape, South Africa.** The Sustainable Together project explores the consequences of disconnection from working with the land as communities are incorporated into wage labour and cash economies. Using memory, storytelling and food, the possibilities for remembering old ways and repurposing them for the contemporary world and its challenges, are explored as the basis for the restoration of self-worth and a sense of belonging, working towards a community exhibition.

Photo: Department of Anthropology



Photo: Simon Pamphilon

# Department of Biochemistry and Microbiology

**Professor Heinrich Hoppe**  
Head of Department

## Introduction

The Department of Biochemistry and Microbiology hosts eleven (11) academic staff members, including two (2) DST/NRF SARChI Chairs in the Molecular and Cellular Biology of the Eukaryotic Stress Response (Professor Adrienne Edkins) and Marine Natural Products Research (Professor Rosemary Dorrington), as well as the Director of the Research Unit in Bioinformatics (RUBi; Professor Özlem Tastan-Bishop).

Professor Edkins is also the Director of the Biomedical Biotechnology Research Unit (BioBRU), which includes two (2) staff members of the Biotechnology Innovation Centre. All staff members are actively engaged in research and supervised a total of thirty-three (33) MSc and fifty-three (53) PhD students as well as nine (9) Postdoctoral Fellows in 2020. Research conducted by individual research groups spans a wide range of topics and sub-disciplines. Basic biomedical research projects include natural product and synthetic chemistry drug discovery programmes using computational and laboratory-based methods aimed at pathogenic bacteria, breast cancer, malaria, trypanosomiasis, tuberculosis, HIV, SARS coronavirus, diabetes and obesity. It further includes research into the stress response machinery of cancer and cancer stem cells, as well as its role in Kaposi's sarcoma-associated herpesvirus biology, the interaction of picornaviruses and TB and *Salmonella* bacteria with host cells and the identification of viruses associated with gastroenteritis in water sources. Research into biotechnological applications includes the investigation of mycorrhizal fungi for application as biofertilizers in horticulture, agriculture and forestry, the use of enzymes to generate prebiotics, foods/feeds and products of biomedical significance, the exploitation of insect viruses for agricultural pest control, and studying microbiome contributions to aquaponic crop production. An additional research field is an investigation of soil microbial ecology in Antarctica. Research was significantly curtailed in 2020 due to the limitation of research facility access caused by lockdown restrictions in response to the COVID pandemic. Nonetheless, the department generated sixty-six (66) authored or co-authored peer-reviewed journal articles and five (5) books/book chapters in 2020.

## Postgraduates / Graduations

The department graduated nineteen (19) BSc (Hons), fifteen (15) MSc and twelve (12) PhD students in 2020. A source of pride for the department and Rhodes University was the entry of Blessing Mabate, a PhD candidate supervised by Professor Brett Pletschke, in the 2020 national 3MT (Three-minute thesis) competition which took place online. Blessing emerged as one of the two (2) joint first prize winners (both from Rhodes University) in this national competition, with his presentation entitled: *"Breaking the walls of diseases with seaweed"*. The presentation was based on his Doctoral study of bioactive compounds in brown seaweeds for the treatment of diabetes and cancer.

## Distinguished Visitors / International Visits

Travel restrictions imposed by the COVID pandemic precluded international visits to and from the Department.

## Significant Research Aligned Events

For her sustained prolific research outputs, Professor Özlem Tastan-Bishop, the Director of RUBi, was awarded the Vice-Chancellor's Distinguished Senior Research Award for 2020. She was also awarded an "African Challenge Grant" by the Medicines for Malaria Venture (MMV) based in Geneva. The grant enables her to access the MMV database of ~200 000 compounds to perform high throughput *in silico* screening against selected malarial drug targets to identify allosteric inhibitors. In addition, she successfully coordinated and led a collaborative application to the African Academy of Sciences for a "Funding for COVID-19 Research and Development Goals for Africa" award to the value of R 2.9 million for two years. The project entitled "Consortium for Rapid COVID-19 Drug Development in Africa" includes co-investigators in the department (Professor Edkins and Professor Hoppe), as well as researchers in Kenya and Cameroon. She was invited to present a talk entitled "Allosteric site of SARS-CoV-2 main protease as a drug target in the presence of its emerging mutations" at the 7th Annual Congress of the European Society for Translational Medicine on Covid-19 (EUSTM).

Professor Rosemary Dorrington, the SARCHI Chair (Marine Natural Products Research) and Professor Mathew Upton of the University of Plymouth are the Principal Investigators of a multi-institutional research project proposal which was awarded R30 million for three (3) years by the SA and UK Medical Research Council Newton Fund Antibiotics Accelerator Initiative in 2020. This Initiative brings together scientists from SA and the UK to establish a cutting-edge drug discovery platform, the SA/UK MRC ADD (Antimicrobial Drug Discovery) Hub, which seeks to harness resources contained in South Africa's natural marine and terrestrial biota to discover new antibiotics to combat antimicrobial resistance. The ADD Hub is located within the Biological Sciences building at Rhodes. Screening of compounds is already underway at the Hub, having achieved a milestone of 2000 screened compounds one year after commencement of the project. Compounds with pharmaceutical potential are being further characterized and assessed, and new molecules arising from the Hub's research will feed into a drug discovery pipeline that aims to develop the next generation of antibiotics. Through this Initiative, Professor Dorrington brings together resources and knowledge within the Department of Biochemistry and Microbiology, the Department of Chemistry (Professor R Krause, Professor P Kaye), and the NRF South African Institute for Aquatic Biodiversity (SAIAB) at Rhodes, as well as collaborators from twelve (12) SA and five (5) UK institutions.



**Biochemistry PhD candidate Blessing Mabate, the co-winner of the 2020 nationwide 3-minute thesis (3MT) competition with his presentation entitled "Breaking the walls of diseases with seaweed".**

Photo: Department of Biochemistry & Microbiology

The DST/NRF SARCHI Chair (Molecular and Cellular Biology of the Eukaryotic Stress Response) of Professor Adrienne Edkins was renewed for a further five (5) years and upgraded to Tier 1 status in 2020. She was awarded an additional grant from the Poliovirus Research Foundation to study the role of proteostasis in HIV-related cancers, as well as a collaborative grant with a member of the department, Dr Garth Abrahams, from the GlaxoSmithKline (GSK) Tres Cantos Open Lab Foundation. The award enables the screening of a GSK chemical compound library to identify new hit compounds for the treatment of tuberculosis, using a novel drug target assay developed in BioBRU. Professor Edkins was further nominated as a Fellow of the Cell Stress Society International (CSSI), which is the leading international society involved in cell stress research, as well as receiving the nomination of the South African National Chair of Membership for the International Chemical Biology Society (ICBS), and was invited to give a talk at the CSSI First Virtual International Symposium on Cellular and Organismal Stress Responses in November 2020.

The Deputy Dean (Research) of Science, Professor Joanna Dames, was awarded the Fertilizer Association of South Africa (FERTASA) Silver research medal award (2020) for her valuable contribution to the knowledge and understanding of mycorrhizal fungi and their interaction with plants and other soil microbes. Her research promotes the development and introduction of biofertilizers to replace more conventional plant fertilizers. In addition, Professor Brett Pletschke was awarded an improved NRF rating of B2 for 2021-26 at the end of 2020.

# PUBLICATIONS

## Books/Chapters/Monographs

Dames, J.F.

Van der Walt, R., Dames, J.F. and Hawley-McMaster, G. (2020) *Fungi and Lichens of the Limpopo Valley & Mapungubwe National Park*. Musina: Retha van der Walt. ISBN: 9780620904056.

Kirigin, E., Yapp, D.K., Okpara, M.O., Whitehouse, A. and Edkins, A.L.

Kirigin, E., Yapp, D.K., Murphy, J.C., McDonnell, E., Okpara, M.O., Whitehouse, A. and Edkins, A.L. (2020) Regulation of Kaposi's Sarcoma-Associated Herpesvirus Biology by Host Molecular Chaperones. In: Asea, A.A.A. and Kaur, P. (eds.). *Heat Shock Proteins in Human Diseases. Heat Shock Proteins*. Dordrecht: Springer. p.167-196. ISBN: 9783030231576.

Malgas, S., Mafa, M.S. and Pletschke, B.I.

Malgas, S., Mafa, M.S. and Pletschke, B.I. (2020) The Effects of Xylanase Synergistic Interactions During Lignocellulose Degradation and Their Significance for Industry. In: Shrivastava, S. (eds.). *Industrial Applications of Glycoside Hydrolases*. Singapore: Springer Nature Singapore. p.229-246. ISBN: 9789811547669.

Malgas, S., Mcabayi, L., Mathibe, B.N., Thoresen, M., Mafa, M.S. and Pletschke, B.I.

Malgas, S., Mcabayi, L., Mathibe, B.N., Thoresen, M., Mafa, M.S., Le Roes-Hill, M., Van Zyl, W.H. and Pletschke, B.I. (2020) Enzymatic path to bioconversion of lignocellulosic biomass. In: Ferreira Filho, E.X., de Souza Moreira, L.R., de Aquino Ximenes, E. and Sanchez Farinas, C. (eds.). *Recent Advances in Bioconversion of Lignocellulose to Biofuels and Value Added Chemicals within the Biorefinery Concept*. Amsterdam, The Netherlands: Elsevier. p.5-32. ISBN: 9780128182239.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Mafa, M.S., Malgas, S. and Pletschke, B.I.

Mafa, M.S., Malgas, S., Bhattacharya, A., Rashamuse, K. and Pletschke, B.I. (2020) The Effects of Alkaline Pretreatment on Agricultural Biomasses (Corn Cob and Sweet Sorghum Bagasse) and Their Hydrolysis by a Termite-Derived Enzyme Cocktail. *Agronomy*. 10 (8): 11211.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Amusengeri, A., Tata, R.B. and Tastan-Bishop, Ö.

Amusengeri, A., Tata, R.B. and Tastan-Bishop, Ö. (2020) Understanding the Pyrimethamine Drug Resistance Mechanism via Combined Molecular Dynamics and Dynamic Residue Network Analysis. *Molecules*. 25 (4): 904.

Beckley, S.J., Hunter, M.C., Kituyi, S.N., Wingate, I., Chakraborty, A., Schwarz, K., Makhubu, M.P., Rousseau, R.P., Yapp, D.K., De La Mare, J.A., Blatch, G.L. and Edkins, A.L.

Beckley, S.J., Hunter, M.C., Kituyi, S.N., Wingate, I., Chakraborty, A., Schwarz, K., Makhubu, M.P., Rousseau, R.P., Ruck, D.K., De La Mare, J.A., Blatch, G.L. and Edkins, A.L. (2020) STIP1/HOP Regulates the Actin Cytoskeleton through Interactions with Actin and Changes in Actin-Binding Proteins Cofilin and Profilin. *International Journal of Molecular Sciences*. 21 (9): 3152.

Blatch, G.L.

Andreassend, S.K., Bentley, S.J., Blatch, G.L., Boshoff, A. and Keyzers, R.A. (2020) Screening for small molecule modulators of Trypanosoma brucei Hsp70 chaperone activity based upon alcyonarian coral-derived natural products. *Marine Drugs*. 18 (2):81.

Dutta, T., Singh, H., Gestwicki, J.E. and Blatch, G.L. (2020) Exported plasmodial J domain protein, PFE0055c, and PfHsp70-x form a specific co-chaperone-chaperone partnership. *Cell Stress and Chaperones*. 26. p.355-366.

Boateng, R.A., Tastan-Bishop, Ö. and Musyoka, T.M.

Boateng, R.A., Tastan-Bishop, Ö. and Musyoka, T.M. (2020) Characterisation of plasmodial transketolases and identification of potential inhibitors: an *in silico* study. *Malaria Journal*. 19: 442.

Brooks, M.

Foster, R.M., Childs, A.R., Brooks, M., Farthing, M.W., Butler, E.C. and Potts, W.M. (2020) Quantifying the impacts of abrasion and bacterial transfer when fish are exposed to sand during a catch-and-release event. *African Journal of Marine Science*. 42 (3). p.307-314.

Ismail, M., Brooks, M., van Baaren, J. and Albittar, L. (2020) Synergistic effects of temperature and plant quality, on development time, size and lipid in *Eccritotarsus eichhorniae*. *Journal of Applied Entomology*. 145 (3). p.239-249..

Chakraborty, A. and Edkins, A.L.

Chakraborty, A. and Edkins, A.L. (2020) Hop depletion reduces HSF1 levels and activity and coincides with reduced stress resilience. *Biochemical and Biophysical Research Communications*. 527 (2). p.440-446.

Chakraborty, A., Boel, N.M.E. and Edkins, A.L.

Chakraborty, A., Boel, N.M.E. and Edkins, A.L. (2020) HSP90 Interacts with the Fibronectin N-terminal Domains and Increases Matrix Formation. *Cells*. 9 (2): 272.

Chakraborty, A., Vukea, N., Dingle, L.M.K., Samson, W.J., De La Mare, J.A. and Edkins, A.L.

Maikoo, S., Chakraborty, A., Vukea, N., Dingle, L.M.K., Samson, W.J., De La Mare, J.A., Edkins, A.L. and Booyens, I.N. (2020) Ruthenium complexes with *mono*- or *bis*-heterocyclic chelates: DNA/BSA binding, antioxidant and anticancer studies. *Journal of Biomolecular Structure and Dynamics*. 39 (11). p.4077-4088.

Chartier Fitzgerald, V. and Dames, J.F.

Chartier Fitzgerald, V., Dames, J.F. and Hawley, G. (2020) Screening of ectomycorrhizal and other associated fungi in South African forest nurseries. *Southern Forests*. 82 (4). p.377-383.

Chartier Fitzgerald, V., Dames, J.F. and Hawley, G. (2020) Biological control potential of ectomycorrhizal fungi against *Fusarium circinatum* on *Pinus patula* seedlings. *Biocontrol Science and Technology*. 30 (8). p.818-829.

Chifetete, V.W. and Dames, J.F.

Chifetete, V.W. and Dames, J.F. (2020) Mycorrhizal Interventions for Sustainable Potato Production in Africa. *Frontiers in Sustainable Food Systems*. 4: 593053.

Daub, C.D., Mabate, B., Malgas, S. and Pletschke, B.I.

Daub, C.D., Mabate, B., Malgas, S. and Pletschke, B.I. (2020) Fucoidan from *Ecklonia maxima* is a powerful inhibitor of the diabetes-related enzyme,  $\text{E}\beta\text{-glucosidase}$ . *International Journal of Biological Macromolecules*. 151. p.412-420.

Diallo, B.N. and Tastan-Bishop, Ö.

Subramaniyam, S., Yang, S., Diallo, B.N., Fanshu, X., Lei, L., Li, C., Tastan-Bishop, Ö. and Bhattacharyya, S. (2020) Oral Phytothymol ameliorates the stress induced IBS symptoms. *Scientific Reports*. 10: 13900.

Dingle, L.M.K., Cash, D., De La Mare, J.A., Laming, D., Hoppe, H.C. and Edkins, A.L.

Mbaba, M., Dingle, L.M.K., Cash, D., De La Mare, J.A., Laming, D., Taylor, D., Hoppe, H.C., Edkins, A.L. and Khanye, S.D. (2020) Repurposing of a polymer precursor: Synthesis and *in vitro* medicinal potential of ferrocenyl 1,3-benzoxazine derivatives. *European Journal of Medicinal Chemistry*. 187: 111924.

Dingle, L.M.K., Chakraborty, A. and Edkins, A.L.

Maikoo, S., Dingle, L.M.K., Chakraborty, A., Xulu, B., Edkins, A.L. and Booyens, I.N. (2020) Synthetic, characterization and cytotoxic studies of ruthenium complexes with Schiff bases encompassing biologically relevant moieties. *Polyhedron*. 184: 114569.

Dingle, L.M.K., Swart, T., Cash, D., Laming, D., De La Mare, J.A., Hoppe, H.C. and Edkins, A.L.

Mbaba, M., Dingle, L.M.K., Swart, T., Cash, D., Laming, D., De La Mare, J.A., Taylor, D., Hoppe, H.C., Biot, C., Edkins, A.L. and Khanye, S.D. (2020) The *in Vitro* Antiplasmodial and Antiproliferative Activity of New Ferrocene-Based a-Aminocresols

Targeting Hemozoin Inhibition and DNA Interaction. *Chembiochem*. 21. p.2643-2658.

**Dorrington, R.A. and Isemonger, E.W.**  
Rishworth, G.M., Dodd, C., Perissinotto, R., Bornman, T.G., Adams, J.B., Anderson, C.R., Cawthra, H.C., **Dorrington, R.A.**, du Toit, H., Edworthy, C., Gibb, R.A., Human, L.R.D., **Isemonger, E.W.**, Lemley, D.A., Miranda, N.A.F. Peer, N., Raw, J.L., Smith, A.M., Steyn, P.P., Strydom, N.A., Teske, P.R. and Welman, S. (2020) Modern supratidal microbialites fed by groundwater: functional drivers, value and trajectories. *Earth Science Reviews*. 210: 10364.

**Hoppe, H.C.**  
Tlapi, D.B., Ramaite, I.D.I., Anokwuru, C.P., Van Ree, T. and **Hoppe, H.C.** (2020) *In Vitro* Studies on Antioxidant and Anti-Parasitic Activities of Compounds Isolated from *Rauvolfia caffra* Sond. *Molecules*. 25: 3781.

Tonisi, S., Okaiyeto, K., **Hoppe, H.C.**, Mabinya, L.V., Nwodo, U.U. and Okoh, A.I. (2020) Chemical constituents, antioxidant and cytotoxicity properties of *Leonotis leonurus* used in the folklore management of neurological disorders in the Eastern Cape, South Africa. *3 Biotech*. 10: 141.

Okaiyeto, K., **Hoppe, H.C.** and Okoh, A.I. (2020) Plant-Based Synthesis of Silver Nanoparticles Using Aqueous Leaf Extract of *Salvia officinalis*: Characterization and its Antiplasmodial Activity. *Journal of Cluster Science*. 32. p.101-109.

Mbosso Teinkela, J.E., Siwe Noundou, X., Mimba, J.E.Z., Meyer, F., Tabouguia, O.M., Nguedia, J.C.A., **Hoppe, H.C.**, **Krause, R.W.M.**, Wintjens, R. and Azebaze, G.A.B. (2020) Compound isolation and biological activities of *Piptadeniastrum africanum* (hook.f.) Brennan roots. *Journal of Ethnopharmacology*. 255: 112716.

**Hoppe, H.C., Isaacs, M. and Mnkandhla, D.**  
Adeyemi, C.M., Hoppe, H.C., Isaacs, M., Mnkandhla, D., Lobb, K.A., Klein, R. and Kaye, P.T. (2020) Synthesis and anti-parasitic activity of N-benzylated phosphoramidic Mg<sup>2+</sup>-chelating ligands. *Bioorganic Chemistry*. 105: 104280.

**Isaacs, M.**  
Eze, F.I., Siwe Noundou, X., Isaacs, M., Patnala, S., Osadebe, P.O. and **Krause, R.W.M.** (2020) Anti-cancer and anti-trypanosomal properties of alkaloids from the root bark of *Zanthoxylum leprieurii* Guill and Perr. *Tropical Journal of Pharmaceutical Research*. 19 (11). p.2377-2383.

**Isaacs, M. and Hoppe, H.C.**  
Adeyemi, C.M., Conibear, A.C., Mutorwa, M.K., Nokalipa, I.C., Isaacs, M., Mnkandhla, D., Hoppe, H.C., Lobb, K.A., Klein, R. and Kaye, P.T. (2020) Synthesis and Anti-parasitic Activity of Achiral N-Benzylated Phosphoramidic Acid Derivatives. *Bioorganic Chemistry*. 101: 103947.

Christopher, R., Mgani, Q.A., Nyandoro, S.S., Rousseau, A.L., **Isaacs, M. and Hoppe, H.C.** (2020) A new indole alkaloid and other constituents from *Monodora minor* and *Uvaria tanzaniae*: their antitrypanosomal and antiplasmodial evaluation. *Natural Product Research*. 10.1080/14786419.2019.1710705.

Odame, F., Hosten, E., Krause, J., **Isaacs, M.**, **Hoppe, H.C.**, Khanye, S.D., Sayed, Y., Frost, C., **Lobb, K.A.** and Tshentu, Z.R. (2020) Synthesis, Characterization and Biological Activity of Some Dithiourea Derivatives. *Acta Chimica Slovenica*. 67 (3). p.764-777.

Zulu, A.I., Oderinlo, O., Kruger, C., Isaacs, M., **Hoppe, H.C.**, Smith, V.J., Veale, C.G.L. and Khanye, S.D. (2020) Synthesis, Structure and *In Vitro* Anti-Trypanosomal Activity of Non-Toxic Arylpyrrole-Based Chalcone Derivatives. *Molecules*. 25 (7): 1668.

**Isemonger, E.W. and Dorrington, R.A.**  
Waterworth, S.C., **Isemonger, E.W.**, Rees, E.R., **Dorrington, R.A.** and Kwan, J. (2020) Conserved bacterial genomes from two geographically isolated peritidal stromatolite formations shed light on potential functional guilds. *Environmental Microbiology Reports*. 13 (2). p.126-137.

**Isemonger, E.W., Isaacs, M. and Dorrington, R.A.**  
Buttner, S.H., **Isemonger, E.W.**, Isaacs, M., Van Niekerk, D., Sipler, R.E. and **Dorrington, R.A.** (2020) Living phosphatic stromatolites in a low-phosphorus environment: Implications for the use of phosphorus as a proxy for phosphate levels in paleo-systems. *Geobiology*. 19 (1). p.35-47.

**Kasozi, N. and Wilhelmi, B.**  
Kasozi, N., Kaiser, H. and **Wilhelmi, B.** (2020) Metabarcoding Analysis of Bacterial Communities Associated with Media Grow Bed Zones in an Aquaponic System. *International Journal of Microbiology*. 2020 (8884070). p.1-10.

**Khairallah, A., Ross, C. and Tastan-Bishop, Ö.**  
Khairallah, A., Ross, C. and **Tastan-Bishop, Ö.** (2020) Probing the Structural Dynamics of the *Plasmodium falciparum* Tunneling-Fold Enzyme 6-Pyruvoyl Tetrahydropterin Synthase to Reveal Allosteric Drug Targeting Sites. *Frontiers in Molecular Biosciences*. 7 (575196). p.1-17.

**Khairallah, A., Tastan-Bishop, Ö. and Moses, V.**  
Khairallah, A., **Tastan-Bishop, Ö.** and Moses, V. (2020) AMBER force field parameters for the Zn (II) ions of the tunneling-fold enzymes GTP cyclohydrolase I and 6-pyruvoyl tetrahydropterin synthase. *Journal of Biomolecular Structure and Dynamics*. 2020 (2020). p.1-18.

**Kituyi, S.N.**  
Mukavi, J.W., Mayeku, P.W., Nyaga, J.M. and **Kituyi, S.N.** (2020) *In vitro* anti-cancer efficacy and phyto-chemical screening of solvent extracts of *Kigelia africana* (Lam.) Benth. *Helijon*. 6 (2020). p.1-4.

**Mafa, M.S., Malgas, S. and Pletschke, B.I.**  
**Mafa, M.S., Malgas, S., Rashamuse, K. and Pletschke, B.I.** (2020) Delineating functional properties of a cello-oligosaccharide and B-glucan specific cellobiohydrolase (GH5\_38): Its synergism with Cel6A and Cel7A for B-(1,3)-(1,4)-glucan degradation. *Carbohydrate Research*. 495 (2020). p.1-8.

**Mafa, M.S., Dirr, H.W., Malgas, S., Krause, R.W.M., Rashamuse, K. and Pletschke, B.I.** (2020) A Novel Dimeric Exoglucanase (GH5\_38): Biochemical and Structural Characterisation towards its Application in Alkyl Cellobioside Synthesis. *Molecules*. 25 (746). p.1-20.

**Malgas, S. and Pletschke, B.I.**  
**Malgas, S. and Pletschke, B.I.** (2020) Combination of CTec2 and GH5 or GH26 Endo-Mannanas for Effective Lignocellulosic Biomass Degradation. *Catalysts*. 10 (2020). p.1-8.

**Malgas, S., Kwanya Minghe, V.M. and Pletschke, B.I.** (2020) The effect of hemicellulose on the binding and activity of cellobiohydrolase I, Cel7A, from *Trichoderma reesei* to cellulose. *Cellulose*. 27 (2020). p.781-797.

**Malgas, S., Rose, S.H., Van Zyl, W.H. and Pletschke, B.I.** (2020) Enzymatic Hydrolysis of Softwood Derived Paper Sludge by an *In Vitro* Recombinant Cellulase Cocktail for the Production of Fermentable Sugars. *Catalysts*. 10 (775). p.1-17.

**Manyumwa, C.V. and Tastan-Bishop, Ö.**  
Manyumwa, C.V., Emameh, R.Z. and **Tastan-Bishop, Ö.** (2020) Alpha-Carbonic Anhydrases from Hydrothermal Vent Sources as Potential Carbon Dioxide Sequestration Agents: *In Silico* Sequence, Structure and Dynamics Analyses. *International Journal of Molecular Sciences*. 21 (8066). p.1-32.

**Mathibe, B.N., Malgas, S., Radosavljevic, L. and Pletschke, B.I.**  
**Mathibe, B.N., Malgas, S., Radosavljevic, L., Kumar, V., Shukla, P. and Pletschke, B.I.** (2020) Lignocellulosic pretreatment-mediated phenolic by-products generation and their effect on the inhibition of an endo-1,4-B-xylanase from *Thermomyces lanuginosus* VAPS-24. *3 Biotech*. 10 (349). p.1-11.

**Mathibe, B.N., Malgas, S., Radosavljevic, L., Kumar, V., Shukla, P. and Pletschke, B.I.** (2020) Tryptic Mapping Based Structural Insights of Endo-1, 4-B-Xylanase from *Thermomyces lanuginosus* VAPS-24. *Indian Journal of Microbiology*. 60 (3). p.392-395.

**Mkabayi, L., Malgas, S., Wilhelmi, B. and Pletschke, B.I.**  
**Mkabayi, L., Malgas, S., Wilhelmi, B. and Pletschke, B.I.** (2020) Evaluating Feruloyl Esterase-Xylanase Synergism for Hydroxycinnamic Acid and Xylo-Oligosaccharide Production from Untreated, Hydrothermally Pre-Treated and Dilute-Acid Pre-Treated Corn Cobs. *Agronomy-Basel*. 10 (688). p.1-14.

**Mtsi, N.I.S. and Dorrington, R.A.**  
Chau, J.H., Mtsi, N.I.S., Munbergova, Z., Greve, M., le Roux, P., Mairal, M., le Roux, J.C., Dorrington, R.A. and Jansen Van Vuuren, B. (2020) An update on the indigenous vascular flora of sub-Antarctic Marion Island: taxonomic changes, sequences for DNA barcode loci, and genome size data. *Polar Biology*. 43 (2020). p.1817-1828.

**Nyamai, D.W. and Tastan-Bishop, Ö.**  
Nyamai, D.W. and Tastan-Bishop, Ö. (2020) Identification of Selective Novel Hits against *Plasmodium falciparum* Prolyl tRNA Synthetase Active Site and a Predicted Allosteric Site Using In Silico Approaches. *International Journal of Molecular Sciences*. 21 (3803). p.1-34.

**Pletschke, B.I.**  
Nasab, B., Homaei, A., Pletschke, B.I., Carmen Salinas-Salazar, C., Castillo-Zacarias, C. and Parra-Saldívar, R. (2020) Marine resources effective in controlling and treating diabetes and its associated complications. *Process Biochemistry*. 92 (2020). p.313-342.

Musengi, A., Durrell, K., Prins, A., Khan, N., Agunbiade, M., Kudanga, T., Kirby-McCullough, B., Pletschke, B.I., Burton, S.G. and Le Roes-Hill, M. (2020) Production and characterisation of a novel actinobacterial DyP-type peroxidase and its application in coupling of phenolic monomers. *Enzyme and Microbial Technology*. 141 (2020). p.1-10.

**Sanyanga, T.A. and Tastan-Bishop, Ö.**  
Sanyanga, T.A. and Tastan-Bishop, Ö. (2020) Structural Characterization of Carbonic Anhydrase VIII and Effects of Missense Single Nucleotide Variations to Protein Structure and Function. *International Journal of Molecular Sciences*. 21 (2764). p.1-20.

**Sheik Amamuddy, O.S.A. and Tastan-Bishop, Ö.**  
Sheik Amamuddy, O.S.A., Verkhivker, G.M. and Tastan-Bishop, Ö. (2020) Impact of Early Pandemic Stage Mutations on Molecular Dynamics of SARS-CoV-2 Mpro. *Journal of Chemical Information and Modeling*. 60 (2020). p.5080-5102.

**Sheik Amamuddy, O.S.A., Musyoka, T.M., Boateng, R.A., Zabo, S. and Tastan-Bishop, Ö.**  
Sheik Amamuddy, O.S.A., Musyoka, T.M., Boateng, R.A., Zabo, S. and Tastan-Bishop, Ö. (2020) Determining the unbinding events and conserved motions associated with the pyrazinamide release due to resistance mutations of *Mycobacterium tuberculosis* pyrazinamidase. *Computational and Structural Biotechnology Journal*. 18 (2020). p.1103-1120.

**Sheik Amamuddy, O.S.A., Veldman, W.M., Manyumwa, C.V., Khairallah, A. and Tastan-Bishop, Ö.**  
Sheik Amamuddy, O.S.A., Veldman, W.M., Manyumwa, C.V., Khairallah, A., Agajanian, S., Oluyemi, O., Verkhivker, G.M. and Tastan-Bishop, Ö. (2020) Integrated Computational Approaches and Tools for Allosteric Drug Discovery. *International Journal of Molecular Sciences*. 21 (847). p.1-39.

**Siwe Noundou, X.**  
Nkanga, C.I., Roth, M., Walker, R.B., Siwe Noundou, X. and Krause, R.W.M. (2020) Co-Loading of Isoniazid-Grafted Phthalocyanine-in-Cyclodextrin and Rifampicin in Crude Soybean Lecithin Liposomes: Formulation, Spectroscopic and Biological Characterization. *Journal of Biomedical Nanotechnology*. 16 (2020). p.14-28.

Okafor, N.I., Nkanga, C.I., Walker, R.B., Siwe Noundou, X. and Krause, R.W.M. (2020) Encapsulation and physicochemical evaluation of efavirenz in liposomes. *Journal of Pharmaceutical Investigation*. 50 (2). p.201-208.

Daramola, O.A., Siwe Noundou, X., Nkanga, C.I., Tseki, P. and Krause, R.W.M. (2020) Synthesis of pH Sensitive Dual Capped CdTe QDs: Their Optical Properties and Structural Morphology. *Journal of Fluorescence*. 30 (2020). p.557-564.

**Swart, T. and Hoppe, H.C.**  
Beteck, R.M., Jordaan, A., Swart, T., van der Kooy, F., Warner, D.F., Hoppe, H.C. and Legoabe, L.J. (2020) 6-Nitro-1-benzylquino-lones exhibiting specific antitubercular activity. *Chemical Biology and Drug Design*. 2020 (2020). p.1-8.

**Swart, T., Khan, F.D., Ntlantsana, A., Laming, D., Edkins, A.L. and Hoppe, H.C.**  
Swart, T., Khan, F.D., Ntlantsana, A., Laming, D., Veale, C.G.L., Przyborski, J.M., Edkins, A.L. and Hoppe, H.C. (2020) Detection of the *in vitro* modulation of *Plasmodium falciparum* Arf1 by Sec7 and ArfGAP domains using a colorimetric plate-based assay. *Scientific Reports*. 10 (4193). p.1-11.

**Thoresen, M., Malgas, S. and Pletschke, B.I.**  
Thoresen, M., Malgas, S. and Pletschke, B.I. (2020) Enzyme adsorption-desorption and evaluation of various cellulase recycling strategies for steam pre-treated Eucalyptus enzymatic degradation. *Biomass Conversion and Biorefinery*. 2020 (2020). p.1-10.

**Upfold, N.S., Ross, C., Tastan-Bishop, Ö. and Knox, C.**  
Upfold, N.S., Ross, C., Tastan-Bishop, Ö. and Knox, C. (2020) The *In Silico* Prediction of Hotspot Residues that Contribute to the Structural Stability of Subunit Interfaces of a Picornavirus Capsid. *Viruses*. 12 (387). p.1-22.

**Veldman, W.M., Moses, V. and Tastan-Bishop, Ö.**  
Veldman, W.M., Vizona Liberato, M., Almeida, V.M., Souza, V.P., Frutuoso, M.A., Marana, S.R., Moses, V., Tastan-Bishop, Ö. and Polikarpov, I. (2020) X-ray Structure, Bioinformatics Analysis, and Substrate Specificity of a 6-Phospho-B-glucosidase Glycoside Hydrolase 1 Enzyme from *Bacillus licheniformis*. *Journal of Chemical Information and Modeling*. 2020 (2020). p.1-16.

**Vukea, N. and De La Mare, J.A.**  
Teclegeorgish, Z.W., Mokgalaka, T., Vukea, N., De La Mare, J.A. and Tembu, V.J. Cytotoxicity of triterpenoids from *Clerodendrum glabrum* against triple negative breast cancer cells *in vitro*. *South African Journal of Botany*. 133 (2020). p.144-150.

**Whitehouse, A.**  
Dobson, S.J., Mankouri, J. and Whitehouse, A. (2020) Identification of potassium and calcium channel inhibitors as modulators of polyomavirus endosomal trafficking. *Antiviral Research*. 179 (2020). p.1-10.

Dobson, S.J., Anene, A., Boyne, J.R., Mankouri, J., Macdonald, A. and Whitehouse, A. (2020) Merkel cell polyomavirus small tumour antigen activates the p38 MAPK pathway to enhance cellular motility. *Biochemical Journal*. 477 (2020). p.2721-2733.

Morgan, E.L., Patterson, M.R., Ryder, E.L., Lee, S.Y., Wasson, C.W., Harper, K.L., Li, Y., Griffin, S., Blair, E., Whitehouse, A. and Macdonald, A. (2020) MicroRNA-18a targeting of the STK4/MST1 tumour suppressor is necessary for transformation in HPV positive cervical cancer. *PLoS Pathogens*. 16 (6). p.1-27.

Nwogu, N., Ortiz, L.E., Whitehouse, A. and Kwan, H.J. (2020) Merkel Cell Polyomavirus Small Tumor Antigen Activates Matrix Metallopeptidase-9 Gene Expression for Cell Migration and Invasion. *Journal of Virology*. 94 (19). p.1.

## Peer Reviewed Proceedings

De La Mare, J.A. and Edkins, A.L.  
Adegoke, Y.A., De La Mare, J.A., Edkins, A.L. and Beukes, D.R. Antiproliferative Effect of Prenylated Diketopiperazine and Barbituric Acid Derivatives against Triple Negative Breast Cancer. *XVI International Symposium on Marine Natural Products, XI European Conference on Marine Natural Products*. MH Peniche, Peniche, Portugal. September 2019.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Dames, J.F.  
Lourens, D.D.J., Dames, J.F. and Peter, C.I. The search for mycorrhizae: An analysis of fungal endophytes found in various life stages of the South African epiphytic orchid genus *Mysticidium*. *5th Wild Orchids South Africa (WOSA) Conference*. Goodesens Garden Castle, Underberg, South Africa. January 2020.



Photo: Simon Pamphilon

# Department of Biotechnology and the Biotechnology Innovation Centre (RUBIC)

Associate Professor Earl Prinsloo  
Head of Department

## Introduction

During the early part of 2020, the Rhodes University Biotechnology Innovation Centre opened its doors to the newly renovated first-floor wing of the Biological Sciences Building. The much-needed renovation upgraded the laboratory spaces and wing to modern safety standards, creating shared work spaces for Postgraduates. The renovation also finally united all RUBIC laboratories on the first floor, with Professor Boshoff's lab shifting from the third floor. The upgrade also created a dedicated area for the South African Research Chair in Biotechnology Innovation and Engagement, where science and humanities Postgraduates work alongside staff developing new products and processes. Laboratory space was also created for the Institute for Environmental Biotechnology staff (Professor Keith Cowan) and Postgraduates, as well as for Biotechnology research groups from the Faculty of Pharmacy (Professor Roman Tandlich and Dr Nosiphewe Ngqwala). This new first-floor space in the Biosciences building thus realises a long-held vision to bring Biotechnology into a common space where shared resources and collaboration can help advance products and processes that benefit society.

However, 2020 also saw RUBIC staff and students move into different modes of operation in line with the rest of the world. The pandemic was an agent of change for research, teaching & learning and most especially for science engagement. The Biotechnology Honours programme saw a substantial overhaul from in-person teaching to an asynchronous hybrid mode of teaching and assessment that allowed for dynamic approaches that were successfully introduced. Dr Ronen Fogel, as Honours Course Coordinator, oversaw the successful introduction of high-level Systematic Reviews for Honours students as an urgent measure to substitute for laboratory coursework. Following rigorous external examination, the approach highlighted opportunities that exist for remote teaching and learning and the use of new tools to enhance our Postgraduate research experience. The academic programme for Masters, Doctoral candidates and Postdoctoral Research Fellows restarted in early July of 2020.

The SARChI Chair in Biotechnology Innovation and Engagement bid, led by Professor Limson, was short-listed for the DSI Nano-Micro-Manufacturing Facility for paper-based diagnostics, launching in 2021. This is a substantial investment to enhance South Africa's capacity to develop rapid diagnostic tests, the need for which was clearly highlighted during the COVID-19 pandemic.

Photo: Simon Pamphilon



**Professor Janice Limson**  
Director

## Postgraduates / Graduations

RUBIC hosted thirty-three (33) Honours, Masters and PhD students in 2020. The Centre graduated eleven (11) Honours (including one distinction), two (2) Masters and four (4) Doctoral (Kelly-Anne Frith Tandlich, Lauren Shaw, Mokaba Malema and Adewoyin Martin Ogunmolasuyi) candidates at two virtual graduation ceremonies. Drs Lauren Shaw, Shane Flanagan, Martin Ogunmolasuyi and Lance Ho continued their research as Postdoctoral Research Fellows in 2020.

## Science Engagement

The global COVID-19 pandemic brought the need for Science Engagement into sharp relief. Providing accessible and factual information about the pandemic, even as our understanding of the challenge of the SARS-CoV-2 virus shifted on an often daily basis, represented an unparalleled challenge, requiring true multidisciplinary approaches across multiple platforms. In 2020, during the national lockdown, SARChI Chair, Professor Janice Limson led the establishment of a COVID-19 science engagement team (<https://www.ru.ac.za/covidscicomm/>) that engaged staff and students of RUBIC (including Dr Ronen Fogel, Lwazikazi Madikiza and Aphiwe Mfuku), RUCE- Rhodes University Community Engagement, School of Journalism and Media Studies, Faculty of Pharmacy and Communications and

Advancement as well as staff of the Karuna Trust (India) and Health Service and Population Research (King's College London). This collaboration resulted in the production of special publications of *Grocott's Mail* (a community newspaper) in three languages which were hand-delivered during the first national lockdown. The team also oversaw the curation of several webinars in collaboration with Grocott's and Scifest Africa, radio interviews and both online and printed materials, providing information and engaging the public during the very critical initial phases of the pandemic.

The Prinsloo Lab joined the call for 3D printed personal protective equipment when the supply chain was strained by printing face shield frames for frontline workers on campus and in Makhanda (<https://www.grocotts.co.za/2020/05/16/locals-team-up-to-help-keep-frontline-workers-safe/>)

## Distinguished Visitors / International Visits

The Prinsloo Lab hosted Dr Deepak Thimiri Govindaraj and Dr Essa Suleman from the Council for Scientific & Industrial Research (CSIR) to establish a collaboration based on the application of microfluidics in precision medicine.

## Significant Research Aligned Events

In recognition of his contribution to research and teaching and learning at RU, Dr Ronen Fogel was promoted to the academic level of Senior Lecturer.

Professor Limson was inducted as a Fellow of the Academy of Science of South Africa (ASSAf) in 2020. Her DSI/NRF South African Research Chair in Biotechnology Innovation was also successfully renewed for a further five year period. Professor Limson was appointed as a Member of the Scientific Meetings Committee (SMC) of the International Society of Electrochemistry (2020 - 2022), which oversees future meetings of this prestigious society.

Dr Fogel and Professor Limson were successfully awarded an EU M-ERA. NET grant in collaboration with colleagues in Romania and Spain to develop electrochemical sensors targeting the agricultural sector.

Professor Boshoff was the acting HoD while Professor Prinsloo was on sabbatical and oversaw the operations during a challenging time for staff and Postgraduate students.

Lwazikazi Madikiza and Aphiwe Mfuku, researchers within the SARChI in Biotechnology Innovation & Engagement, working with PhD student and RUCE staff member, Thandiswa Nqowana, led the drive to translate science engagement materials into isiXhosa for Covid Science Engagement, producing accessible video materials in collaboration with the School of Journalism and Media Studies as well as RUCE and *Grocott's Mail*. Madikiza also supported the Covid Science Engagement through several

live radio interviews allowing us to reach a wider audience. Several research articles detailing the approaches followed are being prepared for publication.

Notwithstanding the pandemic, RUBIC produced multiple research & review articles pushing ahead with scientific research, innovation and engagement.

## PUBLICATIONS

### Patents

Fellows, T.D., Fogel, R. and Limson, J.L.

Fellows, T.D., Fogel, R. and Limson, J.L. (2020) *Cd4 binding aptamers and applications thereof*. South Africa. 2020. Patent application No. 2020/03305.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Bentley, S.J. and Boshoff, A.

Andreassend, S.K., Bentley, S.J., Blatch, G.L., Boshoff, A. and Keyzers, R.A. (2020) Screening for small molecule modulators of *trypanosoma brucei* HSP70 chaperone activity based upon alcyonarian coral-derived natural products. *Marine Drugs*. 18 (2). p.81-88.

Fellows, T.D., Ho, L.S.J., Flanagan, S.P., Fogel, R., Ojo, D.R. and Limson, J.L.

Fellows, T.D., Ho, L.S.J., Flanagan, S.P., Fogel, R., Ojo, D.R. and Limson, J.L. (2020) Gold nanoparticle-streptavidin conjugates for rapid and efficient screening of aptamer function in lateral flow sensors using novel CD4-binding aptamers identified through Crossover-SELEX. *Analyst*. 145 (2020). p.5180-5193.

Fogel, R. and Limson, J.L.

Fanjul-Bolado, P., Fogel, R., Limson, J.L., Purcarea, C. and Vasilescu, A. (2020) Advances in the Detection of Dithiocarbamate Fungicides: Opportunities for Biosensors. *Biosensors*. 11 (12). p.1-26.

Kadye, R., Fanucci, S., Mbanxa, S., Stoffels, M. and Prinsloo, E.

Kadye, R., Fanucci, S., Mbanxa, S., Stoffels, M. and Prinsloo, E. (2020) A STAT3 of Addiction: Adipose Tissue, Adipocytokine Signalling and STAT3 as Mediators of Metabolic Remodelling in the Tumour Microenvironment. *Cells*. 9 (1043). p.1-24.

Limson, J.L.

Kalyatanda, G.S., Archibald, L.K., Patnala, S., Paul-Satyaseela, M., Kiran, P.R., Srinivas, S., Byrne, A., Lin, Y., Chekuri, V.N., Limson, J.L., Paphitis, S.A., Tandlich, R. and Hornby, D. (2020) No human exists in isolation or as an island: the outcomes of a multidisciplinary, global, and context-specific Covid-19 consortium. *American journal of disaster medicine*. 15 (3). p.219-222.

Mtwebana, S.S. and Prinsloo, E.

Mtwebana, S.S. and Prinsloo, E. (2020) The commercially available STAT3 inhibitor 5, 15-diphenylporphyrin (5, 15-DPP) does not directly interact with STAT3 core residues 127-722. *BMC Research Notes*. 13 (345). p.1-4.

Prinsloo, E.

Molupe, N., Babu, B., Oluwole, D.O., Prinsloo, E., Gai, L., Shen, Z., Mack, J. and Nyokong, T. (2020) Photodynamic activity of 2,6-diido-3,5-dithienylvinylene BODIPYs and their folate-functionalized chitosancoated Pluronic® F-127 micelles on MCF-7 breast cancer cells. *Journal of Porphyrins and Phthalocyanines*. 24 (2020). p.973-984.

Motloung, B.M., Babu, B., Prinsloo, E. and Nyokong, T. (2020) The photophysics/chemistry properties and photodynamic therapy activity of In and Zn phthalocyanines when incorporated into individual or mixed Pluronic® micelles. *Polyhedron*. 188 (2020). p.1-9.

Dingiswayo, S., Babu, B., Prinsloo, E., Mack, J. and Nyokong, T. (2020) A comparative study of the photophysics/chemistry and photodynamic activity properties of meso-4-methylthiophenyl functionalized Sn(IV) tetraarylporphyrins and triarylcorroles. *Journal of Porphyrins and Phthalocyanines*. 24 (2020). p.1138-1145.

### Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Limson, J.L.

Limson, J.L. Responsive & Inclusive Science Engagement during Covid-19. *Belt and Road International Science Communication Seminar*. China Science and Technology Exchange Centre, Beijing - Online. China. November 2020.



Photo: Simon Pamphilon

## Department of Botany

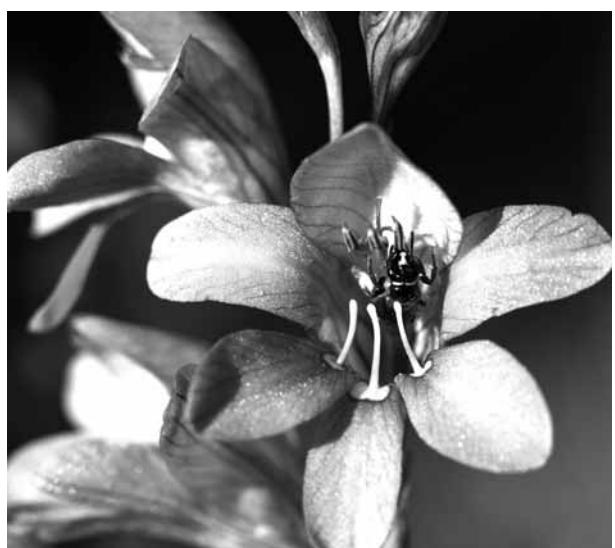
Associate Professor Craig Peter  
Head of Department

### Introduction

Dr Ethan Newman joined our staff at the start of 2020 and initiated several projects on the pollination biology and speciation of Eastern Cape plants. In collaboration with Professor Craig Peter, Ethan has been investigating the role of the "anther mimics" in the flowers of *Tritonia laxifolia*. He also began a project examining the importance of adaptive processes in driving speciation at higher altitudes in the Cape Flora, using *Gladiolus carneus* as a model system. Other significant projects include exploring the use of generalized additive models to disentangle multifarious selection in widespread plants adapted to different pollinators.

Dr Tiffany Pillay, who joined us in 2019, began her research programme looking at the spatial distribution and interactions between savanna and thicket woody encroaching species in the Eastern Cape. She recently received funding from the NRF Thuthuka programme to support this research programme until 2023. This research, a collaboration with Professor Susi Vetter and Dr Andrew Davies of Harvard University (USA), is investigating the spatial patterns of the boundaries between savannah and thicket biomes using high-resolution LiDAR imagery. Dr Pillay presented her work on the effects of woody plant encroachment on soil, plant and litter dynamics at the 2020 Savanna Science Network Meeting, held at Skukuza, Kruger National Park.

Professor Julie Coetzee's year kicked off with a collaborative project, coordinated by the International Water-JPI, called 'MadMacs' - Mass development of aquatic macrophytes: the causes and consequences of macrophyte removal for ecosystem structure, function, and services. The team included researchers from Norway, Germany, France, Brazil, and South Africa. Each country identified a system invaded



Dr Ethan Newman and Professor Craig Peter are examining the evolutionary explanation for the unusual yellow "stamen mimics" present in the flower of *Tritonia laxifolia*.

Photo: Department of Botany

by aquatic macrophytes in order to determine the effects on ecosystem function of large mats of macrophytes and the effect of their removal. Hartbeespoort Dam was chosen for the South African site, and the field campaign commenced in early January 2020. This collaboration will be the first to provide such data on a trans-national basis and use them to provide internationally applicable guidelines for new, knowledge-based management of watercourses with dense aquatic vegetation

Professor Susi Vetter hosted visiting researchers Dr Julieta Rosell Garcia and Professor Mark Olson from the National University of Mexico (Hugh Kelly Fellowship-funded, October 2019 to February 2020), and in 2020 they completed fieldwork in the Eastern Cape as part of their collaboration on bark and wood traits of savanna and thicket species. To their disappointment, they have had to defer plans for Susi to visit them in Mexico in 2020 to study the little-known Mexican savannas. Susi and her Postgraduate students continued their ACCESS-funded research into the functional ecology of encroaching woody species. In 2020 this project evolved into a collaboration with Tiffany Pillay to include work on the ecological interactions and spatial dynamics of woody species involved in the encroachment process.

Despite the Pandemic and travel restrictions, Professor Brad Ripley's group at the RUECF were able to establish and maintain a large NERC (National Ecological Research Council, UK) funded experiment on woody thickening. This investigates the way in which tree-grass competition in savanna systems is altered by drought and elevated atmospheric CO<sub>2</sub> concentration.



Third year student, Marelise Faul sowing *Nerine humilis* seeds for a common garden experiment.

Photo: Department of Botany

Before the 2020 lockdown, Professor Craig Peter and Damian Lourens (MSc candidate) were able to present research at the "Wild Orchids South Africa" conference in Underberg, KwaZulu-Natal. They returned via the former Transkei, where they visited a number of forests to sample epiphytic orchid roots to investigate the diversity of mycorrhizal symbionts as well as to look for additional populations of *Rhipidoglossum millarii*, South Africa's most endangered epiphytic orchid.

## Distinguished Visitors / International Visits

Julieta Rosell Garcia and Mark Olson from the National University of Mexico concluded their field research in collaboration with Susi Vetter, as detailed above.

## Significant Research Aligned Events

At the beginning of 2020, Julie Coetze's research group witnessed the spectacular collapse of water hyacinth on Hartbeespoort Dam as the result of an intensive mass-rearing and release campaign of water hyacinth biological control agents. The CBC initiated this campaign in 2018 and increased efforts in 2019 when the team released hundreds of thousands of the agent, *Megamelus scutellaris*. In the absence of herbicide spraying of the water hyacinth on the dam since 2017, the *Neochetina* weevils had the opportunity to increase their population size, which inflicted damage to the plants that we have not seen before in the field. This has been a true success story of biological control.

Craig Peter appeared in a segment on South African Crocosmia in the wild, which aired on *Gardeners World*, BBC Two (<https://www.bbc.co.uk/programmes/p08lvf5s>). He contributed to this segment as well as the segment on *Eucomis* (<https://www.bbc.co.uk/programmes/p08pf1dz>) in 2018, although the broadcast of these were delayed following the atrocious murder of Rod and Rachel Saunders following filming.



Third year student, Katharine Khouri painting stamen mimics with colour similar to the tepals to determine if bees specifically prefer flowers with UV absorbent yellow colours that resemble the colour of pollen.

Photo: Department of Botany

# PUBLICATIONS

## Books/Chapters/Monographs

Coetzee, J.A.

Hill, M.P. and Coetzee, J.A. (2020) Chapter 20: How can progress in the understanding of antagonistic interactions be applied to improve biological control of plant invasions? In: Travest, A. and Richardson, D.M. (eds.). *Plant Invasions: The Role of Biotic Interactions*. Wallingford, UK: CABI. p.361-374. ISBN: 9781789242171.

Coetzee, J.A. and Hill, M.P. (2020) Chapter 19: More than a century of biological control against invasive alien plants in South Africa: A synoptic view of what has been accomplished. In: van Wilgen, B.W., Richardson, D.M., Measey, J., Wilson, J.R. and Zengeya, T.A. (eds.). *Invading Nature - Springer Series in Invasion Ecology: Biological Invasions in South Africa*. Switzerland: Springer Open. p.553-572. ISBN: 9783030323943.

Coetzee, J.A. and Hill, M.P. (2020) Chapter 4: Invasive alien aquatic plants in freshwater ecosystems. In: van Wilgen, B.W., Richardson, D.M., Measey, J., Wilson, J.R. and Zengeya, T.A. (eds.). *Invading Nature - Springer Series in Invasion Ecology: Biological Invasions in South Africa*. Switzerland: Springer Open. p.67-96. ISBN: 9783030323943.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Coetzee, J.A.

Reid, M.K., Coetzee, J.A., Hill, M.P., Diaz, R., Gettys, L., Cuda, J. and Reid, C. (2020) Insect Herbivores Associated with *Nymphaea mexicana* (Nymphaeaceae) in Southern United States: Potential Biological Control Agents for South Africa. *Florida Entomologist*. 103 (1). p.54-63.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Coetzee, J.A.

Baso, N.C., Delpont, G.R. and Coetzee, J.A. 2020. Nutrient-mediated silica uptake from agricultural runoff in invasive floating macrophytes: implications for biological control. *Hydrobiologia* 847: 3397-3407.

Coetzee, J.A. and Hill, M.P. (2020) *Salvinia molesta* D. Mitch. (Salviniacae): impact and control. *CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources*. 15 (33). p.1-11.

Coetzee, J.A., Langa, S.D.F., Motitsoe, S.N. and Hill, M.P. 2020. Biological control of water lettuce, *Pistia stratiotes* L., facilitates macroinvertebrate biodiversity recovery: a mesocosm study. *Hydrobiologia* 847:3917-3929. doi.org/10.1007/s10750-020-04369-w

Gervazoni, P., Sosa, A., Franceschini, C., Coetzee, J.A., Falthauer, A., Fuentes-Rodriguez, D., Martinez, A. and Hill, M.P. (2020) The alien invasive yellow flag (*Iris pseudacorus* L.) in Argentinian wetlands: assessing geographical distribution through different data sources. *Biological Invasions*. 22 (2020). p.3183-3193.

Hofstra, D., Schoelynck, J., Ferrell, J., Coetzee, J.A., de Winton, M., Bickel, T.O., Champion, P., Madsen, J., Bakker, E.S., Hilt, S. and Matheson, F. 2020. On the move: New insights on the ecology and management of native and alien macrophytes. *Aquatic Botany*. 162: 103190.

Miller, B.E., Coetzee, J.A. and Hill, M.P. 2020. Mind the gap: the delayed recovery of a population of the biological control agent *Megamelus scutellaris* Berg. (Hemiptera: Delphacidae) on water hyacinth after winter. *Bulletin of Entomological Research*. 111: 120 - 128 DOI: <https://doi.org.wam.seals.ac.za/10.1017/S0007485320000516>

Minuti, G.M., Coetzee, J.A., Ngxande-Koza, S.W., Hill, M.P. and Stiers, I. (2020) Prospects for the biological control of *Iris pseudacorus* L. (Iridaceae). *Biocontrol Science and Technology*. (2020). p.1-23.



PhD candidate, Nompumelelo taking zooplankton samples with Professor Christophe Piscart from the University of Rennes.

Photo: Department of Botany



Professor Mark Olson and Dr Julieta Rosell Garcia of the National University of Mexico were funded by the Hugh Kelly Fellowship to visit South Africa to work on bark and wood traits of Savanna and Thicket trees with Professor Susi Vetter.

Photo: Department of Botany

Motitsoe, S.N., Coetzee, J.A., Hill, J.M. and Hill, M.P. (2020) Biological Control of *Salvinia molesta* (D.S. Mitchell) Drives Aquatic Ecosystem Recovery. *Diversity*. 12 (204). p.1-22.

Muskett, P.C., Paterson, I.D. and Coetzee, J.A. (2020) Ground-truthing climate-matching predictions in a post-release evaluation. *Biological Control*. 144 (2020). p.1-9.

Daniels, R.J. and Peter, C.I.

Daniels, R.J., Johnson, S.D. and Peter, C.I. (2020) Flower orientation in *Gloriosa superba* (Colchicaceae) promotes cross-pollination via butterfly wings. *Annals of Botany*. 125 (2020). p.1137-1149.



**South African team members Keneilwe Sebola and Antonella Petruzella inspect the water hyacinth removal site.**

Photo: Department of Botany



**Professor Mark Olsen measuring bark and wood traits of wild Spekboom in the Eastern Cape.**

Photo: Department of Botany

#### Dold, A.P.

Cimi, P.V., Ngcoza, K.M. and Dold, A.P. (2020) The role of ethnobotany in integrating Indigenous Knowledge in the discipline of science education: a study by the herbarium of the Albany Museum in South Africa. *South African Museums Association Bulletin (SAMAB)*. 42 (2020). p.1-9.

#### Lubke, R.

Tordoni, E., Bacaro, G., Weigelt, P., Cameletti, M., Janssen, J.A.M., Acosta, A.T.R., Bagella, S., Filigheddu, R., Lubke, R. and *et al.*, (2020) Disentangling native and alien plant diversity in coastal sand dune ecosystems worldwide. *Journal of Vegetation Science*. 2020 (2020). p.1-13.

#### Martin, G.D.

Ndlovu, M.S., Coetzee, J.A., Nxumalo, M.M., Lalla, R., Shabalala, N. and Martin, G.D. (2020) The establishment and Rapid Spread of *Sagittaria Platiphylla* in South Africa. *Water Research*. 12 (5). p.1-14.

#### Olson, M.E.

Olson, M.E. (2020) From Carlquist's ecological wood anatomy to Carlquist's Law: why comparative anatomy is crucial for functional xylem biology. *American Journal of Botany*. 107 (10). p.1328-1341.

Butterfield, T., Olson, M.E., Beck, D. and Macip-Rios, R. (2020) Morphology, Performance, and Ecology of Three Sympatric Turtles in a Tropical Dry Forest. *Copeia*. 108 (4). p.957-966.

#### Olson, M.E. and Rosell, J.A.

Olson, M.E., Anfodillo, T., Rosell, J.A. and Martínez-Méndez, N. (2020) Across climates and species, higher vapour pressure deficits is associated with wider vessels for plants of the same height. *Plant Cell and Environment*. 43 (12). p.3068-3080.

#### Peter, C.I.

Garcia, J.E., Phillips, R.D., Peter, C.I. and Dyer, A.G. (2020) Changing How Biologists View Flowers - Color as a Perception Not a Trait. *Frontiers in Plant Science*. 11 (2020). p.1-15.

#### Pillay, T.

Pillay, T. and Ward, C. (2020) Grass competition is more important than fire for suppressing encroachment of *Acacia sieberiana* seedlings. *Plant Ecology*. 222 (2). p.149-156.

#### Prevec, R.

Botha, J., Huttonlocker, A., Smith, R., Prevec, R., Viglietti, P., Modesto, S. 2020. New geochemical and palaeontological data from the Permo-Triassic boundary in the South African Karoo Basin test the synchronicity of terrestrial and marine extinctions. *Palaeogeography, Palaeoclimatology, Palaeoecology* 540: 109467. DOI: 10.1016/j.palaeo.2019.109467

#### Situngu, S. and Vetter, S.

Situngu, S., Barker, N. and Vetter, S. (2020) A Snap-Shot of Domatial Mite Diversity of *Coffea arabica* in Comparison to the Adjacent Umtamvuna Forest in South Africa. *Diversity*. 12 (79). p.1-12.

#### Swart, C. and Barker, N.P.

Swart, C., Rowswell, R., Donaldson, J. and Barker, N.P. (2020) Population structure and survival of the critically endangered cycad *Encephalartos latifrons* in South Africa. *South African Journal of Botany*. 127 (2019). p.80-90.

#### Vetter, S.

Vetter, S. (2020) With Power Comes Responsibility - A Rangelands Perspective on Forest Landscape Restoration. *Frontiers in Sustainable Food Systems*. 16 (2020). p.1-9.

Vetter, S., Goodall, V.L. and Alcock, R. (2020) Effect of drought on communal livestock farmers in KwaZulu-Natal, South Africa. *African Journal of Range and Forage Science*. 37 (1). p.93-106.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

#### Lourens, D.D.J. and Peter, C.I.

Lourens, D.D.J., Dames, J.F. and Peter, C.I. The search for mycorrhizae: An analysis of fungal endophytes found in various life stages of the South African epiphytic orchid genus *Mysticidium*. *5th Wild Orchids South Africa (WOSA) Conference*. Goedeseen Garden Castle, Underberg. South Africa. January 2020.

#### Peter, C.I.

Peter, C.I. and Pauck, W.J. Operation millarii: Introducing the *Rhipidoglossum millarii* project. *5th Wild Orchids South Africa (WOSA) Conference*. Goedeseen Garden Castle, Underberg. South Africa. January 2020.

#### Vetter, S.

Vetter, S. From bush encroachment to biome shift: which woody species, traits and canopy cover thresholds characterize the point of no return? *18th Savanna Science network Meeting Skukuza*, Kruger National Park, Skukuza. South Africa. March 2020.



Photo: Simon Pamphilon

# Department of Chemistry

Dr Rosa Klein  
Head of Department

## Introduction

There is no need to mention the many aspects of living through 2020 as an academic Department, as researchers, or simply as people. The challenges and restrictions resulting from the COVID-19 pandemic are well understood. We are grateful to have been a part of this University at this time, enjoying the benefits of being part of a vibrant and caring community that continue to make an effective contribution to the Makhanda community and to the scientific community. Nonetheless, the limits on our personal freedoms did not fail to have an effect. In addition to the limitations resulting from the global pandemic, the Department of Chemistry was obliged to bid farewell to four staff members, including the retirement of Professor Gary Watkins. In the light of those challenges, I am very proud of the achievements of the Department of Chemistry in maintaining a high publication rate and continuing to supervise and graduate students. As always, the many collaborations between members of the Department and with colleagues in other Departments have helped to strengthen our efforts and multiply our rewards.

The outstanding work of Distinguished Professor Nyokong and the Institute for Nanotechnology Innovation contributed extensively to the publication output of the Chemistry community at Rhodes University and to the creation of knowledge in photodynamic therapy and other applications of nanotechnology.

Recognition is also due to the ongoing collaboration between Professor Dorrington and Professor Krause, working on efforts to discover new antibiotic agents from our extensive library of bioactive compounds and the plethora of marine sources collected over the past thirty years. Although the next new drug has not been discovered yet, the project continues to make progress and gain momentum.

## Postgraduates / Graduations

Students from the Department of Chemistry took part in both graduation ceremonies for 2020, with nine (9) Masters students in the first and five (5) in the second, and four (4) PhD graduates in the first and three (3) in the second. Although this was much fewer than we have seen in recent years, the quality of the theses remained high, with six (6) distinctions among the Masters graduates.

Students graduating with research in medicinal chemistry made up the bulk of the graduates, reflecting the Department's long-standing emphasis in this field. Research at both Masters and Doctoral levels covered topics ranging

from treatment of tuberculosis and malaria to photodynamic therapy in the treatment of cancer and bacterial infections.

One graduate who stands out, doing research outside of the realm of medicinal chemistry, is Francis Chindeka, who completed his Masters with distinction in the synthesis of dye-sensitized solar cells while carrying out his demanding duties as Principal Technical Officer in the Department of Chemistry.

## Significant Research Aligned Events

As the doors closed in March 2020, two grants were awarded to the members of the Department. Dr Vincent Smith and Professor Rui Krause were awarded R10 million from the National Equipment Programme towards the purchase of a new Single Crystal X-ray Diffractometer - the first of its kind at Rhodes University. This instrument will be invaluable to several ongoing projects in medicinal chemistry and materials chemistry in the Faculty of Pharmacy and the Department of Chemistry. It will also be available to members

of the scientific community throughout the province of the Eastern Cape, as is the case with several of our scientific instruments.

The Technology Innovation Agency awarded a Seed Grant to Professor Rosa Klein for the development of environmentally friendly household products, a project which is aligned with the Department's commitment to increasing sustainability and research in Green Chemistry. We look forward to seeing the fruit of these efforts, hopefully on our supermarket shelves!

Through the course of 2020, the research activities of the Department were constrained and redirected by the departure of four research-active staff and the appointment of four new research staff. We look forward to seeing the new directions and creative contributions that come through the Department of Chemistry in the years to come.



## RHODES UNIVERSITY CHEMISTRY DEPARTMENT 2020



Staff and students in Department of Chemistry.

Photo: Department of Chemistry

# PUBLICATIONS

## Books/Chapters/Monographs

Krause, R.W.M.

Krause, R.W.M., Kyeremeh, K., Amewu, R., Nartey Padiki, A., Osei-Safo, D., Flint, A., Jaspars, M., Sunassee, S.N., Dziorwu, G. and Acquah, K. (2020) Making North-South Collaborations Work: Facilitating Natural Product Drug Discovery in Africa. In: Ramutsindela, M. and Mickler, D. (eds.). *Africa and the Sustainable Development Goals*. Switzerland: Springer Nature Switzerland. p.257-266. ISBN: 9783030148560.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Nnaji, N.J., Nwaji, N. and Nyokong, T.

Nnaji, N.J., Nwaji, N. and Nyokong, T. (2020) Electrodeposited Benzothiazole Phthalocyanines for Corrosion Inhibition of Aluminium in Acidic Medium. *International Journal of Electrochemistry*. 2020 (2020). p.1-11.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Adeniyi, O.K., Ngqinambi, A. and Mashazi, P.N.

Adeniyi, O.K., Ngqinambi, A. and Mashazi, P.N. (2020) Ultra-sensitive detection of anti-p53 autoantibodies based on nanomagnetic capture and separation with fluorescent sensing nanobioprobe for signal amplification. *Biosensors and Bioelectronics*. 170 (2020). p.1-8.

Adeyemi, C.M., Conibear, A.C., Mutorwa, M.K., Nokalipa, I.C., Mnkandhla, D., Lobb, K.A., Klein, R. and Kaye, P.T. Adeyemi, C.M., Conibear, A.C., Mutorwa, M.K., Nokalipa, I.C., Isaacs, M., Mnkandhla, D., Hoppe, H.C., Lobb, K.A., Klein, R. and Kaye, P.T. (2020) Synthesis and Anti-parasitic Activity of Achiral *N*-Benzylated Phosphoramidic Acid Derivatives. *Bioorganic Chemistry*. 101 (2020). p.1-7.

Adeyemi, C.M., Lobb, K.A., Klein, R. and Kaye, P.T.

Adeyemi, C.M., Hoppe, H.C., Isaacs, M., Mnkandhla, D., Lobb, K.A., Klein, R. and Kaye, P.T. (2020) Synthesis and anti-parasitic activity of *N*-benzylated phosphoramidate Mg<sup>2+</sup> chelating ligands. *Bioorganic Chemistry*. 105 (2020). p.1-10.

Ayeni, A.O.

Akinyele, O.F., Fakola, E.G., Durosini, L.M., Ajayeoba, T.A. and Ayeni, A.O. (2020) Synthesis, characterization and antimicrobial activities of heteroleptic metal chelates of isoniazid and 2,2'-bipyridine. *Bulletin of the Chemical Society of Ethiopia*. 34 (3). p.471-478.

Ayeni, A.O. and Watkins, G.M.

Ayeni, A.O., Watkins, G.M. and Hosten, E.C. (2020) Impact of Thiocyanate on Catalytic Abilities of Metal Complexes of 4-N-(4-hydroxy-3-((piperidin-1-yl) methyl) phenyl) acetamide (HL). X-ray Crystal Structure of HL. *Revista de Chimie*. 71 (9). p.1-10.

Ayeni, A.O., Akinyele, O.F., Hosten, E.C., Fakola, E.G., Olalere, J.T., Egharevba, G.O. and Watkins, G.M. (2020) Synthesis, crystal structure, experimental and theoretical studies of corrosion inhibition of 2-((4-(2-hydroxy-4-methylbenzyl) piperazin-1-yl) methyl) -5-methylphenol e A Mannich base. *Journal of Molecular Structure*. 1219 (2020). p.1-9.

Babu, B., Mack, J. and Nyokong, T.

Babu, B., Mack, J. and Nyokong, T. (2020) Sn(IV) *N*-confused porphyrins as photosensitizer dyes for photodynamic therapy in the near IR region. *Dalton Transactions*. 49 (2020). p.15180-15183.

Babu, B., Mack, J. and Nyokong, T. (2020) An octabrominated Sn(IV) tetraisopropylporphyrin as a photosensitizer dye for singlet oxygen biomedical applications. *Dalton Transactions*. 49 (2020). p.9568-9573.

Babu, B., Ali, T.A., Ochappan, T., Mack, J., Nyokong, T. and Sethuraman, M.G. (2020) Photocytotoxicity of heavy-atom-free

thiobarbituric acid functionalized pyrene derivatives against MCF-7 cancer cells. *Photodiagnosis and Photodynamic Therapy*. 2020 (2020). p.1-6.

Babu, B., Sindelo, A., Mack, J. and Nyokong, T.

Babu, B., Sindelo, A., Mack, J. and Nyokong, T. (2020) Thien-2-yl substituted chlorins as photosensitizers for photodynamic therapy and photodynamic antimicrobial chemotherapy. *Dyes and Pigments*. 2020 (2020). p.1-8.

Babu, B., Soy, R.C., Mack, J. and Nyokong, T.

Babu, B., Soy, R.C., Mack, J. and Nyokong, T. (2020) Non-aggregated lipophilic water-soluble tin porphyrins as photosensitizers for photodynamic therapy and photodynamic antimicrobial chemotherapy. *New Journal of Chemistry*. 44 (2020). p.11006-11012.

Bapolisi, A.M.

Witika, B.A., Makoni, P.A., Matafwali, S.K., Chabalenge, B., Mwila, C., Kalungia, A.C., Nkanga, C.I., Bapolisi, A.M. and Walker, R.B. (2020) Biocompatibility of Biomaterials for Nanoencapsulation: Current Approaches. *Nanomaterials*. 10 (1649). p.1-40.

Bapolisi, A.M., Nkanga, C.I. and Krause, R.W.M.

Bapolisi, A.M., Nkanga, C.I., Walker, R.B. and Krause, R.W.M. (2020) Simultaneous liposomal encapsulation of antibiotics and proteins: co-loading and characterization of rifampicin and human serum albumin in soy-liposomes. *Journal of Drug Delivery Science and Technology*. 58 (8). p.1-12.

Centane, S. and Nyokong, T.

Centane, S. and Nyokong, T. (2020) The antibody assisted detection of HER2 on a cobalt porphyrin binuclear framework and gold functionalized graphene quantum dots modified electrode. *Journal of Electroanalytical Chemistry*. 2020 (2020). p.1-12.

Chindeka, F., Mashazi, P.N., Britton, J., Oluwole, D.O., Mapukata, S. and Nyokong, T.

Chindeka, F., Mashazi, P.N., Britton, J., Oluwole, D.O., Mapukata, S. and Nyokong, T. (2020) Fabrication of dye-sensitized solar cells based on push-pull asymmetrical substituted zinc and copper phthalocyanines and reduced graphene oxide nanosheets. *Journal of Photochemistry and Photobiology A-Chemistry*. 399 (2020). p.1-9.

Daramola, O.A., Nkanga, C.I. and Krause, R.W.M.

Daramola, O.A., Siwe Noundou, X., Nkanga, C.I., Tseki, P. and Krause, R.W.M. (2020) Synthesis of pH Sensitive Dual Capped CdTe QDs: Their Optical Properties and Structural Morphology. *Journal of Fluorescence*. 30 (2020). p.557-564.

Dingiswayo, S., Babu, B., Mack, J. and Nyokong, T.

Dingiswayo, S., Babu, B., Prinsloo, E., Mack, J. and Nyokong, T. (2020) A comparative study of the photophysicochemical and photodynamic activity properties of meso-4-methylthiophenyl functionalized Sn(IV) tetraarylporphyrins and triarylcorroles. *Journal of Porphyrins and Phthalocyanines*. 24 (2020). p.1138-1145.

Eze, F.I., Siwe Noundou, X. and Krause, R.W.M.

Eze, F.I., Siwe Noundou, X., Isaacs, M., Patnala, S., Osadebe, P.O. and Krause, R.W.M. (2020) Anti-cancer and anti-trypanosomal properties of alkaloids from the root bark of *Zanthoxylum leprieurii* Guill and Perr. *Tropical Journal of Pharmaceutical Research*. 19 (11). p.2377-2383.

Hulushe, S.T., Manyeruke, M.H., Louzada, M.S. and Watkins, G.M.

Hulushe, S.T., Manyeruke, M.H., Louzada, M.S., Rigin, S., Hosten, E.C. and Watkins, G.M. (2020) Exploring intermolecular contacts in multisubstituted benzaldehyde derivatives: X-ray, Hirshfeld surface and lattice energy analyses? *RSC Advances*. 10 (2020). p.16861-16874.

Jones, B., Mafukidze, D.M. and Nyokong, T.

Jones, B., Mafukidze, D.M. and Nyokong, T. (2020) Fabrication of electrospun fibers from a porphyrin linked to polyacrylonitrile polymer for photocatalytic transformation of phenols. *Journal of Molecular Structure*. 1213 (2020). p.1-12.

Krause, R.W.M.

Mafa, M.S., Dirr, H.W., Malgas, S., Krause, R.W.M., Rashamuse, K. and Pletschke, B.I. (2020) A Novel Dimeric Exoglucanase (GH5\_38): Biochemical and Structural Characterisation towards its Application in Alkyl Celllobioside Synthesis. *Molecules*. 25 (746). p.1-20.

Mbosso Teinkela, J.E., Siwe Noundou, X., Mimba, J.E.Z., Meyer, F., Tabouguia, O.M., Nguedia, J.C.A., **Hoppe, H.C., Krause, R.W.M.**, Wintjens, R. and Azebaze, G.A.B. (2020) Compound isolation and biological activities of *Piptadeniastrum africanum* (hook.f.) Brennan roots. *Journal of Ethnopharmacology*. 255 (2020). p.112716-112723.

Ojo, E., **Krause, R.W.M.** and Obi-Egbedi, N.O. (2020) Electronic and nonlinear optical properties of 2-(((5-aminonaphthalen-1-yl) imino) methyl) phenol: Experimental and time-dependent density functional studies. *Journal of Molecular Liquids*. 319 (1). p.114157-114165.

Ojo, N., **Krause, R.W.M.** and Obi-Egbedi, N.O. (2020) Electronic and nonlinear optical properties of 3-(((2-substituted-4-nitrophenyl) imino) methyl) phenol. *Computational and Theoretical Chemistry*. 1192 (2020). p.113050-113058.

**Kubheka, G., Mack, J. and Nyokong, T.**

**Kubheka, G., Mack, J., Nyokong, T.** and Shen, Z. (2020) NIR Absorbing AzaBODIPY Dyes for pH Sensing. *Molecules*. 25 (2020). p.1-14.

**Lobb, K.A.**

Odame, F., Hosten, E., Krause, J., Isaacs, M., **Hoppe, H.C., Khanye, S.D.**, Sayed, Y., Frost, C., Lobb, K.A. and Tshentu, Z.R. (2020) Synthesis, Characterization and Biological Activity of Some Dithiourea Derivatives. *Acta Chimica Slovenica*. 67 (2020). p.764-777.

Odame, F., Hosten, E.C., **Lobb, K.A.** and Tshentu, Z.R. (2020) Ultrasound promoted synthesis, characterization and computational studies of some thiourea derivatives. *Journal of Molecular Structure*. 1216 (2020). p.1-10.

Odame, F., Woodcock, G., Hosten, E.C., **Lobb, K.A.** and Tshentu, Z.R. (2020) A novel gold(I)-mediated intramolecular transamidation of benzoyl thiourea derivatives to form benzamides via dethiocyanation. *Journal of Organometallic Chemistry*. 922 (2020). p.1-12.

**Mack, J.**

Uno, H., Muramatsu, K., Hiraoka, S., Tahara, H., Hirose, M., Tamura, E., Shiraishi, T., **Mack, J.**, Kobayashi, N., Mori, S., Okujima, T. and Takase, M. (2020) Synthesis and Aromaticity of Benzene-Fused Doubly *N*-Confused Porphyrins. *Chemistry-A European Journal*. 26 (2020). p.5701-5708.

**Mafukidze, D.M. and Nyokong, T.**

**Mafukidze, D.M. and Nyokong, T.** (2020) Photodynamic antimicrobial chemotherapy of a dimethylamino-functionalized asymmetric zinc(II) phthalocyanine and its quaternized derivative against *Staphylococcus aureus* when supported on asymmetric polystyrene polymer membranes. *Reactive and Functional Polymers*. 154 (2020). p.1-11.

**Magadla, A. and Nyokong, T.**

**Magadla, A. and Nyokong, T.** (2020) Enhanced photodynamic antimicrobial activity of surface modified SiNPs doped with zinc(II) phthalocyanines: The effect of antimicrobial ampicillin and extra charges from a sultone. *Photodiagnosis and Photodynamic Therapy*. 32 (2020). p.1-11.

**Makola, L.C. and Nyokong, T.**

**Makola, L.C., Nyokong, T.** and Amuhaya, E.K. (2020) Impact of axial ligation on photophysical and photodynamic antimicrobial properties of indium (III) methylsulfanylphenyl porphyrin complexes linked to silver-capped copper ferrite magnetic nanoparticles. *Polyhedron*. 2020 (2020). p.1-15.

**Makola, L.C., Managa, M. and Nyokong, T.**

**Makola, L.C., Managa, M. and Nyokong, T.** (2020) Enhancement of photodynamic antimicrobial therapy through the use of cationic indium porphyrin conjugated to Ag/CuFe2O4 nanoparticles. *Photodiagnosis and Photodynamic Therapy*. 30 (2020). p.1-12.

**Managa, M., Mgidlana, S., Khene, S.M. and Nyokong, T.**

**Managa, M., Mgidlana, S., Khene, S.M. and Nyokong, T.** (2020) Optical limiting properties of indium 5,10,15,20-tetrakis(4-aminophenyl) porphyrin covalently linked to semiconductor quantum dots. *Inorganica Chimica Acta*. 511 (2020). p.1-7.

**Mapukata, S. and Nyokong, T.**

**Mapukata, S. and Nyokong, T.** (2020) Development of phthalocyanine functionalised TiO2 and ZnO nanofibers for photo-degradation of methyl orange. *New Journal of Chemistry*. 44 (2020). p.16340-16350.

**Mapukata, S., Britton, J., Osifeko, O.L. and Nyokong, T.**

**Mapukata, S., Britton, J., Osifeko, O.L. and Nyokong, T.** (2020) The improved antibacterial efficiency of a zinc phthalocyanine when embedded on silver nanoparticle modified silica nanofibers. *Photodiagnosis and Photodynamic Therapy*. 33 (2020). p.1-11.

**Mapukata, S., Nwahara, N. and Nyokong, T.**

**Mapukata, S., Nwahara, N. and Nyokong, T.** (2020) The photodynamic antimicrobial chemotherapy of *Staphylococcus aureus* using an asymmetrical zinc phthalocyanine conjugated to silver and iron oxide based nanoparticles. *Journal of Photochemistry and Photobiology A-Chemistry*. 402 (2020). p.1-15.

**Matlou, G.G. and Nyokong, T.**

**Matlou, G.G. and Nyokong, T.** (2020) Photophysico-chemical properties and photoinactivation of *Staphylococcus Aureus* using zinc phthalocyanines linked silver nanoparticles conjugates. *Dyes and Pigments*. 176 (2020). p.1-11.

**Matshitse, R. and Nyokong, T.**

**Matshitse, R. and Nyokong, T.** (2020) Substituent effect on the photophysical and nonlinear optical characteristics of Si phthalocyanine - Detonated nanodiamond conjugated systems in solution. *Inorganica Chimica Acta*. 504 (2020). p.1-10.

**Matshitse, R., Tshiwawa, T., Managa, M., Nwaji, N., Lobb, K.A. and Nyokong, T.**

**Matshitse, R., Tshiwawa, T., Managa, M., Nwaji, N., Lobb, K.A. and Nyokong, T.** (2020) Theoretical and photodynamic therapy characteristics of heteroatom doped detonation nanodiamonds linked to asymmetrical phthalocyanine for eradication of breast cancer cells. *Journal of Luminescence*. 227 (2020). p.1-15.

**May, A.K., Mack, J. and Nyokong, T.**

**May, A.K., Mack, J. and Nyokong, T.** (2020) Optical limiting properties of D- A BODIPY dyes in the presence and absence of methyl groups at the 1,7-positions. *Journal of Porphyrins and Phthalocyanines*. 24 (2020). p.1129-1137.

**May, A.K., Majumdar, P., Mack, J. and Nyokong, T.**

**May, A.K., Majumdar, P., Martynov, A.G., Lapkina, L.A., Troyanov, S.I., Gorbunova, Y.G., Tsividze, A.Y., Mack, J. and Nyokong, T.** (2020) Optical limiting properties, structure and simplified TD-DFT calculations of scandium tetra-15-crown-5 phthalocyaninates. *Journal of Porphyrins and Phthalocyanines*. 24 (2020). p.589-601.

**Mbaba, M.**

**Mbaba, M., Dingle, L.M.K., Swart, T., Cash, D., Laming, D., De La Mare, J.A., Taylor, D., **Hoppe, H.C.**, Biot, C., **Edkins, A.L.** and **Khanye, S.D.** (2020) The *in Vitro* Antiplasmoidal and Antiproliferative Activity of New Ferrocene-Based *α*-Aminocresols Targeting Hemozoin Inhibition and DNA Interaction. *Chembiochem*. 21 (2020). p.2643-2658.**

**Mbaba, M., Dingle, L.M.K., Cash, D., De La Mare, J.A., Laming, D., Taylor, D., **Hoppe, H.C.**, **Edkins, A.L.** and **Khanye, S.D.** (2020) Repurposing of a polymer precursor: Synthesis and *in vitro* medicinal potential of ferrocenyl 1,3-benzoxazine derivatives. *European Journal of Medicinal Chemistry*. 187 (2020). p.111924.**

**Mgidlana, S. and Nyokong, T.**

**Mgidlana, S. and Nyokong, T.** (2020) Photocatalytic desulfurization of dibenzothiophene using asymmetrical zinc(II) phthalocyanines conjugated to silver-magnetic nanoparticles. *Inorganica Chimica Acta*. 2020 (2020). p.1-12.

**Mgidlana, S., Sen, P. and Nyokong, T.**

**Mgidlana, S., Sen, P. and Nyokong, T.** (2020) Direct nonlinear optical absorption measurements of asymmetrical zinc(II) phthalocyanine when covalently linked to semiconductor quantum dots. *Journal of Molecular Structure*. 1220 (2020). p.1-12.

**Molupe, N., Babu, B., Oluwole, D.O., Mack, J. and Nyokong, T.**

**Molupe, N., Babu, B., Oluwole, D.O., Prinsloo, E., Gai, L., Shen, Z., Mack, J. and Nyokong, T.** (2020) Photodynamic activity of 2,6-diodo-3,5-dithienylvinylene BODIPYs and their folate-functionalized chitosan-coated Pluronic® F-127 micelles on MCF-7 breast cancer cells. *Journal of Porphyrins and Phthalocyanines*. 24 (2020). p.973-984.

**Motloung, B.M., Babu, B. and Nyokong, T.**  
**Motloung, B.M., Babu, B., Prinsloo, E. and Nyokong, T.** (2020) The photophysicochemical properties and photodynamic therapy activity of In and Zn phthalocyanines when incorporated into individual or mixed Pluronic® micelles. *Polyhedron*. 188 (2020). p.1-9.

**Mpeta, L.S., Sekhosana, K.E. and Nyokong, T.**  
**Mpeta, L.S., Sekhosana, K.E. and Nyokong, T.** (2020) Nonlinear optical response and electrocatalytic activity of cobalt phthalocyanine clicked zinc oxide nanoparticles. *Inorganica Chimica Acta*. 509 (2020). p.1-9.

**Mpeta, L.S., Sen, P. and Nyokong, T.**  
**Mpeta, L.S., Sen, P. and Nyokong, T.** (2020) Development of manganese phthalocyanine decorated with silver nanoparticles nanocomposite for improved electrocatalytic oxidation of hydrazine. *Journal of Electroanalytical Chemistry*. 866 (2020). p.1-9.

**Mpeta, L.S., Sen, P. and Nyokong, T.** (2020) Investigation of electrocatalytic behaviour of low symmetry cobalt phthalocyanines when clicked to azide grafted carbon electrodes. *Journal of Electroanalytical Chemistry*. 860 (2020). p.1-10.

**Mpeta, L.S., Sen, P. and Nyokong, T.** (2020) The Effects of Asymmetry in Combination with Reduced Graphene Oxide Nanosheets on Hydrazine Electrocatalytic Detection on Cobalt Phthalocyanines. *Electroanalysis*. 32 (2020). p.2723-2732.

**Mwanza, D. and Mashazi, P.N.**  
**Phal, S., Shimizu, K., Mwanza, D., Mashazi, P.N., Shchukarev, A. and Tesfalidet, S.** (2020) Electrografting of 4-Carboxybenzenediazonium on Glassy Carbon Electrode: The Effect of Concentration on the Formation of Mono and Multilayers. *Molecules*. 25 (4575). p.1-12.

**Neduvhuledza, M.Z.R., Nkaki, T.M., Louzada, M.S., Nyokong, T. and Khene, S.M.**  
**Neduvhuledza, M.Z.R., Nkaki, T.M., Louzada, M.S., Nyokong, T. and Khene, S.M.** (2020) Photophysical and nonlinear optical properties of the positional isomers of 4-(4-tertbutylphenoxy) substituted cobalt, nickel and copper phthalocyanines. *Optical Materials*. 109 (2020). p.1-10.

**Njoko, N.A., Louzada, M.S., Britton, J., Khene, S.M., Nyokong, T. and Mashazi, P.N.**  
**Njoko, N.A., Louzada, M.S., Britton, J., Khene, S.M., Nyokong, T. and Mashazi, P.N.** (2020) Bioelectrocatalysis and surface analysis of gold coated with nickel oxide/hydroxide and glucose oxidase towards detection of glucose. *Colloids and Surfaces B: Biointerfaces*. 190 (2020). p.1-7.

**Nkanga, C.I. and Krause, R.W.M.**  
**Mukubwa, G., Nkanga, C.I., Buya, A., Mbinze, J.K., Krause, R.W.M. and Memvanga, P.B.** (2020) Self-nanoemulsifying drug delivery systems (SNEDDS) for oral delivery of *Garcinia kola* seeds ethanolic extract: formulation and *in vivo* antimalarial activity. *Journal of Pharmacy and Pharmacognosy Research*. 8 (3). p.177-190.

**Nkanga, C.I., Roth, M., Walker, R.B., Sive Noundou, X. and Krause, R.W.M.** (2020) Co-Loading of Isoniazid-Grafted Phthalocyanine-in-Cyclodextrin and Rifampicin in Crude Soybean Lecithin Liposomes: Formulation, Spectroscopic and Biological Characterization. *Journal of Biomedical Nanotechnology*. 16 (2020). p.14-28.

**Nkanga, C.I., Fisch, A., Rad-Malekshahi, M., Romic, M.D., Kittel, B., Ullrich, T., Wang, J., Krause, R.W.M., Adler, S., Lammers, T., Hennink, W.E. and Ramazani, F.** (2020) Clinically established biodegradable long acting injectables: An industry perspective. *Advanced Drug Delivery Reviews*. 167 (1). p.19-46.

**Nkanga, C.I., Bapolisi, A.M. and Krause, R.W.M.**  
**Kambale, E.K., Nkanga, C.I., Mutonkole, B.P.I., Bapolisi, A.M., Tassa, D.O., Liesse, J.M.I., Krause, R.W.M. and Memvanga, P.B.** (2020) Green synthesis of antimicrobial silver nanoparticles using aqueous leaf extracts from three Congolese plant species (*Brillantaisia patula*, *Crosopteryx febrifuga* and *Senna siamea*). *Helijon*. 6 (2020). p.1-9.

**Nkhahle, R. and Nyokong, T.**  
**Nkhahle, R. and Nyokong, T.** (2020) Creating the Ideal Push-Pull System for Electrocatalysis: A Comparative Study on Symmetrical and Asymmetrical Cardanol-based Cobalt Phthalocyanines. *Electroanalysis*. 2020 (2020). p.1-13.

**Nyokong, T.**  
**Nyokong, T.** (2020) A career in photophysicochemical and electrochemical properties of phthalocyanine ? a Linstead Career Award paper. *Journal of Porphyrins and Phthalocyanines*. 24 (2020). p.1300-1319.

**Khoza, P., Ndhundhuma, I., Karsten, A. and Nyokong, T.** (2020) Photodynamic Therapy Activity of Phthalocyanine-Silver Nanoparticles on Melanoma Cancer Cells. *Journal of Nanoscience and Nanotechnology*. 20 (5). p.3097-3104.

**Gao, Y.-H., Li, M.-Y., Sajjad, F., Wang, J.-H., Meharban, F., Gadoora, M.A., Yan, Y.-J., Nyokong, T. and Chen, Z.-L.** (2020) Synthesis and pharmacological evaluation of chlorin derivatives for photodynamic therapy of cholangiocarcinoma. *European Journal of Medicinal Chemistry*. 189 (2020). p.1-14.

**Nyokong, T. and Britton, J.**  
**Jankowski, K., Ostafine, A., Tomasik, M., Nyokong, T. and Britton, J.** (2020) Growth of centimeter scale carbon wires using in-liquid AC arc discharge. *SN Applied Sciences*. 2 (1064). p.1-6.

**Oguntade, B.K., Hulushe, S.T. and Watkins, G.M.**  
**Oguntade, B.K., Hulushe, S.T., Hosten, E.C. and Watkins, G.M.** (2020) Synthesis and crystal structure of hexaaqua copper(II) 2,5-dicarboxyterephthalate, C10H16O14Cu. *Zeitschrift für Kristallographie-New Crystal Structures*. 236 (1). p.1-2.

**Okafor, N.I., Nkanga, C.I. and Krause, R.W.M.**  
**Okafor, N.I., Nkanga, C.I., Walker, R.B., Sive Noundou, X. and Krause, R.W.M.** (2020) Encapsulation and physicochemical evaluation of efavirenz in liposomes. *Journal of Pharmaceutical Investigation*. 50 (2). p.201-208.

**Openda, Y.I. and Nyokong, T.**  
**Openda, Y.I. and Nyokong, T.** (2020) Detonation nanodiamonds-phthalocyanine photosensitizers with enhanced photophysicochemical properties and effective photoantibacterial activity. *Photodiagnosis and Photodynamic Therapy*. 32 (2020). p.1-11.

**Openda, Y.I., Matshitse, R. and Nyokong, T.**  
**Openda, Y.I., Matshitse, R. and Nyokong, T.** (2020) A search for enhanced photodynamic activity against *Staphylococcus aureus* planktonic cells and biofilms: the evaluation of phthalocyanine-detonation nanodiamonds-Ag nanoparticle nanoconjugates. *Photochemical & Photobiological Sciences*. 19 (2020). p.1442-1454.

**Sabbagh, I.T. and Kaye, P.T.**  
**Sabbagh, I.T. and Kaye, P.T.** (2020) Formation of 3,3,4-Trimethyl-1,7-dibromonorbornane-2-one: a Spectroscopic and Computational Study. *South African Journal of Chemistry*. 73 (2020). p.30-34.

**Sekhosana, K.E., Nkhahle, R. and Nyokong, T.**  
**Sekhosana, K.E., Nkhahle, R. and Nyokong, T.** (2020) Analytical Detection and Electrocatalysis of Paracetamol in Aqueous Media Using Rare-Earth Double-Decker Phthalocyaninato Chelates as Electrochemically Active Materials. *ChemistrySelect*. 5 (2020). p.9857-9865.

**Sen, P. and Nyokong, T.**  
**Sen, P., Akagunduz, D., Aghdam, A.S., Cebeci, F.C., Nyokong, T. and Catal, T.** (2020) Synthesis of Novel Schiff Base Cobalt (II) and Iron (III) Complexes as Cathode Catalysts for Microbial Fuel Cell Applications. *Journal of Inorganic and Organometallic Polymers and Materials*. 30 (2020). p.1110-1120.

**Ahmetali, E., Sen, P., Suer, N.C., Aksu, B., Nyokong, T., Eren, T. and Sener, M.K.** (2020) Enhanced Light-Driven Antimicrobial Activity of Cationic Poly(oxanorbornene)s by Phthalocyanine Incorporation into Polymer as Pendants. *Macromolecular Chemistry and Physics*. 221 (2020). p.1-14.

**Sen, P., Mpeta, L.S., Mack, J. and Nyokong, T.**  
**Sen, P., Mpeta, L.S., Mack, J. and Nyokong, T.** (2020) New difluoroboron complexes based on N, O-chelated Schiff base ligands: Synthesis, characterization, DFT calculations and photophysical and electrochemical properties. *Journal of Luminescence*. 224 (2020). p.1-10.

**Shabangu, S.M., Babu, B., Soy, R.C. and Nyokong, T.**  
**Shabangu, S.M., Babu, B., Soy, R.C., Oyim, J., Amuhaya, E.K. and Nyokong, T.** (2020) Susceptibility of *Staphylococcus aureus* to porphyrin-silver nanoparticle mediated photodynamic antimicrobial chemotherapy. *Journal of Luminescence*. 222 (2020). p.1-9.

**Shabangu, S.M., Babu, B., Soy, R.C., Managa, M., Sekhosana, K.E. and Nyokong, T.**  
**Shabangu, S.M., Babu, B., Soy, R.C., Managa, M., Sekhosana, K.E. and Nyokong, T.** (2020) Photodynamic antimicrobial chemotherapy of asymmetric porphyrin-silver conjugates towards photo-inactivation of *Staphylococcus aureus*. *Journal of Coordination Chemistry*. 73 (4). p.593-608.

**Smith, V.J.**  
**Witika, B.A., Smith, V.J. and Walker, R.B.** (2020) Quality by Design Optimization of Cold Sonochemical Synthesis of Zidovudine-Lamivudine Nanosuspensions. *Pharmaceutics*. 12 (367). p.1-17.

**Witika, B.A., Smith, V.J. and Walker, R.B.** (2020) A Comparative Study of the Effect of Different Stabilizers on the Critical Quality Attributes of Self-Assembling Nano Co-Crystals. *Pharmaceutics*. 12 (182). p.1-15.

**Lombard, J., Smith, V.J., le Roex, T. and Haynes, D.A.** (2020) Crystallisation of organic salts by sublimation: salt formation from the gas phase. *CRYSTENGCOMM*. 22 (2020). p.7826-7831.

**Witika, B.A., Smith, V.J. and Walker, R.B.** (2020) Top-down synthesis of a lamivudine-zidovudine nano co-crystal. *Crystals*. 11 (33). p.1-18.

**Soy, R.C., Mack, J. and Nyokong, T.**  
**Tang, W., Qiu, Y., Li, X., Soy, R.C., Mack, J., Nyokong, T. and Liang, X.** (2020) pH-Dependent Electrochemically Catalyzed Oxygen Reduction Behaviors o-Substituted Co(III) Corroles. *Macrocycles*. 13 (2). p.156-162.

**Tshenkeng, K.T.C. and Mashazi, P.N.**  
**Tshenkeng, K.T.C. and Mashazi, P.N.** (2020) Covalent attachment of cobalt (II) tetra-(3-carboxyphenoxy) phthalocyanine onto pre-grafted gold electrode for the determination of catecholamine neurotransmitters. *Electrochimica Acta*. 360 (2020). p.1-9.

**Waleguele, C.C. and Krause, R.W.M.**  
**Mba'ning, B.M., Avantu, A.F., Bankeu, J.J.K., Fongang, Y.S.F., Waleguele, C.C., Krause, R.W.M., Tsamo, E., Ngouela, A.S., Sewald, N. and Lenta, B.N.** (2020) Antiparasitic Constituents of *Beilschmiedia louisii* and *Beilschmiedia obscura* and Some Semisynthetic Derivatives (Lauraceae). *Molecules*. 25 (12). p.2862-2895.

**Zulu, A.I., Oderinlo, O., Kruger, C. and Smith, V.J.**  
**Zulu, A.I., Oderinlo, O., Kruger, C., Isaacs, M., Hoppe, H.C., Smith, V.J., Veale, C.G.L. and Khanye, S.D.** (2020) Synthesis, Structure and *In Vitro* Anti-Trypanosomal Activity of Non-Toxic Arylpyrrole-Based Chalcone Derivatives. *Molecules*. 25 (2020). p.1-16.

## Peer Reviewed Proceedings

**Mack, J., Babu, B., Dingiswayo, S., Soy, R.C. and Nyokong, T.**  
**Mack, J., Babu, B., Dingiswayo, S., Soy, R.C., Tasso, T., Baptista, M. and Nyokong, T.** Sn(IV) porphyrins for photodynamic therapy: progress to date and future perspectives. *International Conference of Materials and Engineering Technology (TICMET'20)*. November 2020.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**Dendera, W. and Lobb, K.A.**  
**Dendera, W. and Lobb, K.A.** Glycosyltransferases: an insight into O-glycosylation and potential inhibitors from the South African Natural Compound Database. *CHPC Virtual Conference 2020*. Online, Cape Town. South Africa. January 2020.

**Lobb, K.A. and Sigauke, L.T.**  
**Lobb, K.A. and Sigauke, L.T.** The importance of conformation in the search for active cyclosporine analogues. *CHPC Virtual Conference 2020*. Online, Cape Town. South Africa. January 2020.

**Mack, J., Babu, B., Dingiswayo, S., Soy, R.C. and Nyokong, T.**  
**Mack, J., Babu, B., Dingiswayo, S., Soy, R.C., Tasso, T., Baptista, M. and Nyokong, T.** Rational design of Sn(IV) porphyrins for photodynamic therapy: progress to date and future perspectives. *2020 Centre for High Performance Computing National Convention*. December 2020.

**Tshiwawa, T. and Lobb, K.A.**  
**Tshiwawa, T. and Lobb, K.A.** High throughput virtual screening of terpene isonitrile derivatives on a homology model of MtbATPase binding site. *CHPC Virtual Conference 2020*. Online, Cape Town. South Africa. January 2020.



Photo: Simon Pamphilon

# Department of Computer Science

**Professor George Wells**  
Head of Department

## Introduction

In 2020 the research activities in the Computer Science Department were organized around the research groups listed below. With the exception of Bioinformatics, all groups are integrated into the Telkom Centre of Excellence in Distributed Multimedia, a *triple helix* initiative that brings together Industry, Government and Academia to foster innovation to every participant's gain. The longevity of the Centre, as an externally funded initiative, has been remarkable, having started in 1997.

### Convergence

(Professor Alfredo Terzoli and Dr Zelalem Shibeshi)

This group carries the core activity of the Telkom Centre of Excellence, focusing on the rich intersection of legacy telecommunication systems & organizations and the Internet. The theme from 2019 has been 'Software Defined Networks, Network Function Virtualization, Cloud and Fog computing for 5G networks'.

### Security and Networks

(Professor Barry Irwin, Professor Karen Bradshaw and Dr Alan Herbert)

The Security and Networks Research Group (SNRG) concentrates in the areas of Information Security and Computer Networks, both crucial in modern computing and telecommunications.

### ICT for Development

(Professor Alfredo Terzoli, Dr Nomusa Dlodlo and Dr Zelalem Shibeshi)

This group focuses on a long-term, multidisciplinary effort to introduce meaningful and sustainable ICT in impoverished areas of South Africa, rural and peri-urban. The group

currently also active in the Internet of Things and Blockchain areas.

### Distributed Audio Networks

(Professor Richard Foss)

The Audio Networks group deals primarily with the management and control protocol of audio streams to be used in large sound installations such as stadiums, studios and convention centres.

### Parallel and Distributed Computing

(Professor Karen Bradshaw and Professor George Wells)

This group focuses on the ever-present and vital theme of parallel and distributed computations.

### Intelligent Robots

(Professor Karen Bradshaw)

This group focuses on Artificial Intelligence applied to robots.

### Computer Vision

(James Connan and Dr Dane Brown)

Image Processing and Machine Learning are the focuses of this group.

## Bioinformatics

(Professor Philip Machanick)

Rhodes University Bioinformatics (RUBi) Research Group is an interdisciplinary group housed in the Department of Biochemistry, Microbiology and Biotechnology and focuses on collaborative research to produce computational outcomes of biological significance.

## Software design, modelling, and reliability

(Dr Yusuf Motara)

The Software Design and Development group focuses on finding ways in which the next generation of software and software development can be conceptualised, designed, taught, and implemented.

## Postgraduates / Graduations

During 2020 the following Postgraduate students were in training in the Department:

- Eleven (11) Honours
- Ten (10) MSc by coursework and research
- Eighteen (18) MSc by research
- Eight (8) PhD

The following Postgraduate students completed and graduated in 2021:

- Eight (8) Honours
- Two (2) MSc by Coursework and research
- Two (2) Masters by research
- One (1) PhD

## Distinguished Visitors / International Visits

COVID-19 put a stop to all travelling, so no Distinguished Visitors nor international visits took place during 2020.

## Significant Research Aligned Events

An achievement in 2020 was the successful hosting of this year's SACL (Southern African Computer Lecturers' Association) annual conference, July 6 to 9, by the Computer Science Department together with the Department of Information Systems. In particular:

- **Professor Karen Bradshaw** was one of the two conference co-Chairs;
- **Professor George Wells**, one of the technical programme co-Chairs;
- **Professor Philip Machanick** was one of the two co-editors of the conference proceedings.

The main focus of the conference was on education processes in the computing area. Due to COVID-19, the conference was held online. That notwithstanding, 110 delegates registered, a larger than average number of participants.

Professor Karen Bradshaw ran a remote NVidia workshop on CUDA Python at the ECAL (European Conference on AI) in September 2020.

As in previous years, the Department received research grants from the partners of the Telkom Centre of Excellence in Distributed Multimedia, Telkom and Infinera, as well as the National Research Foundation (NRF).

## PUBLICATIONS

### Peer Reviewed Subsidy-Earning Journal Research Publications

Bradshaw, K. and Chindeka, V.T.

Bradshaw, K. and Chindeka, V.T. (2020) Detecting Similarity in Multi-procedure Student Programs using only Static Code Structure. *Communications in Computer and Information Science*. 1136 (2020). p.211-226.

James, K. and Bradshaw, K.

James, K. and Bradshaw, K. (2020) Detecting plant species in the field with deep learning and drone technology. *Methods in Ecology and Evolution*. 11 (11). p.1509-1519.

Jordaan, J. and Bradshaw, K.

Jordaan, J. and Bradshaw, K. (2020) A Critical Evaluation of Validation Practices in the Forensic Acquisition of Digital Evidence in South Africa. *Communications in Computer and Information Science*. 1339 (1). p.129-143.

Terzoli, A.

Sieborger, I., Terzoli, A. and Hodgkinson-Williams, C. (2020) Evolving an Efficient and Effective Off-the-Shelf Computing Infrastructure for Rural Communities of South Africa. *Communications in Computer and Information Science*. 1236 (2020). p.63-80.

### Peer Reviewed Proceedings

Motara, Y.M.

Motara, Y.M. A structured modelling notation for the typed functional paradigm. *ACM Symposium on Applied Computing*. Online, Brno, Czech Republic. March 2020.

Motara, Y.M. String Diagrams for Modelling Functional Programming. *International Multidisciplinary Information Technology and Engineering Conference*. Sol Plaatje University, Kimberley. South Africa. November 2020.

Motara, Y.M. and Chifamba, T.D.

Motara, Y.M. and Chifamba, T.D. Gamification of Functional Programming. *International Multidisciplinary Information Technology and Engineering Conference (IMITEC)*. Sol Plaatje University, Kimberley. South Africa. November 2020.

Ncube, T., Dlodlo, N. and Terzoli, A.

Ncube, T., Dlodlo, N. and Terzoli, A. Private blockchain networks: a solution for data privacy. *Proceedings of the 2nd International Multidisciplinary Information Technology and Engineering Conference IMITEC 2020*. Sol Plaatje University, Kimberley. South Africa. November 2020.

Wells, G. and Dube, I.

Wells, G. and Dube, I. An Analysis of the Use of DNS for Malicious Payload Distribution. *2020 2nd International Multidisciplinary Information Technology and Engineering Conference (IMITEC)*. Sol Plaatje University, Kimberley. South Africa. November 2020.

### Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

James, K. and Bradshaw, K.

James, K. and Bradshaw, K. An intelligent system for in-field detection of invasive vegetation. *NVIDIA GPU Technology Conference*. Virtual, San Jose. USA. March 2020.

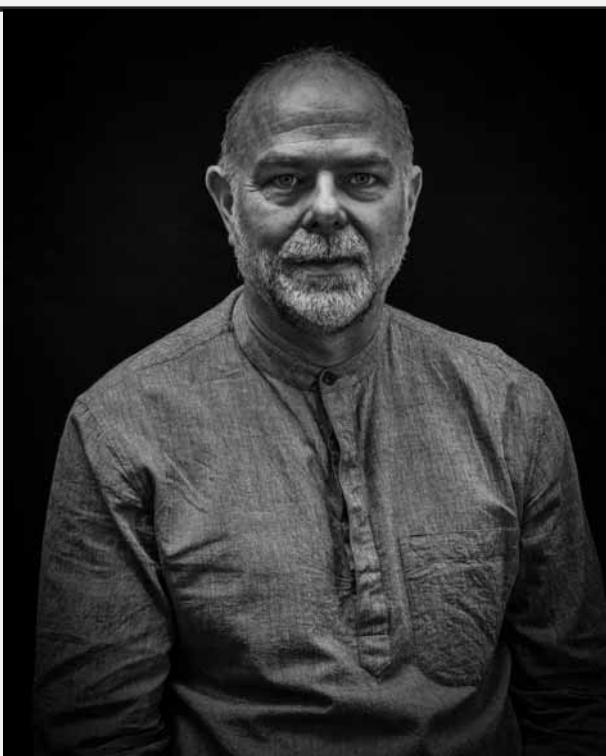


Photo: Simon Pamphilon

## Department of Drama

Professor Anton Krueger  
Acting Head of Department

### Introduction

Performing arts departments the world over experienced a challenging year in 2020, as we saw creative spaces shuttered and performance venues closing down. Some of these closures were temporary, while others - like the celebrated Fugard Theatre in Cape Town - closed permanently. For millennia, dramatic activities have provided a communal space for societies to gather and reflect on themselves, to share, to provoke and to heal. Without the possibility of meeting each other in the same space and time, we felt a keen sense of fracture and loss. Still, we accepted the situation, reconfigured, and were able to creatively continue, making use of the extraordinary new forms made possible by interconnected digital spaces.

Student work that had been designed for live performance was transmuted into digital zones, and Zoom became the room where we met. We also became familiar with working with asynchronous and synchronous times, with the intimacy of rehearsing via WhatsApp groups. International visitors and meetings with colleagues from all over the country became more easily accessible. Despite the challenges to our chosen art form, the Department rallied, and students and staff were able to produce a remarkable range of high calibre research.

For example, newly appointed permanent staff member Gavin Krastin re-visioned his Live Art collective *Arcade* for a digital space. Initially intended for the National Arts Festival, *Arcade2020* developed into an online group exhibition in which eleven (11) multidisciplinary artists exhibited video artworks and performance films on Instagram and Facebook through IGTV. Krastin curated the exhibition, while Alan Parker served as dramaturge. They also relied on curatorial assistance from Nompumelelo Kubheka, an RU Drama alum.

Participating artists in *Arcade2020* included professional artists, Oupa Sibeko, Wezile Mgibe, Bongani Njalo, Kanya Viljoen and Lorin Sookool, as well as Rhodes alum Mmatumisang Kgosigadi ya ga Motsisi; two current MA students, Axl Forder and Julia Ruzyczka de Rosenwerth; and three RU Fine arts MFA students, Evaan Jason Ferreira, Viwe Madinda and Yvette Ellis. The project was supported by the Eastern Cape Department of Sports, Recreation, Arts and Culture, and First Physical Theatre Company.

Also gearing up for the arts festival, Anton Krueger's work *Ellipses* was scheduled to appear on the Main of the NAF. This was to be a one-woman show, a collaboration with Lisa Fay from the University of Illinois at Urbana, centring on the nature of presence and performance. When restrictions arose in March and the live performance was no longer possible, the show

was re-developed into an interactive Zoom experience, *The Voice in Your Head*, performed by Anton Krueger. The show experimented with the live digital space, pushing the boundaries of what was possible on Zoom, using a green screen and other audio-visual media, along with live interactions with audience members. The show had three (3) previews and eleven (11) performances at the Online NAF, attracting visitors from all over the world. It was later invited to be performed for AFDA (Gqeberha) and as a fundraiser for the Tara Rokpa Retreat Centre in the Groot Marico. In January of 2021, it will form part of a residency at Northern Illinois University.

Anton Krueger also launched his new novel *Die Oog* (Naledi, co-written with Eben Viktor) at Amazwi, Makhanda and at Protea Books in Cape Town.

2020 was also a remarkably productive year for Selloane Mokuku, who wrote a Sesotho play called *Hlapa Matsoho* as part of the University of Johannesburg Playwriting Lab. She also published a poetry book, *I Simply Cunt* (nenina House), dealing with gender kindness, and co-wrote *Dipalo*, with Ginni Manning, a play that deals with the pervasive threat of gender-based violence against the background of charismatic religion. *Dipalo* won the 2019 Assitej Africa Playwriting Competition and was published by them in 2020. An audio recording of a reading was hosted by the 2021 Online National Arts Festival.

During this year, we congratulated two (2) staff members who obtained their PhDs. Professor Juanita Praeg's thesis was titled *The Political Promise of Choreography in Performance and/as Research: First Physical Theatre Company's manifesto and repertory, 1993 - 2015*, while Dr Alan Parker's thesis was on *Anarchival Dance: Choreographic Archives and the Disruption of Knowledge*.

## Postgraduates / Graduations

In November 2020, Masters student Ashwin May was able to realise the performance of his thesis project after numerous cancellations due to COVID. Entitled, *I Want To Be*, this performance research established May's own version of drag, using androgyny as a performance strategy to transform but also render cracks in how an audience perceived his body and personhood on stage. Bold and visually arresting, May seduced the audience with his honesty, humour and vulnerability. Other practical performance works by Postgraduates and undergraduates were delivered via digital media.

## Distinguished Visitors / International Visits

Just before lockdown, *Lalela Ulwandle* was performed at the Empatheatre Collective on 10 and 11 March 2020 as part of their ongoing research into creating an empathic community-centred theatre paradigm. Once lockdown commenced, a number of guests visited us online to offer the students a more comprehensive range of expertise, mainly for the courses offered by Selloane Mokuku. These



*Arcade2020* was curated by Gavin Krastin, with online curatorial assistance by Nompumelelo Kubheka and dramaturgical support by Alan Parker. *Arcade2020* was supported by the Eastern Cape Department of Sports, Recreation, Arts & Culture and First Physical Theatre Company (an affiliation of the Rhodes University Department of Drama).

Photo: Department of Drama

included Cherae Hailey (From Drama For Life), Chatikobo Munyaratzi (Cultural Policy and Management Studies expert), Sechaba Motsieloa (Philanthropreneur, from KANSAY Group), Dylan McGarry (co-founder of Empatheatre), Selaelo Maredi (actor/producer/director, co-founder of Workshop '71), Makhaola Ndebele (Artistic Director of the Johannesburg Theatre Companies), and Namatshego (Tshego) Khutsoane (award-winning actor, director). Other Visiting Lecturers were Smangaliso Ngwenya, Daniel Buckland, Maude Sandham and Jaques Da Silva.

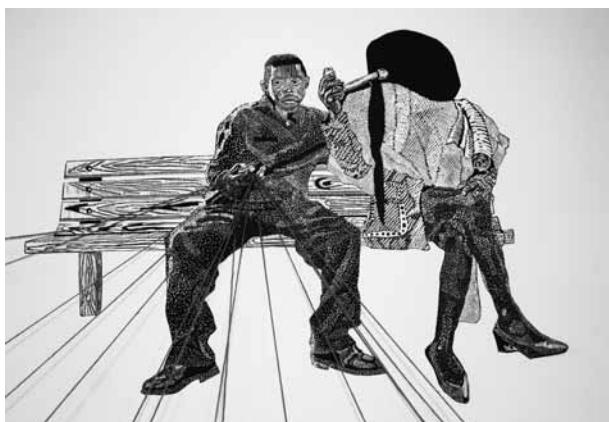
During the month of June 2020, Selloane Mokuku collaborated with the MEQQOO collective, as well as Butana Molefe (US-based human rights activist), to facilitate online conversations with invited speakers and guests. These included Joshua Thomas (Associate Professor of Philosophy at St John's University, New York) and Thokozani Ndama (human rights activist from Ntethelelo Foundation). Selloane (Lalu) also attended the 12th Drama For Life conference with Applied Drama and Theatre students and served on the conference and festival's advisory committee.

The Department also hosted two online festivals, namely the *Young Directors Season*, which was in the form of a virtual platform for Honours Directors and a contemporary and physical theatre platform called *Performing Flux*. The production *Love and Information*, directed by Professor Heike Gehring was also done online. Through these events, the Department continued its research into online performance and hybrid theatre forms.



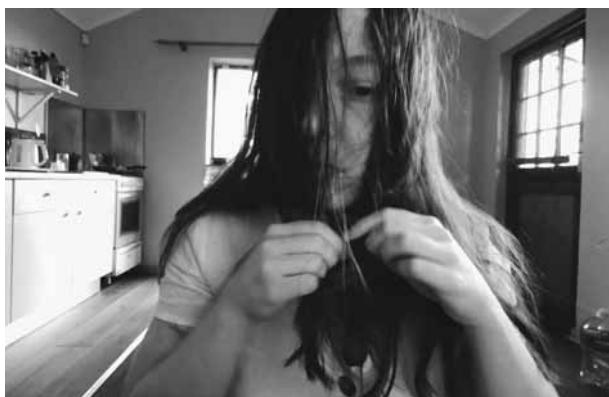
Axl Forder presents "A Real Tearjerker" for *Arcade2020*.

Photo: Axl Forder



Bongani Njalo presents "Abafana Abafani 2.0" for *Arcade2020*.

Photo: Bongani Njalo



Julia Ruzyczka de Rosenwerth presents "Krystyna" for *Arcade2020*.

Photo: Julia de Rosenwerth

Drama Department resident company First Physical Theatre had a complete residency programme planned, with weekly residencies with various artists, as well as an invitation for a guest artist, Jacki Job, to perform her latest work with pianist Jose Dias. Sadly, all of these plans were cancelled due to the pandemic; fortunately, some were realised in the following year.

Similarly, all of resident company Ubom's projects were put on hold, although there was significant development towards



Ashwin May was able to realise the performance of his thesis project, after countless cancellations due to COVID. Entitled, *I Want To Be*, this performance research established May's own version of drag, using androgyny as a performance strategy to transform but also render cracks in how an audience perceived his body and personhood on stage.

Photo: Evaan Ferreira

the Vuka Workshops. These are aimed at school learners in primary schools and high schools, and specifically marginalised learners who are not able to pursue drama as a school subject in ill-equipped schools. Vuka workshops hone learner's talents in performance through diction, theatricality and confidence. An enormous amount of research went into the planning and preparation of these workshops, even though their delivery never materialized.

The Department also spent four weeks of rehearsal on the production *Pitso ea Linonyana*, an adaptation from the Sesotho short story with the same title by A.M. Sekese and the famous poem *Conference of the Birds* by Sufi poet Farid ud-Din Attar. The methodology and practices developed during rehearsals is very much part of our research development, so even though this show was cut short by COVID-19, students and staff still benefited from a month of preparatory processes. The team working on this production included Selloane Mokuku (dramaturge), Emeritus Professor Gary Gordon (choreographer), Illka Louw (set and costume) and Tersia du Plessis (lighting design). It was directed by RU alum Mmatumisang Kgosigadi ya ga Motsisi.

# PUBLICATIONS

## Books/Chapters/Monographs

**Finestone-Praeg, J.**

Finestone-Praeg, J. (2020) Drifting: Reminiscing, Remembering, Reinventing Reza. In: Hauptfleisch, T. and Keuris, M. (eds.). *'n Huldigung: Reza de Wet: Die dramaturg as dromer*. Pretoria: Protea Boekhuis. p.93-106. ISBN: 9781485311034.

**Parker, A.C.**

Parker, A.C. and Samuel, G.M. (2020) Reaching back to move forward: Performing the archive as interdisciplinary artistic-educational process. In: Svendler Nielsen, C. (ed.). *Dancing Across Borders: Perspectives on Dance, Young People and Change*. London: Routledge. p.169-178. ISBN: 9781003008569.

## Review in Journals

**Krueger, A.**

Krueger, A. (2019) A Century of South African Theatre, *South African Theatre Journal*, 32:2, p.180-183.

## International Visits

**Krueger, A.**

Krueger, A. Utopia Theatre, Sheffield, United Kingdom. *Creating Characters - 2 Online Masterclass Workshops*. 6 - 13 June 2020.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**Parker, A.C.**

Parker, A.C. Anarchival dancing: Choreographic archives as embodied research-creation methodologies. *14th National Conference of the South African Journal of Art History 2020*. Nelson Mandela University, Port Elizabeth. South Africa. September 2020.

## Creative Outputs

**Gehring, H.**

Gehring, H. *Love and Information* by Caryl Churchill. Director.

**Krastin, G.**

Krastin, G. *Arcade 2020*, initial release: December 2020, via IGTV. Curator.

**Krueger, A.**

Krueger, A. 2020. *The Voice in Your Head*, National Arts Festival Online. June 2020, Writer & Performer.



Mmatumisang Kgositadi ya ga Motsisi presents "Dumela Mosadi" for Arcade2020.

Photo: Mmatumisang Motsisi



Yvette Ellis presents "The Sleep of Reason" for *Arcade2020*.

Photo: Yvette Ellis



Oupa Sibeko presents "Body on Earth, mind on Pluto...An ode to Prof Jay" for *Arcade2020*.

Photo: Oupa Sibeko

Krueger, A. & Viktor, E. 2020. *Die Oog*. Cape Town: Naledi.

Krueger, A. 2020. "the programmable bride", IN *Writing Robotics: Africa vs Asia Vol 2*, Edited by Tendai Rinos Mwanaka. (Chitungwiza: Mmap).

Krueger, A. 2020. "Everybody is a Bridge", "Another poem", "... ... Falling ..." in *Best New African Poets: 2020 Anthology*, Edited by Tendai R Mwanaka (Chitungwiza, Zimbabwe: Mmap).

Mokuku, S.

Mokuku, S. *Pitso ea Linonyana*. Text developed from *Conference of the Birds* by Farid ud-Din Attar. Dramaturge.

Mokuku, S. *Hlapa Matsoho*, University of Johannesburg Playwriting Laboratory.

Mokuku, S. 2020. *I Simply Cunt* (Makhanda: nenina House).

Mokuku, S and Manning, G. 2020. *Dipalo* (Assitej).

Motsisi, M.

Motsisi, M. The Purple Shall Govern (First Year's Orientation Show). Director.

Parker, A.

Parker, A. *Arcade2020*, initial release: December 2020, via IGTV. Dramaturge and co-curator.



Photo: Simon Pamphilon

# Department of Economics and Economic History

Professor Hugo Nel  
Head of Department

## Introduction

The Department of Economics maintained a healthy research programme in 2020. Research outputs emanated from staff and Postgraduate publication partnerships, as well as individual and co-authored staff papers and publications. The research agenda and culture remain an integral part of teaching at the Postgraduate level. Research topics and themes typically arise during the Honours year, with students doing their research product structured as an academic article.

Growing from a strong profile in 2019, researchers in the Department of Economics were again productive in 2020. Staff co-authored books, contributed chapters to books, presented their research at local and international conferences and published in peer reviewed subsidy-earning journals, as well as research workshops and events. The Department's dual research focus remained focused on Environmental and Cultural Economics, together with Money and Banking and Financial Markets.

The main themes of the published papers this year were Development Economics, Cultural Economics, Political Economy and International Trade Policy. Money & Banking and Financial Markets also featured.

The Rhodes University partnership in the South African Cultural Observatory (SACO) continued in 2020, funded by the Department of Sport, Arts and Culture. At Rhodes, SACO is based in the Department of Economics under the leadership of Professor Jen Snowball. The aim of SACO is to provide evidence-based, policy-relevant research on the Cultural and Creative Industries (CCIs) in South Africa.

A number of Economics staff members have contributed to SACO reports, many of which have subsequently been published in academic journals. Postgraduate supervision is also increasing in the areas of cultural labour markets, creative cities, and cultural trade. SACO-related research work has also been presented internationally, most notably by Professor Jen Snowball.

# PUBLICATIONS

## Books/Chapters/Monographs

Rogan, M.

Rogan, M. and Cichello, P. (2020) (Re)conceptualizing Poverty and Informal Employment. In: Chen, M.A. and Carre, F. (eds.). *The Informal Economy Revisited Examining the Past, Envisioning the Future*. London: Routledge. p.98-102. ISBN: 9780367191511.

Rogan, M. (2020) Agricultural production, the household 'development cycle' and migrant remittances: continuities and change in the Eastern Cape hinterland. In: Bank, L., Posel, D. and Wilson, F. (eds.). *Migrant Labour after Apartheid: The Inside Story*. Cape Town: HSRC Press. p.217-239. ISBN: 9780796925794.

Snowball, J.D.

Snowball, J.D. (2020) Cultural Value. In: Towse, R. and Navarrete Hernández, T. (eds.). *Handbook of Cultural Economics*. 3rd Ed. UK: Edward Elgar Publishing Limited. p.206-215. ISBN: 9781788975797.

## Other Publications

Cattaneo, N.

Cattaneo, N. (2020) Africa's trade in services and the African Continental Free Trade Area Agreement. In: *South African Institute of International Affairs Special Report*. Johannesburg: South African Institute of International Affairs.

Cattaneo, N. and Snowball, J.D.

Cattaneo, N. and Snowball, J.D. (2020) South Africa's international trade in cultural products: a focus on trade with the EU in a comparative regional setting. In: *South African Cultural Observatory Report*. Port Elizabeth: South African Cultural Observatory.

Snowball, J.D.

Snowball, J.D. and Gouws, A. (2020) Measuring the impact of the Covid-19 Crisis on the Cultural and Creative Industries in South Africa: An early assessment. In: *Measuring the impact of the Covid-19 Crisis on the Cultural and Creative Industries in South Africa: An early assessment*. Port Elizabeth: South African Cultural Observatory.

Snowball, J.D. and Hadisi, S. (2020) Unpacking the disparity between employment levels and contribution to GDP within the Craft Sector. In: *Unpacking the disparity between employment levels and contribution to GDP within the Craft Sector*. Port Elizabeth: South African Cultural Observatory.

Snowball, J.D., Lutshaba, U. and Liebenberg, S. (2020) The Economic Mapping of the Cultural and Creative Industries in South Africa 2020 Capstone Report: Results and Policy Implications. In: *The Economic Mapping of the Cultural and Creative Industries in South Africa 2020 Capstone Report: Results and Policy Implications*. Port Elizabeth: South African Cultural Observatory.

Snowball, J.D., Collins, A.L. and Nwauche, E. (2020) The Value of the Repatriation of South African museum artefacts: Debates, Case Studies and a way forward. In: *The Value of the Repatriation of South African museum artefacts: Debates, Case Studies and a way forward*. Port Elizabeth: South African Cultural Observatory.

Snowball, J.D. and Tarentaal, D.

Snowball, J.D. and Tarentaal, D. (2020) Cultural Participation and Consumption in South Africa: A Demand-side report. In: *Cultural Participation and Consumption in South Africa: A Demand-side report*. Port Elizabeth: South African Cultural Observatory.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Botha, F. and Fraser, G.

Botha, F., Fraser, G. and Rhoads, T.A. (2020) Skill and Earnings Amongst Golfers on the Southern African Sunshine Tour. *South African Journal of Economics*. 2020 (2020). p.1-8.

Egbetokun, O.A. and Fraser, G.

Egbetokun, O.A. and Fraser, G. (2020) Factors Influencing Food Consumption Diversity Among Farming Households in Selected States of Southwestern Nigeria. *African Journal of Food, Agriculture, Nutrition and Development*. 20 (5). p.16325-16342.

Ezeoha, A.E.

Ezeoha, A.E., Obi, A., Igwe, A. and Ezeruigbo, C. (2020) The mobile phone revolution, the Internet and rural electricity: What are the implications for food security in Africa? *Information Development* 36 (4). p.603-622.

Fryer, D.

Fryer, D. and Joseph, M.V. (2020) A Marxist Education: Learning to Change the World. *Review of Radical Political Economics*. 52 (4). p.781-788.

Rogan, M.

Otterbach, S., Oskorouchi, H.R., Rogan, M. and Qaim, M. (2020) Using Google data to measure the role of Big Food and fast food in South Africa's obesity epidemic. *World Development*. 140 (1). p.1-13.

Snowball, J.D.

Snowball, J.D. and Hadisi, S. (2020) Do the cultural industries offer labour market opportunities for women and youth? A global south case study. *Cultural Trends*. 29 (4). p.267-286.

Hadisi, S. and Snowball, J.D. (2020) Employment in the Cultural and Creative Industries in South Africa. *African Review of Economics & Finance (The Journal of the African Centre for Economics & Finance)*. 12 (2). p.84-109.

Van Der Linde, J.C., Snowball, J.D. and Jooste, T. (2020) Mapping the spatial distribution of public funding for the arts, culture and heritage in South Africa: Mzansi's Golden Economy and the Cultural and Creative Industries. *African Review of Economics & Finance (The Journal of the African Centre for Economics & Finance)*. 12 (2). p.110-132.

Snowball, J.D. and Antrobus, G.G.

Snowball, J.D. and Antrobus, G.G. (2020) Festival value in multicultural contexts: City festivals in South Africa. *Tourism Economics*. 2020 (2020). p.1-20.

Snowball, J.D. and Mapuma, A.S.

Snowball, J.D. and Mapuma, A.S. (2020) Creative industries micro-enterprises and informality: a case study of the Shweshwe sewing industry in South Africa. *Journal of Cultural Economy*. 2020 (2020). p.1-15.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Cattaneo, N.

Cattaneo, N. Africa's trade in services: Trade potentials, negotiations and challenges in the context of the African Continental Free Trade Area Agreement. *Trade and Industrial Policy Strategies Forum 2020: Regional Industrial Development*. Zoom (online), Pretoria. South Africa. July 2020.

Fraser, G.

Mason, B.A., Martin, G.D., Fraser, G. and Zachariades, C. 2020 invasive alien plants in a economic crucible: conducting an economic evaluation of the invasive *Rubus* genus in South Africa. *46th annual conference South African Association of Botanists*. Qwaqwa, Qwaqwa. South Africa. January 2020.

Martin, G.D., Fraser, G. and Westwood, T.P. Guns and Rosehips. *46th annual conference South African Association of Botanists*. Qwaqwa, Qwaqwa. South Africa. January 2020.



# Faculty of Education

Professor Callie Grant

Dr Lise Westaway

Professor Nhlanhla Mpofu

Education Department Leadership Team

Photos: Simon Pamphilon

## Introduction

The COVID-19 pandemic, and the national lockdown which followed, is unprecedented and played havoc with our research projects and programmes during 2020. Given that much of our research takes place in educational institutions such as schools, our taken-for-granted ways of engaging with research participants and generating data were disrupted with the closure of schools. With no blueprint to guide us, we were challenged to think differently about our research decisions, take risks and innovate. This demanded of us - and our Postgraduate students - courage, perseverance, empathy and humility, like never before. Some studies were able to proceed whilst others could not, resulting in a number of Postgraduate students having to suspend their studies as a consequence of the pandemic.

## Faculty of Education: Reflections on 2020

Despite 2020 being a challenging and devastating year due to the pandemic, the Faculty of Education was able to celebrate a range of significant events.

Five of our Departmental colleagues graduated with their PhDs in 2020; Drs Zintle Songqwaru, Clement Simuja, Fortunate Gunzo and Zukiswa Nhase graduated with their PhDs in April 2020's virtual graduation whilst Dr Samukeliso Chikiwa graduated with her PhD in the October 2020 virtual graduation.



### Dr Zintle Songqwaru

#### THESIS

**“A theory-based approach to evaluating a continuing professional development programme aimed at strengthening environment and sustainability education”.**

#### SUPERVISED BY

**Distinguished Professor Heila Lotz-Sisitka and Professor Ingrid Schudel.**

**Photo: Faculty of Education**



### Dr Clement Simuja

#### THESIS

**“Transformative ICT education practices in rural secondary schools for developmental needs and realities: The Eastern Cape Province, South Africa”.**

#### SUPERVISED BY

**Professor Lorenzo Dalvit.**

**Photo: Faculty of Education**



### Dr Fortunate Gunzo

#### THESIS

**“Teachers’ perceptions, experiences and challenges related to using ICTs in teaching Social Sciences in marginalised classrooms in the Eastern Cape Province, South Africa”.**

#### SUPERVISED BY

**Professor Lorenzo Dalvit.**

**Photo: Faculty of Education**



### Dr Zukiswa Nhase

#### THESIS

**“An exploration of how grade 3 foundation phase teachers develop basic scientific process skills using an inquiry-based approach in their classrooms”.**

#### SUPERVISED BY

**Professor Ken Ngcoza, Sarah Murray and Distinguished Professor Heila Lotz-Sisitka.**

**Photo: Faculty of Education**



### Dr Samukeliso Chikiwa

#### THESIS

**“Exploring pre-service teachers’ reflective practice in the context of video-based lesson analysis”.**

#### SUPERVISED BY

**Professor Mellony Graven.**

**Photo: Faculty of Education**

One of our Departmental Research Associates also graduated with his PhD in 2020. Despite battling throat cancer during his Doctoral studies, Canadian-based Dr Ellison Musara demonstrated character, resilience and resolve by completing his thesis, despite a number of setbacks.



### Dr Ellison Musara

#### THESIS

**"A comparative study of conceptualizations and practices of inclusion as an aspect of social justice in three teacher education institutions in Canada, South Africa and Zimbabwe".**

#### SUPERVISED BY

**Professor Jo-Anne Vorster from CHERTL and Professor Callie Grant.**

Photo: Faculty of Education

Sadly, we lost one of our 2020 MEd graduates to COVID-19. Namibian scholar and Omusati Education Director, Laban Shapange, passed away on 3rd September 2020. He will be sorely missed by his Rhodes community.



### Laban Shapange

#### THESIS

**"An investigation into how teacher leadership can be developed among school teachers in a public combined School, in rural Namibia".**

#### SUPERVISED BY

**Professor Callie Grant.**

Photo: Faculty of Education

In January 2020, we co-hosted the South African Association for Research in Mathematics, Science and Technology Education (SAARMSTE) Conference together with Nelson Mandela University. This coincided with the last year of Professor Ken Ngcoza's term as SAARMSTE President. Dr Lise Westaway and Dr Pamela Vale (project manager and senior researcher in the South African Numeracy Chair) were chair and deputy chair, respectively. The accredited proceedings were edited by the Rhodes University conference committee.

Three of our PhD Scholars, Chrispen Mutanho, Ester Shinana and Dr Denuga attended the first-ever Virtual SAARMSTE Research School, hosted by Sol Plaatje University in Kimberly. The Research School was held under the leadership of Professor Audrey Msimanga, SAARMSTE President-Elect, who succumbed to COVID-19 on Tuesday, 29 June 2021.

Dr Farhana Kajee was invited as Keynote Speaker by the Western Cape Education Department (WCED) for their @Home Webinar on Tuesday, 30 June 2020. Her presentation was entitled *'Leading learning during the COVID-19 pandemic: Legitimizing Knowledge & Knowers'*. Based on the success of this presentation, Dr Kajee was invited

by Samuel Lundie, Teaching and Learning Specialist in the Faculty of Dentistry at the University of the Western Cape (UWC), to take part in their informal *'Learning from each other webinar'* on 15 July 2020. She was asked to repeat her presentation and to share some of her online assessment experiences and practices.

Professor Di Wilmot was invited to serve a second four-year term (2020-2024) as a member of the Steering Committee of the International Geography Union's Commission on Geographical Education (IGU-CGE).

Professor Callie Grant was invited by the University of KwaZulu-Natal to be a panellist for their webinar on the theme *'School leadership in times of crises: The COVID-19 pandemic'* on 27 May 2020. Her presentation was entitled *'Absence and presence in educational leadership work during the COVID-19 pandemic: Challenges and future opportunities'*.

Bev Moore was successful in sourcing funding from the British Council to promote Inclusive Education and the Teaching for All (T4ALL) programme within our department. Rhodes University was one of ten universities to receive this funding. The T4ALL programme includes a research

component in the form of monitoring and evaluation of Inclusive Education programmes, led by Professor Yusuf Sayed. COVID-19 prevented a number of plans, such as conducting Inclusive Education workshops with schools in the local community, from reaching fruition. Nonetheless, information relating to pertinent policy documents, case studies, reporting mechanisms and what Inclusive Education entails has been placed on flash drives to share with schools once the pandemic is over. Worth noting is that some of the materials developed by the programme team have been used with our B Ed FP 3rd and 4th year and PGCE students. A further plan, in collaboration with Associate Professor Dion Nkomo (Department of African Languages), is to translate pertinent inclusive education terminology into isiXhosa. The intention is to conceptualise a glossary booklet that will be helpful for isiXhosa speaking teachers. This work is in progress.

Dr Lise Westaway was invited by the UNESCO Co-Chair in ECD to develop the mathematics education curricula of the new Diploma in Early Childhood Care and Education that will be offered by numerous universities in South Africa from 2022.

Associate Professor Nhlanhla Mpofu was elected as an Executive Committee member of the South African Young Academy of Science (SAYAS). SAYAS selects leading South African young and emerging researchers in basic and applied science, engineering, social sciences, arts and the humanities. SAYAS aims to contribute towards solutions to national and global challenges facing society; provide a platform for young scientists to influence policy decisions; contribute towards the development of scientific capacity in South Africa through mentoring and role-modelling of future scientists; and foster opportunities for interdisciplinary collaborations amongst young scientists.

Associate Professor Nhlanhla Mpofu signed a Memorandum of Understanding with Professor Tom Smits from the University of Antwerp in Belgium to complete a longitudinal study on the learning impact of translanguaging in multilingual content-based instruction classrooms. This research project will include Postgraduate students from Belgium and South Africa.

## South African Numeracy Chair Project 2020 Report

Professor Mellony Graven received a B3 NRF rating in December 2020.

Professor Graven coordinated the work of the ICME-14 Shanghai (2020 postponed due to COVID) plenary panel 'Math in global education reform: Conversations that need to happen'. She was invited as a speaker for Topic Study Group 32: Knowledge in/for teaching mathematics at primary level.

Masters student Tarryn Lovemore graduated with distinction, and Research Chair Doctoral candidates Samu Chikiwa

and Roxanne Long received high praise from external examiners for their Doctoral research.

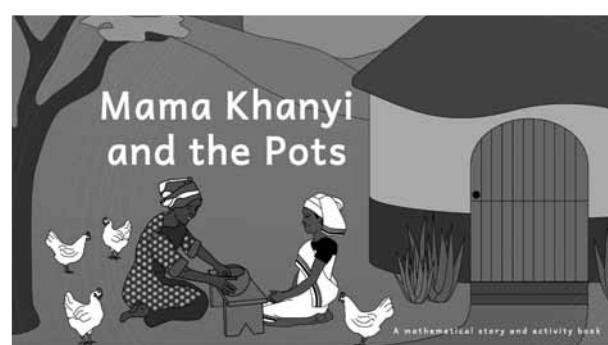
The SANCP team published several journal articles, book chapters and had several papers accepted for regional and international conferences. The international conferences were postponed to 2021.

Dr Pamela Vale gave a plenary presentation (on behalf of the Chair) at the Inclusive Memory Conference held at the Department of Education at Roma Tre University in Rome, 15 February 2020. Thereafter she travelled to Australia where she gave a seminar at the University of Queensland to the Education Department.

The translation of our research-informed collaboration Mathematics Mental Starters Assessment Project (MSAP) between the two numeracy Chairs (Professor Graven and Professor Venkat), our teams and the DBE into all official languages in 2020 has allowed for the programme to go to scale in 2021 and 2022.

The Fraction as Measure research-informed story book Mama Khanyi and the pots (a collaboration between SANC and academics in Mexico and Australia) has now been translated into Italian, Czech and Spanish and is in use in teacher education programmes across five (5) countries.

Two (2) of the Chair members (Dr Chikiwa and Dr Vale) took up positions in the Faculty of Education which is really exciting.



One day Mama Khanyi went to collect some firewood.

Two elders visited from a village far away. They wanted to ask Mama Khanyi to make a very special pot. The pot was a gift for a wedding.

It needed to be exactly the same height as the one they were carrying.



Thembi measured it very carefully with her hands for her mom.

**Mama Khanyi and the pots (a collaboration between SANC and academics in Mexico and Australia) has now been translated into Italian, Czech and Spanish and is in use in teacher education programmes across five (5) countries.**

Photo: Faculty of Education

Emeritus Professor Terezinha Nunes from Oxford University, United Kingdom, was invited by the Rhodes University Numeracy Chair to conduct a variety of research seminars and to work with MEd and PhD students. Her research is extensive and focuses on numeracy and literacy development covering cognitive and cultural issues.

Dr Peter Bryant from Oxford University, United Kingdom, was invited by the Rhodes University Numeracy Chair to conduct a variety of research seminars. He is a developmental psychologist who worked with Jean Pierre Piaget. He works closely with Terezinha Nunes on numeracy and literacy development, particularly with learners with special needs.

## SARChI Chair Mathematics Education Report 2020

Like for so many, 2020 was a tumultuous year for the SARChI Mathematics Education Chair. The pandemic had a considerable impact on all its offerings and research ambitions. As the first wave of the pandemic swept across the region in 2020, our researchers quickly had to adapt and modify their research plans to align with national pandemic protocols. The Chair, Professor Marc Schäfer, thus needed to be flexible and revise its objectives and intended milestones for 2020. In essence, this meant that the completion of the various research projects was extended into 2021.

International participation and mobility of the chair activities were also curtailed significantly, mainly due to travel and face-face restrictions. This forced us into a new mode of digital communication and supervision, which initially raised all sorts of connectivity challenges, but, with gained experience in this regard, resolved itself as the year unfolded. One of last year's highlights was going to be the ICME-14 congress in China, in which the Chair and a number of associated researchers had a significant role. This congress was postponed to 2021. Our work with our semiotics and MCM colleagues in Italy and Germany respectively also took a back seat. Nevertheless, we were successful in securing a Routledge book contract. The title of the book is *Visualisation and epistemological access to mathematics education in Southern Africa*. This book brings together our deliberations, research and engagement with visualization

processes in mathematics education in the region and involves a number of our own researchers and collaborators.

## Research Report 2020: SARChI Chair in Global Change and Social Learning Systems and Environmental Learning Research Centre

Despite the COVID-19 pandemic lockdowns, researchers in the Environmental Learning Research Centre had a productive and richly textured research year. Starting in January 2020, Distinguished Professor Lotz-Sisitka and Injairu Kulundu-Bolus visited Bristol University in the UK for the launch meeting of the GCRF Transforming Education for Sustainable Futures research programme. The SARChI Chair in Global Change and Social Learning Systems is leading a South African hub for this 4.5 Million British Pounds research project. This will involve setting up a national research Network Plus involving 22 funded research projects focusing on Transforming Education for Sustainable Futures. In March 2020, shortly before the first lockdown, we were also able to host the South African launch workshop in Johannesburg. This project works with similar hubs in India, Somalia, Rwanda and the UK.

Another highlight was the launch of a Routledge book on '*Green Skills Research Methods and Cases*', which was edited by Professor Eureta Rosenberg, Dr Presha Ramsarup and Distinguished Professor Heila Lotz-Sisitka. The book carries research from over 20 studies that have been undertaken in the Environmental Learning Research Centre over the past 15 years, together with key outcomes of the Development Bank of South Africa's supported Green Skills research project. The research is informing international green skills research for just transitions and is also supporting the GCRF research project on Vocational Education and Training (VET) Africa 4.0, which is a partnership project between the Chair, the Wits University Centre for Researching Education and Labour, Nottingham University and the University of Gulu in Uganda. This research programme seeks to articulate new orientations to VET in Africa within the context of sustainable development imperatives facing the continent.

Shortly before lockdown, the ELRC also hosted a research school on the fourth generation of Cultural Historical Activity Theory research with Visiting Professors Yrjö Engeström and Annalise Sannino from the University of Helsinki and Tampere. The research school was attended by CHAT researchers in the ELRC who are engaged in the writing of a book that captures twelve (12) years of cultural-historical activity theory research focusing on expansive learning, sustainability and the common good in southern Africa.

In April, we were pleased to hear that our application for a DSI/NRF Community of Practice focusing on Transformative Social Learning and Transdisciplinary Sustainable Development Action was funded. This COP involves eleven (11)



Research Chairs from six (6) universities and brings sustainability scientists and educational scientists together to leverage their research for policy and practice impacts.

In the middle of the lockdown period, the Chair also took on an exciting initiative with UNESCO and the Joint Education Services to work on a regional *#OpenUpYourThinking* Research Challenge for young researchers across SADC to explore the implications of the COVID-19 pandemic for education in southern Africa. The Chair took the lead on Theme 1 of this research challenge which focused on Education for Sustainable Development and the intersecting challenges of water, food and livelihoods.

Also impacting regionally and internationally during the COVID-19 pandemic was the work of the One Ocean Hub, in which several high-level policy engagements took place despite lockdown conditions. The One Ocean Hub also took up new challenges, such as working on an animation film and producing a podcast and online versions of their Lalela Ulwandle play. A fishers solidarity programme was also initiated during the lockdown. The Empatetheatre

methodology developed by Dylan McGarry continues to draw attention worldwide.

2020 was the final of the first five-year cycle of the SARCHI Chair, with preparations being made for a second period of the Chair's trajectory. This involved submitting a substantive report to the NRF, as well as an external review. In September, we were also excited to learn that the SARCHI Chair five-year review drew very positive reviews and has been funded again by the DSI/NRF for another five-year period. In the reporting period, sixteen (16) journal articles and eighteen (18) book chapters were produced by the Chair and ELRC scholars. Three PhDs also concluded their studies: Zintle Songqwaru, Injairu Kulundu-Bolus, and Gibson Mphepo, graduating in April and October, where they walked the invisible stage of the first two virtual graduations at Rhodes University. We look forward to the day that we can gather in-person to celebrate their achievements fully!

In closing, we wish to pay tribute to our colleagues and Postgraduate scholars for displaying the attributes of adaptability, flexibility, agility and a can-do attitude during this extraordinary time of the global pandemic. Rising to the challenge of online and remote research teaching and supervision with no lead-in time was not straightforward, but the way in which the Department rallied in this effort speaks to a dynamic, innovative, resilient and creative collective.

## RESEARCHERS CHALLENGE

### INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

**THEME 1: EDUCATION FOR SUSTAINABLE DEVELOPMENT AND THE COVID-19 FOOD, WATER AND ECONOMIC (LIVELIHOODS) CRISIS**



**OPENUPYOURTHINKING**  
READY, SET, THINK!



**CALL FOR PARTICIPANTS:**

If you feel that you are able to contribute to the research through your insights / lived experience with regards to water, food and / or economic livelihoods in the SADC region, we would love to hear from you

COVID-19 has disrupted the livelihoods of people working in informal sectors, and many communities are struggling to find adequate resources for feeding their families. It has also led to the closure of schools which provide education, daily nutrition and a safe place for many learners during the day. School nutrition programmes, where these existed, have closed down. Issues of access to clean water in education institutions, communities and at household level in southern Africa are also in focus, especially in the context of needing to wash hands regularly as one of the measures to avoid spreading of the virus: yet this is not possible in households and learning institutions where water supplies are cut off or barely available. We wish to understand how to 'build back better' from this situation, in order to transform education systems for sustainable futures.

Contact theme leader Heila Lotz-Sisitka ([h.lotz-sisitka@ru.ac.za](mailto:h.lotz-sisitka@ru.ac.za)) or Rachel Neville ([Rachel@jet.org.za](mailto:Rachel@jet.org.za)) for more information







The Chair also took on an exciting initiative with UNESCO and the Joint Education Services to work on a regional *#OpenUpYourThinking* Research Challenge.

Photo: Faculty of Education

**THEME 1:**  
EDUCATION FOR SUSTAINABLE DEVELOPMENT AND COVID-19 IN SOUTHERN AFRICA  
INTERSECTING PERSPECTIVES ON WHY WATER, FOOD AND LIVELIHOODS MATTER IN TRANSFORMING EDUCATION FOR SUSTAINABLE FUTURES

**"NORMAL"**



I can't wait for this to all be over and we can go back to normal!

**COVID**



**A WAY FORWARD**



What if we went forward instead?

Education for Sustainable Development and the intersecting challenges of water, food and livelihoods.

Photo: Faculty of Education

# PUBLICATIONS

## Books/Chapters/Monographs

Grant, C.

Grant, C. (2020) An analysis of school leadership preparation and development in Namibia. In: Moorosi, P. and Bush, T. (Eds.). *Preparation and development of school leaders in Africa*. London: Bloomsbury. p.55-71. ISBN: 9781350081147.

Graven, M.

Graven, M. (2020). Building multidirectional learning opportunities between teacher, teacher advisor and research communities. In: *International Handbook of Mathematics Teacher Education (2nd Ed.) Volume 3: Participants in Mathematics Teacher Education*. Pp 241-264, Brill/Sense:Boston DOI:10.1163/9789004419230\_010.

Graven, M.

Graven, M. and Lerman, S.. (2020) Mathematics teacher identity. In: Lerman, S. (ed.). *Encyclopedia of Mathematics Education*. 2nd Ed. p.597-600. ISBN: 9783030157883.

Ijabadeniyi, A.

Ijabadeniyi, A. (2020) Transcending the Instrumental Logic of Social Responsibility: A Corporate Reputation Perspective. In: Rendtorff, J.D. (ed.). *Handbook of Business Legitimacy: Responsibility, Ethics and Society*. Online: Springer, Cham. p.1-25. ISBN: 9783319688459.

Ijabadeniyi, A. and Lotz-Sisitka, H.

Ijabadeniyi, A. and Lotz-Sisitka, H. (2020) CSR, Corporate Heritage Identity and Social Learning. In: Crowther, D. and Seifi, S. (eds.). *Governance and Sustainability*. Singapore: Springer Singapore. p.143-166. ISBN: 9789811563690.

Lotz-Sisitka, H.

Ramsarup, P. and Lotz-Sisitka, H. (2020) Transitioning into work: A learning and work transitioning process perspective. In: Rosenberg, E., Ramsarup, P. and Lotz-Sisitka, H.B. (eds.). *Green Skills Research in South Africa. Models, Cases and Methods*. London: Routledge. p.97-113. ISBN: 9781000764598.

Lotz-Sisitka, H. (2020) Ways of Being Free: Finding 'pulses of freedom' in the border zone between Higher and Public Education for Sustainable Development. In: Armon, J., Scoffham, S. and Armon, C. (eds.). *Prioritizing Sustainability Education: A Comprehensive Approach*. p.67-80. ISBN: 9780429021800.

Lotz-Sisitka, H. and Ramsarup, P. (2020) Green skills research: Implications for systems, policy, work and learning. In: Rosenberg, E., Ramsarup, P. and Lotz-Sisitka, H.B. (eds.). *Green Skills Research in South Africa. Models, Cases and Methods*. London: Routledge. p.208-223. ISBN: 9781000764598.

Lotz-Sisitka, H. (2020) Green skills supply: Research from providers' vantage point(s). In: Rosenberg, E., Ramsarup, P. and Lotz-Sisitka, H.B. (eds.). *Green Skills Research in South Africa. Models, Cases and Methods*. London: Routledge. p.143-156. ISBN: 9781000764598.

Lotz-Sisitka, H. (2020) Probing the potential of social ecosystemic skills approaches for green skills planning: Perspectives from the Expanded Public Works Programme studie. In: Rosenberg, E., Ramsarup, P. and Lotz-Sisitka, H.B. (eds.). *Green Skills Research in South Africa. Models, Cases and Methods*. London: Routledge. p.113-127. ISBN: 9781000764598.

Lotz-Sisitka, H. and Pesanayi, T.

Lotz-Sisitka, H. and Pesanayi, T. (2020) Formative interventionist research generating iterative mediating processes in a vocational education and training learning network. In: Rosenberg, E., Ramsarup, P. and Lotz-Sisitka, H.B. (eds.). *Green Skills Research in South Africa. Models, Cases and Methods*. London: Routledge. p.157-174. ISBN: 9781000764598.

Ngcoza, K.M.

Oeftering, T., Davis, C.A., Ngcoza, K.M. and Nhase, Z. (2020) "Fees must fall" - South African student protests in the context of (informal) citizenship education. In: Szukala, A. and Oeftering, T. (eds.). *Protest und Partizipation*. Germany: Nomos. p.187-200. ISBN: 9783848754823.



Launch of a Routledge book on 'Green Skills Research Methods and Cases', which was edited by Professor Eureta Rosenberg, Dr Presha Ramsarup and Distinguished Professor Heila Lotz-Sisitka.

Photo: Faculty of Education

Rosenberg, E.

Rosenberg, E. (2020) Eco-Schools as Education for Sustainable Development in Rural South Africa. In: Gough, A., Lee, J.C.K. and Tsang, E.P.K. (eds.). *Green Schools Globally. International Explorations in Outdoor and Environmental Education*. Online: Springer, Cham. p.289-307. ISBN: 9783030468200.

Rosenberg, E. (2020) Mining: a laminated, dialectical methodology for identifying not-yet-obvious green skills demand. In: Rosenberg, E., Ramsarup, P. and Lotz-Sisitka, H.B. (eds.). *Green Skills Research in South Africa. Models, Cases and Methods*. London: Routledge. p.34-50. ISBN: 9781000764598.

Rosenberg, E. (2020) Framing learning needs assessments for sustainability policy practices. In: Rosenberg, E., Ramsarup, P. and Lotz-Sisitka, H.B. (eds.). *Green Skills Research in South Africa. Models, Cases and Methods*. London: Routledge. p.128-142. ISBN: 9781000764598.

Rosenberg, E. (2020) Skills for just transitions to sustainability: An orientation. In: Rosenberg, E., Ramsarup, P. and Lotz-Sisitka, H.B. (eds.). *Green Skills Research in South Africa. Models, Cases and Methods*. London: Routledge. p.1-15. ISBN: 9781000764598.

Rosenberg, E. (2020) Synthesis and elaboration of critical realist methodology for green skills research. In: Rosenberg, E., Ramsarup, P. and Lotz-Sisitka, H.B. (eds.). *Green Skills Research in South Africa. Models, Cases and Methods*. London: Routledge. p.192-207. ISBN: 9781000764598.

Rosenberg, E. and Lotz-Sisitka, H.

Rosenberg, E., Ramsarup, P. and Lotz-Sisitka, H. (ed.) (2020) *Green Skills Research in South Africa. Models, Cases and Methods*. London: Routledge. ISBN: 9781000764598.

Ward-Smith, C., Olivett, L.L. and Akhurst, J.

Ward-Smith, C., Olivett, L.L. & Akhurst, J. (2020). Decolonising nature-based pedagogy: the importance of history, socio-cultural and socio-material context in mediating connectedness-with-nature. In: Cutter-Mackenzie, A., Malone, K. and Barratt Hacking, E. (eds.). New York: Springer. p.1549-1574.

## Concerts, Exhibitions, Performances, Workshops, Events

Chetty, P.

Chetty, P. Online Presentation. Climate Change Education into the future. *Environmental Education Association of Southern Africa Online Conference*. Online, Makhanda. South Africa. 7 October 2020.

Chetty, P. Online Presentation. Resonance Praxis building. *National Institute for Humanities and Social Sciences Annual Conference*. Online, Gauteng. South Africa. 3 November 2020.

Erwin, K., Pereira-Kaplan, T.L. and McGarry, D.K.

Erwin, K., Pereira-Kaplan, T.L. and McGarry, D.K. Workshop presented. One Ocean Hub Shorebreak session 2: Social and natural sciences in MPA policy. *One Ocean Hub*. Online, Makhanda. South Africa. 19 October 2020.

**Erwin, K., Pereira-Kaplan, T.L., Mcgarry, D.K. and James, A.**  
**Erwin, K., Pereira-Kaplan, T.L., Mcgarry, D.K. and James, A.** Workshop presented. One Ocean Hub Shorebreak session 1: Language, participation and solidarity. *One Ocean Hub*. Online, Makhanda. South Africa. 12 August 2020.

**Jalasi, E.**

**Jalasi, E.** Co-facilitation. Cultural Historical Activity Theory summer school and the CHAT BOOK authors' writing workshop. *Hosted by the Environmental Learning Research Centre*. Rhodes University, Makhanda. South Africa. 17 - 23 February 2020.

**James, A.**

**James, A.** Workshop presented. Source to Sea: Global citizenship and water. *Webinar*. Online, Cape Town. South Africa. 14 August 2020.

**James, A.** Blog. Creativity in engaged research. *Reflecting on empatheatre and creative practice*. Online, Cape Town. South Africa. 1 November 2020.

**Kulundu, I.M.**

**Kulundu, I.M.** Online lecture. Climate change leadership. *Centre for Environment and Development Studies (CEM), Uppsala University (UU) and Swedish University of Agricultural Sciences (SLU)*. Online, Uppsala. Sweden. 21 October 2020.

**Lotz-Sisitka, H.**

**Lotz-Sisitka, H.** Keynote. Sustainability Starts with Teachers (SST) National Workshop for the Capacity Building Programme for Teacher Educators on Education for Sustainable Development (CAP-ESD) in partnership with Fundisa for Change. *SST South Africa National Workshop*. Online, Makhanda. South Africa. 23 June 2020.

**Lotz-Sisitka, H.** Keynote. Conceptualising Education for Sustainable Futures: Framing the work of the TESF Network Plus. *Hosted by School of Education, University of Bristol*. Online, Bristol. United Kingdom. 22 July 2020.

**Lotz-Sisitka, H.** Webinar Panelist. *SADC Member States on Education Sector Response to COVID-19*. Hosted by UNESCO ROSA. Online, Harare. Zimbabwe. 23 July 2020.

**Lotz-Sisitka, H.** Online Presentation. Charting an SDG 4.7 Roadmap for Radical, Transformative Change in the Midst of Climate Breakdown. *Hosted by CIES2020*. Online, Miami. USA. 29 April 2020.

**Mcgarry, D.K.**

**Mcgarry, D.K., Coppen, N. and Mthombeni, M.** Directors. Performance: Lalela Ulwandle. *Empatheatre Collective*. Port Elizabeth Church, Port Elizabeth. South Africa. 9 March 2020.

**Mcgarry, D.K., Coppen, N. and Mthombeni, M.** Directors. Performance: Lalela Ulwandle. *Empatheatre Collective*. Box Theatre, Rhodes University, Makhanda. South Africa. 10 - 11 March 2020.

**Mcgarry, D.K.** Radio podcast. Lalela Ulwandle Radio Drama. *One Ocean Hub*. Online, Makhanda. South Africa. 1 July 2020.

**Mcgarry, D.K.** Workshop presented. African Traditional Healers Workshop. *Southern African Association of Jungian Analysts*. SAAJA, Cape Town. South Africa. 7 November 2020.

**Mcgarry, D.K.** Online Presentation. UN ocean week presentation on *Indlela Yokuphila* Webinar. *One Ocean Hub*. Online, Makhanda. South Africa. 10 June 2020.

**Mcgarry, D.K.** Online lecture. Empatheatre: A theatre-based methodology for collaborative, woven, transgressive and 'de-academised' research in South Africa. *A collaboration between the Intercultural Communication through Practice & Environmental Humanities Research Centre*. Bath Spa University. Online, Bath. UK. 18 November 2020.

**Mcgarry, D.K. and Pereira-Kaplan, T.L.**

**Mcgarry, D.K. and Pereira-Kaplan, T.L.** Panel. Why does transformative ocean governance need civil society? *Transformed and Transformative Ocean Governance Conference*. Nelson Mandela University, Port Elizabeth. South Africa. 22 - 24 January 2020.

**Mcgarry, D.K., Doyle, D. and Pereira-Kaplan, T.L.**

**Mcgarry, D.K., Doyle, D. and Pereira-Kaplan, T.L.** Webinar Presentation. The Invisible Work of Scholar Activists and Pracademics. *One Ocean Hub*. Online, Makhanda. South Africa. 28 October 2020.

**Mcgarry, D.K., Erwin, K. and James, A.**

**Mcgarry, D.K., Erwin, K., Erwin, K. and James, A.** Workshop presented. Lalela ulWandle: Creativity in knowledge co-production, the story of Empatheatre. *Marine Social Science Webinar Series*. Hosted by Cardiff University. Online, Cardiff. Wales. 13 November 2020.

**Mcgarry, D.K., Erwin, K. and Pereira-Kaplan, T.L.**

**Coppen, N., Mcgarry, D.K., Mthombeni, M., Erwin, K. and Pereira-Kaplan, T.L.** Script produced. MPA shorebreak. *One Ocean Hub*. Rhodes University, Makhanda. South Africa. 1 October 2020.

**Coppen, N., Mcgarry, D.K., Mthombeni, M., Erwin, K., Erwin, K. and Pereira-Kaplan, T.L.** Script produced. *Lalela Ulwandle*. *One Ocean Hub*. Rhodes University, Makhanda. South Africa. 1 November 2020.

**Mcgarry, D.K., Pereira-Kaplan, T.L., James, A. and Francis, B.**

**Mcgarry, D.K., Pereira-Kaplan, T.L., James, A. and Francis, B.** Workshop presented. Creativity in participatory research. *One Ocean Hub*. Rhodes University, Makhanda. South Africa. 10 - 12 March 2020.

**Pereira-Kaplan, T.L.**

**Pereira-Kaplan, T.L.** Blog. Presenting Empatheatre to the United Nations. *Empatheatre*. Online, Makhanda. South Africa. 1 July 2020.

**Pereira-Kaplan, T.L.** Online Presentation. *Lalela Ulwandle* Webinar. *UN Ocean Week*. Online, Makhanda. South Africa. 1 May 2020.

**Pereira-Kaplan, T.L.** Online Presentation. UN Nippon presentation: Procedural injustices faced by Small scale fishers under COVID lockdown Webinar. *One Ocean Hub*. Online, Makhanda. South Africa. 10 November 2020.

**Pereira-Kaplan, T.L.** Online Presentation. UN Nippon presentation of impacts of COVID on Small Scale fishers Webinar. *One Ocean Hub*. Online, Makhanda. South Africa. 22 May 2020.

**Pereira-Kaplan, T.L.** Online Presentation. What does Building Back Better look like? *'Inspired Futures Dialogue' Collective*. Online, Makhanda. South Africa. 12 August 2020.

**Pereira-Kaplan, T.L.** Online Presentation. From Community Kitchens to Just Food Systems. 16 September 2020. *'Inspired Futures Dialogue' Collective*. Online, Makhanda. South Africa. 16 September 2020.

**Pereira-Kaplan, T.L. and Maqwelane, L.**

**Pereira-Kaplan, T.L. and Maqwelane, L.** Online Presentation. What does Community Action Network Democracy look like, in the age of Covid? *'Inspired Futures Dialogue' Collective*. Online, Makhanda. South Africa. 2 September 2020.

**Pereira-Kaplan, T.L., Lotz-Sisitka, H. and Ntshudu, M.E.**

**Pereira-Kaplan, T.L., Lotz-Sisitka, H. and Ntshudu, M.E.** Communication and social learning network response. *Eastern Cape Together Iqonga LoThungelwano. Imvotho Bubomi Learning Network (IBLN): a network of farmers, students, academics and activists with its focus on communication and social learning to respond to the COVID-19 pandemic with a strong focus on rural Eastern Cape*. Online, Eastern Cape. South Africa. 1 April - 1 September 2020.

**Rosenberg, E., Thifhulufhelwi, R. and Mtati, N.**

**Rosenberg, E., Thifhulufhelwi, R. and Mtati, N.** Online Presentation. National Biodiversity Research and Evidence Indaba. *Hosted by the Department of Environment, Forestry and Fisheries*. Online, Pretoria. South Africa. 8 - 9 September 2020.

**Schafer, M., Chikiwa, C. and Dongwi, B.L.**

**Schafer, M., Chikiwa, C., Mudaly, V. and Dongwi, B.L.** Facilitator. Visualisation processes in the teaching and learning of mathematics [Symposium]. *Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Nelson Mandela University, Port Elizabeth. South Africa. 14 - 16 January 2020.

**Schudel, I.**

**Schudel, I.** Online Presentation. Transformative learning. *ESD Innovate and Kappa Delta Pi Global Online Forum for ESD Teacher Education*. Online, Canada. 1 March 2020.

**Schudel, I.** Invitational plenary address. Transformative Learning in Climate Change Education: Principles and dialectics in two rural

primary classrooms. *Environmental Education Association of Southern Africa Online Conference*. Online, Makhanda. South Africa. 6 - 7 October 2020.

**Schudel, I. and Songqwaru, N.Z.**

**Schudel, I., Songqwaru, N.Z. and Tshiningayamwe, S.** Online Presentation. ESD Knowledge Webinar. *UNESCO Sustainability Starts with Teachers Course*. Online, Makhanda. South Africa. 22 October 2020.

**Thifhulufhelwi, R.**

**Thifhulufhelwi, R.** Presentation. Navigating Power Dynamic-Contradictions through double stimulation tools in natural resource management practices. *International Research School on Cultural Historical Activity Theory, hosted by the Environmental Learning Research Centre*. Rhodes University, Makhanda. South Africa. 17 - 20 February 2020.

**Thifhulufhelwi, R.** Online Presentation. Thifhulufhelwi, R. Presentation: Narrative of Emerging Researcher within the Science Policy Interface- Ecological Restoration and scientific capacity for the post 2020 agenda. *5th Annual Biodiversity Research and Evidence Indaba, hosted by the Department of Environment, Forestry and Fisheries National Online Conference*. Online, Pretoria. South Africa. 8 - 9 September 2020.

**Thifhulufhelwi, R., Lotz-Sisitka, H. and Jalasi, E.**

**Thifhulufhelwi, R., Lotz-Sisitka, H. and Jalasi, E.** Presentation. Analysing Power Dynamic Contradictions as focus for Transformative Processes in the Blyde Natural Resource Management programme. *Water-Energy-Food Nexus and SDGs Advancement International Online Conference*. Online, Europe. 6 - 7 April 2020.

**Van Borek, S.**

**Van Borek, S.** Online Presentation. Engaging Learners Online. *Studio20 Conference hosted by BC Campus*. Online, Canada. 1 November 2020.

**Van Borek, S.** Session chair/moderator. Shifting landscapes: Engaging ESD Learning Online. *Environmental Education Association of Southern Africa Online Conference*. Online, Makhanda. South Africa. 6 - 7 October 2020.

**Van Borek, S.** Online Presentation. Wet'suwet'en Nation, Blocking Pipelines, and unsettling environmental justice. *Environmental Learning Research Centre Seminar*. Online, Makhanda. South Africa. 17 April 2020.

**Van Borek, S.** Online Presentation. Nature Speaking podcasts and lessons from lockdown soundscapes. *Environmental Learning Research Centre Webinar*. Online, Makhanda. South Africa. 31 July 2020.

**Van Borek, S.** Online course presentation. *Nature Speaking (podcasting about lockdown soundscapes) hosted by the Emily Carr University of Art + Design, Vancouver, Canada*. Online, Vancouver. Canada. 1 July - 1 August 2020.

**Westaway, L., Davis, Z., Brown, B. and Govender, R.**

**Westaway, L., Davis, Z., Brown, B. and Govender, R.** Symposium. Addressing the quality of teacher education through the Primary Teacher Education Project. *28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education*. NMU, Port Elizabeth. South Africa. January 2020.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

**O'Donoghue, R.B.**

**O'Donoghue, R.B. and Roncevic, K.** (2020) The development of education for sustainable development. Materials for inclusive education in South African curriculum settings. *Journal of Education for Sustainable Development*. 1 (20). p.1-7.

**Rosenberg, E.**

**Cockburn, J., Rosenberg, E., Copteros, A., Cornelius, S.F.A., Libala, N., Metcalfe, L. and Van Der Waal, B.W.** (2020) A Relational Approach to Landscape Stewardship: Towards a New Perspective for Multi-Actor Collaboration. *Land*. 9 (224). p.1-20.

**Schudel, I.**

**Nissen, S., Prendergast, K., Aoyagi, M., Birmingham, K., Hasan, M., Hayward, B., Jackson, T., Jha, V., Mattar, H., Schudel, I., Venn,**

S. and Yoshida, A. (2020) Young people and environmental affordances in urban sustainable development: insights into transport and green and public space in seven cities. *Sustainable Earth*. 3 (17). p.1-12.

**Souza, B.**

**Souza, B.** (2020) Gender Performativity, Queer Sexualities and Fictional Representation in Selected Short Stories from Malawi and Uganda. *Journal of Humanities*. 28 (1). p.1-18.

**Wilmot, D.**

**Lee, J., Catling, S., Kidman, G., Bednarz, R., Krause, U., Martija, A.A., Ohnishi, K., Wilmot, D. and Zecha, S.** (2020) A multinational study of authors' perceptions of and practical approaches to writing geography textbooks. *International Research in Geographical and Environmental Education*. 2020 (2020). p.1-21.

## Peer Reviewed Subsidy-Earning Journal Research Publications

**Bhurekeni, J.**

**Bhurekeni, J.** (2020) Decolonial Reflections on the Zimbabwean Primary and Secondary School Curriculum Reform Journey. *Educational Research for Social Change*. 10 (2). p.101-115.

**Burt, J. and James, A.**

**Burt, J., James, A., Walters, S. and von Kotze, A.** (2020) Working for Living: Popular Education as/at Work for Social-ecological Justice. *Southern African Journal of Environmental Education*. 36 (2020). p.1-12.

**Chakona, G.**

**Chakona, G., Ndabula, Y., Mason, P., Asfour, F.M. and Oluwole, D.O.** (2020) Using Translanguaging in Higher Education to Empower Students' Voices and Enable Epistemological Becoming. *Alternation: Interdisciplinary Journal for the Study of the Arts and Humanities in Southern Africa (Formerly International Journal for the Study of Southern African Literature and Languages)*. 31 (2020). p.51-80.

**Engestrom, Y.**

**Skipper, M., Nohr, S.B. and Engestrom, Y.** (2020) The change laboratory in medical education: Two examples of tackling contradictory challenges. *Medical Education*. 55 (1). p.93-100.

**Cenci, A., Lemos, M., Bôas, D.F.V., Damiani, M.F. and Engestrom, Y.** (2020) The contradictions within inclusion in Brazil. *Learning Culture and Social Interaction*. 24 (2020). p.1-14.

**Engestrom, Y. and Pyörälä, E.** (2020) Using activity theory to transform medical work and learning. *Medical Teacher*. 43 (2021). p.7-13.

**Engestrom, Y.** (2020) Concept formation in the wild: Towards a research agenda. *Education et Didactique*. 14 (2). p.99-113.

**Engestrom, Y., Nuttal, J. and Hopwood, N.** (2020) Transformative agency by double stimulation: advances in theory and methodology. *Pedagogy, Culture & Society*. 10 (2020). p.1-8.

**Engestrom, Y. and Sannino, A.**

**Engestrom, Y. and Sannino, A.** (2020) From mediated actions to heterogenous coalitions: four generations of activity-theoretical studies of work and learning. *Mind, Culture, and Activity*. 2020 (2020). p.1-20.

**Glen, N.**

**Glen, N. and Mearns, K.F.** (2020) Sustainable Tourism Implementation for Small Accommodation Establishments in South Africa. *African Journal of Hospitality, tourism and Leisure (AJHTL)*. 9 (3). p.131-148.

**Grant, C.**

**Grant, C.** (2020) Double Stimulation and Transformative Agency for Leadership Development of School Learners in Southern Africa. *Pedagogy, Culture & Society*. August 2020 p.1-18.

**Grant, C. and Kajee, F.A.**

**Grant, C. and Kajee, F.A.** (2020) Expansive learning in the leadership development of school learners: A Southern African case study. *International Journal of Leadership in Education*. 2020 (2020). p.1-18.



The *One Ocean Hub* also took up new challenges, such as working on an animation film, and producing a podcast and online versions of their *Lalela Ulwandle* play.

Photo: Faculty of Education

#### Harrison, G.D.

**Harrison, G.D.** (2020) A snapshot of early childhood care and education in South Africa: Institutional offerings, challenges and recommendations. *South African Journal of Childhood Education (SAJCE)*. 10 (1). p.1-10.

#### Ijabadeniyi, A.

**Ijabadeniyi, A.** and Vanclay, F. (2020) Socially-Tolerated Practices in Environmental and Social Impact Assessment Reporting: Discourses, Displacement, and Impoverishment. *Land*. 9 (33). p.1-18.

#### Jalasi, E.

**Jalasi, E.** (2020) An integrated analytical framework for analysing expansive learning in improved cook stove practice. *Learning Culture and Social Interaction*. 26 (2020). p.1-30.

#### Joseph, M.V.

**Fryer, D.** and **Joseph, M.V.** (2020) A Marxist Education: Learning to Change the World. *Review of Radical Political Economics*. 52 (4). p.781-788.

#### Kulundu, I.M., Mcgarry, D. and Lotz-Sisitka, H.

**Kulundu, I.M., Mcgarry, D.** and **Lotz-Sisitka, H.** (2020) Learning, Living and Leading into Transgression? A reflection on decolonial praxis in a neoliberal world. *Southern African Journal of Environmental Education*. 36 (2020). p.1-20.

#### Lotz-Sisitka, H.

Rodrigues, C., Payne, P.G., Le Grange, L., Carvalho, I.C.M., Steil, C.A., **Lotz-Sisitka, H.** and Linde-Loubser, H. (2020) "New" theory, "post" North-South representations, praxis. *Journal of Environmental Education*. 51 (2). p.97-112.

**Lotz-Sisitka, H.** (2020) Commentary: The Stinking Ontology of Sh#t in the Water: Higher Education Public Pedagogy and "Existance"?? *Sustainability* 12 (2). p.83-87.

#### Lotz-Sisitka, H. and Rosenberg, E.

**Lotz-Sisitka, H.**, **Rosenberg, E.** and Ramsarup, P. (2020) Environment and sustainability education research as policy engagement: (re-) invigorating 'politics as potentia' in South Africa. *Environmental Education Research*. 2020 (2020). p.1-29.

#### Masilela, M.P. and Olvitt, L.L.

**Masilela, M.P.** and **Olvitt, L.L.** (2020) Transforming environmental health practitioners' knowledge-sharing practices through inter-agency formative intervention workshops. *Studies in Continuing Education*. 42 (2). p.180-195.

#### Metelerkamp, L.

**Metelerkamp, L.**, Biggs, R. and Drimie, S. (2020) Learning for transitions: a niche perspective. *Ecology and Society*. 25 (1). p.1-14.

Enqvist, J., Zervogel, G., **Metelerkamp, L.**, van Breda, J. and Dondi, N. (2020) Informality and water justice: community perspectives on water issues in Cape Town's low-income neighbourhoods. *International Journal of Water Resources Development*. p.1-23.

**Metelerkamp, L.** and Schiffer, E. (2020) Epistemic Cartography: Evaluating Net-Map as a Frontline Tool for Navigating Informal Knowledge Networks. *Southern African Journal of Environmental Education*. 36 (2020). p.73-93.

Mukute, M., Francis, B., Burt, J. and Souza, B.

**Mukute, M.**, **Francis, B.**, **Burt, J.** and **Souza, B.** (2020) Education in Times of COVID-19: Looking for Silver Linings in Southern Africa's Educational Responses. *Southern African Journal of Environmental Education*. 36 (2020). p.1-16.

Nakakuwa, T. and Jawahar, K.

**Nakakuwa, T.** and **Jawahar, K.** (2020) Intersemiotic Complementarity in Namibian Physical Science Teachers' Classroom Practice. *African Journal of Research in Mathematics, Science and Technology Education*. 2020 (2020). p.1-13.

Ngcoza, K.M.

**Cimi, P.V.**, **Ngcoza, K.M.** and **Dold, A.P.** (2020) The role of ethnobotany in integrating Indigenous Knowledge in the discipline of science education: a study by the herbarium of the Albany Museum in South Africa. *South African Museums Association Bulletin (SAMAB)*. 42 (2020). p.1-9.

Olvitt, L.L.

Ward-Smith, C., Naidoo, T., **Olvitt, L.L.** and **Akhurst, J.** (2020) Perceived benefits of nature-based experiences as mediators of connectedness with nature: the case of Mystic Mountain. *South African Journal of Psychology*. 2020 (2020). p.1-12.

Robertson, S.A. and Graven, M.

**Robertson, S.A.** and **Graven, M.** (2020) A mathematics teacher's response to a dilemma: 'I'm supposed to teach them in English but they don't understand'. *South African Journal of Childhood Education (SAJCE)*. 10 (1). p.1-11.

Rosenberg, E.

**Cockburn, J.**, Schoon, M., **Cundill, G.**, Robinson, C., Aburto, J., Alexander, S., Rosenberg, E. and Thondhlana, G. (2020) Understanding the context of multifaceted collaborations for social-ecological sustainability: a methodology for cross-case analysis. *Exology and Society*. 25 (3). p.1-15.

**Rosenberg, E.** and Le Grange, L. (2020) Attitudinal difference surveys perpetuate harmful tropes: A comment on Nattrass, S. Afr. J. Sci. *South African Journal of Science*. 116 (2020). p.1-7.

**Rosenberg, E.** (2020) Special Issue: Education for Sustainability in a Time of Crises - Editorial Part 1. *Southern African Journal of Environmental Education*. 36 (2020). p.1-8.

**Rosenberg, E.** and **Kotschy, K.**

**Rosenberg, E.** and **Kotschy, K.** (2020) Monitoring and evaluation in a changing world: A Southern African perspective on the skills needed for a new approach. *African Evaluation Journal*. 8 (1). p.1-10.

Sannino, A.

Morselli, D. and **Sannino, A.** (2020) Testing the model of double stimulation in a Change Laboratory. *Teaching and Teacher Education*. 2020 (2020). p.1-8.

**Sannino, A.** (2020) Transformative agency as warping: how collectives accomplish change amidst. *Pedagogy, Culture & Society*. 2020 (2020). p.1-25.

**Sannino, A.** (2020) Enacting the utopia of eradicating homelessness: toward a new generation of activity-theoretical studies of learning. *Studies in Continuing Education*. 42 (2). p.163-179.

Schafer, M.

Reit, X.S. and **Schafer, M.** (2020) An Analysis of Learner's Solution Strategies in the context of Modelling Tasks. *Journal on Mathematics Education*. 11 (3). p.501-512.

Skae, V.A., Brown, B. and Wilmot, D.

**Skae, V.A.**, **Brown, B.** and **Wilmot, D.** (2020) Teachers' engagement

with learners in inclusive Foundation Phase classrooms. *South African Journal of Childhood Education (SAJCE)*. 10 (1). p.1-11.

**Van Staden, W.**

**Van Staden, W.** (2020) Climate Responsive Innovation within the Agricultural Curriculum and Learning System. *Southern African Journal of Environmental Education*. 36 (2020). p.73-87.

**Van Staden, W.** (2020) Climate-smart innovation tool: an approach to review the climate responsiveness and innovation practices of the agricultural curricula. *South African Journal of Agricultural Extension*. 48 (1). p.42-54.

**Ward, M. and Rosenberg, E.**

**Ward, M. and Rosenberg, E.** (2020) Revealing mechanisms in a transdisciplinary Community Reforestation Research Programme. *African Evaluation Journal*. 8 (1). p.1-9.

**Westaway, L. and Graven M.**

**Westaway, L.**, Kaiser, G. and **Graven, M.** (2020). What does social realism have to offer for research on teacher identity in mathematics education. *International Journal of Mathematics and Science Education*. 18:1229-1247.

## Peer Reviewed Proceedings

**Chikiwa, C.**

**Chikiwa, C.** Task design in mathematics: experiences of preservice teachers. *Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Nelson Mandela University, Port Elizabeth. South Africa. January 2020.

**Chikiwa, C. and Machaka, R.E.**

**Chikiwa, C. and Machaka, R.E.** Visualisation processes for teaching patterns in the Intermediate Phase: A case of Grade 6 teachers. *Southern African Association for research in Mathematics, Science and Technology Education (SAARMSTE)*. Nelson Mandela University, Port Elizabeth. South Africa. January 2020.

**Chikiwa, C. and Ssennyomo, B.J.**

**Chikiwa, C. and Ssennyomo, B.J.** Conceptual teaching of word problems through visualization processes: a case of selected grade 9 mathematics teachers. *The 28th Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Nelson Mandela University, Port Elizabeth. South Africa. January 2020.

**Chikiwa, C. and Ssennyomo, B.J.** Task design in mathematics: Experiences of pre-services teachers. *Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Nelson Mandela University, Port Elizabeth. South Africa. January 2020.

**Chikiwa, S., Westaway, L. and Graven, M.**

**Chikiwa, S., Westaway, L. and Graven, M.** What mathematics content knowledge do pre-service teachers bring to their foundation phase post graduate certificate in education studies? *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

**Griqua, R.M. and Schafer, M.**

**Griqua, R.M. and Schafer, M.** Number sense and visualisation: rediscovering the beauty of mathematics through visual teaching. *Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Nelson Mandela University, Port Elizabeth. South Africa. January 2020.

**Hokonya, W.M., Vale, P. and Graven, M.**

**Hokonya, W.M., Vale, P. and Graven, M.** Exploring an analytic framework for mathematical identities of learners in landscapes of mathematical practice. *28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

**Kangwa, L. and Schafer, M.**

**Kangwa, L. and Schafer, M.** Towards constructing an analytical framework for analysing the incorporation of GeoGebra into the teaching of calculus. *Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Nelson Mandela University, Port Elizabeth. South Africa. January 2020.

**Matengu, G.K., Dongwi, B.L. and Schafer, M.**

**Matengu, G.K., Dongwi, B.L. and Schafer, M.** Mathematics teachers' experiences of using a geoboard as a teaching manipulative: a case of Namibian rural schools. *Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Nelson Mandela University, Port Elizabeth. South Africa. January 2020.

**Nakakuwa, T. and Schafer, M.**

**Nakakuwa, T. and Schafer, M.** An analytical framework to analyse teachers use of GeoGebra as a mathematical modelling tool. *Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Nelson Mandela University, Port Elizabeth. South Africa. January 2020.

**Ngwabe, A.H. and Schafer, M.**

**Ngwabe, A.H. and Schafer, M.** Exploring how GeoGebra software can be used as a mediator between preservice teachers' mathematical pedagogical content knowledge and pedagogical proficiency. *Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Nelson Mandela University, Port Elizabeth. South Africa. January 2020.

**Robertson, S.A. and Graven, M.**

**Robertson, S.A. and Graven, M.** Mathematics classroom talk: converting a theoretical frame to an analytic frame. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

**Schafer, M. and Herbert, S.**

**Schafer, M. and Herbert, S.** The visualisation of linear expressions - Introduction and visualization. *54. Jahrestagung der Gesellschaft für Didaktik der Mathematik*. Universität Würzburg, Würzburg, Germany. March 2020.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**Brown, B.**

**Brown, B.** Assessing the developing mathematical thinking of preservice primary school education students. *28th Annual Meeting of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. January 2020. NMMU, Port Elizabeth. South Africa. January 2020.

**Graven, M. and Vale, P.**

**Graven, M., Vale, P. and Visnovska, J.** Igniting mathematical play through stories: Designing resources. *Queensland Association of Mathematics Teachers Early Years Conference*. Moorooka, Brisbane. Australia. February 2020.

**Venkat, H., Askew, M., Graven, M. and Vale, P.** Foundation phase diagnostic assessments for developing mental number sense: National pilot outcomes 2019. *28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

**Lotz-Sisitka, H., McGarry, D.K. and Pereira-Kaplan, T.L.**

**Lotz-Sisitka, H., McGarry, D.K. and Pereira-Kaplan, T.L.** Learning for transformed and transformative ocean governance. *Transformed and Transformative Ocean Governance Conference*. Nelson Mandela University, Port Elizabeth. South Africa. January 2020.

**Ngcoza, K.M.**

**Ngcoza, K.M., and Mutanho, C.** Using easily accessible resources to mediate learning of electrostatics concepts and Coulomb's law. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

**Ngcoza, K.M., and Nhase, K.** Using an inquiry-based approach as an instructional method to develop scientific process skills in two isiXhosa Foundation Phase classrooms. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Chikamori, K., Ueno, M., Tanimura, C., Noguchi, F., O'Donoghue, R., **Ngcoza, K.M.**, Nhase, Z., Asheela, E., Nikodemus, K., Nyondo, C. Contours of research collaboration in education for sustainable development, indigenous knowledge and lesson study pedagogy: the power of networks. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Liveve, A., and **Ngcoza, K.M.** Exploring the use of beads as models and representations to mediate learning of the Bohr structure in a Grade 8 physical science class. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Mayana, X., and **Ngcoza, K.M.** Enriching learning of waves and sound through mobilising indigenous practices and knowledge about the sea. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Mutinho, C., and **Ngcoza, K.M.** Ethics of the ethics: With whose lenses are we viewing the terrain? *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Nhase, Z., and **Ngcoza, K.M.** Inquiry-based learning approach in Grade 3 classrooms. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Nikodemus, K., and **Ngcoza, K.M.** The effect of using an indigenous technology as the basis for a practical investigation of the concept of rates of reactions. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Simasiku, F., and **Ngcoza, K.M.** The integration of cultural knowledge in Grade 10 physical science examinations in Namibia. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Mapfumo, K., and **Ngcoza, K.M.** Using a diagnostic test to explore relevant prior content knowledge that Grade 12 physical sciences learners have before learning the work-energy theorem. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Shinana, E., **Ngcoza, K.M.**, and Mavhunga, E. Mobilising the process of making Oshikundu to create learning opportunities for Grade 8 life science teachers to understand scientific inquiry-based approaches. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Mika, R., and **Ngcoza, K.M.** Mobilising local knowledge on wood ash to teach the concept of neutralisation. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Denuga, D., **Ngcoza, K.M.**, and Sewry, J. How do physical science teachers mediate learning of the developed stoichiometry exemplary lessons? *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Haimene, J., **Ngcoza, K.M.**, and Nhase, Z. Exploring the influence of indigenous knowledge on learners' conceptions, dispositions and interest when teaching acids and bases. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Mukwambo, M., and **Ngcoza, K.M.** Indigenous knowledge epistemologies in southern Africa: Reclaiming indigenous knowledge for science practices. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Ramasike, L., and **Ngcoza, K.M.** Absenting silences as a learning opportunity of electricity concepts in a science classroom. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

**Ngcoza, K.M.**, Sewry, J., and Mutinho, C. Kitchen chemistry as a catalyst for border crossing from home to school science: From context to content. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

Ngqinambi, A., Sewry, J. and **Ngcoza, K.M.** The influence of the integration of local knowledge during practical activities on secondary school learners' attitudes. *The 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

**Vale, P.**

**Vale, P.** Integrating culture and human development into mathematics to create inclusive learning opportunities: The case of a story-centred instructional sequence. *University of Queensland School of Education Seminar*. University of Queensland, Brisbane. Australia. March 2020.

**Vale, P.** Personifying maths club - one learner's account of her four-year journey with a friend. *28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.

**Vale, P.** and **Graven, M.**

**Vale, P.**, **Graven, M.** and Visnovska, J. After-school mathematics clubs in the middle years. *Queensland Association of Mathematics Teachers Early Years Conference*. Moorooka, Brisbane. Australia. February 2020.

**Vale, P.**, **Graven, M.** and Visnovska, J. After-school mathematics clubs in the early years. *Queensland Association of Mathematics Teachers Early Years Conference*. Moorooka, Brisbane. Australia. February 2020.

**Vale, P.** and **Graven, M.** Plenary: Integrating culture and human development into mathematics instruction: Revealing fraction and measurement concepts through a story-centred instructional sequence. *Inclusive Memory Conference held at the Faculty of Education at Roma Tre University in Rome, 14-15 February 2020*. Roma Tre University, Rome. Italy. February 2020.

**Van Staden, W.**

**Van Staden, W.** Engaging Education for Sustainable Development Learning Online- Development of Online Course: Conceptual to Contextual. *EESAE 2020 Sustainability Dialogue Online Conference: ESD in a time of crisis: Leaving no one behind*. Online, Makhanda. South Africa. October 2020.

**Westaway, L.**

**Westaway, L.** Assessing pre-service teachers' knowledge of learner addition calculation strategies. *28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. NMMU, Port Elizabeth. South Africa. January 2020.



Photos: Simon Pamphilon

# Department of English Language and Linguistics

**Professor Silvester Ron Simango**  
Head of Department

## Introduction

The research endeavours for staff were severely curtailed by the effects of the COVID-19 pandemic as local and international conferences and symposia were either cancelled or postponed to the following year. Nevertheless, staff managed to have some of their work published and take advantage of the limited avenues for making presentations.

Associate Professor William G. Bennett presented his work at the 4th meeting of the Society of Typological Analysis in Florida, USA, Miss Tracy Bowles (Probert) and Dr Kelly Jones presented their works virtually at, respectively, the Literacy Association of South Africa Annual Conference and the Language Resources and Evaluation Conference (LREC 2020 Workshop).

Professor Adendorff continued serving on the Board of the Dictionary of South African English as well as on the national (PANSALB-affiliated) English Language Board. He and Professor Simango continued to serve as members of the Academy of Science of South Africa. Professors de Vos, Simango, Dr Sieborger and Bowles continued to be members of the Southern African Linguistics and Applied Linguistics Society (SALALS). Bowles also continued her membership of the Literacy Association of South Africa (LITASA), where she serves as the chairperson of the Eastern Cape branch. Professor Simango continued to serve as a non-executive director for the Molteno Institute for Language and Literacy, in addition to serving as an executive member of SALALS.

## Postgraduates / Graduations

One (1) student submitted his PhD thesis for examination; two (2) other students graduated with MA degrees whilst seven (7) completed their Honours degrees. In addition, seven (7) Postgraduates continued with their MA studies, and a further thirteen (13) continued with their PhD studies. A number of these Postgraduate students presented their work at a specially arranged virtual linguistics conference which was held in September 2020.

## Distinguished Visitors / International Visits

The department hosted Dr Kelly Jones, a Postdoctoral Fellow whose research focuses on the endangered languages of Africa. Dr Bennett visited Eckerd College, St Petersburg, Florida, in the United States, where he interacted with other scholars on cutting edge research in phonology.

# PUBLICATIONS

## Books/Chapters/Monographs

Bennett, W.G.

Bennett, W.G. (2020) Click phonology. In: Sands, B.E. (ed.). *Click Consonants*. Leiden: Brill. p.74-128. ISBN: 9789004232686.

Simango, S.R.

Simango, S.R. (2020) English prepositions in isiXhosa spaces: Evidence from code-switching. In: Hickey, R. (ed.). *English in Multilingual South Africa*. Cambridge: Cambridge University Press. p.310-328. ISBN: 9781108425346.

## International Visits

Bennett, W.G.

Bennett, W.G. and DelBusso, N. Eckerd College, St Petersburg, Florida, United States. *4th meeting of the Society for Typological Analysis (SOTA 4)*. 13 - 17 January 2020.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Bennett, W.G.

Bennett, W.G. and Braver, A. (2020) Different speakers, different grammars: Productivity and representation of Xhosa labial palatalization. *Phonological Data & Analysis*. 2 (6). p.1-29.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Bennett, W.G.

Bennett, W.G. and DelBusso, N. (2020) Summing constraints in and across properties. *Phonology*. 37 (3). p.367-381.

Daries, M.A. and Probert, T.

Daries, M.A. and Probert, T. (2020) A linguistic analysis of spelling errors in Grade 3 isiXhosa home-language learners. *Reading and Writing*. 11 (1). p.1-10.

Jones, K.

Hilcove, K., Marceau, C., Larkey, L., Brewer, M.A. and Jones, K. (2020) Holistic Nursing in Practice: Mindfulness-Based Yoga as an Intervention to Manage Stress and Burnout. *Journal of Holistic Nursing*. 2020 (2020). p.1-14.

Probert, T. and Rees, S.A.

Schaefer, M., Probert, T. and Rees, S.A. (2020) The roles of phonological awareness, rapid automatised naming and morphological awareness in isiXhosa. *Per Linguam: A Journal of Language Learning*. 36 (1). p.90-111.

## Peer Reviewed Proceedings

Bennett, W.G.

Bennett, W.G. and DelBusso, N. Cross-level Correspondence in Q Theory. *2019 Annual Meeting on Phonology*. Stony Brook University, Stony Brook, NY. USA. October 2019.

Jones, K.

Jones, K. and Muftic, S. Endangered African Languages Featured in a Digital Collection: The Case of the Khomani San | Hugh Brody Collection. *LREC 2020 Workshop: Language Resources and Evaluation Conference*. Virtual - due to COVID-19 pandemic, Virtual. Virtual. May 2020.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Probert, T.

Probert, T. Give that child a book: A classroom library initiative. *Literacy Association of South Africa Annual Conference*. Virtual Conference (crowdcast), Virtual Conference. South Africa. September 2020.



# Department of Environmental Science

Professor Gladman Thondhlana  
Head of Department

Photos: Simon Pamphilon

## Introduction

The Department produced a sizable number of publications. These consisted of thirty-five (35) papers in peer-reviewed subsidy-earning journals, three (3) book chapters and three (3) peer-reviewed conference proceedings. Four (4) articles were published in the popular press. Staff participated in numerous research conferences and workshops both locally and internationally. Staff also served on several national and international organizations.

## Postgraduates / Graduations

We graduated fifteen (15) Honours students, three (3) MSc students and six (6) PhD candidates. We have a healthy number of Postgraduate students, and several of them are due to submit their theses for examination.

## Distinguished Visitors / International Visits

Dr Sheunesu Ruwanza organized and hosted the South Africa Sweden University Forum (SASUF) collaboration workshop at Rhodes University (14 - 16 January 2020). The SASUF collaboration workshop gathered experts from the University of Cape Town, Cape Peninsula University of Technology, and Stockholm University to discuss drought implications in South Africa and Sweden.

Professor Gladman Thondhlana participated in the International Collaborative Research Project (Strengthening Postgraduate Collaboration) in Turkey (17- 20 February 2020).

## Significant Research Aligned Events

Dr Jessica Cockburn trained local community partners in the use of mobile devices and relevant applications to participate in online research, training, and reflection activities in the TSITSA project. This process was managed by the project's local implementation partner LIMA Rural development. Dr Cockburn continued her role as Project Manager in the Social Learning, Knowledge Management and Mediation (SLKMM) Project of the National Ecological Infrastructure for Water Security Project. Dr Cockburn participated in two fellowship programmes: Analysing Transformative Approaches for the Management of the Water-Energy-Food Nexus and the Advancement of the SDGs - Volkswagen Foundation Workshop and Summer School Series (2020-2021) and the Beijer Young Scholars Programme - Third Generation: Globalisation and the Biosphere (2019 - 2021). She was part of collaborative research with global partners through the Programme on Ecosystem Change and Society



**SASUF collaboration workshop participants at Rhodes University (14 - 16 January 2020). From left to right: Professor Ken Findlay; Professor Gladman Thondhlana; Dr Staffan Rosell; Professor Regina Lindborg; Professor Sheona Shackleton; Professor James Gambiza; Dr Sheunesu Ruwanza, and Dr Elandrie Davoren.**

Photo: Dr Sheunesu Ruwanza, Department of Environmental Science



**Training on use of mobile devices and online applications at Ngqakaqheni Village: To continue collaborative research and training activities in the Tsitsa Project during the COVID-19 lockdown community partners had to be provided with training on the use of mobile devices and various applications.**

Photo: Siphakamise Ngobhane, LIMA Rural Foundation

(PECS) network. The network focused on the publication of a special journal issue to celebrate its 10-year anniversary, and she contributed to two articles in this special issue.

Dr Sheunesu Ruwanza attended the virtual Centre for Invasion Biology Annual Research Forum in Stellenbosch (12 - 13 November 2020). Dr Ruwanza was appointed to serve in the South African Alien Species Risk Analysis Review Panel (ASRARP) for two years (March 2020 to March 2022). ASRARP provides advice on alien invasive species risk analyses carried in South Africa under the auspices of the National Environmental Management: Biodiversity Act (NEM:BA), and specifically the Alien and Invasive Species Regulations. He also received funding (R320 000) from the Centre for Invasion Biology to support one MSc student at Rhodes University for two years (2020 - 2021).

Professor Gladman Thondhlana was also awarded an International Science Council grant (€20 000) to lead a research project entitled 'Facilitating urban sustainability through knowledge co-production'. He is also part of a multi-country/university EU grant (€950 000) for supporting Postgraduate collaborations between universities in South Africa, Kenya, Turkey, Belgium and the Netherlands. Professor Thondhlana was also appointed to serve as an Associate/Subject Editor for the following journals: *Society & Natural Resources*, *Frontiers in Conservation Science* and *Conservation and Society*.

Professor Charlie Shackleton was invited to serve on the advisory committee of GreenPop's forest restoration programme for a three-year term. He continued as a member

of the National Forestry Advisory Council (NFAC), which is a statutory committee in South Africa that provides advice directly to the relevant Minister on all aspects relating to forests and forestry in the country, as well as being the international representative on the Scientific Research Committee of the International Society for Arboriculture.

Professor Charlie Shackleton also holds Thematic Editor or Associate Editor positions on several peer-reviewed journals, including (1) *Economic Botany*, (2) *Environmental Conservation*, (3) *Land*, and (4) *Scientific African* and is on the editorial boards of (1) *Journal of Environmental Planning & Management*, (2) *Forests, Trees & Livelihoods*, (3) *Land Use Policy*, and (4) *Landscape & Urban Planning*.

Dr Alta De Vos received a Google Faculty grant of \$75,000 in collaboration with the University of Angers, France, to lead research on co-existence landscapes in and around protected areas. Dr De Vos collaborated as the research co-lead on the SANBI-led Sustainable Wildlife Economy Project (SWEP), which launched with Presidential Economic Stimulus Funding in December 2020. She also continued to work as a lead author on the IPBES Values assessment and participated as an editor on a social-ecological methods research project with the Universities of Stellenbosch and Stockholm. Dr De Vos was appointed to serve as Subject Editor in the following journals: *Ecology and Society*, *Regional Environmental Change*, and *Kudu*.

# PUBLICATIONS

## Books/Chapters/Monographs

### Enokenwa Epse Baa, O.

Donkor, F.K., Kevin, M., Tantoh, H.B., **Enokenwa Epse Baa, O.**, Ebhuoma, E., Abubakar, H., Mavuso, S., Mbewe, P., Mabenza, C. and Leclerc, A. (2020) Attitudinal changes towards agriculture through the generational lens and impact of engagement in related activities: Case study from a mountainous area. In: Squires, V.R. and Gaur, M.K. (eds.). *Food security and land use change under conditions of climatic variability: A multidimensional perspective*. Switzerland: Springer Nature Switzerland. p.165-180. ISBN: 9783030367619.

### Ruwanza, S.

Holmes, P.M., Esler, K.J., Gaertner, M., Geerts, S., Hall, S.A., Ntsikani, M.M., Richardson, D.M. and **Ruwanza, S.** (2020) Biological invasions and ecological restoration in South Africa. In: van Wilgen, B.W., Richardson, D.M., Measey, J., Wilson, J.R. and Zengeya, T.A. (eds.). *Invading Nature - Springer Series in Invasion Ecology: Biological Invasions in South Africa*. Switzerland: Springer Open. p.665-700. ISBN: 9783030323943.

### Shackleton, C.M.

Shackleton, R.T., Novoa, A., **Shackleton, C.M.** and Kull, C.A. (2020) The social dimensions of biological invasions in South Africa. In: van Wilgen, B.W., Richardson, D.M., Measey, J., Wilson, J.R. and Zengeya, T.A. (eds.). *Invading Nature - Springer Series in Invasion Ecology: Biological Invasions in South Africa*. Switzerland: Springer Open. p.701-728. ISBN: 9783030323943.

## Concerts, Exhibitions, Performances, Workshops, Events

### Cockburn, J. and Mtati, N.

Cockburn, J. and Mtati, N. Workshop. Transformative processes

in a WEF nexus landscape: A case study of two vignettes from the Tsitsa Project. *Volkswagen Foundation Workshop and Summer School Series*. Online. Online. 7 - 8 May 2020.

## Other Publications

### Mograbi, P.J., De Vos, A. and Shackleton, C.M.

Mograbi, P.J., De Vos, A., Shackleton, C.M., Clements, H., Carlos Bezerra, J., Coetzer, K. and Maciejewski, K. (2020) South Africa's land reform policies need to embrace social, economic, and ecological sustainability. In: *The Conversation*. South Africa: The Conversation.

### Powell, M., Zenani, K.T.S. and Balintulo, P.

Powell, M., Zenani, K.T.S. and Balintulo, P. (2020) Thicket patches in the Eastern Cape: Do they have any value? In: Soutey, C. (ed.). *Grassroots*. Cape Town: Grassroots.

### Sardeshpande, M. and Shackleton, C.M.

Sardeshpande, M., Shackleton, C.M., Sekonya, J.G. and Wynberg, R. (2020) Why the world needs to ensure that wild species are used sustainably. In: Soutey, C. (ed.). *The Conversation*. South Africa: The Conversation.

### Shackleton, C.M.

Shackleton, C.M. (2020) Most loved and hated SA trees. In: *Veld & Flora*. Johannesburg: Veld & Flora.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

### Cockburn, J. and Copteros, A.

Cockburn, J., Rosenberg, E., Copteros, A., Cornelius, S.F.A., Libala, N., Metcalfe, L. and **Van Der Waal, B.W.** (2020) A Relational Approach to Landscape Stewardship: Towards a New Perspective for Multi-Actor Collaboration. *Land*. 9 (224). p.1-20.

### Ruwanza, S.

Ruwanza, S. (2020) Effects of *Lantana camara* invasion on vegetation



Volunteers in the River Rescue project conducting a miniSASS assessment on the outskirts of Makhanda as part of on-going river monitoring and clean-up activities in the local Bloukrans / Matyana River. Volunteers in this photo: Helen Holleman, Alexandra Collett, Putuma Balintulo and Preven Chetty.

Photo: Jessica Cockburn



Volunteers in the River Rescue project participating in a river clean up near Evans Road in Makanda.

Photo: Jessica Cockburn

diversity and composition in the Vhembe Biosphere Reserve, Limpopo Province of South Africa. *Scientific African*. 1 (12). p.1-12.

## Peer Reviewed Subsidy-Earning Journal Research Publications

**Bellon De La Cruz, B.** and **De Vos, A.**

**Bellon De La Cruz, B.**, Blanco, J., **De Vos, A.**, De O. Roque, F., Pays, O. and Renaud, P. (2020) Integrated landscape change analysis of protected areas and their surrounding landscapes: Application in the Brazilian Cerrado. *Remote Sensing*. 12 (0). p.1413.

**Chakona, G.**

**Chakona, G.** (2020) Social circumstances and cultural beliefs influence maternal nutrition, breastfeeding and child feeding practices in South Africa. *Nutrition Journal*. 19 (47). p.1-15.

**Cockburn, J.**

Fazey, I., Schapke, N., Lyon, C. and **Cockburn, J.** (2020) Transforming knowledge systems for life on Earth: Visions of future systems and how to get there. *Energy Research & Social Science*. 70 (0). p.1-18.

**Cockburn, J.** and **Thondhlana, G.**

**Cockburn, J.**, Schoon, M., Cundill, G., Robinson, C., Aburto, J., Alexander, S., **Rosenberg, E.** and **Thondhlana, G.** (2020) Understanding the context of multifaceted collaborations for social-ecological sustainability: a methodology for cross-case analysis. *Ecology and Society*. 25 (3). p.1-15.

**Cundill, G.**

Currie-Alder, B., **Cundill, G.**, Scodanibbio, L., Vincent, K., Prakash, A. and Nathe, N. (2020) Managing collaborative research: insights from a multi-consortium programme on climate adaptation across Africa and South Asia. *Regional Environmental Change*. 20 (4). p.1-12.

**De Vos, A.**

Shumba, T., **De Vos, A.**, Biggs, R., Esler, K., Ament, J. and Clements,

H.S. (2020) Effectiveness of private land conservation areas in maintaining natural land cover and biodiversity intactness. *Global Ecology and Conservation*. 22 (0). p.1-11.

**De Vos, A.**, Coetzer, K., Mograbi, P.J. and **Shackleton, C.M.** Clements, H.S., **De Vos, A.**, Carlos Bezerra, J., Coetzer, K., Maciejewski, K., Mograbi, P.J. and **Shackleton, C.M.** (2020) The relevance of ecosystem services to land reform policies: Insights from South Africa. *Land Use Policy*. 100 (104939). p.1-10.

**Du-Pont, T.C.**, Vilakazi, C.M. and **Thondhlana, G.**

**Du-Pont, T.C.**, Vilakazi, C.M., **Thondhlana, G.** and Vedeld, P. (2020) Livestock income and household welfare for communities adjacent to the Great Fish Nature Reserve, South Africa. *Environmental Development*. 33 (100508). p.1-12.

**Falayi, M.** and **Gambiza, J.**

**Falayi, M.**, **Gambiza, J.** and Schoon, M. (2020) Unpacking changing multi-actor and multi-level actor ties in transformative spaces: Insights from a degraded landscape, Machubeni, South Africa. *Land*. 9 (227). p.1-25.

**Garekae, H.** and **Shackleton, C.M.**

**Garekae, H.** and **Shackleton, C.M.** (2020) Foraging wild food in urban spaces: The contribution of wild foods to urban dietary diversity in South Africa. *Sustainability*. 12 (678). p.1-19.

**Garekae, H.** and **Shackleton, C.M.** (2020) Urban foraging of wild plants in two medium-sized South African towns: People, perceptions and practices. *Urban Forestry & Urban Greening*. 49 (126581). p.1-10.

**Herd-Hoare, S.C.** and **Shackleton, C.M.**

**Herd-Hoare, S.C.** and **Shackleton, C.M.** (2020) Integrating ecosystem services and disservices in valuing smallholder livestock and poultry production in three villages in South Africa. *Land*. 9 (294). p.1-20.

**Herd-Hoare, S.C.** and **Shackleton, C.M.** (2020) Ecosystem disservices matter when valuing ecosystem benefits from small-scale arable agriculture. *Ecosystem Services*. 46 (0). p.1-10.

**King, A.T. and Shackleton, C.M.**  
**King, A.T. and Shackleton, C.M.** (2020) Maintenance of private and public urban green space provides significant employment in Eastern Cape towns, South Africa. *Urban Forestry & Urban Greening*. 54 (0). p.1-10.

**Martins, A.R.O. and Shackleton, C.M.**  
**Martins, A.R.O. and Shackleton, C.M.** (2020) Local use and knowledge of *Hyphaene coriacea* and *Phoenix reclinata* in Zitundo area, Southern Mozambique. *South African Journal of Botany*. 138 (2020). p.65-75.

**Ngulani, T. and Shackleton, C.M.**  
**Ngulani, T. and Shackleton, C.M.** The degree, extent and value of air temperature amelioration by urban green spaces in Bulawayo, Zimbabwe. *South African Geographical Journal*. 102: 344-355. DOI: 10.1080/03736245.2019.1685405.

**Parker, K.H. and De Vos, A.**  
**Parker, K.H., De Vos, A., Clements, H.S., Biggs, D. and Biggs, R.** (2020) Impacts of a trophy hunting ban on private land conservation in South African biodiversity hotspots. *Conservation Science and Practice*. 214 (0). p.1-12.

**Pullanikkatil, D., Mograbi, P.J. and Shackleton, C.M.**  
**Pullanikkatil, D., Mograbi, P.J., Palamuleni, L., Ruhiga, T. and Shackleton, C.M.** Unsustainable trade-offs: ecosystem services in a rapidly changing Likangala River catchment in southern Malawi. *Environment, Development & Sustainability*. 22: 1145-1164. DOI: 10.1007/s10668-018-0240-x.

**Ruwanza, S.**  
**Ruwanza, S.** (2020) Topsoil transfer from natural Renosterveld to degraded old fields facilitates native vegetation recovery. *Sustainability*. 12 (3833). p.1-13.

**Ntsikani, M.M., Geerts, S., Ruwanza, S. and Richardson, D.M.** (2020) Secondary invasion and weedy native species dominance after clearing invasive alien plants in South Africa: Status quo and prognosis. *South African Journal of Botany*. 132 (2020). p.338-345.

**Ruwanza, S.** (2020) Vegetation and soil recovery following Eucalyptus grandis removal in Limpopo Province, South Africa. *African Journal of Ecology*. p.1-12.

**Ruwanza, S.** (2020) Potential of soil seed bank and ungulate-mediated endozoochory in old field restoration. *Ecological Restoration*. 38 (1). p.9-12.

**Ruwanza, S. and Mhlongo, E.S.**  
**Ruwanza, S. and Mhlongo, E.S.** (2020) *Lantana camara* invasion along road-river interchanges and roadsides in Soutpansberg, Vhembe Biosphere Reserve in South Africa. *South African Journal of Science*. 116 (9/10). p.1-5.

**Sardeshpande, M. and Shackleton, C.M.**  
**Sardeshpande, M. and Shackleton, C.M.** (2020) Urban foraging: Land management policy, perspectives, and potential. *PLoS One*. 15 (4). p.1-26.

**Sardeshpande, M. and Shackleton, C.M.** (2020) Fruits of the Veld: Ecological and socioeconomic patterns of natural resource use across South Africa. *Human Ecology*. p.1-13.

**Senkoro, A.M. and Shackleton, C.M.**  
**Senkoro, A.M., Talhinhas, P., Simoes, F., Batista-Santos, P., Shackleton, C.M., Voeks, R.A., Marques, I. and Ribeiro-Barros, A.I.** (2020) The genetic legacy of fragmentation and overexploitation in the threatened medicinal African pepper-bark tree, *Warburgia salutaris*. *Scientific Reports*. 10 (2020). p.1-13.

**Shackleton, C.M.**  
**Shackleton, C.M., Drescher, A. and Schlesinger, J.** (2020) Urbanisation reshapes gendered engagement in land-based livelihood activities in mid-sized African towns. *World Development*. 130 (2020). p.1-9.

**Venter, Z., Shackleton, C.M., van Staden, F., Selomane, O. and Masterson, V.** (2020) Green Apartheid: Urban green infrastructure remains unequally distributed across income and race geographies in South Africa. *Landscape and Urban Planning*. 203 (2020). p.1-12.

**Shackleton, C.M. and Njwaxu, A.**  
**Shackleton, C.M. and Njwaxu, A.** (2020) Does the absence of community involvement underpin the demise of urban neighbourhood parks in the Eastern Cape, South Africa? *Landscape and Urban Planning*. 207 (2020). p.1-9.

**Thondhlana, G.**  
**Bellugi, D.Z. and Thondhlana, G.** (2020) Your skin has to be elastic: The politics of belonging as a selected black academic at a 'transforming' South African University. *International Journal of Qualitative Studies in Education*. p.1-23.

**Thondhlana, G. and Murata, C.**  
**Thondhlana, G., Redpath, S., Vedeld, P.O., van Eeden, L., Pascual, U., Sherren, K. and Murata, C.** (2020) Non-material costs of wildlife conservation to local people and their implications for conservation interventions. *Biological Conservation*. 246 (108578). p.1-9.

**Thondhlana, G., Pullanikkatil, D. and Shackleton, C.M.**  
**Thondhlana, G., Pullanikkatil, D. and Shackleton, C.M.** (2020) Plant fibre crafts production, trade and income in Eswatini, Malawi, and Zimbabwe. *Forests*. 11 (832). p.1-19.

**Williams, S.P. and Thondhlana, G.**  
**Williams, S.P., Thondhlana, G. and Kua, H.** (2020) Electricity use behaviour in a high-income neighbourhood in Johannesburg, South Africa. *Sustainability*. 12 (0). p.1-19.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**De Vos, A.**  
**De Vos, A.** Africa's conservation and trophy hunting dilemma. *The Conversation*. Online. June 2020.

**Enokenwa Epse Baa, O.**  
**Enokenwa Epse Baa, O.** Climate change, coping responses, livelihood options: Exploring these complexities within the Baka Communities in Cameroon. *ACDI's 5th Annual Conference for Early Career Researchers*. Online. October 2020.

**Shackleton, C.M.**  
**Shackleton, C.M.** Ecological implications of changing patterns of smallholder farming in South Africa. *SASUF Conference*. Online, Stockholm. Sweden. May 2020.



## Department of Fine Art

Professor Maureen de Jager  
Head of Department

Photos: Simon Pamphilon

### Introduction

The Department of Fine Art had a reasonably productive research year, despite the challenges of COVID-19 which upset many conference and exhibition plans and took valuable research time away from teaching staff who had to reinvent courses for online delivery. Outputs generated by our staff, Postgraduates, and SARChI Research Associates and fellows comprised numerous publications (several of them subsidy-earning) and conference presentations. We participated in a number of notable exhibitions and creative endeavours. In addition, members of the Department hosted high-profile visitors and were awarded prestigious residencies.

### Postgraduates / Graduations

Postgraduates contributed to the research culture of the Department in various ways. Master of Fine Art candidate Ashley Hodgson submitted her MFA Exhibition, *In my flesh*, for examination in Makhanda in November 2020. MFA candidate Brunn Kramer contributed work to the online *Turbine Art Fair* (August - September 2020). In March 2020, MFA candidates Viwe Madinda, N'lamwai Chithambo and Juanito Featherstone exhibited their work in the RAW Spot Gallery when Bayreuth University members of the Africa Multiple Cluster of Excellence, Professors Ute Fendler and Erdmute Alber, visited the *Arts of Africa and Global Souths Research Programme* (headed by Professor Ruth Simbao).

Four (4) PhD candidates in Art History who participate in the NRF/DSI SARChI research programme in *Geopolitics and the Arts of Africa* received international recognition for their work. Nancy Dantas published a chapter in the book, *Exchanging Symbols: Monuments and memorials in post-apartheid South Africa* and was awarded a prestigious C-MAP Fellowship at the Museum of Modern Art (MoMA) in New York. This competitive programme awards Fellowships to outstanding Fellows who conduct research on modern and contemporary art produced in Africa, Asia, Central and Eastern Europe, and Latin America and the Caribbean. Dantas was the C-Map Africa Fellow in 2020-2021. Andrew Mulenga was selected to participate in the Dhaka Art Summit, which was part of the *Modern Art Histories in and across Africa, South and Southeast Asia* programme. This programme brings together leading international faculty and emerging scholars to investigate parallel and intersecting developments in the cultural histories of modern Africa, South Asia, and Southeast Asia. Gladys Kalichini held two solo exhibitions in prestigious international venues: Künstlerhaus Bethanien, Berlin (in connection with the KfW Stiftung artist-in-residence programme) and the Biennial du Mercosul in Brazil. Binjun Hu Grobbelaar was invited to present her work on Chinese art collectors in South Africa at the Christie's Education Conference on the Chinese Art Market and published an article in the accredited journal, *African and Asian Studies*. Binjun works with Simbao and PhD candidate Lifang Zhang



Work in progress for Christine Dixie's *The Blueprint for the Disorder of Things* during her residency at STIAS in Stellenbosch.

Photos: Department of Fine Art



on African and Chinese encounters in the visual arts, and as part of this programme, Simbao and Associate Artist Thania Petersen presented their work at the Smithsonian Institute conference *AfricAsia: Overlooked Histories of Exchange*.

## Distinguished Visitors / International Visits

On the 6th of March, 2020, Bayreuth University members of the Africa Multiple Cluster of Excellence, Professors Ute Fendler and Erdmute Alber, visited the Arts of Africa and Global Souths Research Programme and the RAW Spot Gallery. Head of the programme, Professor Ruth Simbao, is part of the Rhodes University collaboration with Bayreuth University (Germany), the University of Lagos (Nigeria), Moi University (Kenya) and Joseph Ki-Zerbo University (Burkina Faso), which forms the Multiple Cluster of Excellence.

Fine Art Practice Senior Lecturer, Christine Dixie, was awarded a prestigious STIAS residency in Stellenbosch as Artist-in-residence from 6 - 23 August 2020. Dixie, together with her collaborator Helene van Aswegen (Stellenbosch University), used the opportunity to work on several projects, including two artist's books (*Blueprint for The Disorder of Things* and *Ghostprint for The Disorder of Things*) and a print series (*Under the Crux*). Conceptualised in response to the COVID-19 pandemic, the project is informed by a post-colonial reinterpretation of the painting Las Meninas by Velasquez and the Foucault's essay on Las Meninas, which forms the first chapter of *The Order of Things*. As described by Michelle Galloway in the STIAS Annual Report, "The conceptual point of departure is that language in a disordered world cannot be read as logical, and that vision becomes fragmented as we traverse the space between image and text. Book arts as a medium align with this exploration of 'unreading' traditional text and introducing

a new way of reading through an emphasis on visual, tactile and sensory responses". During her residency, Dixie also delivered an Artist's Talk, *Unpacking 'Blueprint for the Disorder of Things'*, as part of the STIAS Seminar Series.

## Significant Research Aligned Events

From February to March 2020, Senior Lecturer Christine Dixie presented her solo exhibition, *The Matrices*, at The Toffee Gallery in the Western Cape - just before the pandemic arrived and the first lockdown was put in place. *The Matrices* is the next iteration of a project started in 2010, entitled *The Binding*, where both projects explore the complex relationship between mother and son and the psycho-social implications of this relationship. In Dixie's words, "*The Binding* engages with the psychological and social implications of the story of the Aqedah (the sacrifice of

Isaac by Abraham). Core to this engagement is an exploration of the complex traversing of space as artist and mother - distance is required as observer/artist and closeness needed as a mother in relation to my son".

The Rhodes University editorial board for the MIT Press journal, *African Arts*, brings together three scholars based at Rhodes University, Professor Ruth Simbao (SARChI Chair), Associate Professor Stephen Folaranmi (Art History and Visual Culture) and Dr Rachel Baasch (Postdoctoral Fellow), as well as two international scholars who are Rhodes Research Associates, Professor Angelo Kakande (Makerere University, Uganda) and Professor Emi Koide (Federal University of Reconcavo da Bahia, Brazil). Together they published an article on collaboration in research on the arts of Africa, examining ideas of intimacy and solidarity in knowledge creation that shifts away from Eurocentric models of "African Studies". This position underpins the research of the Africa Multiple Cluster of Excellence that brings

together collaborators from Rhodes University, Moi University (Kenya), the University of Lagos (Nigeria), Joseph Ki-Zerbo University (Burkina Faso) and Bayreuth University (Germany). In 2020, Simbao, Koide, Baasch and Mwaba conducted collaborative research on art and activism as part of this research cluster.



Installation view of Christine Dixie's *The Matrices*, at the Toffee Gallery.

Photos: Department of Fine Art

# PUBLICATIONS

## Books/Chapters/Monographs

### Dantas, N.I.

Dantas, N.I. (2020) This fragile present: Verfremdung as a strategy of memorial in the work of contemporary South African artists. In: Nettleton, A. and Fubah, M.A. (eds.). *Exchanging Symbols: Monuments and memorials in post-apartheid South Africa*. Cape Town: African Sun Media. p.175-207. ISBN: 9781928480587.

### Foláranmí, S.

Foláranmí, S. (2020). 'Lasekan: The Western Region Years'. In: jegede, dele. and Adesanya, A. (eds) *Akinola Lasekan: Cartooning, Art and Nationalism at the Dawn of a New Nigeria*. Ibadan, Nigeria: Bookcraft. P.171-181.

### Siebert, N.I.

Schramm, K. and Siebert, N.I. (2020) *Handle with Care: Post-Colonial Object Matters*. Bayreuth: iwalewabooks. ISBN: 9783947902101.

### Simba, R.

Simba, R. (2020) Geopolitics and the Arts of Africa: Creating our art histories on the ground where we stand (La géopolitique et les arts d'Afrique : créer nos histoires de l'art sur le sol où nous sommes). In: Kouoh, K. (ed.). *On Art History in Africa / De l'histoire de l'art en Afrique*. Switzerland: RAW Material Company: Motto Books. p.147-156. ISBN: 9782940672097.

### Stanley-Niaah, S.N.

Stanley-Niaah, S.N. (ed.) (2020) *Dancehall: A reader on Jamaican Music and Culture*. Jamaica: The University of the West Indies Press. ISBN: 9789766407506.

## Concerts, Exhibitions, Performances, Workshops, Events

### De Jager, M.S.

De Jager, M.S. Seminar Presenter. PhD reflections: the thesis-as-record. *Presentation to PhD students at Kingston University School of Art*. Online, London. United Kingdom. 21 October 2020.

### Dixie, C.

Dixie, C. Solo Exhibition. *The Matrices*. The Toffee Gallery, Darling, South Africa. 22 February - 23 March 2020.

Dixie, C. Group Exhibition. *Bloodspoor. Conversing the Land*. University of Johannesburg Arts and Culture Platform, Johannesburg. South Africa. 1 October - 1 December 2020.

Dixie, C. Artist's Talk. Unpacking Blueprint for the Disorder of Things. *Stellenbosch Institute for Advanced Studies seminar Series*. Wallenberg Research Centre, Stellenbosch. South Africa. 13 August 2020.

Dixie, C. Artist's Talk. Collaborating on 'Blueprint for the Disorder of things'. *UJ SARCHI Research Centre, Webinar Series*. UJ Research Centre, Johannesburg. South Africa. 6 October 2020.

### Goniwe, T.

Goniwe, T. Lecture Presenter. Agency, Subjectivity and Space in Modern/Contemporary African Art. *Africa Yesterday, Today and Tomorrow*. Opa-lacka Community Development Corporation, Florida. 25 September 2020.

### Hodgson, A.

Hodgson, A. MFA Exhibition. *In my flesh*. Department of Fine Art Sculpture and Painting building, Makhanda. South Africa. 21 November 2020.

### Kalichini, G.M.

Kalichini, G.M. Solo Exhibition. These gestures of memory. *KfW Stiftung*. Künstlerhaus Bethanien, Berlin. Germany. 19 June - 12 July 2020.

Kalichini, G.M. Solo Exhibition. Biennial du Mercosul, Biennial 12, Feminine(s). Visualities, Actions and Affections. *Biennial du Mercosul*. Museu Margs, Porto Alegre. Brazil. 16 April - 31 August 2020.

### Kramer, B.D.

Kramer, B.D. Online Group Exhibition. *Tronkvoel. Turbine art Fair*. Online. South Africa. 27 August - 13 September 2020.

### Madinda, V., Chithambo, N.L. and Featherstone, J.R.

Madinda, V., Chithambo, N.L. and Featherstone, J.R. Group Exhibition. *Multi-Media Emergent. Group Exhibition created for the*

*Africa Multiple Cluster collaboration visit*. RAW Spot Gallery, Makhanda. South Africa. 20 March 2020.

### Thornburn, D.

Thornburn, D. Group Exhibition. 3rd International Mini Print Exhibition of Cantabria. *The Sea and the Lighthouses*. Faro Cabo Mayor Art Center, Santander. Spain. 14 August - 31 December 2020.

## Creative Writing

### Goniwe, T.

Goniwe, T. (2020) The Inquiring Beauty of Adijoke Tugbiyele. *Art Africa*.

Goniwe, T. (2020) Short Meditations on Blessing Ngobeni's Chaotic Pleasure. *Blessing Ngobeni: Recipient of the 2020 Standard Bank Young Artist Award for Visual Art*. Johannesburg: Everard Read Gallery.

### Muchemwa, F.V.

Muchemwa, F.V. (2020) Catalogue. In: Tannert, C. (ed.). *Glady's Kalichini: ...these gestures of memory*. Dortmund, Germany: Verlag Kettler.

### Panchia, B.

Panchia, B. and Tawil, L.M. (2020) Noise and Nation: A Blue Skies Conversation. *International Curators Forum*.

Panchia, B. Limits in Listening. *Sonic Continuum, The Contemporary Journal*.

Panchia, B. Abri de Swardt's Ridder Thirst LP project. *Africanah.org*.

## Distinguished Visitors

### Dixie, C.

C Dixie. STIAS Residency. Stellenbosch University, Stellenbosch, South Africa. *Artist's Book Lectures/Workshop*. August 2020.

### Simba, R.

R Simba. Bayreuth University, Bayreuth, Germany. *Collaboration*. March 2020.

## International Visits

### Dantas, N.I.

Dantas, N.I. Museum of Modern Art (MoMA), New York, USA. *C-MAP Africa Fellow, Contemporary and Modern Art Perspectives (C-MAP)*. 1 August - 1 December 2020.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

### Foláranmí, S.A.

Jimoh, K.O., Odejobi, O.A., Foláranmí, S.A. and Aina, S. (2020) Handmade Embroidery Pattern Recognition: A New Validated Database. *Malaysian Journal of Computing (MJoC)*. 5 (1). p.390-420.

### Muchemwa, F.V.

Muchemwa, F.V. (2020) Reclaiming history and agency: reflections on the role of artists collectives in Harare. *Third Text Africa*. 12 (1). p.26-32.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Baasch, R.M., Foláranmí, S.A., Koide, E., Kakande, A. and Simba, R.

Baasch, R.M., Foláranmí, S.A., Koide, E., Kakande, A. and Simba, R. (2020) "Knowing With": New Rhodes Board Navigates Collaboration, Intimacy, and Solidarity. *African Arts*. 53 (2). p.1-5.

### Cheng, Y.

Cheng, Y. (2020) Yorùbá E Ronú: Tradition, Youth and Cultural Citizenship in Túnédé Kéláni's Films (Research Associate, NRF/DST SARChI programme Geopolitics and the Arts of Africa). *Journal of African Cultural Studies*. 32 (4). p.382-399.

### Grobbelaar, B.J.

Grobbelaar, B.J. (2020) A Multimodal discourse analysis of Zhaoaimao (Lucky Cat) constructed by the Chinese communities in South Africa. *African and Asian Studies*. 19 (1-2). p.99-132.

**Khan, S., Ntombela, N., Makhubu, N., Mdluli, S.S., Mabaso, N.** and Tutani, Z.  
**Khan, S., Ntombela, N., Makhubu, N., Mdluli, S.S., Mabaso, N.** and Tutani, Z. (2020) Curating as World-Making ? An Art on Our Mind Creative Dialogue. *Journal of African Cultural Studies*. 32 (4). p.471-492.

**Simbao, R.**  
**Simbao, R.** (2020) David Nthubu Koloane (1938-2019). *African Arts*. 53 (2). p.6-9.

**Tello, V.**  
**Tello, V.** (2020) What is contemporary about institutional critique? Instituting the contemporary: A study of The Silent University (Research Associate, NRF/DST SARCHI programme Geopolitics and the Arts of Africa). *Third Text*. 34 (6). p.635-649.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**Foláranmí, S.A.**  
**Foláranmí, S.A.** Shifting Poles, Shifting Role: The Politics and Understanding of Jelili Atiku's Performance Art. *108th College Art Association (CAA) conference*. Chicago Hilton, Chicago. USA. February 2020.

**Goniwe, T.**  
**Goniwe, T.** Engaged | Disengage: Intergenerational Conversations about Apartheid Trauma. *Studies in Historical Trauma and Transformation*. Stellenbosch University. 25 November 2020.

**Goniwe, T.** Of Tradition in Artistic Modernism: from Ernest Mancoba to David Koloane. *Ernest Mancoba: A Dialogue on His Art and Words*. A4 Foundation & University of Cape Town. 11 February 2020.

**Goniwe, T.** Moderator. *Annual National Doctoral Conference*. National Institute for Humanities and Social Sciences. 3-5 November 2020.

**Goniwe, T.** Moderator. *The Aesthetic Charge of Pitika Ntuli's Bone Sculptures*. Melrose Gallery, 20 August 2020.

**Grobbelaar, B.J.**  
**Grobbelaar, B.J.** Collecting and Connecting: small narratives of art collectors in the Chinese diaspora in South Africa since the 1980s. *Christie's Education Conference 2020: The Chinese Art Market*. Online. November 2020.

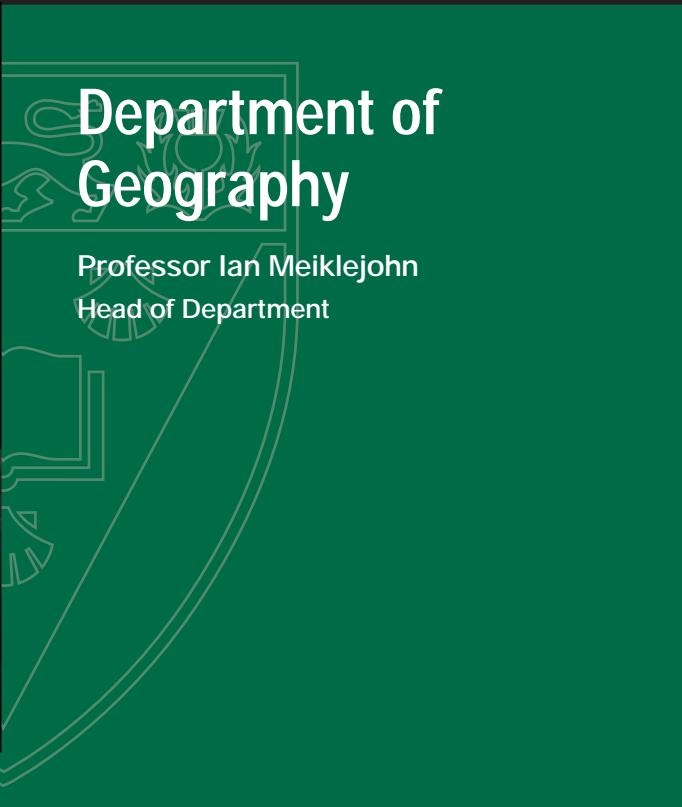
**Jimoh, G.A.**  
**Jimoh, G.A.** Not One of US? The Place of Comic in Art Historical Discourse (Research Associate, NRF/DST SARCHI programme Geopolitics and the Arts of Africa). *108th College Art Association Annual Conference*. Chicago Hilton, Chicago. USA. February 2020.

**Mulenga, A.M.**  
**Mulenga, A.M.** Seismic Movements. *Modern Art Histories in and across Africa, South and Southeast Asia (MAHASSA)*. Dhaka, Dhaka. Bangladesh. February 2020.

**Simbao, R.**  
**Simbao, R.** Resisting Soft Power, Subverting Solidarity: Visual Narratives of Chinese Presence in Zambia. *AfricAsia: Overlooked Histories of Exchange*. National Museum of Asian Art and the National Museum of African Art, Smithsonian. USA. September 2020.



Photo: Simon Pamphilon



## Introduction

Research in the Department reflects the diversity of the discipline of Geography. Current activities include the wild honeybush industry; land and agrarian reform; human mobility; the role of tertiary institutions on Makhanda; the social dynamics of small towns; spatial dynamics related to heritage conservation; the impacts of dams on societies and river systems; soil erosion and sediment transfer; wetlands and their importance to society and the natural environment; applications of Geographical Information Systems (GIS) and Remote Sensing; Antarctic Geomorphology and Biogeomorphology; and climate change. The Tsitsa project, which is a multi-institutional and departmental effort, produces significant numbers of Postgraduates. Not only is our research academically diverse, but spatially extensive, with projects extending from the Nordic Arctic to Antarctica. An aspect that the Department is incredibly proud of is our training of Postgraduate students and exposing them to the international research community. All those who have been involved in such interactions have shown that Rhodes University, and the Department of Geography, are conducting research that is internationally relevant and of an international standard.

## Postgraduates / Graduations

Five (5) PhDs and two (2) Masters students completed their studies in 2020 and graduated in the 2021 Graduation Ceremonies. One (1) of them was Dr Sinenhlanhla Memela, a lecturer in the Department, who was awarded her PhD investigating land-use decision-making on residential plots in Fingo Village, Makhanda. Distinctions were awarded to Masters students Tayla Dominy and Sibuyisele Pakati.

## Distinguished Visitors / International Visits

COVID -19 regulations prevented adequate engagement with international visitors. Staff also found it very difficult to travel abroad. We do continue to engage with members of the international community.

## Significant Research Aligned Events

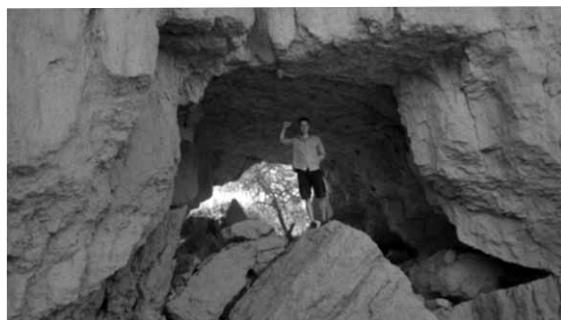
Emeritus Professor Kate Rowntree and Dr Bennie van der Waal continue with their groundbreaking research into sediment dynamics in the Tsitsa catchment with two (2) PhD and two (2) MSc students. Regular presentations are made to the

honeybush industry on topics identified as a need linked to the research by Gillian McGregor; topics include the compilation of statistics for cultivation based on GIS and expert mapping, together with fire mapping for permit determination. These contributions are driven by requests put out through the Honeybush Community of Practice (HCOP). Gillian McGregor and her students have completed their investigations into precision agriculture in the citrus industry using multispectral data and high-resolution satellite imagery. The research was supported by collaboration with Calleum Technologies. Similarly, Remote Sensing is still being used in collaborative research with the Centre for Biological Control (CBC) to map the distribution of invasive water hyacinth.

Sinenhlanhla Memela and Philippa Irvine are investigating land tenure practices and the sense of place in the Makhanda area, together with the utilisation of and perceptions towards historical buildings.

Professor Fred Ellery and three (3) Postgraduate students are working on the rehabilitation of the wetlands in the Krom valley.

Professor Ian Meiklejohn contributed to the SCAR (Scientific Committee on Antarctic Research) Open Science Conference. The conference was scheduled to be held in Hobart, Australia but was changed to online.



Research Associate Bennie van der Waal standing in a soil pipe in the Tsitsa catchment in the Eastern Cape Province.

Photo: Laura Bannatyne, PhD candidate

## PUBLICATIONS

### Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Van Der Waal, B.W.

Cockburn, J., Rosenberg, E., Copteros, A., Cornelius, S.F.A., Libala, N., Metcalfe, L. and Van Der Waal, B.W. (2020) A Relational Approach to Landscape Stewardship: Towards a New Perspective for Multi-Actor Collaboration. *Land*. 9 (224). p.1-20.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Boelhouwers, J.

Boelhouwers, J., Andersson, C., Berg, R., Kandastar, R.A., Sjöman, A. and Lindgren, E.V. (2020) Long-term frost weathering rates of limestone beach clasts, Färö Island, Central Baltic Sea. *Geografiska Annaler, Series A: Physical Geography*. 102 (1). p.12-32.

Boelhouwers, J., Borg, C. and Meiklejohn, K.I.

Nel, W., Boelhouwers, J., Borg, C., Cotrina, J.H., Hansen, C.D., Haussmann, N.S., Hedding, D.W., Meiklejohn, K.I., Nguna, A.A., Rudolph, E.M., Sinuka, S.S. and Sumner, P.D. (2020) Earth science research on Marion Island (1996-2020): a synthesis and new findings. *South African Geographical Journal*. (2021) 103 (1). p.22-42.

Breytenbach, I.J.

Breytenbach, I.J. (2020) Seasonal bedrock temperature oscillations and inversions as a function of depth and the implications for thermal fatigue. *Physical Geography*. 2020, p.1-18.

Foster, I.D.L.

Boardman, J., Burt, T. and Foster, I.D.L. (2020) Monitoring soil erosion on agricultural land: results and implications for the Rother valley, West Sussex, UK. *Earth Surface Processes and Landforms*. 45, p.3931-3942.

Collins, A., Blackwel, M., Boeckx, P., Chivers, C.A., Emelko, M., Evrard, O., Foster, I.D.L., et al. (2020) Sediment source fingerprinting: benchmarking recent outputs, remaining challenges and emerging themes. *Journal of Soils and Sediments*. 20 (12). p.4160-4193.

McKenzie, M., Mathers, K., Wood, P., England, J., Foster, I.D.L., Lawler, D. and Wilkes, M. (2020) Potential physical effects of suspended fine sediment on lotic macroinvertebrates. *Hydrobiologia*, 847, 697-711.

Timpany, S., Mighal, T., Foster, I.D.L., Martinez Cortizas, A., Owen, O., Krus, A. and Kamerling, I. (2020) Later Prehistoric and Norse Communities in the Northern Isles: Multi-Proxy Environmental Investigations on Orkney. *Environmental Archaeology*. 2020, p.1-22.

Boardman, J. and Foster, I.D.L. (2020) Run-off and sediment storage: The effectiveness of mitigation measures against soil erosion and freshwater pollution. *Land Degradation and Development*. 32. p.2453-2455.

Kepe, T.

Kepe, T. and Hall, R. (2020) Creating learning and action space in South Africa's post-apartheid land redistribution program. *Action Research*. 18 (4). p.510-527.

Shortly, A. and Kepe, T. (2020) Consuming the city: challenges and possibilities for foraging in Toronto's parks. *Forests Trees and Livelihoods*. 30 (2). p.75-89.

Nyamela, N. and Van Der Waal, B.W.

Gwapedza, D., Nyamela, N., Hughes, D.A., Slaughter, A.R., Mantel, S.K. and Van Der Waal, B.W. (2020) Prediction of sediment yield of the Inxu River catchment (South Africa) using the MUSLE. *International Soil and Water Conservation Research*. 9 (2021). p.37-48.

Van Der Waal, B.W.

le Roux, J. and Van Der Waal, B.W. (2020) Gully erosion susceptibility modelling to support avoided degradation planning. *South African Geographical Journal*. 102 (3). p.406-420.

### Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Meiklejohn, K.I.

Meiklejohn, K.I. and Hansen, C.D. The Development of Blockfields in Western Dronning Maud Land: A New Model. *SCAR (Scientific Committee on Antarctic Research) Open Science Conference*. Online, Hobart, Australia. August 2020.



Photo: Simon Pamphilon

## Department of Geology

Professor A.J. Booth  
Acting Head of Department

### Introduction

2020 was another transitional year for the Department of Geology. The challenges faced during a year of virus pandemic-induced lockdown required significant adjustments in research and teaching strategies and execution. Recent staff departures for a variety of reasons had left us with two vacant academic posts, which presented the Department with additional challenges. In the face of this, the Department has nonetheless maintained a stable research output in terms of Postgraduate research student development, undergraduate training, and research breadth. The rebuilding process continues with hopes that a diverse and forward-looking staff complement will lead us into the next decade.

### Research

In 2020 the Department produced fourteen (14) journal publications, maintaining a steady research profile. Notable aspects include three publications on biogeological themes (courtesy of Professor Büttner, Dr Grosch, Dr Gess, and Dr McLoughlin, and their colleagues), and the Department no doubt made itself popular in the professional community at large with three published comments on existing research. In a new collaborative project between the Department of Geology and Professor Rosemary Dorrington's team of the SDST/NRF SARCHI Chair in Marine Natural Products, the first discovery of living phosphatic stromatolites, published online in October in *Geobiology*, produced the cover of the related issue. In addition, staff members conducted four (4) conference presentations (two of them at international conferences) and contributed four (4) presentations to the Geological Society of South Africa's online lunchtime talks, maintaining a presence in the domestic research community in the absence of any national meetings for the discipline (another casualty of the pandemic).



Dr Deon van Niekerk examining outcrops in late 2019 in the sedimentary rocks of the Karoo Supergroup near Cradock, Eastern Cape as part of reconnaissance for a research project on graphite and metal mineralisation in the area.

Photo: Steve Prevec

## Postgraduates / Graduations

At the virtual 2020 graduation ceremonies, the Department graduated eight (8) Honours and nineteen (19) B.Sc. students, with Naadiya Hoosen achieving a Distinction in her Honours degree. M.Sc. degrees were awarded to Mwango Chilekwa, Wesson Reid, Mawande Ntantiso, and Mamello Thokoa (with Distinction). In addition, (now Dr) Xolane Mhlanga was awarded his PhD, entitled "A reappraisal of the origin of the Hotazel Fe-Mn Formation in an evolving early Earth system through the application of mineral-specific geochemistry, speciation techniques and stable isotope systematics".

## Distinguished Visitors / International Visits

Professional visiting (in and out) was significantly curtailed by the national restrictions globally resulting from the pandemic. However, Dr Stefan Polteau, a Rhodes alumnus (PhD Geology, 2004) now based at the IFE Institute for Energy Technology in Norway, was able to visit the Department (Professor Tsikos) just ahead of the lockdown in the context of discussions relating to novel metal-based battery development.

### Geology Students graduating in 2020

B. Sc	Honours	M. Sc.	PhD
19	8	W. Reid	1
		M. Thokoa	Mhlanga
		M. Ntantiso	
		M. Chilekwa (Exploration Geol)	



**Professor Steve Prevec examining folded mudstones from just to the north of Makhanda, as part of research in 2020 on the formation of local clays. These rocks represent the protolith, or former rock type, from which most of the economic kaolinite clay deposits later formed here.**

Photo: Department of Geology

## PUBLICATIONS

### Concerts, Exhibitions, Performances, Workshops, Events

McLoughlin, N.

McLoughlin, N. Deconstructing the Fossil Record of Life in the Archean sub-seafloor. *Centre for Excellence in Palaeosciences Lecture Series*. Online Lecture Series, Johannesburg. RSA. 29 October 2020.

Prevec, S.A.

Prevec, S.A. Online audiovisual presentation. Constraining geochemical variation in mafic igneous rocks. Part 3: Differentiation & Recrystallisation. *Geological Society of South Africa free online talks*. Online, Johannesburg. RSA. 6 November 2020.

Prevec, S.A. Online audiovisual presentation. Constraining geochemical variation in mafic igneous rocks. Part 2: Contamination. Geological Society of South Africa free online talks. Online, Johannesburg. RSA. 7 August 2020.

Prevec, S.A. Online audiovisual presentation. Constraining geochemical variation in mafic igneous rocks. Part 1: magma mixing & mingling. *Geological Society of South Africa free online talks*. Online, Johannesburg. R.S.A. 3 July 2020.

### Creative Writing

Prevec, S.A.

Prevec, S.A. (2020) Geode of the Mineralogical Society of South Africa. In: Prevec, S.A. (ed.). *The Editor's Site*. 3rd Ed. Johannesburg, South Africa: Geological Society of South Africa.

Scoon, R.

Scoon, R. (2020) Geobulletin of the Geological Society of South Africa. In: Hatton, C. (ed.). *Antiquities and Historical Sites in the Peloponnese, Greece: Ancient Cultures and Active Tectonism*. Johannesburg, South Africa: Geological Society of South Africa.

Scoon, R. (2020) Geobulletin of the Geological Society of South Africa. In: *Craters of the Moon, Idaho: Holocene Lava Fields and Cinder Cones*. 3rd Ed. Johannesburg, South Africa: Geological Society of South Africa.

Scoon, R. (2020) Geobulletin of the Geological Society of South Africa. In: *The Nyiragongo Volcano, Democratic Republic of Congo: Active Summit Crater with a Semi-permanent Lava Lake*. 2nd Ed. Johannesburg, South Africa: Geological Society of South Africa.

### Distinguished Visitors

Polteau, S.

S Polteau. IFE Institute for Energy Technology, Kjeller, Norway. Research collaboration on battery technology. February 2020.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Büttner, S.H.

Büttner, S.H. (2020) Comment on "Evidence for Mesoproterozoic collision, deep burial and rapid exhumation of garbenschiefer in the Namaqua Front, South Africa" by Valby Van Schijndel, David H. Cornell, Robert Anczkiewicz, Anders Schersten. *Geoscience Frontiers*. Volume 11, Issue 2, Pages 511-531. *Geoscience Frontiers*. 11 (5). p.1889-1894.

Büttner, S.H. and Van Niekerk, D.

Büttner, S.H., Isemonger, E.W., Isaacs, M., Van Niekerk, D., Sipler, R.E. and Dorrington, R.A. (2020) Living phosphatic stromatolites in a low-phosphorus environment: Implications for the use of phosphorus as a proxy for phosphate levels in paleo-systems. *Geobiology*. 19 (1). p.35-47.

Gess, R. and Whitfield, A.K.

Gess, R. and Whitfield, A.K. (2020) Estuarine fish and tetrapod evolution: insights from a Late Devonian (Famennian) Gondwanan

estuarine lake and a southern African Holocene equivalent. *Biological Reviews*. 95 (2020). p.865-888.

**Grosch, E.G. and Ndlela, S.**

**Grosch, E.G., Viola, G. and Ndlela, S.** (2020) Geological record of Paleoarchean oceanic flake tectonics preserved in the c. 3.3 Ga Kromberg volcanic type-section, Barberton greenstone belt, South Africa. *Precambrian Research*. 346 (1). p.105815-105838.

**Marsh, J.S.**

**Marsh, J.S.** (2020) Misrepresentation of early Karoo Volcanism: A critical discussion of aspects of "De Wit *et al.*, 2020. Pillow talk: Volcanic rocks of the Karoo that formed many leagues under the Gondwanan Sea. *South African Journal of Geology*. 123 (4). p.647-652.

Neumann, E.R., **Marsh, J.S.**, Galerne, C.Y., Polteau, S., Svensen, H.H. and Planke, S. (2020) Co-existing low-Ti and high-Ti dolerites in two large dykes in the Gap Dyke swarm, southeastern Karoo Basin (South Africa). *South African Journal of Geology*. 123 (1). p.19-34.

**McLoughlin, N., Phunguphungu, S. and Grosch, E.G.**

**McLoughlin, N., Wacey, D., Phunguphungu, S., Saunders, M. and Grosch, E.G.** (2020) Deconstructing Earth's oldest ichnofossil record from the Pilbara Craton, West Australia: Implications for seeking life in the Archean subseafloor. *Geobiology*. 18 (2020). p.525-543.

**Moore, A.E.**

**Moore, A.E., Yudovskaya, M., Poyer, M. and Blenkinsop, M.** (2020) Evidence for olivine deformation in kimberlites and other mantle-derived magmas during crustal emplacement. *Contributions to Mineralogy and Petrology*. 175 (2). p.1-9.

**Scoon, R.N.**

**Scoon, R.N., Costin, G., Mitchell, A.A. and Moine, B.** (2020) Non-sequential injection of PGE-rich ultramafic sills in the Platreef Unit at Akanani, Northern Limb of the Bushveld Complex: Evidence from Sr and Nd isotopic systematics. *Journal of Petrology*. 61 (3). p.1-25.

**Scoon, R.N.** (2020) Geotourism, Iconic Landforms and Island-style Speciation Patterns in National Parks of East Africa. *Geoheritage*. 12 (66). p.1-19.

**Scoon, R.N. and Mitchell, A.A.** (2020) Discussion of "Crustal fluid contamination in the Bushveld Complex, South Africa: An analogue for subduction zone fluid migration by Benson, E., Connolly, J.A.D. and Boudreau, A.E. (2020)". *International Geology Review*. (2020). p.1-9.

**Siahi, M., Tsikos, H., Rafuza, S., Oonk, P.B.H., Mhlanga, X.R. and Van Niekerk, D.**

**Siahi, M., Tsikos, H., Rafuza, S., Oonk, P.B.H., Mhlanga, X.R., Van Niekerk, D., Mason, P.R.D. and Harris, C.** (2020) Insights into the processes and controls on the absolute abundance and distribution of manganese in Precambrian Iron Formations. *Precambrian Research*. 350 (1). p.105878-105892.

**Tsikos, H.**

Rasmussen, B., Muhling, J., Zi, J.W., **Tsikos, H.** and Fischer, W.W. (2020) A 1.25 Ga depositional age for the "Paleoproterozoic" Mapedi red beds, Kalahari Manganese Field, South Africa: New constraints on the timing of oxidative weathering and hematite mineralization. *Geology*. 48 (1). p.44-48.

Albarede, F., Thibon, F., Blichert-Toft, J. and **Tsikos, H.** (2020) Chemical archeoceanography. *Chemical Geology*. 548 (1). p.119625-119636.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**Dyan, S. and Prevec, S.A.**

**Dyan, S., Prevec, S.A. and Tonnelier, N.** Modelling the influence of carbonate assimilation on the stability of chromites. *DSI-NRF CIMERA Annual Colloquium*. University of Johannesburg, Johannesburg, RSA. November 2020.

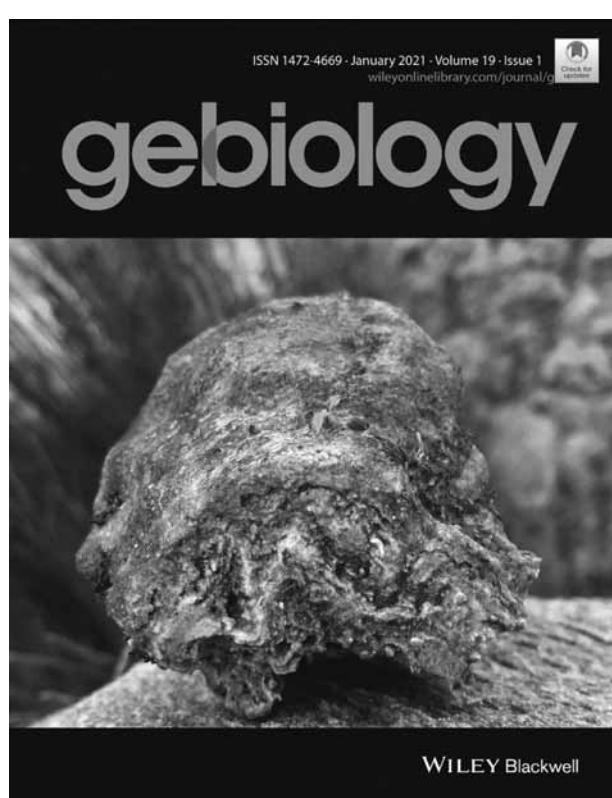
**Dyan, S., Prevec, S.A. and Tonnelier, N.** Modelling the role of carbonate assimilation on the stability of spinels: a focus on the Northern Limb chromites, Bushveld Complex. *South Africa. Geological Society of America annual meeting*. Online, n.a. U.S.A. October 2020.

**McQuillan, S.S.**

**McQuillan, S.S. and Harmer, R.E.** A field, petrological and geochemical study of the Keikampspruit Carbonatite. *DSI-NRF CIMERA Annual Colloquium*. University of Johannesburg, Johannesburg, RSA. November 2020.

**Tsikos, H.**

Heard, A.W., Bekker, A., Dauphas, N., **Tsikos, H.** and Ireland, T. Oxidation pathway for iron-rich stromatolites deposited in the lead up to the GOE. *Goldschmidt 2020*. Virtual, Hawaii. USA. July 2020.



Cover page of *Geobiology*, showing a sample of calcitic and phosphatic stromatolites from Cape Recife (Büttner *et al.* 2020 (online)). Phosphatic stromatolites, described here as living organisms, are otherwise only known from the fossil record.



Needles of fibrous amphibole that have grown in this rock as a result of the addition of water, caused by the heating and dehydration of a block of mudstone which was engulfed in magma at temperatures of >1200°C, which then crystallised as this rock. This was the subject of a geology Honours project in 2020.

Photo: Department of Geology



Photo: Simon Pamphilon



## Introduction

The COVID-19 pandemic had a significant negative impact on research activities in the Department. All archives in South Africa closed down for most of the year, and research trips for the collection of oral history proved impossible. Staff were forced to continue working on material that they already had in their possession but generally could not complete research tasks. Professor Alan Kirkaldy managed to complete editing the manuscript of a book that he was working on entitled *Everyday Communists in South Africa's Liberation Struggle: The Lives of Ivan and Lesley Schermbrucker*. This is currently in publication with Palgrave Macmillan. Other staff members are hard at work utilising the periodic relaxations in lockdown levels to access archives whenever gaps in the online teaching schedule allow for this.

## Postgraduates / Graduations

The Department had seven (7) Honours graduates, five (5) with distinction. Our MA student graduated with distinction. Archival restrictions prevented the completion of other MA and PhD theses.

## Distinguished Visitors / International Visits

Due to lockdown, we had no visits from outside and were generally prevented from undertaking international visits.

## Significant Research Aligned Events

Professor Helena Pohlandt-McCormick was responsible for planning and hosting an online exhibition, including specially made films and filmed debates entitled *Sounding the Land* which formed part of the online National Arts Festival. Participants included independent researchers, former and current Postgraduate students of the Department, the University of Fort Hare, the University of the Western Cape, the South African Heritage Resources Agency and the National Arts Festival. This was initially planned as a workshop, conference and exhibition but had to be moved online as a result of COVID-19 restrictions. (See <https://soundingtheland.co.za/>).

# PUBLICATIONS

## Books/Chapters/Monographs

Baines, G.F.

Baines, G.F. (2020) Visual Narratives of the Border War in 1980s South African Print Culture. In: Schmahmann, B., van Robbroeck, L. and Feschi, F. (eds.). *Troubling Images: Visual Culture and the Politics of Afrikaner Nationalism*. Johannesburg: Wits University Press. p.273-298. ISBN: 9781776144723.

## Concerts, Exhibitions, Performances, Workshops, Events

Ulrich, N.

Van Der Walt, L., Ulrich, N., Maisiri, L.J. and Hagemeyer, L. Design, facilitation, presentation. History and Debates in the Workers' Movement. *Policy, Theory and Research for Labour Movements' programme*. Neil Aggett Labour Studies Unit (NALSU)/Sociology Department, Rhodes University. Graham Hotel, Makhanda. South Africa. 12 November - 6 December 2020.

## International Visits

Ulrich, N.

Ulrich, N. ENS de Lyon, Accueil Site Descartes, Lyon, France. *Worlds in Related Coercions in Work (WORCK)- EU COST ACTION - as an international observer, management committee meeting and working group meetings*. 27 - 29 February 2020.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Maylam, P.

Maylam, P. (2020) Student 'Fallism' in South Africa, 2015?16: Some Diverging Analyses. *Journal of Southern African Studies*. 46 (6). p.1237-1247.

Mkhize, N.

Mzileni, P. and Mkhize, N. (2020) Decolonisation as a Spatial Question: The Student Accommodation Crisis and Higher Education Transformation. *South African Review of Sociology*. 50 (3-4). p.104-115.

Wells, J.C.

Wells, J.C. (2020) Resistance and survival: Demolishing myths of disappearing people, minor chiefs and non-existent boundaries in the early 19th century Zuurveld of the Cape Colony. *New Contree: A Journal of Historical and Human Sciences for Southern Africa*. 84 (1). p.1-29.



Sounding the Land is an ongoing project of interdisciplinary multi-media collaboration between the Rhodes University History Department, the SARChI Chair in Social Change (University of Fort Hare), the Cory Library for Historical Research (Rhodes University), the National Arts Festival and the South African Heritage Resources Agency. In 2020 it drew together a combined team of scholars and artists to reinvigorate and reassess debates on the impact and legacy of the settler colonial project in South Africa's Eastern Cape through discussions of the historical certainties that define the debates and the meanings and commemorations of settler colonialism over time. In a series of works and engagements that cumulatively do the work of *Sounding the Land* and ungrounding 1820, this project addressed the complex auditions between subject, land and space, and the work of place, home, belonging, and its dispossessions from the past into the present: <https://soundingtheland.co.za/>



Photo: Simon Pamphilon

# Department of Human Kinetics and Ergonomics

Dr Swantje Zschernack  
Head of Department

## Introduction

Given the fact that the research in the Department always includes interaction with human participants, the current COVID-19 pandemic made research in the Department difficult. Despite these challenges, the Department has had a very successful year in the research sphere with a number of publications which include student co-authors and national and international collaborators.

## Postgraduates / Graduations

In 2020 the Department graduated one (1) PhD student, six (6) Master of Science students and thirteen (13) Honours students during the April graduation and three (3) MSc students during the October graduation.

## Significant Research Aligned Events

During the level 5 hard lockdown, Dr Jonathan Davy initiated, along with Dr Swantje Zschernack, Professor Candice Christie, Andrew Todd, and academics from the University of Cape Town and the University of the Witwatersrand, the development and eventual release of a national survey that aimed to explore the impact of the hard lockdown on the lifestyles of South Africans, compared to pre-lockdown. The online survey focused on understanding how the restrictions on movement and working from home influenced sleep-wake behaviour, mental health, physical activity, screen time and sedentary behaviour and other lifestyle behaviours.

To date, the collaboration has resulted in one publication (Davy, J. P., Scheuermaier, K., Roden, L. C., Christie, C. J., Bentley, A., Gomez-Olive, F. X., ... & Rae, D. E. (2021). *The COVID-19 Lockdown and Changes in Routine-Oriented*



Dr Jonathan Davy, Dr Swantje Zschernack and a group of Postgraduate students after presenting aviation-related research to representatives of airline operators, pilot associations and the South African Civil Aviation Authority at the SCAA on 13 February 2020.

Photo: Department of Human Kinetics & Ergonomics

*Lifestyle Behaviors and Symptoms of Depression, Anxiety, and Insomnia in South Africa. Journal of Physical Activity and Health, 1(aop), 1-12.)* with another manuscript under review. The effects of Level 5 and 4 lockdowns were associated with changes in sleep timing and sleep quality, where sleep timing was delayed, was longer but of more inferior quality, compared to pre-lockdown. Both reported levels of anxiety and depression increased under the hard lockdown, screen time and sedentary behaviour increased as well, while physical activity levels were generally reduced. Overall, the hard lockdown negatively affected various lifestyle factors, with many of these adverse effects being more prominent in women and students.

Professor Candice Christie, with colleagues Professor Vicki Lambert (UCT), Professor Tracy Kolbe-Alexander (University of Southern Queensland) and Professor Rowena Naidoo (UKZN), led four policy briefs produced by, and in conjunction with, the African Academic Physical Activity Consortium, the African Physical Activity Network and various partners and stakeholders. They were focused on physical activity and health in (1) adults, (2) children, (2) adults with disabilities and then one focused explicitly on school sport (3) all within the South African context: COVID-19 and beyond. They published these briefs and a call to action to the South African government explaining the ban on school contact sports, which was led by Professor Christie.

## PUBLICATIONS

### Books/Chapters/Monographs

Todd, A.

Thatcher, A. and Todd, A. (2020) HFE in Underdeveloped Countries, How do we Facilitate Equitable, Egalitarian, and respectful progress. In: Roscoe, R.D., Chiou, E.K. and Wooldridge, A.R. (eds.). *Advancing Diversity, Inclusion, and Social Justice Through Human Systems Engineering*. Boca Raton London New York: CRC Press. p.31-50. ISBN: 9781138387980.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Barnard, D.V., Pote, L. and Christie, C.J.

Barnard, D.V., Pote, L. and Christie, C.J. (2020) Workloads of forward and backline adolescent rugby players: a pilot study. *South African Journal of Sports Medicine*. 32 (1). p.1-5.

Christie, C.J.

Abass, A.O., Alli, A.R., Olagbegi, O.M., Christie, C.J. and Bolarinde, S.O. (2020) Effects of an eight-week lumbar stabilization exercise programme on selected variables of patients with chronic low back pain. *Bangladesh Journal of Medical Science*. 19 (3). p.467-474.

Christie, C.J., Barnard, D.V., Pote, L. and Munro, C.E.

Christie, C.J., Barnard, D.V., Pote, L. and Munro, C.E. (2020) Workload Monitoring in Team Sports: Using Elite Cricket as an Example. *Indian Journal of Orthopaedics*. 54 (2020). p.271-274.

McEwan, K., Davy, J. and Christie, C.J.

McEwan, K., Davy, J. and Christie, C.J. (2020) Get sleep or get stumped: sleep behaviour in elite South African cricket players during competition. *Journal of Sports Sciences*. 30 (19). p.2225-2235.

Pote, L. and Christie, C.J.

Pote, L., King, G. and Christie, C.J. (2020) Strength and conditioning practices of franchise-level cricket trainers. *South African Journal of Sports Medicine*. 32 (1). p.1-5.

Sholto-Douglas, R. and Christie, C.J.

Sholto-Douglas, R., Cook, R.L., Wilkie, M. and Christie, C.J. (2020) Movement Demands of an Elite Cricket Team During the Big Bash League in Australia. *Journal of Sports Science and Medicine*. 19 (2020). p.59-64.



Honours field trip to an agricultural company analysing the work demands of harvesting cabbage.

Photo: Department of Human Kinetics & Ergonomics



Photo: Simon Pamphilon

# Department of Ichthyology and Fisheries Science

Associate Professor Clifford Jones  
Head of Department

## Introduction

The Department of Ichthyology and Fisheries Science's (DIFS) contribution in its field was recognised in 2020 when it was designated by the African Union as its *Centre of Excellence for Training in Marine Fisheries and Aquaculture*. The DIFS focus is on the study of fish, fisheries, aquaculture and the sustainable utilization of aquatic resources in general, primarily through research and research-related teaching and training of students in these fields. Its staff of seven academics maintained this international reputation through collaborative teaching and research relationships with about 30 universities and research institutions around the world. Also, in 2020, the DIFS' generated a third-stream income of over R15,200,000 to maintain these research programmes, most of which supported not just research and innovation but the application of this research and learning in society.

## Postgraduates / Graduations

The DIFS saw the registration of two Postdoctoral Fellows, forty (40) PhD and twenty-five (25) MSc students in 2020, and it graduated seven (7) PhD, ten (10) MSc and seven (7) Honours students that year. A school of 70-odd Postgraduates was made possible primarily due to a well-developed network of Research Associates and other collaborative relationships. In addition to the South African Institute of Aquatic Biodiversity (SAIAB), our Postgraduate supervision and research network also included collaborations with, and by way of example: the South African Environmental Observation Network (SAEON), Department of Forestry, Fisheries and Environment (DFFE), North West Provincial Government, Water Research Commission (WRC), Oceanographic Research Institute (ORI), Makerere University (Uganda), Bahir Dar University (Ethiopia), University of Namibia, Eldoret University (Kenya), Maynooth University (Ireland), University of Ghent (Belgium), Fort Hare University, University of Johannesburg, Nelson Mandela University and researchers from numerous fish-farm industry partners.

## Distinguished Visitors / International Visits

We had substantial international interaction in 2020, but due to the COVID-19 pandemic, this was mostly limited to virtual-online meetings. In addition to these, Professor Cliff Jones managed to attend the *All-Atlantic Research Forum* and an AANCHOR workshop in Brussels just before lockdown. Professor Warren Potts was invited to present a keynote address at the *73rd Annual Gulf and Caribbean Fisheries Institute* annual conference, which was held in November. This was based on his research on the governance and management of recreational fisheries in the developing world. Dr Amber Childs and Professor Potts were invited to become members of the COST Action CA19107; *Unifying Approaches to Marine Connectivity*

for improved Resource Management for the Seas (SEA-UNICORN) (<https://www.sea-unicorn.com>), led by Dr Audrey Darnaude.

## Significant Research Aligned Events

Professor Warwick Sauer continued with a number of research projects throughout the western Indian Ocean and the West Coast of South Africa, covering South Africa, Namibia and Angola. He served on the African Coelacanth Ecosystem Programme standing panel, and with Professor Aswani, was awarded four years of BELMONT funds through the National Science Foundation of the United States of America to undertake an international project examining fisheries conflicts. Professor Sauer also contributed to course design and developed an international online lecture series, *Ocean Science in Action*, as part of the SOLSTICE project funded through the British Government. He also jointly organised a Virtual Regional Training Workshop to test the use of the FAO Legislative Guide and the Legal Diagnostic Tool for Sustainable Small-Scale Fisheries in South Africa, Ghana, and Namibia, as part of the One Ocean Hub project, also funded through the British Government.

Professor Peter Britz's abalone ranching research has led to the restoration of the heavily poached abalone stock off Gqeberha, the approval of a sustainable harvest of 37 tons by the rights holder, and the creation of new jobs. The abalone ranching public/private/community model is set to be expanded to coastal communities along the Eastern Cape coast.

Professors Cliff Jones and Peter Britz continued their participation in the European Union's Horizon 2020 All Atlantic 'AquaVitae' project, collaborating with thirty-seven (37) partners from seventeen (17) countries. The South African team included abalone feed producer Marifeed (Pty) Ltd and Wildcoast Abalone (Pty) Ltd and researchers from France, Germany and the Canary Islands. Their work on integrated multi-trophic aquaculture (IMTA) saw the land-based culture of sea cucumbers and seaweeds in the effluent stream of South African abalone farms and the sea-based co-culture of macroalgae and mussel. The IMTA systems recycle the waste from one product, and this waste is used to produce another while improving water quality, creating a new crop and reducing the farm's environmental footprint. The effluent grown seaweeds are also being tested as feed ingredients in pelleted abalone diets, making them more environmentally sustainable. Cliff Jones is also developing technology to reduce the biosecurity risk to farmed abalone that is fed macroalgae produced in farm effluent.

Cliff Jones also continued his partnership with South African Breweries in 2020. With Research Associate Dr Richard Taylor, they finalised the scale-up of their pilot-scale research, where water and nutrients in brewery effluent are recovered and used to generate food. The process integrates constructed wetland treatment technologies with aquaculture and agriculture, where jobs are created, and fresh vegetables and fish are produced as part of the effluent treatment process.



Abalone produced in tanks at Wildcoast Abalone farm near East London, where seaweed is produced in farm effluent and fed back to the abalone making aquaculture more environmentally sustainable.

Photo: Department of Ichthyology & Fisheries Science



Some of the DIFS 2020 Honours students on their aquaculture field trip to an aquaponics fish farm, where vegetables are produced using fish waste as a nutrient source.

Photo: Department of Ichthyology & Fisheries Science

Professors Cliff Jones and Horst Kaiser also participated in a research exchange programme (COTRA) that aims to improve tertiary education in aquaculture and fisheries science across Eastern, Central and Southern Africa, funded by the European Commission/African Union's Inter-Africa Academic Mobility Scheme. The programme involves the exchange of ten (10) staff and thirty-six (36) MSc and PhD students between seven countries in Africa. Cliff and Horst hosted PhD students from Kenya, Uganda and Ethiopia as part of this project in 2020.

Horst Kaiser continued collaboration with the Department of Biochemistry and Microbiology, Rhodes University, to study the microbiome in aquaponics systems. He is a part of a team of researchers who work on the genetics and ecology of the South African estuarine pipefish, *Syngnathus watermeyeri*. In 2020, a new collaboration was initiated with the University of Ghent in Belgium that involves the exchange of Postgraduate students. Joint research with South African abalone farms continued with new student projects.

Dr Wilbert Kadye's research focussed on freshwater ecology, food web modelling and molecular systematics. He worked in collaboration with Professor Andrew Parnell (Maynooth University, Ireland) and Dr Albert Chakona (SAIAB) in the fields of statistical modelling and freshwater systematics and taxonomy.

Professor Warren Potts continued leading several projects, including his NRF, African Coelacanth Ecosystem project (ACEP), which aimed to gain an understanding of fisheries-induced selectivity on fish physiological traits, the South African fisheries research component for the One Ocean Hub programme, which aims to improve the resilience of South Africa's coastal fisheries through the implementation of a socio-ecological systems approach, a NRF bilateral project between South Africa and Namibia, which aims to

understand the biological and physiological effects of an ocean warming-induced hybridization event for two congeneric coastal fisheries species in Namibia and a number of smaller (privately-funded) projects on aspects of recreational fisheries.

Warren Potts continued serving as the African Representative on the scientific committee of the World Recreational Fisheries Conference. He also continued serving on the Department of Environment, Forestry and Fisheries' Linefish Scientific Working Group.

Dr Amber Childs was appointed to serve on the SANCOR Steering Committee as the Eastern Cape Representative. She also continued her second year of serving on the Board of the Council for Scientific and Industrial Research (CSIR) as a non-executive member. Amber continued her research on her NRF Y-rated funded project on the links between the behaviour and physiology of fishes and her collaborations with Professor Potts NRF-ACEP project investigating fisheries-induced evolution and other recreational fishery projects, and her collaboration with Dr Nikki James (SAIAB) on her NRF-Marine and Coastal Research grant on shallow-water seascape connectivity.

Qurban Rouhani has been leading an experimental fishery project on Vanderkloof Dam in the Northern Cape Province. This research has not only provided information to assess the sustainability of inland small-scale fisheries at the dam level but also informed the national inland fisheries process. Qurban has also completed a WRC project to develop an online platform (called *Buna Africa*) designed to assist fish farmers to increase production and for government officials to use as a decision-making tool. There has been considerable interest from the South African government and the African Union-IBAR to use *Buna*, not only in SA but across the continent.

# PUBLICATIONS

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Kadye, W.T., Redelinghuys, S. and Booth A.J.

Kadye, W.T., Redelinghuys, S., Parnell, A. and Booth, A.J. (2020) Exploring source differences on diet-tissue discrimination factors in the analysis of stable isotope mixing models. *Scientific Reports*. 10 (1). p.15816.

Muller, C., Childs, A.R. and Potts, W.M.

Muller, C., Childs, A.R., James, N.C. and Potts, W.M. (2020) Effects of Experimental Ocean Acidification on the Larval Morphology and Metabolism of a Temperate Sparid, *Chrysoblephus laticeps*. *Oceans*. 2 (1). p.26-40.

Potts, W.M. and Cowley, P.D.

Potts, W.M., Attwood, C. and Cowley, P.D. (2020) Linefish resilience in the Anthropocene. *African Journal of Marine Science*. 42 (3). p.3.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Arkert, N.K., Childs, A.R., Duncan, M.I., Farthing, M.W. and Potts, W.M.

Arkert, N.K., Childs, A.R., Duncan, M.I., Farthing, M.W. and Potts, W.M. (2020) Physiological stress response and recovery of an important estuarine fishery species, dusky kob '*Agyrosomus japonicus*' after a simulated catch - and - release event. *African Journal of Marine Science*. 42 (3). p.339-345.

Arkipkin, A.I.

Maureaud, A.A., Frelat, R., Pécuchet, L., Shackell, N., Mérigot, B., Pinsky, M.L., Amador, K., Anderson, S.C., Arkipkin, A.I. and et al., (2020) Are we ready to track climate-driven shifts in marine species across international boundaries? - A global survey of scientific bottom trawl data. *Global Change Biology*. 2020 (2020). p.1-17.

Iriarte, V., Arkipkin, A.I. and Blake, D. (2020) Implementation of exclusion devices to mitigate seal (*Arctocephalus australis*, *Otaria flavescens*) incidental mortalities during bottom-trawling in the Falkland Islands (Southwest Atlantic). *Fisheries Research*. 227 (2020). p.1-12.

Busbridge, T.A.J., Marshall, C.T., Arkipkin, A.I., Shcherbich, Z., Marriott, A.L. and Brickle, P. (2020) Can otolith microstructure and elemental fingerprints elucidate the early life history stages of the gadoid southern blue whiting (*Micromesistius australis australis*)? *Fisheries Research*. 228 (2020). p.1-11.

Bradley, K.A. and Arkipkin, A.I. (2020) Age and growth of slender tuna (*Allothunnus fallai*) in an unexploited temperate population. *Journal of Fish Biology*. 97 (2020). p.1257-1261.

Arkipkin, A.I. and Sauer, W.H.H.

Moustahfida, H., Hendrickson, L., Arkipkin, A.I., Pierce, G.J., Gangopadhyay, A., Kidokoro, H., Markaida, U., Nigmatullin, C., Sauer, W.H.H., Jereb, P., Pecl, G.T., de la Chesnais, T., Ceriola, L., Lazar, N., Firmin, C.J. and Laptikhovsky, V. (2020) Ecological-Fishery Forecasting of Squid Stock Dynamics under Climate Variability and Change: Review, Challenges, and Recommendations. *Reviews in Fisheries Science & Aquaculture*. p.1-25.

Butler, E.C., Childs, A.R. and Potts, W.M.

Butler, E.C., Childs, A.R., Saayman, A. and Potts, W.M. (2020) Can Fishing Tourism contribute to conservation and sustainability via Ecotourism? A case study of the Fishery for giant African threadfin *Polydactylus quadrifilis* on the Kwanza Estuary, Angola. *Sustainability*. 12 (4221). p.1210-4221.

Butler, E.C., Childs, A.R., Duncan, M.I. and Potts, W.M.

Butler, E.C., Childs, A.R., Duncan, M.I. and Potts, W.M. (2020) Understanding the effects of recreational catch-and-release angling on an increasingly important foreign fishing tourism species, the giant African threadfin *Polydactylus quadrifilis* (Cuvier). *Fisheries Management and Ecology*. 27 (1). p.603-614.

Butler, E.C., Childs, A.R., Farthing, M.W., Duncan, M.I., Winkler, A.C. and Potts, W.M.

Butler, E.C., Childs, A.R., Milner, M.V., Farthing, M.W., Duncan, M.I., Winkler, A.C. and Potts, W.M. (2020) Do contemporary age-growth models overlook life-history complexities in protandrous fishes? A case study on the large protandrous polynemid, the giant African threadfin *Polydactylus quadrifilis*. *Fisheries Research*. 2020 (2020). p.1-11.

Weyl, O.L.F. and Chakona, A.

Weyl, O.L.F. and Chakona, A. (2020) Journal of Fish Biology special issue on The Biology and Ecology of African Freshwater Fishes. *Journal of Fish Biology*. 96 (1). p.1075-1076.

Cochrane, K.L.

Cochrane, K.L. (2020) Reconciling sustainability, economic efficiency and equity in marine fisheries: Has there been progress in the last 20 years? *Fish and Fisheries*. 2020 (2020). p.1-26.

Cochrane, K.L., Ortega-Cisneros, K. and Sauer, W.H.H.

Cochrane, K.L., Ortega-Cisneros, K., Itembu, J.A., dos Santos, C.I. and Sauer, W.H.H. (2020) Application of a general methodology to understand vulnerability and adaptability of the fisheries for small pelagic species in the Benguela countries: Angola, Namibia and South Africa. *African Journal of Marine Science*. 42 (4). p.473-493.

Cochrane, K.L., Eggers, J., and Sauer, W.H.H.

Cochrane, K.L., Eggers, J., and Sauer, W.H.H. (2020) A diagnosis of the status and effectiveness of marine fisheries management in South Africa based on two representative case studies. *Marine Policy*. 112.

Cuthbert, R.N., Kaiser, H. and Weyl, O.L.F.

Cuthbert, R.N., Wasserman, R.J., Dalu, T., Kaiser, H., Weyl, O.L.F., Dick, J.T.A., Sentis, A., McCoy, M.W. and Alexander, M.E. (2020) Influence of intra- and interspecific variation in predator-prey body size ratios on trophic interaction strengths. *Ecology and Evolution*. 10 (12). p.5946-5962.

Duncan, M.I. and Potts, W.M.

Duncan, M.I., James, N.C., Potts, W.M. and Bates, A.E. (2020) Different drivers, common mechanism: the distribution of a reef fish is restricted by local-scale oxygen and temperature constraints on aerobic metabolism. *Conservation Physiology*. 8 (1). p.1-16.

Elston, C.

Elston, C., Cowley, P.D., von Brandis, R.G. and Fisk, A.T. (2020) Dietary niche differentiation in a mesopredatory dasyatid assemblage. *Marine Biology*. 167 (89). p.1-15.

Farthing, M.W., Potts, W.M., Sauer, W.H.H., Shaw, P.W. and King, N.

Healey, A.J.E., Farthing, M.W., Potts, W.M., Sauer, W.H.H., Shaw, P.W., King, N. and McKeown, N.J. (2020) Genetic analysis provides insights into species distribution and population structure in East Atlantic horse mackerel. *Journal of Fish Biology*. 2020 (96). p.795-805.

Forget, F. and Cowley, P.D.

Forget, F., Dagorn, L., Mérigot, B., Gaertner, J.C., Robinson, J., Cowley, P.D., Adam, M.S., Rilwan, Y., Koonjul, M., Mangar, V., Taquet, M. and Ménard, F. (2020) Beta diversity of pelagic assemblages at fish aggregating devices in the open ocean. *African Journal of Marine Science*. 42 (2). p.247-254.

Foster, R.M., Childs, A.R., Farthing, M.W., Butler, E.C. and Potts, W.M.

Foster, R.M., Childs, A.R., Brooks, M., Farthing, M.W., Butler, E.C. and Potts, W.M. (2020) Quantifying the impacts of abrasion and bacterial transfer when fish are exposed to sand during a catch-and-release event. *African Journal of Marine Science*. 42 (3). p.307-314.

Gennari, E.

Dines, S. and Gennari, E. (2020) First observations of white sharks (*Carcharodon carcharias*) attacking a live humpback whale (*Megaptera novaeangliae*). *Marine and Freshwater Research*. 71 (2020). p.1205-1210.

Gennari, E., Parkinson, M.C. and Watson, R.G.A.

van Staden, M., Gledhill, K.S., Gennari, E., McCord, M.E., Parkinson, M.C., Watson, R.G.A., Rhode, C. and Bester-van der Merwe, A.E. (2020) Microsatellite development and detection of admixture among three sympatric *Haplblepharus* species



The DIFS Honours class of 2020 met Nico Prince of Blue Ocean Mussels on a mussel raft in Saldanha Bay, where we are researching methods to co-culture seaweed and mussel.

Photo: Department of Ichthyology & Fisheries Science

(Carcharhiniformes: Scyliorhinidae). *Aquatic Conservation-Marine and Freshwater Ecosystems*. 30 (2020). p.2336-2350.

**Gouws, G.**

Daniels, S.R., James, N.C. and **Gouws, G.** (2020) Phylogeographic structure and continued surveys of a vulnerable South African freshwater crab (*Potamonautidae*, *Potamonautus lividus*): Implications for the IUCN Red listing of the Afrotropical fauna. *Aquatic Conservation-Marine and Freshwater Ecosystems*. 30 (1). p.2221-2239.

**Gouws, G. and Potts, W.M.**

**Gouws, G.**, Kerwath, S.E., **Potts, W.M.**, James, N.C., Vine, N.G. and Cowley, P.D. (2020) High genetic diversity and limited spatial structure in an endangered and endemic South African sparid, the red steenbras *Petrus rupestris*. *African Journal of Marine Science*. 42 (3). p.295-306.

**Hannweg, B., Bloy, L.E. and Weyl, O.L.F.**

**Hannweg, B.**, Marr, S.M., **Bloy, L.E.** and **Weyl, O.L.F.** (2020) Habitat utilisation of *Pseudobarbus afer* and *Sandelia capensis* in headwaters of the Swartkops river, Eastern Cape, South Africa. *African Journal of Aquatic Science*. 45 (3). p.364-371.

**Hannweg, B.**, Marr, S.M., **Bloy, L.E.** and **Weyl, O.L.F.** (2020) Using action cameras to estimate the abundance and habitat use of threatened fish in clear headwater streams. *African Journal of Aquatic Science*. 45 (3). p.372-377.

**Sifundza, D.S., Chakona, A. and Kadye, W.T.**

**Sifundza, D.S., Chakona, A. and Kadye, W.T.** (2020) Distribution pattern and habitat associations of *Sandelia bainsii* (Teleostei:

Anabantidae), a highly threatened narrow-range endemic freshwater fish. *Journal Fish Biology*. 98 (1). p.292-303.

**Kadye, W.T. and Booth A.J.**

**Kadye W.T. and Booth A.J.** (2020) Ecological niche patterns of native and non-native fishes within an invaded river system. *Journal of Fish Biology*. 96: 1269-1277.

**Kadye, W.T., Leigh, S.M. and Booth, A.J.**

**Kadye, W.T., Leigh, S.M. and Booth, A.J.** (2020) Predator naïve minnows respond to their conspecific alarm substance but not the odour from a non-native predator. *African Journal of Ecology*. 58 (4). p.757-765.

**Chakona, A., Gouws, G., Kadye, W.T. and Mpopetsi, P.P.**

**Chakona, A., Gouws, G., Kadye, W.T., Mpopetsi, P.P.** and Skelton, P.H. (2020) Probing hidden diversity to enhance conservation of the endangered narrow-range endemic Eastern Cape rocky, *Sandelia bainsii* (Castelnau 1861). *Koedoe*. 62 (1). p.1627.

**Chakona A., Gouws G., and Kadye W.T.**

**Chakona A., Gouws G., Kadye W.T., Jordaan M. and Swartz E.R.** (2020) Reconstruction of the historical distribution ranges of imperilled stream fishes from the Cape Fold Ecoregion using molecular data. *Aquatic Conservation: Marine and Freshwater Ecosystems*. 30, 144-158.

**Kaiser, H.**

**Kasozi, N., Kaiser, H. and Wilhelmi, B.** (2020) Metabarcoding Analysis of Bacterial Communities Associated with Media Grow Bed Zones in an Aquaponic System. *International Journal of Microbiology*. 2020 (8884070). p.1-10.

**Lipinski, M.R., Mwanangombe, C.H. and Sauer, W.H.H.**  
**Lipinski, M.R., Mwanangombe, C.H., Durholtz, D., Yemane, D., Githaiga-Mwicigi, J. and Sauer, W.H.H.** (2020) Age estimates of chokka squid *Loligo reynaudii* off South Africa and their use to test the effectiveness of a closed season for conserving this resource. *African Journal of Marine Science*. 42 (4). p.461-471.

**Mabasa, N.C. and Jones, C.L.W.**  
**Mabasa, N.C., Jones, C.L.W.** and Laing, M. (2020) The use of treated brewery effluent for salt tolerant crop irrigation. *Agricultural Water Management*. 245 (2020). p.106-590.

**Madzivanzira, T.C. and Weyl, O.L.F.**  
**Madzivanzira, T.C., South, J., Wood, L., Nunes, A.L. and Weyl, O.L.F.** (2020) A Review of Freshwater Crayfish introductions in Africa. *Reviews in Fisheries Science & Aquaculture*. 1 (1). p.1-25.

**Malherbe, W., Sauer, W.H.H. and Aswani, S.**  
**Malherbe, W., Sauer, W.H.H. and Aswani, S.** (2020) Social capital reduces vulnerability in rural coastal communities of Solomon Islands. *Ocean and Coastal Management*. 191 (2020). p.1-9.

**Mayekiso, S. and Gouws, G.**  
**Mayekiso, S., Gouws, G., Mwale, M. and Gon, O.** (2020) Evidence of genetic differentiation in cigar wrasse *Cheilio inermis* (Labridae) within the western Indian Ocean. *Genome*. 63 (1). p.493-502.

**Mofu, L. and Weyl, O.L.F.**  
**Mofu, L., Woodford, D.J., Wasserman, R.J. and Weyl, O.L.F.** (2020) Life history of the river goby *Glossogobius callidus* (Teleostei: Gobiidae). *Journal of Fish Biology*. 2020 (2020). p.1-7.

**Muller, C., Childs, A.R., Duncan, M.I., Skeeles, M.R., Van Der Walt, K.A., Winkler, A.C. and Potts, W.M.**  
**Muller, C., Childs, A.R., Duncan, M.I., Skeeles, M.R., James, N.C., Van Der Walt, K.A., Winkler, A.C. and Potts, W.M.** (2020) Implantation, orientation and validation of a commercially produced heart-rate logger for use in a perciform teleost fish. *Conservation Physiology*. 8 (1). p.1-35.

**Ortega-Cisneros, K.**  
Shannon, L.J., **Ortega-Cisneros, K.**, Lamont, T., Winker, H., Crawford, R., Jarre, A. and Coll, M. (2020) Exploring Temporal Variability in the Southern Benguela Ecosystem Over the Past Four Decades Using a Time-Dynamic Ecosystem Model. *Frontiers in Marine Science*. 7 (2020). p.1-20.

**Potts, W.M.**  
Camp, E.V., Kaemingk, M.A., Ahrens, R., **Potts, W.M.**, Pine, W.E., **Weyl, O.L.F.** and Pope, K.L. (2020) Resilience Management for Conservation of Inland Recreational Fisheries. *Frontiers in Ecology and Evolution*. 7 (1). p.498-505.

**Potts, W.M.** (2020) preparing for a changing future in recreational fisheries:100 research questions for global consideration emerging from a horizon scan. *Reviews in Fish Biology and Fisheries*. 30 (0). p.137-151.

Arlinghaus, R., Cowx, I.G., Danylchuk, A.J., Freire, K.D.F., **Potts, W.M.**, Sutton, S.G. and Cooke, S.J. (2020) Knowledge Gaps and Management Priorities for Recreational Fisheries in the Developing world. *Reviews in Fisheries Science & Aquaculture*. 28 (4). p.518-535.

Arlinghaus, R., Alos, J., Freire, K.D.F. and **Potts, W.M.** (2020) Global participation in and Public attitudes toward Recreational Fishing: International Perspectives and Developments. *Reviews in Fisheries Science & Aquaculture*. 29 (1). p.58-95.

**Potts, W.M., Childs, A.R., Winkler, A.C. and Duncan, M.I.**  
**Potts, W.M., Attwood, C.G., Cowley, P.D., Childs, A.R., Winkler, A.C., Duncan, M.I., Murray, T.S., Mann, B.Q. and Mann-lang, J.B.** (2020) Editorial overview: recommendations for the promotion of a resilient linefishery in the Anthropocene. *African Journal of Marine Science*. 42 (3). p.155-167.

**Potts, W.M., Sauer, W.H.H. and Shaw, P.W.**  
McKeown, N.J., Gwilliam, M., Healey, A.J.E., Skujina, I., **Potts, W.M., Sauer, W.H.H. and Shaw, P.W.** (2020) Deep phylogeographic structure may indicate cryptic species within the Sparid genus 'Spondylisoma'. *Journal of Fish Biology*. 96 (0). p.1434-1443.

**Pringle, B.A., Childs, A.R., Butler, E.C., Winkler, A.C., Duncan, M.I., Teta, C. and Potts, W.M.**  
**Pringle, B.A., Childs, A.R., Butler, E.C., Winkler, A.C., Duncan,** M.I., Teta, C. and Potts, W.M. (2020) Time-course of the physiological-stress response in bronze bream 'Pachymetopan grande' following a simulated catch-and-release angling event. *African Journal of Marine Science*. 42 (3). p.375-380.

**Ramoejane, M., Weyl, O.L.F. and Gouws, G.**  
**Ramoejane, M., Weyl, O.L.F., Swartz, E.R. and Gouws, G.** (2020) Identifying multiple geographically restricted phylogeographic lineages of Moggel (Cyprinidae: *Labeo umbratus*) in South Africa. *African Journal of Aquatic Science*. 1 (2020). p.1-11.

**Sauer, W.H.H.**  
Sekadende, B., Scott, L., Anderson, J., **Aswani, S.**, Francis, J., Jacobs, Z., Jebri, F., Jiddawi, N., Kamukuru, A.T., Kelly, S., **Sauer, W.H.H.** and *et al.*, (2020) The small pelagic fishery of the Pemba Channel, Tanzania: What we know and what we need to know for management under climate change. *Ocean and Coastal Management*. 197 (2020). p.1-18.

Jacobs, Z.L., Jebri, F., Srokosz, M., Raitsos, D.E., Painter, S.C., Nencioli, F., Osuka, K., Samoilys, M., **Sauer, W.H.H.**, Roberts, M., Taylor, S., Scott, L., Kizenga, H. and Popova, E. (2020) A Major Ecosystem Shift in Coastal East African Waters During the 1997/98 Super El Niño as Detected Using Remote Sensing Data. *Remote Sensing*. 12 (2020). p.1-18.

**Sithole, Y. and Gouws, G.**  
**Sithole, Y., Smith, D.G., Mwale, M. and Gouws, G.** (2020) A taxonomic revision of *Gymnothorax undulatus* (Anguilliformes: Muraenidae) in the Western Indian Ocean, with description of a new species. *Zootaxa*. 4767 (1). p.161-181.

**Skeeles, M.R., Winkler, A.C., Duncan, M.I., Van Der Walt, K.A. and Potts, W.M.**  
**Skeeles, M.R., Winkler, A.C., Duncan, M.I., James, N.C., Van Der Walt, K.A. and Potts, W.M.** (2020) The use of internal heart rate loggers in determining cardiac breakpoints of fish. *Journal of Thermal Biology*. 89 (1). p.102524-102529.

**Taylor, R. and Jones, C.L.W.**  
**Taylor, R., Jones, C.L.W.** and Laing, M. (2020) Effect of pH on nutrient removal and crop production of hydroponic systems treating brewery effluent. *Journal of Water Supply Research and Technology-Aqua*. p.1-330.

**Taylor, R., Jones, C.L.W. and Laubscher, R.** (2020) Agricultural fertiliser from brewery effluent - the recovery of nutrients from the biomass of activated sludge and high rate algal pond treatment systems. *Journal of Water Supply Research and Technology-Aqua*. 256 (2020). p.780-804.

**Taylor, R., Jones, C.L.W. and Laubscher, R.** (2020) Recovery of methane and adding value to the digestate of biomass produced by high rate algal ponds or waste activated sludge, used to treat brewery effluent. *Journal of Water Process Engineering*. 256 (0). p.780-804.

**Taylor, R., Jones, C.L.W. and Laubscher, R.** (2020) Empirical comparison of activated sludge and high rate algal ponding technologies used to recover water, nitrogen and carbon from brewery effluent. *Journal of Water Process Engineering*. 40 (2021). p.101840.

**Teta, C.**  
Sanganyado, E., Bi, R., **Teta, C.**, Moreira, L.B., Yu, X., Yajing, S., Dalu, T., Rajput, I.R. and Liu, W. (2020) Toward an integrated framework for assessing micropollutants in marine mammals: Challenges, progress, and opportunities. *Critical Reviews in Environmental Science and Technology*. 2020 (2020). p.1-48.

**South, J., Madzivanzira, T.C. and Weyl, O.L.F.**  
**South, J., Madzivanzira, T.C., Tshali, N., Measey, J. and Weyl, O.L.F.** (2020) In an Pinch: Mechanisms behind potential biotic resistance toward Two Invasive Crayfish by Native African Freshwater Crabs. *Frontiers in Ecology and Evolution*. 8 (1). p.1-11.

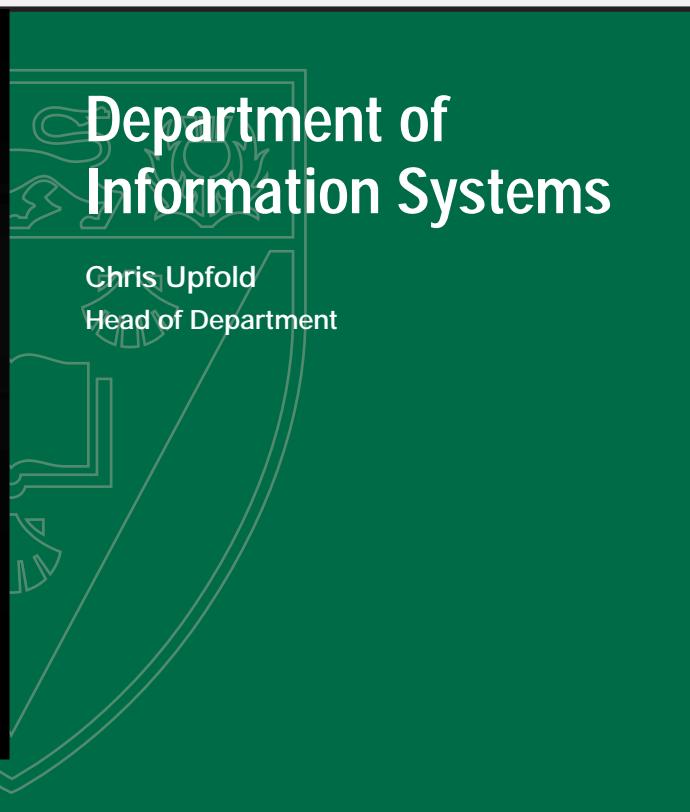


Photo: Simon Pamphilon

## Introduction

Despite 2020 being a challenging year, not least due to lockdown restrictions, with minimal travel opportunities and most if not all research collaboration and conferences moving online, staff and students did exceptionally well with robust research outputs.

## Postgraduates / Graduations

Six (6) students graduated at the April and October 2020 graduations with their Masters or PhD degrees.

### MASTERS

1. **Mudzamba, Ronald Ratidzo.** Thesis: *A Cloud adoption framework for South African SMEs.*
2. **Nathoo, Dina.** Thesis: *Guidelines for the User Interface Design of Electronic Medical Records in Optometry.*
3. **Tilbury, Jack Laurie.** Thesis: *A Business Process For Blockchain-based South African Real Estate Transactions.*

### PhD

1. **Bhana, Bhaveer.** Thesis: *Passphrase Authentication Model: Balancing Usability and Security in User Authentication.*
2. **Jordaan, Leandra.** Thesis: *Using phronesis to enact design ethnography: Methodological considerations for rebalancing socio-technical phenomena in CMS performativity.*
3. **van der Schyff, Karl Izak.** Thesis: *A Personality-based Surveillance Model for Facebook Apps.*

## Distinguished Visitors / International Visits

Professor Foster was a recipient of a South Africa-Sweden University Forum (SASUF) grant, which is an internationalisation initiative aimed at strengthening ties between Swedish and South African universities in research, education, and innovation. The successful research proposal was for a project entitled "*Understanding the design factors for diabetes information sharing when using health information kiosks: A Citizen-Centric Approach to Healthcare Management*" that was developed in collaboration with Dr Orre (Malmö University), Dr Lindroth (University of Gothenburg) and Boucher (University of Fort Hare).

Stephen Flowerday works on a project funded by the South Africa - Sweden University Forum (SASUF) under the theme - Digital technologies, big data and cybersecurity. The project's title is "Global Sustainability through Cybersecurity" and is informed by the UN Millennium Development Goals.

The four (4) researchers are Fredrik Blix, Stockholm University; Stephen Flowerday, Rhodes University; Fredrik Karlsson, Örebro University; Jacques Ophoff, University of Cape Town. Based on this project, they currently have a journal article under review.

## Significant Research Aligned Events

The following staff and students were recognised for their research awards in 2020:

1. Dr Caroline Pade-Khene, Dr Ingrid Sieborger, Percy Ngwerume and Chido Rusike - Best Paper Award at the European Conference on Information Systems (ECIS) 2020.
2. Professor Stephen Flowerday - Commerce Faculty Researcher of the Year 2020.
3. Dr Gugulethu Baduza - Best Short Paper Award at the Digital Skills 2020 Research Colloquium hosted by UNISA and NEMISA.



Dr Gugu Baduza receives her Best Short Paper Award at the 'Digital Skills 2020 Research Colloquium' hosted by UNISA and NEMISA.

Photo: Department of Information Systems

## PUBLICATIONS

### Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Thinyane, H.  
Gallo, M. and Thinyane, H. (2020) Sentinel Surveillance and Centring Prevention in Anti-Trafficking Policy and Response. *Journal of Modern Slavery*. 5 (1). p.1-24.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Bhana, B. and Flowerday, S.  
Bhana, B. and Flowerday, S. (2020) Passphrase and keystroke dynamics authentication: Usable security. *Computers & Security*. 96, 101925.

Conger, S.  
Conger, S. (2020) The Impact of the COVID-19 Pandemic on Information Systems Management. *Information Systems Management*. 37 (4). p.327-331.

Flowerday, S.  
Maoneke, P.B., Flowerday, S. and Isabirye, N. (2020) Evaluating the strength of a multilingual passphrase policy. *Computers & Security*. 92, 101746.

Frauenstein, E.D. and Flowerday, S.  
Frauenstein, E.D. and Flowerday, S. (2020) Susceptibility to phishing on social network sites: A personality information processing model. *Computers & Security*. 94, 101862.

Machiri, M. and Pade-Khene, C.  
Machiri, M. and Pade-Khene, C. (2020) Appropriating digital citizen engagement in resource constrained local government service delivery A case study in South Africa. *Communications in Computer and Information Science*. 1236 (242249). p.141-154.

Pade-Khene, C.  
Osah, J. and Pade-Khene, C. (2020) E-government strategy formulation in resource-constrained local government in South Africa. *Journal of Information Technology & Politics*. 17 (4). p.426-451.

Parker, H.J. and Flowerday, S.  
Parker, H.J. and Flowerday, S. (2020) Contributing factors to increased susceptibility to social media phishing attacks. *South African Journal of Information Management*. 22 (1), a1176.

Read, K. and Van Der Schyff, K.  
Read, K. and Van Der Schyff, K. (2020) Modelling the intended use of Facebook privacy settings. *South African Journal of Information Management*. 22 (1). p.1-9.

Renaud, K.  
Bongiovanni, I., Renaud, K. and Cairns, G. (2020) Securing intellectual capital: an exploratory study in Australian universities. *Journal of Intellectual Capital*. 21 (3). p.481-505.

Ferguson, R.I., Renaud, K., Wilford, S. and Irons, A. (2020) PRECEPT: a framework for ethical digital forensics investigations. *Journal of Intellectual Capital*. 21 (2). p.257-290.

Renaud, K., Orgeron, C., Warkentin, M. and French, P.E. (2020) Cyber Security Responsibilization: An Evaluation of the Intervention Approaches Adopted by the Five Eyes Countries and China. *Public Administration Review*. 80 (4). p.577-589.

Renaud, K. and Prior, S. (2020) Children's Password-Related Books: Efficacious, Vexatious and Incongruous. *Early Childhood Education Journal*. 2020. p.1-14.

Aleisa, N., Renaud, K. and Bongiovanni, I. (2020) The privacy paradox applies to IoT devices too: A Saudi Arabian study. *Computers & Security*. 96, 101897.

Prior, S. and Renaud, K. (2020) Age-appropriate password "best practice" ontologies for early educators and parents. *International Journal of Child-Computer Interaction*. 23-24, 100169.



**Dr Carl Johan Orre (Malmö University, Sweden), Duane Boucher (University of Fort Hare, South Africa), Dr Tomas Lindroth (University of Gothenburg, Sweden), Professor Greg Foster (Rhodes University, South Africa).**

Photo: Department of Information Systems

Dupuis, M. and Renaud, K. (2020) Scoping the ethical principles of cybersecurity fear appeals. *Ethics and Information Technology*. p.1-20.

Alahmari, S., Renaud, K. and Omoronyia, I. (2020) A model for describing and maximising security knowledge sharing to enhance security awareness. *Lecture Notes in Business Information Processing*. 381 (LNBP2020). p.376-390.

van Schaik, P., Renaud, K., Wilson, C., Jansen, J. and Onibokun, J. (2020) Risk as affect: The affect heuristic in cybersecurity. *Computers and Security*. 90. p.1-16.

Kulyk, O., Volkamer, M., Müller, M. and Renaud, K. (2020) Towards Improving the Efficacy of Code-Based Verification in Internet Voting. *Lecture Notes in Computer Science*. 12063 (LNCS2020). p.291-309.

Alkhassis, E., Petrie, H. and Renaud, K. (2020) KidsDoodlePass: An Exploratory Study of an Authentication Mechanism for Young Children. *IFIP Advances in Information and Communication Technology*. 593. p.123-132.

Renaud, K., Johnson, G. and Ophoff, J. (2020) Dyslexia and Password Usage: Accessibility in Authentication Design. *IFIP Advances in Information and Communication Technology*. 593 (2020). p.259-268.

Sieborger, I.

Sieborger, I., Terzoli, A. and Hodgkinson-Williams, C. (2020) Evolving an Efficient and Effective Off-the-Shelf Computing Infrastructure for Rural Communities of South Africa. *Communications in Computer and Information Science*. 1236 (2020). p.63-80.

Thinyane, H.

Gallo, M., Konrad, R.A. and Thinyane, H. (2020) An Epidemiological Perspective on Labor Trafficking. *Journal of Human Trafficking*. p.1-10.

Thinyane, H. and Sasetti, F. (2020) Towards a Human Rights-Based Approach to AI: Case Study of Apprise. *Communications in Computer and Information Science*. 1236. p.33-47.

Thinyane, H. and Sasetti, F. (2020) Digital Technology for Unmasking Labour Exploitation in Supply Chains. *IFIP Advances in Information and Communication Technology*. 601. p.267-280.

Tsegaye, T.A. and Flowerday, S.

Tsegaye, T.A. and Flowerday, S. (2020) A Clark-Wilson and ANSI Role-Based Access Control Model. *Information and Computer Security*. 28 (3). p.373-395.

Van Der Schyff, K. and Flowerday, S.

Van Der Schyff, K., Flowerday, S. and Lowry, P.B. (2020) Information privacy behavior in the use of Facebook apps: A personality-based vulnerability assessment. *Helijon*. 6, e04717.

Van Der Schyff, K., Flowerday, S. and Furnell, S. (2020) Duplicitous social media and data surveillance: An evaluation of privacy risk. *Computers & Security*. 94, 101822.

Van Der Schyff, K., Flowerday, S. and Furnell, S. (2020) Privacy risk and the use of Facebook Apps: A gender-focused vulnerability assessment. *Computers & Security*. 96, 101866.

Van Der Schyff, K., Flowerday, S. and Patel, N.

Van Der Schyff, K., Flowerday, S., Kruger, H. and Patel, N. (2020) Intensity of Facebook use: a personality-based perspective on dependency formation. *Behaviour & Information Technology*. DOI /10.1080/0144929X.2020.1800095.

Wright, G.

Betts, A. and Wright, G. (2020) 200 Years Since the Birth of Nursing Informatics? *Studies in Health Technology and Informatics*. 272 (2020). p.28-32.

Wright, G. and Flowerday, S.

Tsai, C.H., Eghdam, A., Davoody, N., Wright, G., Flowerday, S. and Koch, S. (2020) Effects of Electronic Health Record Implementation and Barriers to Adoption and Use: A Scoping Review and Qualitative Analysis of the Content. *Life*. 10 (327). p.1-27.

## Peer Reviewed Proceedings

Baduza, G. and Pade-Khene, C.

Baduza, G. and Pade-Khene, C. Up-Scaling ICT for Development Projects in Growing the Digital Economy. *Digital Skills Colloquium & Postgraduate Symposium 2020*. Birchwood Hotel, Gauteng, South Africa. March 2020.

Flowerday, S.

Flowerday, S., Maoneke, P.B. and Warkentin, M. Evaluating the Usability of a Multilingual Passphrase Policy. *26th Americas Conference on Information Systems, AMCIS 2020*. Virtual Conference. United States. August 2020.

Pade-Khene, C. and Sieborger, I.

Pade-Khene, C., Sieborger, I., Ngwerume, P. and Rusike, C. Enabling Digital Social Accountability Monitoring of Adolescent Sexual Reproductive Health Services: MobiSAfAIDS. *28th European Conference on Information Systems (ECIS) 2020: Liberty, Equality, and Fraternity in a Digitizing World*. Online, HEM Business School. Morocco. June 2020.



## School of Journalism and Media Studies

**Professor Anthea Garman**

Head of School

**Dr Jeanne du Toit**

Deputy Head of School

**Ryan Hancock**

Deputy Head of School

Photo: Simon Pamphilon

### Introduction

The School of Journalism and Media Studies had a productive year despite the circumstances. Continued funding by the Andrew W. Mellon Foundation, the South African Reserve Bank and the National Research Fund (NRF) sustained an upward trajectory in senior Postgraduate graduations. Staff members and students (co)authored three (3) book chapters and ten (10) journal articles, as well as creative work and international conference papers. The shift to remote teaching, learning and communication presented opportunities for research as well as the organisation of virtual seminars with local and international guests.

### Postgraduates / Graduations

The School graduated forty-two (42) Bachelor of Journalism, thirty (30) Bachelor of Arts, two (2) Postgraduate Diploma, twenty-two (22) Media Management Diploma, six (6) Honours, fourteen (14) Masters, and four (4) Doctor of Philosophy candidates. The Postgraduates were engaged in a variety of journalism and media studies projects, ranging from health and economics journalism to the study of digital inequalities, critical analyses of social media in the global South and more. Under the leadership of Francis Mdlongwa, the Rhodes University Sol Plaatje Institute received approval from the South African Qualifications Authority (SAQA), Council on Higher Education (CHE), and Department of Higher Education and Training (DHET) to run a distance Postgraduate Diploma



Absa Zambia Data Journalism training 12 - 13 October 2020.

Photo: Absa Group Limited

in Media Management. This is the first such distance programme offered by RU and will run alongside the existing full-time PGDip in Media Management.

## Distinguished Visitors / International Visits

Professor Anthea Garman and Dr Adjin Tettey were invited to be part of the sustainable journalism in sub-Saharan Africa report/policy brief spearheaded by the Fojo Media Institute, Sweden, under the Consortium to Promote Human Rights, Civic Freedoms and Media Development (CHARM) project. It brought together scholars from Rhodes University, Wits University and Jönköping University, Sweden. The main objectives of the project policy brief were to explore how sustainable journalism could be applied in sub-Saharan Africa as well as its implications for media development in the region, along with the provision of clear policy directions for its practice. The team conducted interviews with journalists in Nigeria, Ghana, Kenya, and Liberia. Interviewees acknowledged the importance of journalistic attention being given to the UN Sustainable Development Goals. The policy brief recommends what can be done at the individual, organisational and systemic levels to ensure successful sustainable journalism practice in sub-Saharan Africa. In addition, Professor Garman presented guest lectures at the University of Amsterdam and the University of Groningen in the Netherlands.

## Significant Research Aligned Events

Professor Anthea Garman and a team of Doctoral and Postdoctoral students (Dr Theodora Adjin-Tettey, Martina

Della Togna, Thandeka Bukula and Thandi Bombi) all contributed towards the COVID-19 Country Report. The aim of the report was to examine how government, along with its social partners, managed and responded to the COVID-19 pandemic. As communications scholars focusing on listening theory, their research and writing of the chapter on communications centred on perspectives and insights geared towards understanding government's communications strategy and the responses to it from the South African public.

Dr Alette Schoon and Professor Harry Dugmore, together with Dr Hayes Mabweazara (University of Glasgow) and Professor Tanja Bosch (University of Cape Town), edited the 2020 "African Digital Media Review", a Special Annual Issue of *African Journalism Studies*. The special issue broadly explores debates that emerged from the first African Digital Methods Symposium, "African Digi-methods", which took place at Rhodes University's School of Journalism and Media Studies in June 2019. The commentary piece by Professor Jean Burgess and Professor Axel Bruns (Queensland University of Technology) reflects on some of the key methodological challenges in the field as well as the contributions carried in the issue).

Dr Alette Schoon collaborated with Professor Janice Limson from Biotech Innovation in the Science Faculty on a joint research project funded by Biosafety SA in the field of Science Communication, examining how to develop a model for engaged science communication. The project engages with sugarcane growers in KZN about a new South African sugarcane GM product developed by the South African Sugarcane Research Institute (SASRI). The research project uses various tools such as questionnaires, in-depth interviews, multimedia animation and documentary film to document the process of developing and testing media with both commercial and small-scale sugarcane growers. It follows an action-research and practice-led approach to theorizing media practices within science communication.

Absa granted Rhodes University support to host a Data Journalism Master class for African Journalists from ten (10) African countries. The 2020 Data journalism Masterclass, facilitated by Dr Peter Verweij (D3 Media), is part of a longstanding relationship between Absa and Rhodes University, which is centred primarily on capacitating African journalists to report on financial and economic matters on the African continent effectively. Research in this area is ongoing within the South African Reserve Bank Centre for Economics Journalism hosted by the School and headed by Ryan Hancocks.

Partnership for Social Accountability (PSA) Alliance granted Rhodes University support to host a Social Accountability Data Journalism Course for fifteen (15) journalists from Malawi, Mozambique, Tanzania, Zambia and Zimbabwe. The capacity building initiative sought to support the existing nucleus of investigative journalists to utilise data collection, analysis and visualisation tools to report effectively on social accountability issues related to food security, HIV and Sexual Reproductive

Health and Rights (SRHR) in Southern Africa. The 2020 Social Accountability Data Journalism Course, facilitated by Tatenda Chatikobo (Highway Africa coordinator), is part of the PSA Alliance project 'Strengthening Social Accountability and Oversight in Health and Agriculture in Southern Africa,' which seeks to improve public service delivery in agriculture (food security), health (HIV/AIDS, sexual and reproductive health and rights) and public resource management.

Highway Africa, the continent's biggest and oldest conference series run by Rhodes University, launched a series of four high-level webinars dubbed "Our Futures, Our New Normals" to seek practical solutions to challenges that face African media and journalism in the era of COVID-19 and how to exploit emerging opportunities. The first webinar, titled "The future of journalism and media in Africa", sought solutions to the challenges that face African media and journalism in the era of COVID-19, platformisation and fake news and reflected on how to exploit emerging opportunities. In the second webinar, titled "Journalists, scientists, whistle-blowers, governments: who are the truth-tellers?", four media experts from across the African continent discussed how to navigate the rocky terrain of deciding whom to trust amongst journalists, scientists, governments and whistle-blowers in the time of the COVID-19 pandemic. The third webinar, titled "Building trust, practising credibility, journalism's challenge", looked at the credibility of news content of our media and the role audience trust plays in the economic and financial fortunes and misfortunes of media houses and their journalism. The fourth and final seminar, titled "Thinking globally, acting locally: sustaining South African media in a post covid world", explored and discussed what South Africans could learn from global debates about funding independent journalism and the new media economics of news.

## In addition:

- Dr Jeanne du Toit presented a case study of a service-learning course that forms part of the third-year programme. This is part of a broad ongoing effort in the school towards innovative curriculum development and to explore synergies between teaching, research and community engagement. Shepi Mati, Rod Amner, Jane Viedge and Dr Priscilla Boshoff are part of the team.
- **Jan du Toit**, a wildlife filmmaker and lighting DOP, presented a seminar about the ethical debates around making wildlife films, drawing on his expertise documenting the lives of meerkats and wild dogs.
- Senior students in the School of JMS hosted a virtual seminar series called *Owning the Future*, designed to be of benefit to students who are about to graduate and enter the working world of media. Over multiple sessions organised as panels, graduates from the School of JMS who have now established themselves as media practitioners spoke about their experience of media work and offered advice to new graduates about how to find



Absa Kenya Data Journalism training 15 - 16 October 2020.

Photo: Absa Group Limited

and pursue their own career paths. All students in the School of JMS were invited to subscribe to the Owning the Future network's regular newsletter, contribute to the webinar series by suggesting panellists and debate questions or help to create compelling artwork to promote the series, such as posters and a logo.

- **Heather Robertson**, the inaugural editor of the *Daily Maverick* newspaper, shared her challenges as a newspaper editor in this economic climate as well as her excitement about this new venture.
- **Dr Mark Deuze**, a Professor of Media Studies at the University of Amsterdam, and Dr Tamara Witschge, the Rosalind Franklin Fellow at the University of Groningen, shared some insights into new forms of journalism and presented their new book '*Beyond Journalism*'. In the context of profound transformations in the professional, business, technological and social context of journalism, it is crucial for journalism studies and education to move beyond limited approaches to the discipline. Among the most significant changes affecting journalism worldwide is the emergence of start-up culture, as more and more journalists strike out on their own. The authors combine extensive global and comparative fieldwork with the aim to recognize new and emerging voices as legitimate participants in the discourse about what journalism is, can be and should be. The virtual seminar was chaired by Professor Anthea Garman.

# PUBLICATIONS

## Books/Chapters/Monographs

Adjin-Tettey, T.

Adjin-Tettey, T. (2020) Healthcare gets smarter: smart and digital technology usage by maternal and neo-natal healthcare providers. In: *Mobile Devices and Smart Gadgets in Medical Sciences* (pp. 39-55). USA: IGI Global. p.39-55. ISBN: 9781719825210.

Garman, A.

Garman, A. (2020) Anger, pain and the body in the South African public sphere. In: Cowling, L. and Hamilton, C. (eds.). *Babel Unbound: Rage, Reason and Rethinking Public Life*. Johannesburg: Wits University Press. p.239-259. ISBN: 9781776145898.

Schoon, A.

Schoon, A. (2020). SciFest Africa, a model for science communication in Africa. In L. Peschke (Ed.), *Let's Write About Science: Case studies and best practices of science popularization and storytelling*. Peter Lang. <https://doi.org/10.3726/>

## Concerts, Exhibitions, Performances, Workshops, Events

Adjin-Tettey, T.

Adjin-Tettey, T. Panel Member. GBC @ 85 panel discussions on Media and Democracy. *GBC @ 85 Panel Discussions on Media and Democracy*. Ghana Broadcasting Corporation, Accra. Ghana. 3 November 2020.

Adjin-Tettey, T. Interview. The Honest Truth (Radio Show). *Gender bias in news coverage*. Smile 90.4FM, Cape Town. South Africa. 20 October 2020.

Schoon, A.

Schoon, A. Invited Speaker. Creating for digital platforms part III: tips from the experts. *National Arts Festival Webinar*. Zoom, Makhanda. South Africa. 27 May 2020.

Schoon, A. and Jacobs, J. Webinar Co-Hosts. Journalists, scientists, whistle Blowers, governments: who are the truth-tellers? *Highway Africa Webinar Series*. Zoom, Makhanda. South Africa. 5 August 2020.

## Creative Writing

Adjin-Tettey, T.

Adjin-Tettey, T. (2020) The media have muted the voices of women during COVID-19: can the tide be turned? In: Leshilo, T. (ed.). *The media have muted the voices of women during COVID-19: can the tide be turned?* South Africa: The Conversation.

Rennie, G.

Rennie, G. (2020) Here is the river. In: Moolman, K. and Murray, S.M. (eds.). *New Contrast: South African Literary Journal 191*. Cape Town: South African Literary Journal NPC.

Rennie, G. (2020) Five hundred grams. In: Moolman, K. and Murray, S.M. (eds.). *New Contrast: South African Literary Journal 191*. Cape Town: South African Literary Journal NPC.

Rennie, G. (2020) Bots aloes. In: Owen, H. and Fox, R. (eds.). *In Tandem: Poetry to Imagery* (<https://nationalartsfestival.co.za/show/in-tandem-poetry-to-imagery/>). Makhanda: National Arts Festival.

## Distinguished Visitors

Garman, A.

A Garman. University of Amsterdam, Amsterdam, The Netherlands. *Lecture*. April 2020.

A Garman. University of Groningen, Groningen, The Netherlands. *Lecture*. April 2020.

A Garman. Fojo Media Institute, Linnaeus University, Kalmar, Sweden. *Research collaboration on Sustainable Journalism*. October 2020.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Adjin-Tettey, T.

Adjin-Tettey, T. (2020) Can 'digital natives' be 'strangers' to digital technologies? *An analytical reflection*. 12 (1). p.11-23.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Adjin-Tettey, T.

Adjin-Tettey, T., Allotey, E., Ogoe, A.S. and Anyomi, H. (2020) Public relations as strategic management function in selected organisations in Accra, Ghana. *International Journal of Interdisciplinary Organizational Studies*. 15 (1). p.13-28.

Berger, G.

Berger, G. (2020) New opportunities in monitoring safety of journalists through the UN's 2030 Sustainable Development Agenda. *Media and Communication*. 8 (1). p.78-88.

Chatikobo, T. and Dalvit, L.

Chatikobo, T. and Dalvit, L. (2020) Services, schools and skills: mobile media and local development in a South African Rural Area. *Smart Innovation, Systems and Technologies*. 158 (2020). p.219-231.

Garman, A.

Garman, A. (2020) Truth-telling in unsettling times - experiments with truth: narrative non-fiction and the coming of democracy in South Africa by Hedley Twidle. Woodbridge, Suffolk: James Currey, 2019. *Literary Journalism Studies*. 12 (1). p.201-203.

Patnala, S.

Kalyatanda, G.S., Archibald, L.K., Patnala, S., Paul-Satyaseela, M., Kiran, P.R., Srinivas, S., Byrne, A., Lin, Y., Chekuri, V.N., Limson, J.L., Paphitis, S.A., Tandlich, R. and Hornby, D. (2020) No human exists in isolation or as an island: the outcomes of a multidisciplinary, global, and context-specific Covid-19 consortium. *American journal of disaster medicine*. 15 (3). p.219-222.

Prinsloo, J.

Prinsloo, J. (2020) Prototypical women - EDITORIAL. *Agenda : A journal about women and gender*. 34 (4). p.1-2.

Rennie, G.

Rennie, G. (2020) One moment, three Bullets, a lifetime. *a/b: Auto/Biography Studies*. 35 (3). p.645-665.

Robertson, H.L. and Dugmore, H.

Robertson, H.L. and Dugmore, H. (2020) 'But is it journalism?' Reflections on online informational roles and content creation practices of a sample of South African lawyers. *African Journalism Studies*. 40 (3). p.107-122.

Schoon, A.

de Lanerolle, I., Schoon, A. and Walton, M. (2020) Researching mobile phones in the everyday life of the 'less connected': The development of a new diary method. *African Journalism Studies*. 41 (2020). p.35-50.

Schoon, A. and Dugmore, H.

Schoon, A., Mabweazara, H.M., Bosch, T. and Dugmore, H. (2020) Decolonising digital media research methods: positioning African digital experiences as epistemic sites of knowledge production. *African Journalism Studies*. 41 (4). p.1-15.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Dalvit, L.

Dalvit, L. Mobile communication and urban/rural flows in a South African marginalised community. *The Network Society Today*. Online, Barcelona. Spain. November 2020.

Garman, A.

Garman, A. When the listening stops: South Africa's Truth and Reconciliation Commission two decades later. *International Communication Association*. Online, Goldcoast. Australia. May 2020.

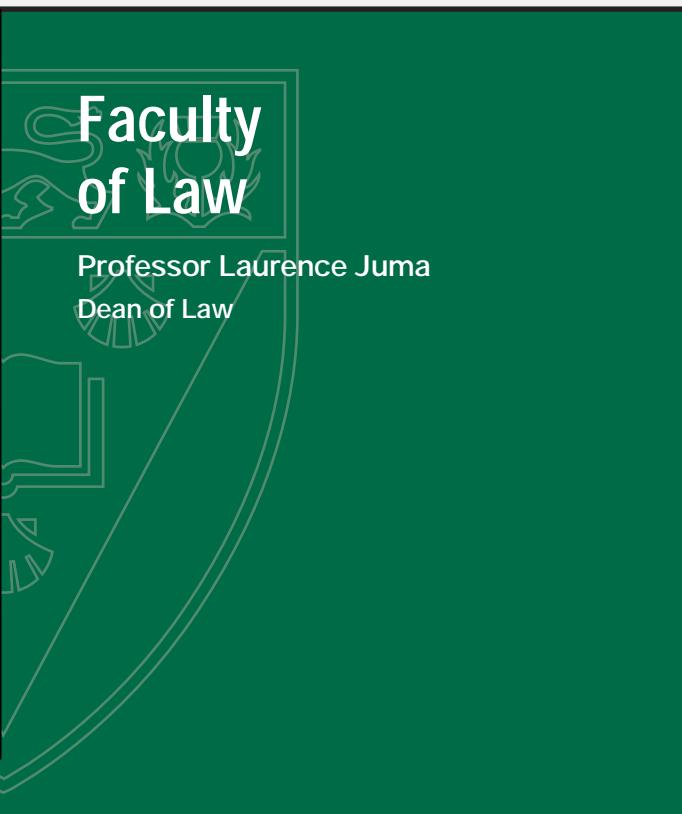
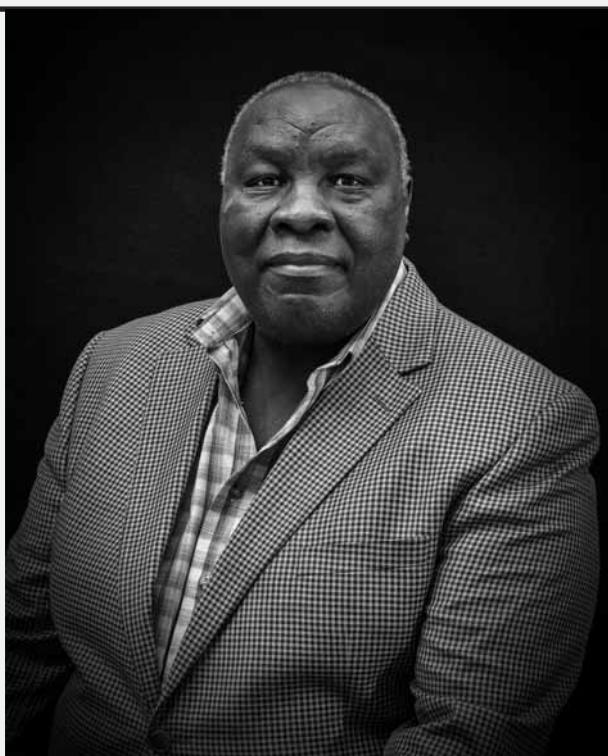


Photo: Simon Pamphilon

## Introduction

Many of our research activities planned for 2020, including our first Research Showcase, were cancelled in the face of the COVID-19 pandemic and the nationwide lockdown. During this difficult time, academic staff had to adjust to the changed circumstances, online teaching challenges, and limited time for research. As pointed out by a colleague, 2020 is a write-off for research! Despite these circumstances, our staff and students at the Law Faculty tried their best to keep our research on track.

## Postgraduates / Graduations

One of our PhD candidates, Idowu Akinloye, completed his PhD in April 2020 and graduated in October 2020 with a thesis: *Examining the efficacy of church internal governance mechanisms in reducing legal disputes within South African and Nigerian churches*. He has been very productive on the research front and was awarded a Rhodes Postdoctoral Fellowship for 2020, but due to the restrictions on international travel during the Covid pandemic, the Fellowship was postponed to 2021. He presented several papers at international conferences, and he published widely on issues of Law and Religion. He received a Young Scholars Fellowship on Religion and the Rule of Law, 2020, at Christ Church, Oxford.

## Significant Research Aligned Events

- The Faculty of Law Researcher of the Year Award was finalised towards the end of 2019, and the first award was made in 2020. During a Faculty Tea, September 2020, Associate Professor Helena van Coller received the Law Faculty's inaugural 'Researcher of the Year' award for 2020.
- Noma Mashinini, a lecturer in the Faculty of Law, published her first article: "The Processing of Personal Information using Remotely Piloted Aircraft Systems in South Africa" (2020), *De Jure Law Journal*. p. 140-158.
- Professor Charlene Lubaa joined the Faculty on 1 April 2020. Charlene has been a Y-rated researcher by the NRF since January 2020. Her research interests lie in international criminal law, criminal law in national courts, women and children and women's rights.
- Law Faculty staff has been productive in giving their time and expertise as editors of journals and editing special editions of books and journals. Many staff also found the time to assist with peer reviews for journals, acting as external examiners for Postgraduate research, assisted with NRF rating and other applications, and many other research review processes.
- Professor Glover, in his capacity as the managing editor of the *South African Law Journal*, has spent an incredible amount of time running the SALJ in trying conditions for researchers, which has also made life tough for editors. Over many years,

Professor Glover, and Kruuse, also an editor for the SALJ, have given their time and expertise in running this premier law journal, the oldest law journal of its kind in the world.

- Staff were asked on an ongoing basis to comment on draft legislation, policy documents or write opinion pieces for the media or popular press. These efforts all contributed to the research in the faculty and provided a platform for staff to get their research out in the public domain through a variety of different platforms.
- Staff from the Rhodes Law Clinic publish monthly articles in *Grocott's Mail* on a range of topics.

## PUBLICATIONS

### Books/Chapters/Monographs

Kruger, R.

Kruger, R. (2020) From hierarchy to dialogue: EU-Africa exchange on the right to equality and the prohibition of unfair discrimination by religious organisations. In: Giegerich, T. (ed.). *The European Union as the Protector and Promoter of Equality*. Switzerland: Springer Nature Switzerland. p.455-473. ISBN: 9783030437640.

Lubaale, E.C.

Lubaale, E.C. (2020) Judicial Enforcement of Environmental Human Rights in Africa. In: Addaney, M. and Oluborode Jegede, A. (eds.). *Human Rights and the Environment under African Union Law*. p.155-185. ISBN: 9783030465223.

Van Coller, H.

Van Coller, H. (2020) *Regulating Religion: State Governance of Religious Institutions in South Africa*. New York: Routledge: Taylor and Francis. ISBN: 9781138298712.

### Concerts, Exhibitions, Performances, Workshops, Events

Lubaale, E.C.

Lubaale, E.C. Panelist. The hazy future of international criminal justice in light of Africa's interaction with the ICC. *OpinioJuris International Commission of Jurists*. Online. 26 - 1 August 2020.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Akinloye, I.A.

Akinloye, I.A. (2020) The Proscription of a Broadcasting Licence to Religious Organisations in Nigeria: The Constitutional Issues Arising. *African Journal of Legal Studies*. 2020 (0). p.1-19.

Akinloye, I.A. (2020) Legal Disputes Involving Clergy Discipline: Perspectives from Nigeria and South Africa. *Ecclesiastical Law Journal*. 22 (2020). p.194-233.

Akinloye, I.A. (2020) Acquisition and protection of church property under Nigerian law: issues, challenges and some lessons for churches. *Commonwealth Law Bulletin*. p.1-21.

Chigowe, L.

Chigowe, L. (2020) Allies or Foes? A Review of the Relationship between the International Criminal Court and the United Nations Security Council. *Netherlands International Law Review*. 67 (2020). p.403-425.

Chigowe, L. (2020) One Step Forward, Two Steps Backwards: The Threat of 'Third Termism' on Democracy Rule of Law and Governance in Africa. *Speculum Juris*. 34 (3). p.1-13.

Lubaale, E.C.

Lubaale, E.C. (2020) Legal pluralism as a lens through which to understand the role and place of traditional justice mechanisms in international criminal justice. *Journal of Legal Pluralism and Unofficial Law*. 52 (2). p.180-202.

Lubaale, E.C. (2020) Limitations of the ordinary-crimes approach to the international crime of rape: the Case of Uganda. *African Journal of Legal Studies (Online)*. 12 (3-4). p.266-297.

Mphidi, T.M. and Lubaale, E.C. (2020) The IAAF Rules on Testosterone Levels and the Right to Health - notes. *Obiter*. 41 (2). p.410-428.

Mashinini, T.N.

Mashinini, T.N. (2020) The processing of personal information using remotely piloted aircraft systems in South Africa. *De Jure*. 53 (1). p.140-158.

Mathiba, G.L.

Mathiba, G.L. and Lefenza, K. (2020) Rethinking the Regulation of Mining Activities in a Declared Protected Environment: MEJCON Case Analysis. *Speculum Juris*. 34 (2). p.115-125.

Mathiba, G.L. (2020) Corruption, Public Sector Procurement and COVID-19 in South Africa: Negotiating the New Normal. *Journal of Public Administration*. 55 (4). p.642-661.

Plasket, C.

Plasket, C. (2020) Procedural Fairness, Executive Decision-making and the Rule of Law. *The South African Law Journal*. 137 (4). p.698-712.

### Peer Reviewed Proceedings

Rahim, S.

Pearse, N.J., Skae, F.O. and Rahim, S. Structure and Membership of Boards for Inclusive Stakeholder Governance. *The 16th European Conference on Management, Leadership and Governance*. A Virtual Conference Supported by EM-Normandie Business School, Oxford. United Kingdom. October 2020.



Professor Juma, Professor van Coller, Jaine Roberts.

The Faculty of Law Researcher of the Year Award was finalised towards the end of 2019 and the first award was made in 2020. During a Faculty Tea, September 2020, Associate Professor Helena van Coller received the Law Faculty's inaugural 'Researcher of the Year' award for 2020.

Photo: Adv Shuaib Rahim



Photo: Simon Pamphilon

# Department of Literary Studies in English

Associate Professor  
Lynda Gichanda Spencer  
Head of Department

## Introduction

In 2020, most research activities were affected by the COVID-19 pandemic; the Department includes areas such as postcolonial, transnational and diasporic literature; popular African literature and culture; post-apartheid literature; ecocriticism and literature; romance fiction and chick-lit; crime and detective fiction and visual media and academic writing.

## Postgraduates / Graduations

We are incredibly proud of our 2020 Postgraduate students. In total, four (4) PhD candidates, eleven (11) Masters students and thirteen (13) Honours students were awarded their degrees at an online graduation ceremony. Twelve (12) of these degrees were awarded with distinction.

## Distinguished Visitors / International Visits

Bobson, A.

A Bobson. University of Ghana, Accra, Ghana. *Visiting Doctoral Student*. February 2020.

## Significant Research Aligned Events

The Intersecting Diasporas Group (IDG) was conceived in 2017 when Professor Sam Naidu received an Andrew W. Mellon Inclusive Professoriate Grant. Although this grant officially came to an end in 2019, the IDG continues to receive support and guidance from the Andrew W Mellon Foundation on an *ad hoc* basis. This research group focuses on transnational subjectivities represented in literature of the African, Latin American, and South Asian diasporas. The project examines literature produced in the African, Latin American and South Asian diasporic contexts. Mainly, the project utilises a comparative methodology that explores the respective literatures of these diasporas in relation to each other. The intention is to compare and contrast various transnational texts in order to describe the complex and paradoxical experiences of diasporas in a world of increasing mobility and de-territorialism, which yet, in specific locations, also faces increased regulation or prohibition of migration.

In 2020, many research activities were curtailed due to the COVID-19 pandemic, but here are some of the IDG's highlights: Sean James Bosman, a PhD candidate, graduated in 2020. His monograph titled *None So Weak: Just Memory and the Rejection of Victimhood in Abdulrazak Gurnah, Viet Thanh Nguyen, and Luis Alberto Urrea* will be published by BRILL in

October 2021. The monograph examines literature that contemplates the precarity of transnationals in times of increased nationalism but has been honed to focus on the role of just memory in the rejection of victimhood. In particular, Bosman's work is interested in the complex relationships amongst victimhood, aggression, agency, and just memory. Postdoctoral Fellow Indrani Karmakar, from Kolkata, India, continued her project on representations of "non-normative" or marginal mothering modes in literature by women from South Asian countries and their diasporas. Her thesis examines the representation of motherhood in Indian women's writing. She has revised her thesis to convert it into a monograph. The manuscript has been accepted by Routledge. Although Andrea Thorpe's Postdoctoral Fellowship ended in 2019, she continued to be an active member of the IDG. Andrea completed a monograph titled *South African London*. This monograph will be published by Manchester University Press in 2021.

## PUBLICATIONS

### Books/Chapters/Monographs

**Marais, M.**

**Marais, M.** (2020) 'A wandering to find home': Samuel Beckett's Molloy and the unhomeliness of home. In: Williams, M.A. (ed.). *Hospitalities: Transitions and Transgressions, North and South*. London: Routledge. p.59-74. ISBN: 9780367557027.

**Naidu, S.**

**Naidu, S.** (2020) Transnational Crime in Deon Meyer's *Devil's Peak* and Santiago Gamboa's *Night Prayers*. In: Piipponen, M., Mäntymäki, H. and Rodi-Risberg, M. (eds.). *Transnational Crime Fiction*. Switzerland: Palgrave Macmillan. p.45-62. ISBN: 9783030534127.

**Naidu, S.** (2020) Race and ethnicity. In: Allan, J., Gulddal, J., King, S. and Pepper, A. (eds.). *The Routledge Companion to Crime Fiction*. London: Routledge. p.111-119. ISBN: 9781138320352.

**Naidu, S.** (2020) "[A] girl from the village: totally unspoilt": Nazneen's 'Unhomeliness' in Monica Ali's *Brick Lane*. In Bhat Shilpa Daithota (eds.). *Aliens and Domiciles*. Lexington Books. Pp.53-69. 978-149851768.

**Phiri, A.**

**Phiri, A.** (2020) Transgressing Borders: (Re)imagining Africa(ns) in the World. In: Phiri, A. (ed.). *African Philosophical and Literary Possibilities - Re-reading the Canon*. Plymouth UK: Lexington Books. p.113-130. ISBN: 9781498571241.

**Phiri, A.** (2020) Fingering the Jagged Grain: Rereading Afropolitanism (and Africa) in Taiye Selasi's *Ghana Must Go*. In: Hodapp, J. (ed.). *Afropolitan Literature as World Literature*. London: Bloomsbury. p.155-161. ISBN: 9781501342585.

**Phiri, A.** (2020) Introduction: Re-reading the Canon, Re-reading Africa. In: Phiri, A. (ed.). *African Philosophical and Literary Possibilities - Re-reading the Canon*. Plymouth UK: Lexington Books. p.1-5. ISBN: 9781498571241.

**Phiri, A.** (ed.) (2020) *African Philosophical and Literary Possibilities - Re-reading the Canon*. Plymouth UK: Lexington Books. ISBN: 9781498571241.

**Primorac, R.**

**Primorac, R.** (2020) Gwebede's Wars: Anglophone Black Novels in Southern Africa 1965-1989. In: *The Palgrave Handbook of Cold War Literature*. Switzerland: Palgrave Macmillan. p.551-569. ISBN: 9783030389727.

### Concerts, Exhibitions, Performances, Workshops, Events

**Njovane, T.**

**Njovane, T.** Respondent. Rethinking Resilience. *Rethinking Resilience Workshop*. Rhodes University, Makhanda. South Africa. 5 - 9 October 2020.

### Peer Reviewed Subsidy-Earning Journal Research Publications

**Goldblatt, C.**

**Goldblatt, C.** (2020) Bakary Diallo's *Force- Bonte* (1926): A Complicit Critique of French Humanity. *Research in African Literatures*. 50 (4). p.182-201.

**Gouws, J.**

**Gouws, J.** (2020) Kairic Complexity in Fulke Greville's *A Dedication to Sir Philip Sidney*. *English Literary Renaissance*. 50 (3). p.450-484.

**Kiguru, D.W.**

**Kiguru, D.W.** (2020) Radiobook Rwanda: Modern Myths. 'The Thunder Hunter'. Jimmy Tuyiringire and Souls. No Bindings. Bristol, 2018, pb, 31pp, ISBN 9789997772534. *Wasafiri*. 35 (4). p.103-105.

**Kiguru, D.W.** (2020) Genre versus Prize: The Short Story Form and African Oral Traditions. *English in Africa*. 47 (3). p.36-54.

**Marais, M.**

**Marais, M.** (2020) Uncertainty and the Time of the Stranger: Michael Ondaatje's *Warlight*. *Mosaic-A Journal for the Interdisciplinary Study of Literature*. 53 (1). p.91-106.

**Marais, S.**

**Marais, S.** (2020) Review of Zoe Wicomb, Race, Nation, Translation: *South African Essays, 1990-2013*, edited by Andrew van der Vlies. *English in Africa*. 47 (3). p.149-150.

**Mason, P.**

**Chakona, G., Ndabula, Y., Mason, P., Asfour, F.M. and Oluwole, D.O.** (2020) Using Translanguaging in Higher Education to Empower Students' Voices and Enable Epistemological Becoming. *Alternation: Interdisciplinary Journal for the Study of the Arts and Humanities in Southern Africa (Formerly International Journal for the Study of Southern African Literature and Languages)*. 31 (2020). p.51-80.

**Mason, P.** (2020) Draft-dodgers in 1980s South Africa: Styles of Liminality and Lostness. *Journal of Literary Studies*. 36 (4). p.105-122.

**Naicker, K.E.**

**Naicker, K.E.** (2020) Nuruddin Farah: Variations on the theme of return. *Tydskrif vir letterkunde*. 57 (1). p.88-95.

**Naidu, S.**

**Naidu, S.** (2020) 'That Ever-Blurry Line Between Us and the Criminals': African Noir and the Ambiguity of Justice in Mukoma Wa Ngugi's *Black Star Nairobi* and Leye Adenle's *When Trouble Sleeps*. *Forum for Modern Language Studies*. 56 (3). p.331-346.

**Njovane, T.**

**Njovane, T.** (2020) Colonial monuments, postcolonial selves: History, trauma and silence in Yvonne Adhiambo Owuor's *Dust*. *Journal of Commonwealth Literature*. 2020 (2020). p.1-14.

**Phiri, A.**

**Phiri, A.** (2020) Race, decolonization, and global citizenship in South Africa by Chielozona Eze, New York, NY, University of Rochester Press, 2018, (Rochester Studies in African History and the Diaspora), 240 pp. ISBN-13: 978-1-58046-933-3. *Safundi*. 21 (2). p.226-228.

**Phiri, A.** and et al., (2020) The race for reparation(s), the (im)possibility of repair in Toni Morrison's *Beloved* and Antjie Krog's *Country of My Skull*. *Safundi*. 21 (1). p.69-84.

**Phiri, A.** (2020) Trumping the House that Race Built: Deracinating 21st-Century American Politics. *English Studies in Africa*. 63 (1). p.45-58.

**Phiri, A.** (2020) Response - Postcolonial Comparative Ireland South Africa. *Interventions*. 23 (1). p.170-175.

**Thorpe, A. and Naidu, S.**

**Thorpe, A. and Naidu, S.** (2020) Vulnerability and Consequential

Complicity: The Figure of the Black Female Migrant in Miriam Tlali's 'Devil at a Dead End' and Chimamanda Adichie's 'On Monday of Last Week'. *Research in African Literatures*. 51 (3). p.180-196.

**Wylie, D.**

Wylie, D. (2020) "Sermon among the ruins": Laurens van der Post's. *Safundi*. 2020 (2020). p.1-19.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**Njovane, T.**

Njovane, T. Trauma Theory and Childhood: A View from Africa. *The Future of Trauma: African Scholars Thinking with Cathy Caruth*. University of Stellenbosch, Stellenbosch. South Africa. October 2020.

Njovane, T. Rethinking Trauma Theory Through African Fiction. *African Knows! Conference*. Leiden University , Leiden. Netherlands. December 2020.

Njovane, T. On Achille Mbembe's Critique of Black Reason. *Digital Roundtable on Achille Mbembe*. University of Bayreuth, Bayreuth. Germany. July 2020.

Njovane, T. Black Women Creating Knowledge: Higher Education in South Africa. *Black Women's Knowledge Production on African (Continental and Diasporic) Contexts: Processes, Perspectives, Politics*. University of Bayreuth, Bayreuth. Germany. November 2020.

Njovane, T. (Un)Homing and the Uncanny in the Life Writing of Es'kia Mphahlele and Hugh Masekela. *Department of Political and International Studies Seminar Series*. Rhodes University, Makhanda. South Africa. February 2020.

Njovane, T. Community and the Covid 19 Pandemic: A View from South Africa. *Forging Solidarities: Community and the Covid 19 Pandemic*. University of Leeds, Leeds. United Kingdom. July 2020.

Njovane, T. A Conversation with Yvonne Owuor About her Novel, *Dust. A Conversation with Yvonne Owuor About her Novel, Dust: Lenses, Senses and a Conversation*. University of Stellenbosch, Stellenbosch. South Africa. August 2020.

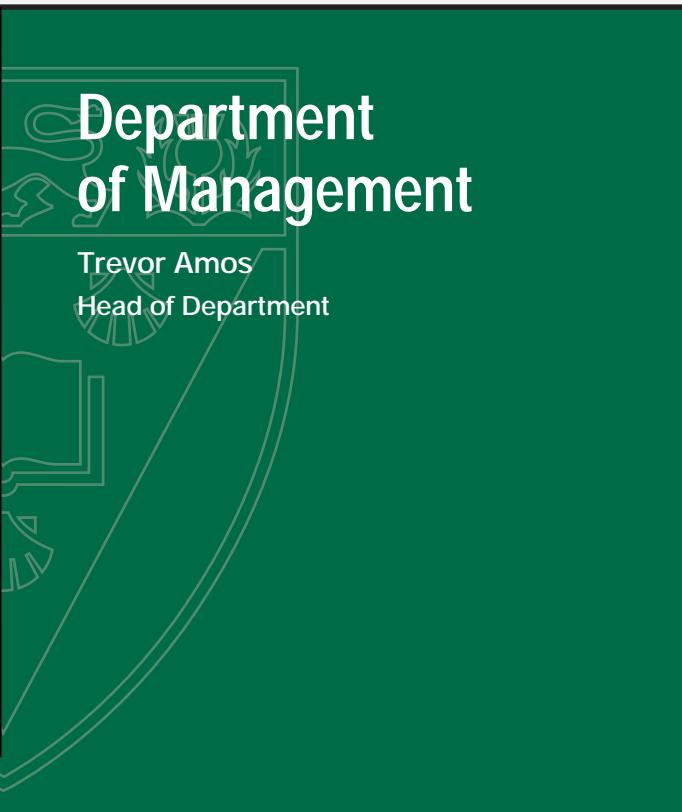


Photo: Simon Pamphilon

## Introduction

During 2020, the Department of Management continued to promote and develop a research culture and research capability by integrating the development of research thinking and skills into its teaching, particularly at the fourth-year level where students are exposed to a research methodology module and produce a research report. The Department also offers a structured research component in the Masters and PhD programmes. Due to the pandemic, this was all offered online.

Staff continued their research and authoring during the year, with publication due in 2021. Some of the activity centred around content development of textbooks for online delivery.

## Postgraduates / Graduations

During 2020, ten (10) Management students, four (4) Financial Management students and eight (8) PhD candidates were registered in the Department. Two (2) Masters students graduated with their Masters degree at the 2021 graduation ceremony. Important to note is that Lisa Maholo, a staff member in the Department, graduated with her Masters degree from the Department of Management.

## Distinguished Visitors / International Visits

These were unable to take place because of travel restrictions.

# PUBLICATIONS

## Peer Reviewed Subsidy-Earning Journal Research Publications

**Antoni, X.L.**

**Antoni, X.L.**, Saayman, M. and Vosloo, N. (2020) The Relationship Between Financial Literacy And Retirement Planning, Nelson Mandela Bay. *International Journal of Business and Management Studies*. 12 (2). p.577-593.

**Antoni, X.L.**, Dlephu, A. and Notshe, N. (2020) A Comparative Study Of Financial Literacy Among Undergraduate Commerce And Arts Students: A Case Of A South African University. *International Journal of Economics and Finance Studies*. 12 (2). p.563-580.

**Asah, F.T. and Louw, L.**

**Asah, F.T.**, **Louw, L.** and Williams, J.M. (2020) The availability of credit from the formal financial sector to small and medium enterprises in South Africa. *Journal of Economic and Financial Sciences*. 13 (1). p.1-10.

**Bunting, M.B.**

**Bunting, M.B.** (2020) Dimensions and indicators of nonprofit financial condition: Evidence from South African public universities. *South African Journal of Economic and Management Sciences*. 23 (1). p.1-17.

## Peer Reviewed Proceedings

**Maritz, M., Byrne, J.L. and Robertson, S.J.**

**Maritz, M., Byrne, J.L. and Robertson, S.J.** An investigation into the use of the marketing mix in the food and beverage industry in Grahamstown, South Africa: An exploratory study. *5th Emerging Trends in Marketing and Management International Conference (ETIMM 2020)*. The Bucharest University of Economic Studies, Bucharest. Romania. June 2020.

**Maritz, M., Staub, O. and Van Bergen, R.A.**

**Maritz, M., Staub, O. and Van Bergen, R.A.** An Investigation into the factors influencing the purchasing behaviour of smartphones among university students in South Africa. *5th Emerging Trends in Marketing and Management International Conference (ETIMM 2020)*. The Bucharest University of Economic Studies, Bucharest. Romania. June 2020.



Photo: Simon Pamphilon

# Department of Mathematics (Pure and Applied)

Dr Eric Andriantiana  
Head of Department

## Introduction

Despite the COVID-19 crisis, we have been able to engage with local and international collaborators and maintain our research productivity pace. In fact, compared to 2019, 2020 was more productive for both the Discrete Mathematics and the Artificial Intelligence Research groups. Attending online local and international conferences online allowed us to follow current trends in our research fields. The Artificial Intelligence Research group welcomed a new member, Dr Patrice Okouma, who joined in 2020.



Dr Andriantiana from the Discrete Mathematics research group of Rhodes University presenting in the Spring South-eastern sectional meeting of American Mathematical Society, Nashville, USA.

Photo: Department of Mathematics (Pure and Applied)

# PUBLICATIONS

## Peer Reviewed Subsidy-Earning Journal Research Publications

Andriantiana, E.O.D.

Andriantiana, E.O.D., Razanajatovo Misanantenaina, V. and Wagner, S. (2020) The average size of independent sets of graphs. *European Journal of Mathematics*. 6 (2). p.561-576.

Andriantiana, E.O.D., Razanajatovo Misanantenaina, V. and Wagner, S. (2020) The Average Size of Matchings in Graphs. *Graphs and Combinatorics*. 36 (1). p.539-560.

Andriantiana, E.O.D. and Wang, H. (2020) Subtrees and Independent Subsets in Unicyclic Graphs and Unicyclic Graphs with Fixed Segment Sequence. *Match Communications in Mathematical and in Computer Chemistry*. 84 (3). p.537-566.

Atemkeng Teufack, M.

Atemkeng Teufack, M., Smirnov, O.M., Tasse, C., Foster, G. and Makhathini, S. (2020) Fast algorithms to approximate the position-dependent point spread function responses in radio interferometric wide-field imaging. *Monthly Notices of the the Astronomical Society*. 499 (2020). p.292-303.

Fountsop, A., Kedieng Fendji, J. and Atemkeng Teufack, M. (2020) Deep Learning Models Compression for Agricultural Plants. *Applied Sciences*. 10 (19). p.2-19.

Tchakounté, F., Faissal, A., Atemkeng Teufack, M. and Ntyam, A. (2020) A Reliable Weighting Scheme for the Aggregation of Crowd Intelligence to Detect Fake News. *Information (Switzerland)*. 11 (1). p.1-25.

Cotton, W.D., Thorat, K., Condon, J.J., Jozsa, G.I.G., White, S.V., Atemkeng Teufack, M., Tchakounté F, Kamdem PC, Kamgang JC, Tchapgnou H.B. (2020) An Efficient DCT-SVD Steganographic Approach Applied to JPEG Images. *EAI Endorsed Transactions on Industrial Networks and Intelligent Systems*. 7 (24). 166365.

Tchakounté, F., Nyassi V.S., Danga D.E., Udagepola K.P., Atemkeng Teufack, M. (2020) A Game Theoretical Model for Anticipating Email Spear-Phishing Strategies. *EAI Endorsed Transactions on Scalable Information Systems*. 8 (30). e5.

Tchakounté, F., Pagor, A., Kamgang, J. and Atemkeng Teufack, M. (2020) CIAA RepDroid: A Fine-Grained and Probabilistic Reputation Scheme for Android Apps based on Sentiment Analysis of Reviews. *Future Internet*. 12 (9). p.1-27.

Bester, L., Smirnov, O.M. and Kupa, R.S.

Bester, L., Smirnov, O.M., Kupa, R.S., Oozeer, N. and et al. (2020) Hydrodynamical backflow in X-shaped radio galaxy PKS 2014-55. *Monthly Notices of the Royal Astronomical Society*. 496 (3). p.3469-3481.

Bishop, N.T., Van Der Walt, P.J. and Naidoo, M.

Bishop, N.T., Van Der Walt, P.J. and Naidoo, M. (2020) Effect of a low density dust shell on the propagation of gravitational waves. *General Relativity and Gravitation*. 52 (92). p.1-16.

## Peer Reviewed Proceedings

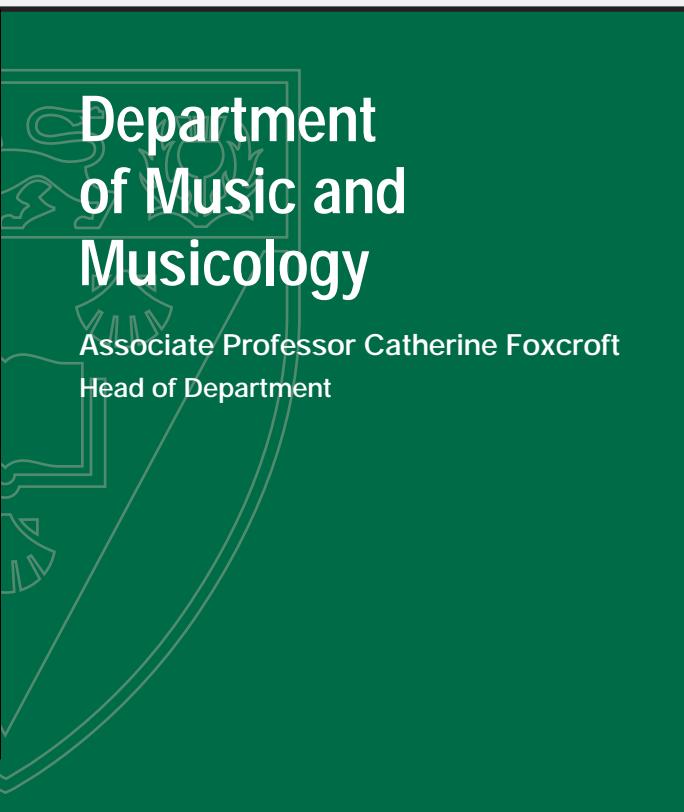
Atemkeng Teufack, M.

Atemkeng Teufack, M., Smirnov, O.M., Perkins, S., Kenyon, J.S. and Hugo, B. Xova: Baseline-Dependent Time and Channel Averaging for Radio Interferometry. *Astronomical Data Analysis Software and Systems (ADASS)*. Granada. Spain. November 2020.

Atemkeng Teufack, M., Ebiele, J., Ansah-Narh, T., Djokap, S. and Proven-Adzri, E. Conventional Machine Learning based on Feature Engineering for Detecting Pneumonia from Chest X-rays. *Conference of the South African Institute of Computer Scientists and Information Technologists*. Cape Town, Cape Town. South Africa. September 2020.



Photo: Simon Pamphilon



## Introduction

2020 was a remarkably challenging year for the performing arts across the globe. COVID-19 prevented gatherings and live performances from taking place for most of the year. This severely affected the creative outputs of the Music Department staff in terms of concerts, performances, workshops and events. Several exciting live events were cancelled, both at Rhodes and external venues in South Africa. Fortunately, two (2) MMus (Nelani, Robertson) and one (1) PhD (Viljoen) live performance examinations were scheduled for the examination period in January/February 2020 and were both well attended and highly appreciated by the public.

On a more positive note, two (2) staff members (Foxcroft, Ramanna) submitted two (2) creative outputs (CO) to the DHET for review and evaluation in the first cycle of the *DHET subsidies for Creative Outputs and Innovations* introduced in 2019. Both submissions were successful and were awarded three (3) units in the creative outputs category. The Music Department thus represented Rhodes University successfully at a national level in the music performance and composition arena.

In the research arena, the staff research outputs were not negatively affected despite the global challenges. The Department's peer-reviewed subsidy-earning journal research publications was impressive, with articles by three (3) staff members (Brukman, Fourie, Foxcroft) featured in the 2020 edition of the journal *SAMUS Volume 39 (1)*. The Department welcomed Dr William Fourie as a new musicology Lecturer in November 2020 and an immediate publication in *TEMPO. 75 (296)* added to the Department's 2020 publications list.

## Postgraduates / Graduations

Once again, the number of Postgraduate students supervised in the Department in 2020 increased to include eight (8) BMus 4/BA Honours students, sixteen (16) MMus students and nine (9) PhD candidates. All eight (8) BMus/BA students completed their degrees in November 2020, and three (3) of these students were accepted to continue their studies in the MMus degree programmes at Rhodes in 2021. Two (2) MMus students graduated in 2020.

## Significant Research Aligned Events

The Music Department's first PhD (Performance) candidate JF Viljoen was invited to present his research at the 16th International Conference for Music Perception and Cognition (ICMPC) in Madrid, Spain, in March 2020. Unfortunately, the international borders closed due to the pandemic a week before the conference was due to begin. However, the conference



Garreth Robertson MMus recital, February 2020.

Photo: Department of Music and Musicology



JF Viljoen PhD  
(Final Recital).  
Photo: Department  
of Music and  
Musicology

proceeded as an online virtual event, which allowed the candidate to present his research in an international forum for the first time. Other staff (Fourie, McConnachie) also presented their research at virtual conferences in South Africa and the United Kingdom in 2020.

## PUBLICATIONS

### Concerts, Exhibitions, Performances, Workshops, Events

Foxcroft, C.

Foxcroft, C. CD recording. Catherine Foxcroft A Portrait. *A Portrait: Schubert & Rachmaninoff Sonatas*. Hugo Lambrechts, NA. South Africa. 15 - 30 July 2020.

McConnachie, B.

McConnachie, B. Lecture. Making Music. *South African Society of Music Teachers*. School, Port Elizabeth. South Africa. 13 February 2020.

### Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Viljoen, J.F. and Foxcroft, C.

Viljoen, J.F. and Foxcroft, C. (2020) Gaze Patterns of Skilled and Unskilled Sight Readers Focusing on the Cognitive Processes Involved in Reading Key and Time Signatures. *International Journal of Humanities and Social Science*. 14 (9). p.764-767.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Bruckman, J.

Bruckman, J. (2020) Arnold Schoenberg's Op 11/1, Friedrich Hartmann's fully-chromaticised scales and analytical system, and the Henk Temmingh-Bernard van der Linde debate. *SAMUS: South African Music Studies (Formerly South Africa Journal of Musicology)*. 39 (1). p.345-376.

Fourie, W.E.

Fourie, W.E. (2020) Morton Feldman, Morton Feldman Piano. Philip Thomas. *Another Timbre*, AT144 x 5. *TEMPO*. 75 (296). p.102-103.

Fourie, W.E. (2020) Between the Musical Anti- and Post-Apartheid: Structures of Crisis in Kevin Volans's String Quartet No. 5, Dancers on a Plane. *SAMUS: South African Music Studies (Formerly South Africa Journal of Musicology)*. 39 (1). p. 134 - 175.

Foxcroft, C.

Foxcroft, C. (2020) 'Being in the Zone': Towards a Conceptual Understanding of Flow during Optimal Solo Performance. *SAMUS: South African Music Studies (Formerly South Africa Journal of Musicology)*. 39 (1). p. 314 - 344.

### Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Fourie, W.E.

Fourie, W.E. Composing the Interregnum: Kevin Volans and South Africa's Transition to Democracy. *Music and Political Democratisation in Late Twentieth Century*. University of Huddersfield, Huddersfield. United Kingdom. November 2020.

McConnachie, B.

McConnachie, B. Talking about indigenous music. *Unsettling Paradigms in the Faultlines of Change: Reimaging a Curriculum A USAFT LSG (Teaching and Learning Strategy Group)*. Webinar. Online, South Africa. September 2020.

McConnachie, B. Eco-creativity: Music, Religion, Activism. *Faculty of Arts and Social Sciences*. The Open University. Online, UK. October 2020.

Viljoen, J.F. and Foxcroft, C.

Viljoen, J.F. and Foxcroft, C. Gaze patterns of expert and amateur sight-readers with particular focus on the cognitive underpinnings of reading key and time signatures. *ICMPC 16 (virtual)*. Spain. March 2020.

### Peer Reviewed Subsidy-Earning Creative Outputs

Foxcroft, C.

Foxcroft, C. (2020) Solo Musical Performance. *Beethoven Piano Concerto No 3, FSSO*. Odeion concert hall, Bloemfontein. FreeState.

Ramanna, N.

Ramanna, N. (2020). Group performance; musical composition. *Jazz Suites: Ten pieces collated into two suites*.



Photo: Simon Pamphilon

# International Library of African Music

Dr Lee Watkins

Director (ILAM) and Editor of  
*African Music*

## Introduction

A particular interest at the International Library of African Music (ILAM) is to understand how archiving and music studies may bring about a new awareness influenced by developing rural cultural economies, as in the research project on the jazz heritage of the Eastern Cape and social cohesion, and as evident in our ongoing attempts at forging relations with community projects. We ask how may the music archive be imagined in a context of vociferous demands for the decolonization of knowledge production in the academic sector as well as in the community at large?

We argue that it is through the study of sound, rather than music, with “music” being a western construct, that sound studies connect profoundly with other disciplines; to the past, the present and to the future. In developing relations through sound, ILAM has been stretching the idea of the “community” to include not only our immediate constituencies but also those near and far who share our interests in developing relationships in and outside the academy. At ILAM, a word such as the “decolonial” is not mere rhetoric but a part of its lived experience from one day to the next. ILAM has not been able to achieve this on its own. Indeed, a critical step is the development of partnerships through which resources are developed and shared. Today ILAM is proof of the connectivity among diverse groups of people. Its future as a place where Africa is reimagined through sound should hopefully engage all of us at Rhodes University.

During the past fifteen months, ILAM has managed to keep its head above all the challenges thrown at it. A number of factors such as our dedication and teamwork, in addition to demands from everywhere as if the world is not in crisis, compels us to forge ahead so that we keep delivering to students, scholars, organisations, musicians, and music companies, among others, to the best of our abilities. Most of this relied on the resources of only two individuals, the Director (Dr Lee Watkins) and the Sound Engineer (Elijah Madiba). Further, we have had to reinvent many of our actions to comply with prevailing circumstances, with fieldwork, our dominant research approach, perhaps falling victim to the extent that it has become difficult to produce first-class, original research in a sustainable manner. The core duties of the archive, such as digitisation and cataloguing, continued as usual while we also tried to continue with our efforts at sustaining the leadership position of ILAM on the continent. Despite the global pandemic, I can confidently say that ILAM is indeed at the vanguard of archival practices on the continent. ILAM maintains this position as a result of ethical practices, the support of partners and collaborators on the continent and abroad, the financial support of the National Arts Council and the National Heritage Council, the Bayreuth University-RU Multiple Cluster of Excellence, and, of course, those in senior management at Rhodes University.

## Significant Research Aligned Events

In 2020, Professor Austin Emielu from the University of Ghana in Accra was appointed a Visiting Professor at ILAM. Professor Dave Dargie's term as Visiting Professor came to an end, and this was renewed for a further three years. In 2020 Dr John Doe Dorzdro of the University of Cape Coast in Ghana served as an Andrew W. Mellon Foundation Postdoctoral Fellow at ILAM. Due to the lockdown, he was not able to enjoy the full benefits of this position. Dr Garhe Osiebe of Nigeria was appointed the Africa Multiple Cluster of Excellence (Bayreuth University) Postdoctoral Fellow in 2020. He is being co-hosted by ILAM and the Cluster. The lockdown started a few days after his arrival in 2020, and he has also not been able to enjoy the full benefits of the position. Dr Osiebe's Fellowship was renewed in 2021.

## Conferences

Dr Lee Watkins attended the following events: On 5 - 6 December 2019, that conducted a colloquium at the New University in Lisbon at a conference titled, *Listening to Mozambique: Musics in Africa*. The topic was "The relationship between ILAM and Mozambique." I made a presentation on ILAM at the Imibala Youth Festival in Gqeberha on 13 December 2019. While the topic introduced ILAM, the presentation focused on South African hip hop as a living archive of youth cultures in South Africa. The paper presented at the Conference titled *Frontiers in African Digital Research*, which took place on 30 January - 01 February 2020 at Bayreuth University, Germany. The trips to Portugal and Germany were supported by the hosts.

## Lectures

Dr Lee Watkins had been chairing weekly seminars for Postgraduate Ethnomusicology students at Rhodes University. The content consists of critical Ethnomusicology, presentation skills, fieldwork updates and research issues. These seminars include students in Makhanda, India, Ghana and China. In 2020, Elijah Madiba, Andrew Mugenyi, colleagues at ILAM, and Dr Lee Watkins, taught modules in the Heritage Management course offered by the Department of Anthropology. The following online classes were conducted with Postgraduate students overseas: June 2020 - University of Frankfurt, Germany (Topic was about digital return). September 2020 - University of Michigan, USA (Topic was about race and hip hop in Cape Town). September 2020 - University of Virginia (Topic was about the decolonial in a South African musicological context).

## Community Engagement

In 2020 we commenced with cataloguing the recordings obtained during research in Keiskammahoek since 2012. The catalogued recordings will be hosted on the ILAM website, and the income generated will be returned to the Ntinga Development Centre in Keiskammahoek. Funding for the cataloguing was obtained from the National Arts Council. The date of completion is 30 August 2021.

## Diane Thram, Emeritus Professor

The Jazz Heritage Project photo collections of Richard Hatana and Dudley Tito have been indexed and catalogued, and entered into the RU online database. The student assistant is now indexing video recordings of workshops at the Red Location Museum, and memorials in Gqeberha held for musicians who passed away who were active in the project. This research project commenced in around 2009 and is ongoing with more research being undertaken in Queenstown, King William's Town and East London. The cataloguing is supported by funds provided by the Research Office at Rhodes University.

## Distinguished Visitors / International Visits

In 2020 Pro-Helvetia provided a grant for Jorge Henriquez Mulumba from Angola to visit ILAM. We had prepared a programme of concerts and workshops at all the universities in the Eastern Cape. He arrived here just before the first lockdown, and none of these plans could materialise. He returned home with the first opportunity in July 2020. Pro-Helvetia generously increased the grant when they realised that Jorge would have to remain in SA for much longer than planned. During his visit, Jorge managed to record a few tracks at ILAM. These will be released as a package once recordings by Venancio Mbande from Mozambique and Bisaso Ssempeke from Uganda are completed. Currently, Venancio and Bisaso are Masters degree students in the Department of Music at Rhodes University. They are being supervised by Dr Boudina McConnachie.



**Jorge Henriquez Mulumba.**

Photo: Department of Music and Musicology

## Postgraduate students

### MASTERS DEGREE

**Qhawekazi Giyose:** MA. Topic: *Traditional jazz songs in East London and their role as repositories of a collective memory about the jazz music heritage of the Eastern Cape (1940-1980)*. Ethical clearance obtained. Proposal accepted.

### PhD

**Thobeka Ndlebe-September:** PhD. Topic: *The "little jazz towns" of the Eastern Cape: Constructing the heritage of jazz as it prevails in the memories and sounds of veteran musicians in Queenstown and King William's Town*. Ethical clearance obtained. Proposal to be submitted at the end of June 2021.

**Rakesh Kumar:** PhD. Topic: *Liminality and States of Being in the Contemporary Music Performances of goma/dhamal among Afro-Indian (Siddi) Performers and Audiences in Gujarat, India*. Ethical clearance not yet obtained. Proposal accepted. (Recipient of an ILAM bursary).

**Obianuju Njoku:** PhD. Topic: *Traversing Sonic Spaces: Expressions of Identity, Gender, and Power in the Musical Traditions of the Nupe in Northern Nigeria*. Completed.

## Fundraising

Since the last report, Dr Lee Watkins was successful in raising the following grants:

- National Arts Council 2020** - an amount of R1200 000 spread over three (3) years starting in 2020. This grant is for research on the jazz heritage of the Eastern Cape. The point of the project is to understand how the jazz music heritage could assist primarily rural based musicians in generating and sustaining livelihoods. The grant includes two (2) bursaries, one (1) for a Doctoral candidate (Thobeka Ndlebe-September) and the other one (1) for a Masters degree (Qhawekazi Giyose).
- National Heritage Council 2020** - an amount of R100 000 to catalogue the recordings of the research project in Keiskammahoek.

## Journal: *African Music*

Volume 11, 2 of *African Music*. The issue appeared in December 2020. The issue consists of 195 pages.

This journal was launched in 1954. Unlike most journals in Africa which appear with much fanfare only to disappear as quickly, *African Music* has continued to serve students and music scholars of the continent and abroad. It remains the longest-serving journal dedicated to the music of African and its diaspora.

## PUBLICATIONS

### Books/Chapters/Monographs

Dargie, D.

Dargie, D. (2020) Chapter 3: Musical Bows of Namibia; Chapter 7: Musical Bows of the amaXhosa. In: Dlamini, S. (eds.). *Musical Bows of Southern Africa*. New York & London: Bloomsbury Academic. p. 83-112; p. 203-228.

Dargie, D. (2020) *lingoma zesiXhosa - Xhosa Music*: Songs with Salt in. South Africa: ILAM. This is a revised version of the book published in 1988. Publication of this book (as a digital book) is in preparation at ILAM.

### Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Dordzro, J. D.

Dordzro, J. D. (2020). Repertoire selection processes of basic school marching band instructors in Ghana. *European Journal of Education and Pedagogy*. 1 (1), <https://doi.org/10.24018/ejedu.2020.1.1.7>

Dordzro, J. D. (2020). Informal brass band instruction in Ghana: A study of effective and efficient rehearsals using research findings. *Journal of African Arts & Culture*. 4(3), 1-27.

Osiebe, G.

Osiebe, G. 2020. 'Fashion in Parliament: Performances from Nigeria to South Africa'. *Leeds African Studies Bulletin*. 81 (1): 1.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Dordzro, J. D.

Dordzro, J. D. (2020). Brass band music in Ghana: The indigenization of European military music and popular culture. *Journal of the International Library of African Music*. 11(2), 141-163.

Emielu, A.

Emielu, A. (2020). "Cape Town Harmonies: Memory, Humour and Resilience." *Canadian Journal of African Studies*. DOI:10.1080/00083968.2020.1757743.

Emielu, A. and Donkor, G. (2019). "Highlife Music without Alcohol? Interrogating the Concept of Gospel Highlife in Ghana and Nigeria". *Journal of the Musical Arts in Africa*. (16) 1-2. 29-44.DOI:10.2989/18121004.2019.1690205.

Osiebe, G.

Osiebe, G. 2020. 'The Ghetto President and Presidential Challenger in Uganda'. *Africa Spectrum*. 55 (1): 86-99.

Osiebe, G. 2020. 'Methods in performing Fela in contemporary Afrobeats, 2009-2019'. *African Studies*. 79 (1): 88-109.

### Creative Outputs

Emielu, A.

Emielu, A. "Land of my Birth." A single in support of the global Black Lives Matter Movement, released in August 2020 in the United States of America.



# Faculty of Pharmacy

Associate Professor Sandile Khamanga  
Dean of Faculty

Photo: Simon Pamphilon

## Introduction

This time last year, it was easy to write a review for 2019. However, 2020 has presented extraordinary circumstances for all of us. We extend our immense gratitude to those on the frontlines, particularly healthcare workers, for their commitment to keeping all of us safe and to all academic and support staff who demonstrated tremendous resilience and agility as we continued to navigate the ongoing uncertain environment. We believe that a healthy and sustainable recovery can only be achieved when we work together and have support from the University.

This 2020 Research Review shows that, although it was not the year anyone anticipated, our incredible staff continued to achieve so much despite the turmoil of the pandemic. Our staff and students rose to the challenge. We adapted and proved that even during the toughest of years, we still have reasons to celebrate.

The lockdown in March 2020 caused the immediate closure of all our research laboratories. In response to these unprecedented circumstances, we were forced to change our focus and re-evaluate our direction. One of the laboratories was immediately repurposed into a hand sanitiser manufacturing unit, which enabled Professor Rod Walker and his team to play a crucial role in the University's response to the pandemic. This demonstrated the powerful contribution our profession makes to society and the importance of our expertise in response to complex global events. This review looks at a cross-section of work that celebrates not only how we have responded to the pandemic but how we have been resourceful and adapted to keep vital research and Postgraduate programmes active under lockdown. Pharmaceutical Chemistry, Pharmaceutics, Pharmacology, and Pharmacy Practice staff continued to create and share knowledge that changes the world for the better. The uncertainty that we faced in 2020 has shown no sign of abating up until we reach herd immunity.

The Faculty enrolment continued to grow in 2020, with a total headcount of six hundred and eighty-eight (688), an increase on the six hundred and eighty-two (682) headcounts of 2019 and six hundred and seventy-two (672) of 2018.

## Postgraduates / Graduations

One academic staff member completed a PhD degree in Pharmaceutics in ocular drug delivery systems.

Through the efforts of the Faculty and its divisions, a culture of research and scholarly activity is again steadily emerging among academic staff members, and about ten (10) students submitted their MSc and/or PhD theses at the end of the year. Research topics included medicines registration, drug delivery, antimicrobial prescribing, water quality, topical formulations

and molecular docking, to name a few. Hard work and perseverance bore fruit in 2020 when we witnessed the number of publications from academic staff increase sharply.

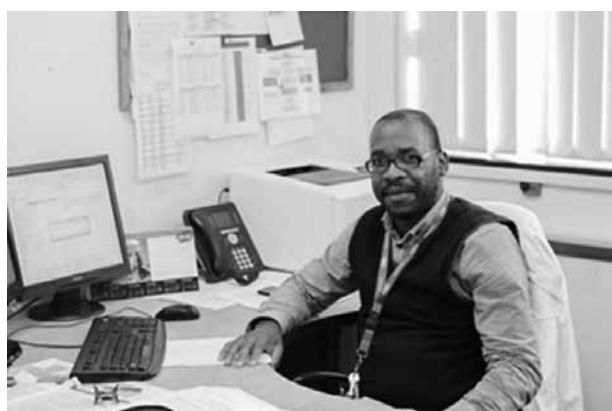
## Distinguished Visitors / International Visits

Professor Roman Tandlich was involved in Disaster Management activities and the targeted resource development for COVID-19 through the International Emergency Management Society (TIEMS). Furthermore, Professor Tandlich participated as a Guest Editor for the April 2020 Special issue of the *TIEMS* newsletter, and he presented along with his students at two (2) international conferences on emergency management. Professor Tandlich also sits on the Compliance Board of the TIEMS International certification for emergency managers.

## Significant Research Aligned Events

Professor Setshaba Khanye received the National Research Foundation (NRF) C2 rating in Physical and Chemical Sciences, which illustrates an upward trajectory in research productivity within the Division of Pharmaceutical Chemistry. Professor Khanye, together with his former PhD candidate Dr Mziyanda Mbaba (a Postdoctoral Fellow at UCT) and former co-supervisor, Professor Gregory Smith (UCT), were invited through Professor Christophe Biot (Universite de Lille, France) to write a book chapter (*Organometallic Chemistry of Drugs Based on Iron*). The chapter has been accepted for publication in the book series *Comprehensive Organometallic Chemistry IV*.

Professor Setshaba Khanye's Drug Discovery and Pharmaceutical Research Laboratory have partnered with the Council for Scientific and Industrial Research (CSIR) to find a potential treatment for the infectious disease *trichomoniasis*.



**Professor Setshaba Khanye: University researchers on quest to find new ways to treat trichomoniasis.**

Photo: Faculty of Pharmacy

Professor Sandile Khamanga received a C3 rating in Health Sciences from the NRF. His primary research interests are centred on the implementation of novel engineering approaches to the design and manufacture of drug delivery systems to taste-mask bitter-tasting medicine. He currently serves as an external reviewer on the clinical trials committee of the South African Health Products Regulatory Authority. Professor Sandile Khamanga received a research grant of R1.35 million from NRF to purchase an Electronic Tongue (E-tongue). The taste sensor employs the exact mechanism as that of the human tongue, converting the taste of various substances into numerical data.

## PUBLICATIONS

### Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Duxbury , T. and Tandlich, R.  
 Duxbury, T., Paphitis, S.A., Carlos Bezerra, J. and Tandlich, R. (2020) Understanding Critical Concepts in Engaged Research: The Case of a Rural Health Development Project in South Africa. *New Trends in Qualitative Research*. 1 (1). p.81-103.  
 Kanfer, I. and Patnala, S.  
 Wen, J., Luo, Y., Kanfer, I., Patnala, S. and Yu, P. (2020) *celetium Tortuosum*: Effects on Central Nervous System and Related Disease. *Journal of Pharmaceutical and Biomedical Sciences*. 10 (6). p.151-160.  
 Vumazonke, S., Khamanga, S.M. and Ngqwala, N.  
 Vumazonke, S., Khamanga, S.M. and Ngqwala, N. (2020) Detection of Pharmaceutical Residues in Surface Waters of the Eastern Cape Province. *International Journal of Environmental Research and Public Health*. 17 (4067). p.1-13.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Agbor Ambang, O. and Tandlich, R.  
 Agbor Ambang, O., Alloggio, S. and Tandlich, R. (2020) Dissecting the post-humanist ethical framework in environmental resource management, bioprospecting and the related legislation. *Environmental Law and Management*. 31 (2019). p.96-116.  
 Burton, S.F.  
 Burton, S.F. and Ndzamela, S.T. (2020) Patients and healthcare professionals experiences of medicine stock-outs and shortages at a community healthcare centre in the Eastern Cape. *SA Pharmaceutical Journal*. 87 (5). p.37.  
 Bobbins, A., Burton, S.F. and Fogarty, T.L. (2020) Different models of pharmaceutical services and care in primary healthcare clinics in the Eastern Cape, South Africa: Challenges and opportunities for pharmacy practice. *African Journal of Primary Health Care and Family Medicine*. 12 (1). p.1-11.  
 Chikukwa, M.T.R., Walker, R.B. and Khamanga, S.M.  
 Chikukwa, M.T.R., Walker, R.B. and Khamanga, S.M.B. (2020) Formulation and Characterisation of a Combination Captopril and Hydrochlorothiazide Microparticulate Dosage Form. *Pharmaceutics*.12 (712). p.1-19.  
 Chiwanza, F., Irwin, Y.L. and Dowse, R.  
 Chiwanza, F., Irwin, Y.L. and Dowse, R. (2020) Acceptance of ambulatory blood pressure monitoring in a semi-rural population in South Africa. *Health SA Gesondheid*. 25 (a1336). p.1-7.  
 Dowse, R.  
 Dowse, R. (2020) Designing and reporting pictogram research:

Problems, pitfalls and lessons learnt. *Research in Social and Administrative Pharmacy*. 2020 (2020). p.1-8.

**Dowse, R.** (2020) Pharmacists, are words enough? The case for pictograms as a valuable communication tool. *Research in Social and Administrative Pharmacy*. 2020 (2020). p.1-5.

**Farounbi, A.I. and Ngqwala, N.**

**Farounbi, A.I. and Ngqwala, N.** (2020) Occurrence of selected endocrine disrupting compounds in the Eastern Cape province of South Africa. *Environmental Science and Pollution Research*. 27 (14). p.17268-17279.

**Farounbi, A.I., Olawode, E.O. and Ngqwala, N.**

**Farounbi, A.I., Mensah, P.K., Olawode, E.O. and Ngqwala, N.** (2020) H-NMR Determination of Organic Compounds in Municipal Wastewaters and the Receiving Surface Waters in Eastern Cape Province of South Africa. *Molecules*. 25 (2020). p.1-13.

**Fauzee, A.F.B. and Walker, R.B.**

**Fauzee, A.F.B. and Walker, R.B.** (2020) The impact of formulation variables on the optimization of pilot scale cream formulations. *Cogent Engineering*. 7 (1804713). p.1-21.

**Glass, B.D.**

Taylor, S., Cairns, A. and **Glass, B.D.** (2020) Health professional perspectives of expanded practice in rural community pharmacy in Australia. *International Journal of Pharmacy Practice*. 28 (2020). p.1-8.

**Kanfer, I.**

Ozdin, D., **Kanfer, I.** and Ducharme, M.P. (2020) Novel Approach for the Bioequivalence Assessment of Topical Cream Formulations: Model-Based Analysis of Tape Stripping Data Correctly Concludes BE and BIE. *Pharmaceutical Research*. 37 (2). p.1-18.

**Khanye, S.D.**

Odame, F., Hosten, E., Krause, J., Isaacs, M., Hoppe, H.C., **Khanye, S.D.**, Sayed, Y., Frost, C., Lobb, K.A. and Tshentu, Z.R. (2020) Synthesis, Characterization and Biological Activity of Some Dithiourea Derivatives. *Acta Chimica Slovenica*. 67 (2020). p.764-777.

**Mbaba, M., Dingle, L.M.K., Swart, T., Cash, D., Laming, D., De La Mare, J.A., Taylor, D., Hoppe, H.C., Biot, C., Edkins, A.L. and Khanye, S.D.** (2020) The *in Vitro* Antiplasmodial and Antiproliferative Activity of New Ferrocene-Based a-Aminocresols Targeting Hemozoin Inhibition and DNA Interaction. *CHEMBIOCHEM*. 21 (2020). p.2643-2658.

**Mbaba, M., Dingle, L.M.K., Cash, D., De La Mare, J.A., Laming, D., Taylor, D., Hoppe, H.C., Edkins, A.L. and Khanye, S.D.** (2020) Repurposing of a polymer precursor: Synthesis and *in vitro* medicinal potential of ferrocenyl 1,3-benzoxazine derivatives. *European Journal of Medicinal Chemistry*. 187 (2020). p.111924.

**Kloppers, R.**

Wehmeyer, A., Coetze, R., Hoffman, N., Johnson, Y. and **Kloppers, R.** (2020) Medicine-use evaluation of doxazosin prescribing to inform formulary recommendations. *SAMJ South African Medical Journal*. 110 (1). p.1-5.

**Laubscher, R.**

Taylor, R., Jones, C.L.W. and **Laubscher, R.** (2020) Agricultural fertiliser from brewery effluent - the recovery of nutrients from the biomass of activated sludge and high rate algal pond treatment systems. *Journal of Water Supply Research and Technology-aqua*. 256 (2020). p.780-804.

**Makoni, P.A., Kasongo, W.K.M. and Walker, R.B.**

**Makoni, P.A., Kasongo, W.K.M. and Walker, R.B.** (2020) Preformulation studies of efavirenz with lipid excipients using thermal and spectroscopic techniques. *Die Pharmazie*. 75 (2020). p.417-423.

**Makoni, P.A., Khamanga, S.M. and Walker, R.B.**

**Makoni, P.A., Khamanga, S.M. and Walker, R.B.** (2020) Muco-adhesive clarithromycin-loaded nanostructured lipid carriers for ocular delivery: Formulation, characterization, cytotoxicity and stability. *Journal of Drug Delivery Science and Technology*. 61 (2021). p.1-15.

**Makoni, P.A., Ranchhod, J., Kasongo, W.K.M., Khamanga, S.M. and Walker, R.B.**

**Makoni, P.A., Ranchhod, J., Kasongo, W.K.M., Khamanga, S.M. and Walker, R.B.** (2020) The use of quantitative analysis and Hansen solubility parameter predictions for the selection of excipients for lipid nanocarriers to be loaded with water soluble and insoluble compounds. *Saudi Pharmaceutical Journal*. 28 (2020). p.308-315.

**Mazonde, P., Khamanga, S.M. and Walker, R.B.**

**Mazonde, P., Khamanga, S.M. and Walker, R.B.** (2020) Design, Optimization, Manufacture and Characterization of Efavirenz-Loaded Flaxseed Oil Nanoemulsions. *Pharmaceutics*. 12 (797). p.1-22.

**Melamane, S., Walker, R.B. and Khamanga, S.M.**

**Melamane, S., Walker, R.B. and Khamanga, S.M.** (2020) Formulation optimization of smart thermosetting lamotrigine loaded hydrogels using response surface methodology, Box-Behnken design and artificial neural networks. *Drug Development and Industrial Pharmacy*. 46 (9). p.1402-1415.

**Mudyahoto, N.A., Rath, S., Ramanah, A. and Kanfer, I.**

**Mudyahoto, N.A., Rath, S., Ramanah, A. and Kanfer, I.** (2020) *In Vitro* Release Testing (IVRT) of Topical Hydrocortisone Acetate Creams: A Novel Approach Using Positive and Negative Controls. *Dissolution Technologies*. 27 (1). p.1-7.

**Mwila, C. and Walker, R.B.**

**Mwila, C. and Walker, R.B.** (2020) Improved Stability of Rifampicin in the Presence of Gastric-Resistant Isoniazid Microspheres in Acidic Media. *Pharmaceutics*. 12 (234). p.1-28.

**Ngqwala, N.**

**Ngqwala, N.** and Muchesa, P. (2020) Occurrence of pharmaceuticals in aquatic environments: A review and potential impacts in South Africa. *South African Journal of Science*. 116 (7/8). p.1-7.

**Patnala, S.**

Eze, F.I., Siwe Noundou, X., Isaacs, M., Patnala, S., Osadebe, P.O. and Krause, R.W.M. (2020) Anti-cancer and anti-trypanosomal properties of alkaloids from the root bark of *Zanthoxylum leprieurii* Guill and Perr. *Tropical Journal of Pharmaceutical Research*. 19 (11). p.2377-2383.

**Purazi, P., Rath, S., Ramanah, A. and Kanfer, I.**

**Purazi, P., Rath, S., Ramanah, A. and Kanfer, I.** (2020) Assessment of Sameness and/or Differences between Marketed Creams Containing Miconazole Nitrate Using a Discriminatory *in vitro* Release Testing (IVRT) Method. *Scientia Pharmaceutica*. 88 (1). p.1-13.

**Rath, S. and Kanfer, I.**

**Rath, S. and Kanfer, I.** (2020) A Validated IVRT Method to Assess Topical Creams Containing Metronidazole Using a Novel Approach. *Pharmaceutics*. 12 (2). p.1-14.

**Rath, S., Ramanah, A. and Kanfer, I.**

**Rath, S., Ramanah, A., Bon, C. and Kanfer, I.** (2020) Application of a dermatopharmacokinetic (DPK) method for bioequivalence assessment of topical metronidazole creams. *Journal of Pharmacy and Pharmaceutical Sciences*. 23 (2020). p.437-450.

**Sharma, S., Tandlich, R. and Srinivas, S.**

**Sharma, S., Tandlich, R., Doçrat, M. and Srinivas, S.** (2020) Antibiotic procurement and ABC analysis for a comprehensive primary health care clinic in the Eastern Cape province, South Africa. *Southern African Journal of Infectious Diseases (Formerly Southern African Journal of Epidemiology and Infection)*. 35 (1). p.1-7.

**Sibiya, N.H.**

**Sibiya, N.H.**, Ngubane, P., Khathi, A., Boysen, I., Msibi, B. and Mangudu, P. (2020) Cardio-protective effects of a dioxidovalanadium(V) complex in male Sprague Dawley rats with streptozotocin-induced diabetes. *Biometals*. 2020 (2020). p.1-13.

**Khathi, A., Ngubane, P., Sibiya, N.H., Siboto, A., Akinjide, M., Khumalo, B., Boysen, I., Ismail, M.B.** (2020) Effect of a [3+1] oxo-free rhenium (V) compound with uracil derived ligands on selected parameters of glucose homeostasis in diet-induced diabetic rats. *Obesity Medicine*. 19 (2020). p.1-8.

**Akinnuga, A.M., Siboto, A., Khumalo, B., Sibiya, N.H., Ngubane, P. and Khathi, A.** (2020) Ameliorative Effects of Bredemolic Acid on Markers Associated with Renal Dysfunction in a Diet-Induced Prediabetic Rat Model. *Oxidative Medicine and Cellular Longevity*. 2020 (2020). p.1-12.

**Akinnuga, A.M., Siboto, A., Khumalo, B., Sibiya, N.H., Ngubane, P. and Khathi, A.** (2020) Bredemolic Acid Improves Cardiovascular



**Professor Sandile Khamanga received a research grant of R1.35 million from NRF to purchase an Electronic tongue (E-tongue).**

Photo: Faculty of Pharmacy

Function and Attenuates Endothelial Dysfunction in Diet-Induced Prediabetes: Effects on Selected Markers. *Cardiovascular Therapeutics*. 2020 (2020). p.1-9.

Akinnuga, A.M., Siboto, A., Khumalo, B., **Sibiya, N.H.**, Ngubane, P. and Khathi, A. (2020) Bredemolic Acid Ameliorates Selected Liver Function Biomarkers in a Diet-Induced Prediabetic Rat Model. *Canadian Journal of Gastroenterology and Hepatology*. 2020 (2020). p.1-9.

Mosili, P., Mkhize, B.C., Ngubane, P., **Sibiya, N.H.** and Khathi, A. (2020) The dysregulation of the hypothalamic-pituitary-adrenal axis in diet-induced prediabetic male Sprague Dawley rats. *Nutrition and Metabolism*. 17 (104). p.1-12.

**Srinivas, S. and Tandlich, R.**

Kalyatanda, G.S., Archibald, L.K., Patnala, S., Paul-Satyaseela, M., Kiran, P.R., **Srinivas, S.**, Byrne, A., Lin, Y., Chekuri, V.N., Limson, J.L., Paphitis, S.A., **Tandlich, R.** and Hornby, D. (2020) No human exists in isolation or as an island: the outcomes of a multidisciplinary, global, and context-specific Covid-19 consortium. *American journal of disaster medicine*. 15 (3). p.219-222.

**Tandlich, R.**

**Tandlich, R.** (2020) Citizen science-based monitoring of microbial water quality at a single household level in a South African local municipality during the COVID19 lockdown. *Nova Biotechnologica et Chimica*. 19 (1). p.116-123.

**Veale, C.G.L. and Khanye, S.D.**

Zulu, A.I., Oderinlo, O., Kruger, C., Isaacs, M., Hoppe, H.C., Smith, V.J., **Veale, C.G.L.** and **Khanye, S.D.** (2020) Synthesis, Structure and *In Vitro* Anti-Trypanosomal Activity of Non-Toxic Arylpyrrole-Based Chalcone Derivatives. *Molecules*. 25 (2020). p.1-16.

**Veerubhotla, H.M.K. and Walker, R.B.**

**Veerubhotla, H.M.K.** and **Walker, R.B.** (2020) Application of Quality by Design Principles for Optimizing Process Variables of Extrusion and Spheronization of a Captopril Pellet Formulation. *Indian Journal of Pharmaceutical Sciences*. 82 (1). p.76-87.

**Vhiriri, E.P., Irwin, Y.L. and Tandlich, R.**

**Vhiriri, E.P., Irwin, Y.L., Laubscher, R. and Tandlich, R.** (2020) Legislation and policy analysis on management of listeriosis epidemic disaster in South Africa. *American Journal of Disaster Medicine*. 15 (2). p.113-128.

**Walker, R.B.**

Bapolisi, A.M. Nkanga, C.I. **Walker, R.B.** and **Krause, R.W.M.** (2020) Simultaneous liposomal encapsulation of antibiotics and proteins: co-loading and characterization of rifampicin and human serum albumin in soy-liposomes. *Journal of Drug Delivery Science and Technology*. 58 (8). p.1-12.

**Nkanga, C.I., Roth, M., Walker, R.B., Siwe Noundou, X. and Krause, R.W.M.** (2020) Co-Loading of Isoniazid-Grafted Phthalocyanine-in-Cyclodextrin and Rifampicin in Crude Soybean Lecithin Liposomes: Formulation, Spectroscopic and Biological Characterization. *Journal of Biomedical Nanotechnology*. 16 (2020). p.14-28.

**Okafor, N.I., Nkanga, C.I., Walker, R.B., Siwe Noundou, X. and Krause, R.W.M.** (2020) Encapsulation and physicochemical evaluation of efavirenz in liposomes. *Journal of Pharmaceutical Investigation*. 50 (2). p.201-208.

**Wilson, B., Bobbins, A.C. and Srinivas, S.**

Yu, P., **Wilson, B., Bobbins, A.C., Srinivas, S.** and Yin, G. (2020) Pharm D Program: Is it Necessary in BIRCS? *Indian Journal of Pharmaceutical Education and Research*. 53 (3). p.517-525.

**Witika, B.A. and Walker, R.B.**

**Witika, B.A., Smith, V.J. and Walker, R.B.** (2020) Quality by Design Optimization of Cold Sonochemical Synthesis of Zidovudine-Lamivudine Nanosuspensions. *Pharmaceutics*. 12 (367). p.1-17.

**Witika, B.A., Smith, V.J. and Walker, R.B.** (2020) A Comparative Study of the Effect of Different Stabilizers on the Critical Quality Attributes of Self-Assembling Nano Co-Crystals. *Pharmaceutics*. 12 (182). p.1-15.

**Witika, B.A., Smith, V.J. and Walker, R.B.** (2020) Top-down synthesis of a lamivudine-zidovudine nano co-crystal. *Crystals*. 11 (33). p.1-18.

**Witika, B.A., Makoni, P.A. and Walker, R.B.**

**Witika, B.A., Makoni, P.A., Matafwali, S.K., Chabalenge, B., Mwila, C., Kalungia, A.C., Nkanga, C.I., Bapolisi, A.M. and Walker, R.B.** (2020) Biocompatibility of Biomaterials for Nanoencapsulation: Current Approaches. *Nanomaterials*. 10 (1649). p.1-40.

**Witika, B.A., Makoni, P.A., Ntemi, P.V., Chikukwa, M.T.R., Mwila, C. and Walker, R.B.**

**Witika, B.A., Makoni, P.A., Mweetwa, L.L., Ntemi, P.V., Chikukwa, M.T.R., Matafwali, S.K., Mwila, C., Mudenda, S., Katandula, J. and Walker, R.B.** (2020) Nano-Biomimetic Drug Delivery Vehicles: Potential Approaches for COVID-19 Treatment. *Molecules*. 25 (5952). p.1-20.

## Peer Reviewed Proceedings

**Tandlich, R.**

Duxbury, T., **Tandlich, R.**, Carlos Bezerra, J. and Paphitis, S.A. Building health resilience: An engaged, systems analysis and epistemically just approach to rural health development. *4th World Conference on Qualitative Research*. Lusofona University of Porto, Porto, Portugal. October 2019.

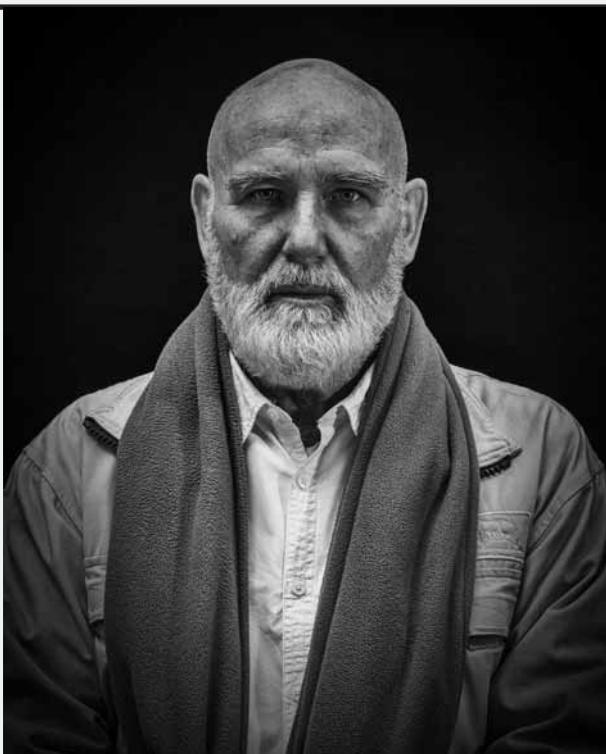
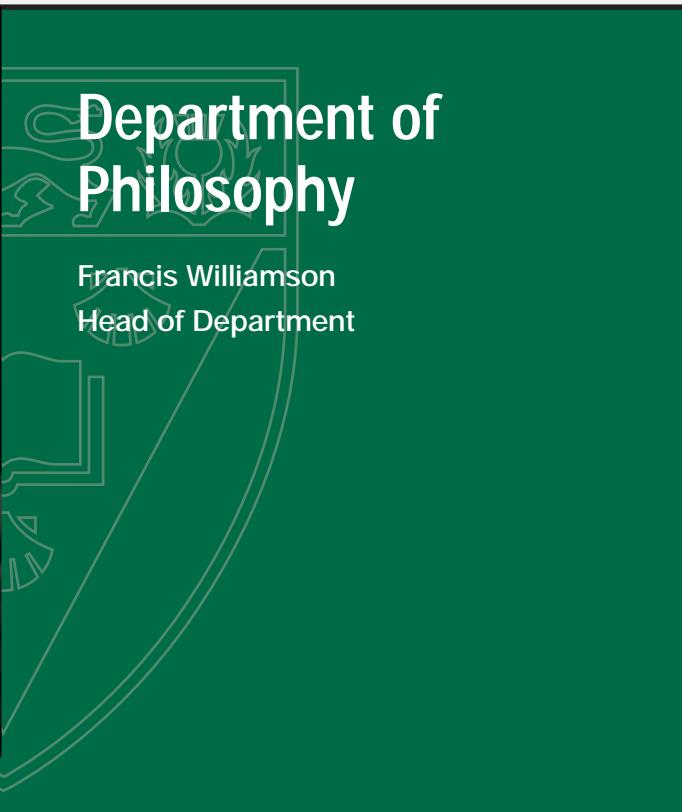


Photo: Simon Pamphilon



## Introduction

The Rhodes University Philosophy Department once again had a good year with respect to published research but, as was to be expected, slightly lower output of conference and workshop presentations and attendance. Members of the Department contributed no less than seven (7) subsidy-earning articles to accredited journals as well as a number of book chapters and other creative writing publications.

The stand-out research output was the publication in the *Southern Journal of Philosophy* of a significant journal article by Professor Ward Jones. Not only is this a leading journal, but the article itself is poised to be a significant game-changer with respect to the debate it enjoins. Professor Uchenna Okeja had a very productive year as well, bringing out an edited collection on *Religion in the Era of Postsecularism* (published by Routledge) as well as a number of other articles and scholarly contributions. The members of the Allan Grey Centre for Leadership Ethics (Professor Pedro Tabensky and Dr Lindsay Kelland) made excellent contributions to contemporary debates around issues in education and gender, and even though it is perhaps not an obvious item related to research, Mapula Maponya of the AGCLE won the Vice-Chancellor's Community Engagement Award, something which involves significant research and practical application, especially with respect to how students can impact school-level learners. Both Drs Larry Bloom and Tess Dewhurst continued to make sterling contributions in their respective fields of Ancient Philosophy (Bloom) and Epistemology (Dewhurst).

We had no visitors during the course of the year, but we were fortunate enough to have a virtual visiting scholar, Dr Graham Schuster from Georgia in the USA, present a third-year course on *Kant's Critique of Judgement*. This course attracted interest even from Postgraduate students outside the Philosophy Department.

## Distinguished Visitors / International Visits

Virtual visiting scholar Dr Graham Schuster (University of Georgia) presented a joint Undergraduate/Postgraduate course on Kant's aesthetics during Term 3 of 2020.

# PUBLICATIONS

## Books/Chapters/Monographs

**Kelland, L.**  
**Kelland, L.** (2020) Seeing the Other in South Africa as a Promise. In: Imafidon, E. (ed.). *Handbook of African Philosophy of Difference*. Switzerland: Springer Nature Switzerland. p.489-509. ISBN: 9783030049416.

**Okeja, U.**  
**Okeja, U.** (2020) Introduction. In: Okeja, U. (ed.), *Religion in the Era of Postsecularism*. London: Routledge. p.1-11. ISBN: 9780429441422.

**Okeja, U.** (ed.) (2020) *Religion in the Era of Postsecularism*. London: Routledge. ISBN: 9780429441422.

**Tabensky, P.**  
**Tabensky, P.** (2020) Blind Sisyphus: Two Perspectives on Meursault. In: Phiri, A. (ed.). *African Philosophical and Literary Possibilities - Re-reading the Canon*. Plymouth UK: Lexington Books. p.59-74. ISBN: 9781498571241.

## Creative Writing

**Kelland, L.**  
**Kelland, L.** (2020) Taking our Vulnerability to Heart. In: Lewis, R. (ed.). *Philosophy Now*. London, UK: Anja Publications Limited.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

**Okeja, U.**  
**Okeja, U.** (2020) On Kant's Duty of State Entrance. *Philosophy and Public Issues*. 9 (3). p.1-28.

## Peer Reviewed Subsidy-Earning Journal Research Publications

**Bloom, L.J.**  
**Bloom, L.J.** (2020) Reading Plato and Aristotle in contemporary South Africa. *South African Journal of Philosophy*. 39 (3). p.327-346.

**Dewhurst, T.**  
**Dewhurst, T.** (2020) The non-existent objects of belief. *South African Journal of Philosophy*. 39 (4). p.1-6.

**Jones, W.E.**  
**Jones, W.E.** (2020) Men in Women's Clothes. *Southern Journal of Philosophy*. 58 (4). p.1-36.

**Kelland, L.**  
**Macleod, C.I., Du Toit, R.R., Paphitis, S.A. and Kelland, L.** (2020) Social and structural barriers related to menstruation across diverse schools in the Eastern Cape. *South African Journal of Education*. 40 (3). p.1-9.

**Okeja, U.**  
**Okeja, U.** and Krushil, W. (2020) Introduction. *Reimagining Justice. Ethical Perspectives*. 27 (1). p.1-8.

**Okeja, U.** (2020) Collectivism and the Question of Justice. *Ethical Perspectives*. 27 (1). p.93-115.

**Pityana, B.N.**  
**Pityana, B.N.** (2020) A Theological Statement on the Coronavirus Pandemic. *Religion & Theology: A Journal of Contemporary Religious Discourse*. 27 (3-4). p.329-358.

**Tabensky, P.**  
**Tabensky, P.** (2020) Ethics and Education as Practices of Freedom. *Educational Philosophy and Theory*. 1 (1). p.1-10.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**Kelland, L.**  
**Kelland, L.** *lINtetho zoBomi* and Ethical Agency: Getting into the Details. *Philosophical Society of Southern Africa Annual Conference*. Salt Rock, Durban. South Africa. January 2020.

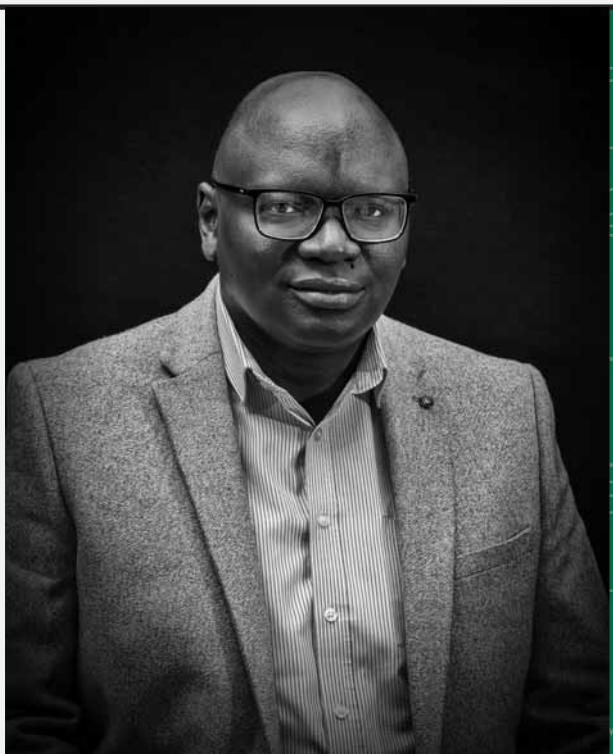


Photo: Simon Pamphilon

## Department of Physics and Electronics

**Professor Makaiako Chithambo**

**Head of Department**

**Professor Allan Joseph Medved**

**Acting Head of Department (2020)**



Photo: Simon Pamphilon

### Introduction

The Department of Physics and Electronics at Rhodes University conducts research in the following areas: Radio Astronomy and the SKA project, Experimental Solid-State Physics (with the focus being on the study of luminescence), Experimental Nuclear Physics, Physics in Education, Electronics and, finally, Theoretical Physics (quantum and gravitation and the combination thereof). One can then see quite a diverse range of active research areas in spite of the modest size of our staff. One can also see, from the attached list of outputs, that all groups remained active in spite of the issues that ensued from the global pandemic.

### Highlights

The Radio Astronomy Group, which is led by Professor Oleg Smirnov, the SKA Research Chair, and Professor Justin Jonas, the Associate Director for Science and Engineering in the SKA South Africa project, has been at the forefront of leading-edge research, especially since the advent of the SKA project in the middle of the last decade. (SKA is shorthand for the Square Kilometre Array Radio Telescope.) Although a myriad of countries from around the world are involved in the research, the telescopes themselves are located in South Africa and Australia. A central part of South Africa's contribution is the MeerKAT telescope, which is the most powerful radio telescope in the southern hemisphere

and forms 25% of the South African dish array in the initial phase of the project. The Department of Physics and Electronics at Rhodes is proud to announce that a couple of our Postdoctoral Fellows were the lead authors in the first two (2) publications to take advantage of MeerKAT's open time (meaning observational time that is open to the scientific community at large and awarded to the most competitive of research proposals). These were Dr Mpati Ramatsoku, whose article was published in *Astronomy & Astrophysics* (Volume 636, Pages 1-5, 2020), and Dr Viral Parekh, whose article was published in *Monthly Notices of the Royal Astronomical Society* (Volume 499, Pages 404-414, 2020). It is also worth mentioning that Dr Ramatsoku's article and research received attention in Scientific American: <https://www.scientificamerican.com/article/strange-extragalactic-strands-mystify-astronomers/>.

It is well worth clicking on the article just to see the astonishing radio-wave-generated image of filaments of electromagnetic radiation growing out of a distant galaxy. The filaments are, amazingly, hundreds of thousands of light-years in length and a previously unknown phenomenon.

## Postgraduates / Graduations

The Department of Physics and Electronics is proud of all of our graduates in 2020; well done!

## Distinguished Visitors / International Visits

Unfortunately, because of the global pandemic, most academic visits throughout the world were cancelled in 2020. Our Department was no different.

## Significant Research Aligned Events

Research aligned events met the same fate as academic visits in 2020. For instance, "Postgraduate day," an annual event in which the graduate students introduce themselves and give brief talks on their research, was regrettably cancelled.

# PUBLICATIONS

## Peer Reviewed Subsidy-Earning Journal Research Publications

### Abdalla, F.B.

du Buisson, L., Marchant, P., Podsiadlowski, P.H., Kobayashi, C., **Abdalla, F.B.**, Taylor, P., Mandel, I., de Mink, S.E., Moriya, T.J. and Langer, N. (2020) Cosmic rates of black hole mergers and pair-instability supernovae from chemically homogeneous binary evolution. *Monthly Notices of the Royal Astronomical Society*. 499 (2020). p.5941-5959.

Jennings, W.D., Watkinson, C.A. and **Abdalla, F.B.** (2020) Analysing the Epoch of Reionization with three-point correlation functions and machine learning techniques. *Monthly Notices of the Royal Astronomical Society*. 498 (2020). p.4518-4532.

Wuensche, C.A., Reitano, L., Peel, M.W., Browne, I.W.A., Maffei, B., Abdalla, E., Radcliffe, C., **Abdalla, F.B.**, Barosi, L., Liccardo, V. and *et al.*, (2020) Baryon acoustic oscillations from Integrated Neutral Gas Observations: Broadband corrugated horn construction and testing. *Experimental Astronomy*. 50 (1). p.125-144.

Manning, S.M., Casey, C.M., Hung, C.-L., Batty, R., Brown, M.L., Jackson, N., **Abdalla, F.B.**, Chapman, S., Demetroullas, C., Drew, P., *et al.*, (2020) SuperCLASS - II. Photometric redshifts and characteristics of spatially resolved?Jy radio sources. *Monthly Notices of the Royal Astronomical Society*. 495 (1). p.1724-1736.

Harrison, I., Brown, M.L., Tunbridge, B., Thomas, D., Hillier, T., Thomson, A.P., Whittaker, L., **Abdalla, F.B.**, Batty, R., Bonaldi, A. and *et al.*, (2020) SuperCLASS - III. Weak lensing from radio and optical observations in Data Release 1. *Monthly Notices of the Royal Astronomical Society*. 495 (1). p.1737-1759.

Bacon, D.J., Batty, R., Bull, P. and **Abdalla, F.B.** (2020) Cosmology with Phase 1 of the Square Kilometre Array Red Book 2018: Technical specifications and performance forecasts. *Publications of the Astronomical Society of Australia*. 37 (007). p.1-31.

Batty, R., Brown, M.L., Casey, C.M., Harrison, I., Jackson, N.J., Smail, I., Watson, R.G.A., Hales, C.A., **Abdalla, F.B.** and *et al.*, (2020) SuperCLASS - I. The super cluster assisted shear survey: Project overview and data release 1. *Monthly Notices of the Royal Astronomical Society: Letters*. 495 (1706). p.1706-1723.

Asad, K.M.B., Heywood, I., Hugo, B., Jozsa, G.I.G., Jonas, J.L., Kenyon, J.S., Ngcебетsha, B., Ramaila, A., Sirothia, S., Smirnov, O.M. and Tasse, C.

Asad, K.M.B., Heywood, I., Hugo, B., Jozsa, G.I.G., Jonas, J.L., Kenyon, J.S., Ngcебетsha, B., Ramaila, A., Sirothia, S., Smirnov, O.M. and Tasse, C. (2020) The 1.28 GHz MeerKAT DEEP2 Image. *Astrophysical Journal*. 888 (2). p.1-16.

### Bernardi, G.

**Bernardi, G.** (2020) The Lowest-frequency Fast Radio Bursts: Sardinia Radio Telescope Detection of the Periodic FRB 180916 at 328 MHz. *Astrophysical Journal Letters*. 896 (2). p.1.

**Bernardi, G.**, Kern, N.S., Parsons, A.R., Dillon, J.S., Lanman, A.E., Liu, A., Bull, P., Ewall-Wice, A., Abdurashidova, Z., Aguirre, J.E. and *et al.*, (2020) Mitigating Internal Instrument Coupling for 21cm Cosmology. II. A Method Demonstration with the Hydrogen Epoch of Reionization Array. *Astrophysical Journal*. 888 (70). p.1-16.

**Bernardi, G.**, Kern, N.S., Dillon, J.S., Parsons, A.R., Carilli, C.L., Abdurashidova, Z., Aguirre, J.E., Alexander, P., Ali, Z.S., Balfour, Y. and *et al.*, (2020) Absolute calibration strategies for the hydrogen epoch of reionization array and their impact on the 21cm power spectrum. *Astrophysics*. 1 (1). p.1-32.

**Bernardi, G.**, Fagnoni, N., Acedo, E.D., deBoer, D.R., Abdurashidova, Z., Aguirre, J.E., Alexander, P., Ali, Z.S., Balfour, Y., Billings, T.S. and *et al.*, (2020) Understanding the HERA Phase I receiver system with simulations and its impact on the detectability of the EoR delay power spectrum. *Monthly Notices of the Royal Astronomical Society*. 500 (1). p.1232-1242.

Locatelli, N.T., **Bernardi, G.**, Bianchi, G., Chiello, R., Magro, A., Naldi, G., Pilia, M., Pupillo, G., Ridolfi, A., Setti, G. and *et al.*, (2020) The Northern Cross fast radio burst project ? I. Overview and pilot observations at 408 MHz. *Monthly Notices of the Royal Astronomical Society*. 494 (1). p.1229-1236.

Wang, J., Santos, M.G., Bull, P., Grainge, K., Cunningham, S., Fonseca, J., Irfan, M.O., Li, Y., Poutsidou, A., Soares, P.S., Spinelli, M., **Bernardi, G.** and Engelbrecht, B. (2020) Hi intensity mapping with MeerKAT: Calibration pipeline for multi-dish autocorrelation observations. *Monthly Notices of the Royal Astronomical Society*. (1). p.1-23.

Spinelli, M., **Bernardi, G.**, Garsden, H., Greenhill, L.J., Fialkov, A., Dowell, J. and Price, D.C. (2020) Spectral index of the Galactic foreground emission in the 50 - 87 MHz range. *Monthly Notices of the Royal Astronomical Society*. (1). p.1-23.

Dillon, J.S., Lee, M., Ali, Z.S., Parsons, A.R., Orosz, N., **Bernardi, G.**, Billings, T.S., Nunhokee, C.D., Beardsley, A.P., Kern, N.S. and *et al.*, a.l. (2020) Redundant-baseline calibration of the hydrogen epoch of reionization array. *Monthly Notices of the Royal Astronomical Society*. 499 (1). p.5840-5861.

**Bernardi, G.**, Nunhokee, C.D., Parsons, A.R., Kern, N.S., Nikolic, B., Pober, J.C., Carilli, C.L., Abdurashidova, Z., Aguirre, J.E., Alexander, P. and *et al.*, (2020) Measuring HERA's primary beam in-situ: methodology and first results. *Monthly Notices of the Royal Astronomical Society*. 1 (1). p.1-22.

Tavani, M., Verrecchia, F., Casentini, C., Perri, M., Ursi, A., Pacciani, L., Pittori, C., Bulgarelli, A., Piano, G., Pilia, M. and **Bernardi, G.** (2020) Gamma-ray and X-ray observations of the periodic-repeater FRB 180916 during active phases. *The Astrophysical Journal Letters*. 893(2). p.L42.

Carilli, C.L., Thyagarajan, N., Kent, J., Nikolic, B., Gale-Sides, K., Kern, N.S., **Bernardi, G.**, Mesinger, A., Matika, S., Abdurashidova, Z. and Aguirre, J.E. (2020) Imaging and Modeling Data from the Hydrogen Epoch of Reionization Array. *The Astrophysical Journal Supplement Series*. 247 (2). p.67.

**Bernardi, G.** and **Matika, S.**

Thyagarajan, N., Carilli, C.L., Nikolic, B., Kent, J., Mesinger, A., Kern, N.S., **Bernardi, G.**, **Matika, S.**, Abdurashidova, Z., Aguirre, J.E. and *et al.*, (2020) Detection of cosmic structures using the bispectrum phase. II. First results from application to cosmic reionization using the Hydrogen Epoch of Reionization Array. *Physical Review D*. 102 (2). p.1-19.

**Bray, A.F.** and **Williams, J.A.**

Bray, A.F. and Williams, J.A. (2020) Why is physics hard? Unpacking students' perceptions of physics. *Journal of Physics: Conference Series*. 1512 (2020). p.1-9.

**Chithambo, M.L.**

Kalita, J.M. and **Chithambo, M.L.** (2020) Structural, compositional and thermoluminescence properties of microcline (KAISiO8). *Journal of Luminescence*. 224 (2020). p.1-8.

Ogundare, F.O., **Chithambo, M.L.** and Akintunde, B.O. (2020) Optically stimulated luminescence of cowrie shells. *Applied Radiation and Isotopes*. 2020 (2020). p.1-6.

Kalita, J.M. and **Chithambo, M.L.** (2020) Blue- and infrared-light stimulated luminescence of microcline and the effect of optical bleaching on its thermoluminescence. *Journal of Luminescence*. 2020 (2020). p.1-9.

**Chithambo, M.L.** (2020) Thermal assistance in the optically stimulated luminescence of superluminous Sr4Al14O25:Eu<sup>2+</sup>, Dy<sup>3+</sup>. *Physica B: Condensed Matter*. 603 (1). p.1-9.

**Chithambo, M.L.** and **Dawam, R.R.**

**Chithambo, M.L.** and **Dawam, R.R.** (2020) Phototransferred thermoluminescence of annealed synthetic quartz: Analysis of illumination-time profiles, kinetics and competition effects. *Radiation Measurements*. 131 (2020). p.1-11.

**Chithambo, M.L.** and **Folley, D.E.**

**Chithambo, M.L.** and **Folley, D.E.** (2020) Dosimetric features, kinetics and mechanisms of thermoluminescence of tanzanite. *Physica B: Condensed Matter*. 598 (2020). p.1-8.

**Chithambo, M.L.** and **Kalita, J.M.**

**Chithambo, M.L.**, Kalita, J.M. and Finch, A.A. (2020) F- and F++ band radioluminescence and the influence of annealing on its emission spectra in Al2O3:C, Mg. *Radiation Measurements*. 134 (2020). p.1-4.

**Folley, D.E.** and **Chithambo, M.L.**

Alatishe, M.A., Ogundare, F.O., **Folley, D.E.**, **Chithambo, M.L.** and Chikwembani, S. (2020) Optically stimulated luminescence and spectral emission features of radioluminescence and thermoluminescence of natural kunzite. *Radiation Measurements*. 138 (2020). p.1-7.

Ike, F.O., **Folley, D.E.**, Umeh, C.D., Agwu, K., **Chithambo, M.L.**, Chikwembani, S. and Ezema, F.I. (2020) The effect of copper on the structural and thermoluminescence properties of aluminium borate. *Journal of Luminescence*. 226 (2020). p.1-6.

Ogundare, F.O., **Folley, D.E.**, **Chithambo, M.L.** and Arise, T.O. (2020) Thermoluminescence properties of potassium fluoride. *Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms*. 482 (2020). p.53-57.

**Giday, N.M.** and **Katamzi-Joseph, Z.T.**

**Giday, N.M.**, **Katamzi-Joseph, Z.T.** and Stoneback, R. (2020) Effect of moderate geomagnetic storms on equatorial plasma bubbles over eastern Africa in the year 2012: Evolution and electrodynamics. *Advances in Space Research*. 65 (2020). p.1701-1713.

**Grobler, T.L.**, **Smirnov, O.M.**, **Matika, S.**, **Nunhokee, C.D.** and **Bernardi, G.**

Ghosh, A., Mertens, F., Santos, M.G., Kern, N.S., Carilli, C.L., **Grobler, T.L.**, Koopmans, L.V.E., Jacobs, D.C., Liu, A., Parsons, A.R., Morales, M.F., Aguirre, J.E., Dillon, J.S., Hazelton, B.J., **Smirnov, O.M.**, Gehlot, B.K., **Matika, S.**, Alexander, P., Ali, Z.S., Beardsley, A.P., Benefo, R.K., Billings, T.S., Bowman, J.D., Bradley, R.F., Cheng, C., Chichura, P.M., deBoer, D.R., de Lera Acedo, E., Kariseb, M., Kohn, S.A., Kolopanis, M., Lekalake, T., Loots, A., MacMahon, D., Malan, L., Malgas, C., Maree, M., Martinot, J.Z.E., Mathison, N., Matsetela, E., Mesinger, A., Neben, A.R., Nikolic, B., **Nunhokee, C.D.**, Patra, N., Pieterse, S., Razavi-Ghods, N., Ringue, J. and **Bernardi, G.** (2020) Foreground modelling via Gaussian process regression: an application to HERA data. *Monthly Notices of the Royal Astronomical Society*. 495 (3). p.2813-2826.

**Habarulema, J.B.**

Dugassa, T., **Habarulema, J.B.** and Nigussie, M. (2020) Equatorial and low-latitude ionospheric TEC response to CIR-driven geomagnetic storms at different longitude sectors. *Advances in Space Research*. 66 (2020). p.1947-1966.

Fagundes, P.R., Pezzopane, M., **Habarulema, J.B.**, Venkatesh, B., Dias, M.A.L., Tardelli, A., de Abreu, A.J., Pillat, V.G., Pignalberi, A., Bolzan, M.J.A. and *et al.*, (2020) Ionospheric disturbances in a large area of the terrestrial globe by two strong solar flares of September 6, 2017, the strongest space weather events in the last decade. *Advances in Space Research*. 66 (2020). p.1775-1791.

Okoh, D., **Habarulema, J.B.**, Rabiu, B., Seemala, G., Wisdom, J.B., Olwendo, J., Obrou, O.K. and Matamba, T. (2020) Storm-Time Modeling of the African Regional Ionospheric Total Electron Content Using Artificial Neural Networks. *Space Weather*. 10 (1029). p.1-16.

Dugassa, T., **Habarulema, J.B.** and Nigussie, M. (2020) Statistical study of geomagnetic storm effects on the occurrence of ionospheric irregularities over equatorial/low-latitude region of Africa from 2001 to 2017. *Journal of Atmospheric and Solar-Terrestrial Physics*. 199 (2020). p.1-18.

Habyarimana, V., **Habarulema, J.B.**, Mungufeni, P. and Uwamahoro, J. (2020) An effort to study the influence of tides on the longitudinal variation of vertical ExB drift over the African sector. *Journal of Atmospheric and Solar-Terrestrial Physics*. 206 (2020). p.1-12.

Habyarimana, V., **Habarulema, J.B.** and Mungufeni, P. (2020) On the possible contribution of ionospheric vertical drifts to TEC modelling in low latitudes. *Advances in Space Research*. 65 (2020). p.2391-2402.

Pignalberi, A., Pietrella, M., Pezzopane, M. and **Habarulema, J.B.** (2020) Investigating different vTEC calibration methods for data assimilation in ionospheric empirical models. *Advances in Space Research*. p.1-14.

Galkin, I.A., Reinisch, B.W., Vesnin, A.M., Bilitza, D., Fridman, S., **Habarulema, J.B.** and Veliz, O. (2020) Assimilation of Sparse

Continuous Near-Earth Weather Measurements by NECTAR Model Morphing. *Space Weather*. 18 (1). p.1-16.

**Heywood, I. and Hugo, B.**

**Heywood, I. and Hugo, B.**, **Katamzi-Joseph, Z.T.**, **Habarulema, J.B.**, **Katamzi-Joseph, Z.T.**, Buresova, D., Nndanganeni, R., Matamba, T., Tshisaphungo, M., Buchert, S., Kosch, M., Lotz, S., Cilliers, P. and Mahrous, A. (2020) Ionospheric response at Conjugate Locations During the 7-8 September 2017 Geomagnetic Storm Over the Europe-African Longitude Sector. *Journal of Geophysical Research-Space Physics*. 125 (1). p.1-17.

**Heywood, I.**

Yusef-Zadeh, F., Royster, M., Wardle, M., Cotton, W., Kunneriath, D., **Heywood, I.** and Michail, J. (2020) Evidence for a jet and outflow from Sgr A?: a continuum and spectral line study. *Monthly Notices of the Royal Astronomical Society*. 499 (2020). p.3909-3931.

Pasini, T., Brüggen, M., de Gasperin, F., Birzan, L., O'Sullivan, E., Finoguenov, A., Jarvis, M., Gitti, M., Brightenti, F., Whittam, I.H., Collier, J.D., **Heywood, I.** and Gozaliasl, G. (2020) The relation between the diffuse X-ray luminosity and the radio power of the central AGN in galaxy groups. *Monthly Notices of the Royal Astronomical Society*. 497 (2020). p.2163-2174.

Bright, J.S., Fender, R.P., Motta, S.e., Williams, D.R.A., Moldon, J., Plotkin, R.M., Miller-Jones, J.C.A., **Heywood, I.**, Tremou, E., Beswick, R. and *et al.*, (2020) An extremely powerful long-lived superluminal ejection from the black hole MAXI J1820+070. *Nature Astronomy*. p.1-10.

Hewitt, D.M., Pretorius, L., Woudt, P., Tremou, E., Miller-Jones, J.C.A., Knigge, C., Castro Segura, N., Williams, D.R.A., Fender, R.P., Armstrong, R., Groot, P., **Heywood, I.** and *et al.* (2020) A MeerKAT survey of nearby nova-like cataclysmic variables. *Monthly Notices of the Royal Astronomical Society*. 496 (2020). p.2542-2557.

Tremou, E., Corbel, S., Fender, R.P., Woudt, P., Miller-Jones, J.C.A., Motta, S.e., **Heywood, I.**, Armstrong, R.P., Groot, P., Horesh, A. and *et al.*, (2020) Radio and X-ray detections of GX 339-4 in quiescence using MeerKAT and Swift. *Monthly Notices of the Royal Astronomical Society*. 493 (2020). p.123-137.

Pan, H., Jarvis, M.J., Allison, J.R., **Heywood, I.**, Santos, M.G., Maddox, N., Frank, B.S. and Kang, X. (2020) Measuring the HI mass function below the detection threshold. *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*. 491 (2020). p.1227-1242.

McConnell, D., Hale, C.L., Banfield, J.K., Heald, G., Hotan, A.W., Leung, J.K., Moss, V.A., Murphy, T., O'Brien, M., **Heywood, I.** and *et al.*, (2020) The Rapid ASKAP Continuum Survey I: Design and first results. *Publications of the Astronomical Society of Australia*. 37 (048). p.1-18.

Yusef-Zadeh, F., Wardle, M., Heinke, C., **Heywood, I.**, Arendt, R., Royster, M., Cotton, W., Camilo, F. and Michail, J. (2020) G0.173?0.42: an X-ray and radio magnetized filament near the galactic centre. *Monthly Notices of the Royal Astronomical Society*. 500 (2020). p.3142-3150.

Williams, D.R.A., Motta, S.e., Fender, R., Bright, J.S., **Heywood, I.**, Tremou, E., Woudt, P., Buckley, D.A.H., Corbel, S., Coriat, M., Joseph, T., Rhodes, K.L., Sivakoff, G.R. and van der Horst, A.J. (2020) The 2018 outburst of BHXB H1743?322 as seen with MeerKAT. *Monthly Notices of the Royal Astronomical Society*. 491 (2020). p.1-5.

Driessen, L.N., McDonald, I., Buckley, D.A.H., Caleb, M., Kotze, E.J., Potter, S.B., Rajwade, K.M., Rowlinson, A., Stappers, B.W., Tremou, E. and **Heywood, I.** (2020) MKT J170456.2?482100: The first transient discovered by MeerKAT. *Monthly Notices of the Royal Astronomical Society*. 391 (1). p.560-575.

**Heywood, I. and Hugo, B.**

**Heywood, I.**, Lenc, E., Serra, P., **Hugo, B.**, Bannister, K.W., Bell, M.E., Chippendale, A., Harvey-Smith, L., Marvil, J., McConnell, D. and Voronkov, M.A. (2020) Field sources near the southern-sky calibrator PKS B1934-638: effect on spectral line observations with SKA-MID and its precursors. *Monthly Notices of the Royal Astronomical Society*. 494 (2020). p.5018-5028.

**Heywood, I. and Rammala, I.**

Anderson, L.D., Sormani, M.C., Ginsburg, A., Glover, S.C.O., **Heywood, I.**, Schuller, F., Csengeri, T., Urquhart, J., S., Bronfman, L. and **Rammala, I.** (2020) Unusual Galactic H ii Regions at the Intersection of the Central Molecular Zone and the Far Dust Lane. *Astrophysical Journal*. 901 (1). p.1-10.

**Heywood, I., Makhathini, S., Sebokolodi, M.L.L. and Smirnov, O.M.**

**Heywood, I., Hale, C.L., Jarvis, M.J., Makhathini, S., Peters, J.A., Sebokolodi, M.L.L. and Smirnov, O.M.** (2020) VLA imaging of the XMM-LSS/VIDEO deep field at 12 GHz. *Monthly Notices of the Royal Astronomical Society*. 501 (3). p.3469-3481.

**Heywood, I., White, S.V., Smirnov, O.M. and Tasse, C.**

**Heywood, I., White, S.V., Smirnov, O.M., Tasse, C., Delhaize, J., Prescott, M., Jarvis, M.J., Delvecchio, I., Whittam, I.H., Hardcastle, M.J., Hale, C.L., Afonso, J., Ao, Y., Brienza, M., Brüggen, M., Collier, J.D., Daddi, E., Glowacki, M., Maddox, N., Morabito, L.K., Prandoni, I., Randriamanakoto, Z., Sekhar, S., Adams, N.J., Blyth, S., Bowler, R.A.A., Leeuw, L., Marchetti, L., Randriamampandry, S.M., Seymour, N., Taylor, A.R., Vaccari, M., Thorat, K. and *et al.*, (2020) MIGHTEE: Are giant radio galaxies more common than we thought? *Monthly Notices of the Royal Astronomical Society*. 501 (1). p.1-15.**

**Hugo, B.**

Bailes, M., Jameson, A., Abbate, F., Barr, E.D., Bhat, N.D.R., Bondonneau, L., Burgay, M., Buchner, S. and **Hugo, B.** (2020) The MeerKAT telescope as a pulsar facility: System verification and early science results from MeerTime. *Publications of the Astronomical Society of Australia*. 37 (1). p.1-16.

**Ianjamasimanana, R.**

Das, M., McGaugh, S.S., **Ianjamasimanana, R.**, Schombert, J. and Dwarakanath, K.S. (2020) Tracing the Dynamical Mass in Galaxy Disks Using H i Velocity Dispersion and Its Implications for the Dark Matter Distribution in Galaxies. *Astrophysical Journal*. 889 (1). p.1-11.

**Ianjamasimanana, R., Namumba, B., Jozsa, G.I.G., Myburgh, T., Thorat, K., Maina, E.K., Andati, L.A.L., Hugo, B., Smirnov, O.M., Makhathini, S., Ramatsoku, M. and White, S.V.**

**Ianjamasimanana, R., Namumba, B., Jozsa, G.I.G., Myburgh, T., Thorat, K., Maina, E.K., Andati, L.A.L., Hugo, B., Smirnov, O.M., Makhathini, S., Ramatsoku, M., White, S.V., Ramaila, A.J.T., Saburova, A.S., Carignan, C., de Blok, W.J.G., Kleiner, D., Kamphuis, P., Serra, P., Maccagni, F.M., Molnar, D.C.S. and Perkins, S. (2020) MeerKAT-16 HI observation of the dIrr galaxy WLM. *Monthly Notices of the Royal Astronomical Society*. 497 (1). p.4795-4813.**

**Jozsa, G.I.G.**

de Blok, W.J.G., Athanassoula, E., Bosma, A., Combes, F., English, J., Heald, G.H., Kamphuis, P., Koribalski, B.S., Meurer, G.R., **Jozsa, G.I.G.** and *et al.*, (2020) MeerKAT HI commissioning observations of MHONGOOSE galaxy ESO 302-G014. *Astronomy & Astrophysics*. 643 (1). p.1-16.

Koribalski, B.S., Staveley-Smith, L., Westmeier, T., Serra, P., Spekkens, K., Wong, O.I., Lee-Waddell, K., Lagos, C.D., Obreschkow, D., **Jozsa, G.I.G.** and *et al.*, (2020) WALLABY - an SKA Pathfinder H I survey. *Astrophysics and Space Science*. 365 (118). p.1-35.

**Jozsa, G.I.G., Makhathini, S., Ramaila, A., Ramatsoku, M., Thorat, K. and Smirnov, O.M.**

Maccagni, F.M., Murgia, M., Serra, P., Govoni, F., Morokuma-Matsui, K., Kleiner, D., Buchner, S., **Jozsa, G.I.G.**, Kamphuis, P., Makhathini, S., Molnar, D.C.S., Prokhorov, D.A., Ramaila, A., Ramatsoku, M., Thorat, K. and Smirnov, O.M. (2020) The flickering nuclear activity of Fornax A\*. *Astronomy & Astrophysics*. 634 (A9). p.1-26.

**Jozsa, G.I.G., Thorat, K., Sebokolodi, M.L.L., Maina, E.K., Andati, L.A.L., Hugo, B., Makhathini, S., Ramatsoku, M. and Smirnov, O.M.**

**Jozsa, G.I.G., Thorat, K., Kamphuis, P., Sebokolodi, M.L.L., Maina, E.K., Wang, J., Pieterse, D.L.A., Groot, P., Serra, P., Andati, L.A.L., de Blok, W.J.G., Hugo, B., Kleiner, D., Maccagni, F.M., Makhathini, S., Molnar, D.C.S., Ramatsoku, M., Smirnov, O.M., Bloemen, S., Vreeswijk, P., McBride, V., Klein-Wolt, M., Woudt, P., Kording, E., Le Poole, R., Goedhart, S., Passmoor, S., Seryak, M., Dettmar, R., Paterson, C. and Ramaila, A.J.T. (2020) Anomalous gas in ESO 149-G003: A MeerKAT-16 View. *Monthly Notices of the Royal Astronomical Society*. 501 (2). p.2704-2723.**

**Jozsa, G.I.G., White, S.V., Bester, L., Smirnov, O.M. and Kupa, R.S.**

Cotton, W.D., Thorat, K., Condon, J.J., Jozsa, G.I.G., White, S.V., Atemkeng Teufack, M., Bester, L., Smirnov, O.M., Kupa, R.S., Oozeer, N. and *et al.*, (2020) Hydrodynamical backflow in X-shaped radio galaxy PKS 2014&#8722;55. *Monthly Notices of the Royal Astronomical Society*. 496 (3). p.3469-3481.

#### Karastergiou, A.

Johnston, S., Smith, D., Karastergiou, A. and Kramer, M. (2020) The Galactic population and properties of young, highly energetic pulsars. *Monthly Notices of the Royal Astronomical Society*. 497 (1). p.1957-1965.

Agarwal, S., Lorimer, D.R., Surnis, M., Pei, X., Karastergiou, A., Golpayegani, G., Werthimer, D., Cobb, J., McLaughlin, M.A., White, S. and *et al.*, (2020) Initial results from a realtime FRB search with the GBT. *Monthly Notices of the Royal Astronomical Society*. 497 (1). p.352-360.

Rajwade, K., Mickaliger, M.B., Stappers, B.W., Bassa, C.G., Breton, R.P., Karastergiou, A. and Keane, E.F. (2020) Limits on absorption from a 332-MHz survey for fast radio bursts. *Monthly Notices of the Royal Astronomical Society*. 493 (1). p.4418-4427.

Oswald, L., Karastergiou, A. and Johnston, S. (2020) Pulsar polarimetry with the Parkes ultra-wideband receiver. *Monthly Notices of the Royal Astronomical Society*. 496 (2020). p.1418-1429.

#### Karastergiou, A. and Hugo, B.

Johnston, S., Karastergiou, A., Hugo, B., Keith, M., Song, X., Weltevrede, P., Abbate, F., Buchner, S., Camilo, F., Geyer, M. and *et al.*, (2020) The Thousand-Pulsar-Array programme on MeerKAT ? I. Science objectives and first results. *Monthly Notices of the Royal Astronomical Society*. 493 (1). p.3608-3615.

#### Kemball, A.

Huang, K.Y., Kemball, A., Vlemmings, W.H.T., Lai, S.-P., Yang, L. and Aguado, I. (2020) Mapping Circumstellar Magnetic Fields of Late-type Evolved Stars with the Goldreich?Kylafis Effect: CARMA Observations at  $\lambda$ 1.3 mm of R Crt and R Leo. *Astrophysical Journal*. 899 (2). p.1-10.

Taaki, J.S., Kamalabadi, F. and Kemball, A. (2020) Bayesian Methods for Joint Exoplanet Transit Detection and Systematic Noise Characterization. *Astronomical Journal*. 159 (6). p.1-10.

Wen, D., Kemball, A. and Saslaw, W. (2020) Halo Counts-in-cells for Cosmological Models with Different Dark Energy. *Astrophysical Journal*. 890 (2). p.1-19.

#### Lokesha, H.S. and Chithambo, M.L.

Lokesha, H.S. and Chithambo, M.L. (2020) A combined study of the thermoluminescence and electron paramagnetic resonance of point defects in  $ZrO_2:Er^{3+}$ . *Radiation Physics and Chemistry*. 172 (2020). p.1-7.

Lokesha, H.S., Nagabhushana, K.R., Chithambo, M.L. and Singh, F. (2020) Down and up-conversion photoluminescence of  $ZrO_2:Er^{3+}$  phosphor irradiated with 120 MeV gold ions. *Materials Research Express*. 7 (2020). p.1-8.

#### Lontsi Sob, A.J. and Chithambo, M.L.

Lontsi Sob, A.J., Chithambo, M.L. and Kalita, J.M. (2020) Analysis of illumination-time-dependent profiles of phototransferred thermoluminescence of  $Al_2O_3:C, Mg$ . *Journal of Luminescence*. 2020 (2020). p.1-9.

#### Matamba, T.M. and Habarulema, J.B.

Matamba, T.M. and Habarulema, J.B. (2020) The ionospheric response to high-intensity long duration continuous AE activity (HILCAA) event (13-15 April 2005) over mid-latitude African region. *Advances in Space Research*. 67 (2021). p.777-787.

#### Medved, A.J.M.

Medved, A.J.M. and Brustein, R. (2020) Correspondence between strings in the Hagedorn phase and asymptotically de Sitter space. *Physical Review D*. 102 (8). p.8600201-8600216.

Medved, A.J.M. and Brustein, R. (2020) Maximal-entropy initial state of the Universe as a microscopic description of inflation. *Physical Review D*. 101 (12). p.12350201-12350214.

#### Natarajan, I., Deane, R. and Smirnov, O.M.

Natarajan, I., Deane, R., van Bemmel, I., Van Langevelde, H., Small, D.P., Kettenis, M., Paragi, Z., Smirnov, O.M. and Szomoru, A. (2020) A probabilistic approach to phase calibration I. Effects of source structure on fringe-fitting. *Monthly Notices of the Royal Astronomical Society*. 496 (1). p.801-813.

Parekh, V.J., Makhathini, S., White, S.V., Smirnov, O.M., Andati, L.A.L., Jozsa, G.I.G. and Ramatsoku, M.

Parekh, V.J., Makhathini, S., White, S.V., Smirnov, O.M., Andati, L.A.L., Jozsa, G.I.G., Ramatsoku, M., Oozeer, N., Kleiner, D., Van der Heyden, K., *et al.*, Perkins, S.J., Ramaila, A.J.T. and Thorat, K. (2020) MeerKAT's discovery of a radio relic in the bimodal merging cluster A2384. *Monthly Notices of the Royal Astronomical Society*. 499 (1). p.404-414.

#### Perley, R. and Sebokolodi, M.L.L.

Snios, B., Johnson, A.C., Nulsen, P.E.J., Kraft, R.P., de Vries, M., Perley, R., Sebokolodi, M.L.L. and Wise, M.W. (2020) The X-Ray Cavity Around Hotspot E in Cygnus A: Tunneled by a Deflected Jet. *Astrophysical Journal*. 891 (2). p.1-10.

Ramatsoku, M., Andati, L.A.L., Jozsa, G.I.G., Makhathini, S., Ramaila, A. and Smirnov, O.M.

Ramatsoku, M., Serra, P., Poggianti, B.M., Moretti, A., Gullieuszik, M., Bettoni, D., Deb, T., Franchetto, A., van Gorkom, J.H., Jaffé, Y., Tonnesen, S., Verheijen, M.A.W., Vulcani, B., Andati, L.A.L., de Blok, W.J.G., Jozsa, G.I.G., Kamphuis, P., Kleiner, D., Maccagni, F.M., Makhathini, S., Molnar, D.C.S., Ramaila, A., Smirnov, O.M. and Thorat, K. (2020) GASP-XXVI. HI gas in jellyfish galaxies: The case of JO201 and JO206. *Annual Review of Astronomy and Astrophysics*. 640 (1). p.1-9.

Ramatsoku, M., Andati, L.A.L., Makhathini, S., Jozsa, G.I.G. and Smirnov, O.M.

Ramatsoku, M., Serra, P., Poggianti, B.M., Moretti, A., Gullieuszik, M., Andati, L.A.L., Makhathini, S., Jozsa, G.I.G., Smirnov, O.M., Ramaila, A.J.T. and *et al.*, (2020) XXVI. HI gas in jellyfish galaxies: The case of JO201 and JO206. *Astronomy & Astrophysics*. 640 (1). p.1-9.

Ramatsoku, M., Makhathini, S., Smirnov, O.M., Andati, L.A.L., Jozsa, G.I.G. and White, S.V.

Ramatsoku, M., Makhathini, S., Smirnov, O.M., Andati, L.A.L., Jozsa, G.I.G., White, S.V. and *et al.*, (2020) Collimated synchrotron threads linking the radio lobes of ESO137-006. *Astronomy & Astrophysics*. 636 (2020). p.1-5.

#### Roux, D.G.

Majola, S.N.T., Sithole, M.A., Mdletshe, L., Hartley, D., Timár, J., Nyakó, B.M., Allmond, J.M., Bark, R.A., Beausang, C. and Roux, D.G. (2020) First candidates for  $\gamma$ vibrational bands built on the [505]11/2- neutron orbital in odd- A Dy isotopes. *Physical Review C*. 101 (4). p.1-12.

#### Sebokolodi, M.L.L., Perley, R. and Smirnov, O.M.

Sebokolodi, M.L.L., Perley, R., Jean, L., Carilli, C., Smirnov, O.M., Laing, R., Greisen, E.W. and Wise, M. (2020) A Wideband Polarization Study of Cygnus A with the Jansky Very Large Array. I. The Observations and Data. *Astrophysical Journal*. 903 (1). p.1.

#### Smirnov, O.M.

de Gasperin, F., Vink, J., McKean, J.P., Asgekar, A., Avruch, I.M., Bentum, M.J., Blaauw, R., Bonafede, A., Broderick, J.W., Brüggen, M., Breitling, F., Brouw, W.N., Butcher, H.R., Ciardi, B., Cuciti, V., de Vos, M., Duscha, S., Eislöffel, J., Engels, D., Fallows, R.A., Franzen, T.M.O., Garrett, M.A., Gunst, A.W., Horandell, J., Heald, G., Hoeft, M., Iacobelli, M., Koopmans, L.V.E., Krankowski, A., Maat, P., Mann, G., Mevius, M., Miley, G., Morganti, R., Nelles, A., Norden, M.J., Offringa, A.R., Orru, E., Paas, H., Pandey, V.N., Pandey-Pommier, M., Pekal, R., Pizzo, R., Reich, W., Rowlinson, A., Rottgering, H.J.A., Schwarz, D.J., Shulevski, A., Smirnov, O.M. and Sobey, C. (2020) Cassiopeia A, Cygnus A, Taurus A, and Virgo A at ultra-low radio frequencies. *Astronomy and Astrophysics Review*. 635 (1). p.1-7.

Fallows, R.A., Forte, B., Astin, I., Allbrook, T., Arnold, A., Wood, A., Dorrian, G., Mevius, M., Rothkaehl, H., Smirnov, O.M. and *et al.*, (2020) A LOFAR observation of ionospheric scintillation from two simultaneous travelling ionospheric disturbances. *Journal of Space Weather and Space Climate*. 10 (2020). p.1-16.

#### Smirnov, O.M. and Tasse, C.

Smirnov, O.M., Broderick, J.W., Shimwell, T.W., Gourdji, K., Rowlinson, A., Nissanke, S., Hotokezaka, K., Tasse, C., Jonker, P.G., Hardcastle, M.J., Oonk, J.B.R., Fender, R.P., Wijers, R.A.M.J., Shulevski, A., Stewart, A.J., ter Veen, S., Moss, V.A., van der Wiel, M.H.D., Nichols, D.A., Piette, A., Bell, M.E., Carbone, D., Corbel, S., Eislöffel, J., Grießmeier, J., Keane, E.F., Law, C.J., Muñoz-Darias, T., Pietka, M., Serylak, M., van der Horst, A.J., van Leeuwen, J.,

Wijnands, R., Zarka, P., Anderson, J., Bentum, M.J., Blaauw, R., Brouw, W.N., Brüggen, M., Ciardi, B., de Vos, M., Duscha, S., Fallows, R.A., Franzen, T.M.O., Garrett, M.A., Gunst, A.W., Hoeft, M., Horandel, J.R., Iacobelli, M., Jütte, E., Koopmans, L.V.E., Krankowski, A., Maat, P., Mann, G., Mulder, H., Nelles, A., Paas, H., Pandey-Pommier, M., Pekal, R., Reich, W., Röttgering, H.J.A., Schwarz, D.J., Soida, M., Toribio, M.C., van Haarlem, M., van Weeren, R.J., Vocks, C., Wucknitz, O., Zucca, P. and *et al.* (2020) LOFAR 144-MHz follow-up observations of GW170817. *Monthly Notices of the Royal Astronomical Society*. 494 (4). p.5110-5117.

**Smirnov, O.M., Tasse, C. and Makhathini, S.**

Atemkeng Teufack, M., Smirnov, O.M., Tasse, C., Foster, G. and Makhathini, S. (2020) Fast algorithms to approximate the position-dependent point spread function responses in radio interferometric wide-field imaging. *Monthly Notices of the Royal Astronomical Society*. 499 (2020). p.292-303.

**Tasse, C.**

Osinga, E., Miley, G.K., van Weeren, R.J., Shimwell, T.W., Duncan, K., Hardcastle, M.J., Mechev, A.P., Röttgering, H.J.A., Tasse, C. and Williams, W.L. (2020) Alignment in the orientation of LOFAR radio sources. *Astronomy & Astrophysics*. 642 (2020). p.1-10.

O'Sullivan, S.P., Brüggen, M., Vazza, F., Carretti, E., Locatelli, N.T., Stuardi, C., Vacca, V., Vernstrom, T., Heald, G., Horellou, C., Shimwell, T.W., Hardcastle, M.J., Tasse, C. and Röttgering, H. (2020) New constraints on the magnetization of the cosmic web using LOFAR Faraday rotation observations. *Monthly Notices of the Royal Astronomical Society*. 495 (3). p.2607-2619.

Vedantham, H.K., Callingham, J.R., Shimwell, T.W. and Tasse, C. (2020) Coherent radio emission from a quiescent red dwarf indicative of star?planet interaction. *Nature Astronomy*. 4 (6). p.577-583.

Siewert, T.M., Hale, C., Bhardwaj, N., Biermann, M., Bacon, D.J., Jarvis, M.J. and Tasse, C. (2020) One- and two-point source statistics from the LOFAR Two-metre Sky Survey first data release. *Astronomy & Astrophysics*. 643 (2020). p.1-29.

Mandal, S., Intema, H.T., van Weeren, R.J., Shimwell, T.W., Botteon, A., Brunetti, G., de Gasperin, F., Brüggen, M., Di Gennaro, G., Kraft, R., Röttgering, H.J.A., Hardcastle, M. and Tasse, C. (2020) Revived fossil plasma sources in galaxy clusters. *Astronomy & Astrophysics*. 634 (2020). p.1.

Tasse, C., Webster, B., Croston, J.H., Mingo, B., Baldi, R.D., Barkus, B., Gurkan, G., Hardcastle, M.J., Morganti, R., Röttgering, H.J.A. and *et al.* (2020) A population of galaxy-scale jets discovered using LOFAR. *Monthly Notices of the Royal Astronomical Society*. 500 (1). p.4921-4936.

Cantwell, T., Bray, J., Croston, J.H., Scaife, A.M.M., Mulcahy, D.D. and Tasse, C. (2020) Low-frequency observations of the giant radio galaxy NGC 6251. *Monthly Notices of the Royal Astronomical Society*. 495 (1). p.143-159.

Jurlin, N., Morganti, R., Brienza, M., Mandal, S., Maddox, N., Duncan, K.J., Shabala, S.S., Hardcastle, M.J., Prandoni, I., Röttgering, H.J.A., Mahatma, V.H., Best, P.N., Mingo, B., Sabater, J., Shimwell, T.W. and Tasse, C. (2020) The life cycle of radio galaxies in the LOFAR Lockman Hole field. *Astronomy & Astrophysics*. 638 (2020). p.1-16.

Wilber, A.G., Johnston-Hollitt, M., Duchesne, S.W., Tasse, C., Akamatsu, H., Intema, H. and Hodgson, T. (2020) ASKAP reveals giant radio halos in two merging SPT galaxy clusters. *Publications of the Astronomical Society of Australia*. 37 (040). p.1-12.

**White, S.V.**

Malefahlo, E., Santos, M.G., Jarvis, M.J., White, S.V. and Zwart, J.T.L. (2020) The optically selected 1.4-GHz quasar luminosity function below 1 mJy. *Monthly Notices of the Royal Astronomical Society*. 492 (4). p.5297-5312.

**White, S.V., Seymour, N., Huynh, M., Shabala, S.S., Rogers, J., Davies, L.J.M., Turner, R., O'Brien, A., Ishwara-Chandra, C.H., Thorne, J.E., Galvin, T.J., Jarrett, T.H., Anderson, C., Bunton, J.D., Chow, K., Collier, J.D., Driver, S.P., Filipovic, M.D., Gurkan, G., Hopkins, A.M., Kapinska, A.D., Leahy, D.A., Marvil, J., Manojlovic, P., Norris, R., Phillips, C.J., Robotham, A.S.G., Rudnick, L., Singh, V. and Andernach, H. (2020) PKS 2250-351: A giant radio galaxy in Abell 3936. *Publications of the Astronomical Society of Australia*. 37 (4). p.13.**

Riseley, C., Galvin, T.J., Sobey, C., Vernstrom, T., White, S.V., Zhang, X., Gaensler, B., Heald, G., Anderson, C., Franzen, T.M.O., Hancock, P., Hurley-Walker, N., Lenc, E. and Van Eck, C.L. (2020) The Polarised GLEAM Survey (POGS) II: Results from an all-sky rotation measure synthesis survey at long wavelengths. *Publications of the Astronomical Society of Australia*. 37 (7). p.29.

Ross, K., Callingham, J.R., Hurley-Walker, N., Seymour, N., Hancock, P., Franzen, T.M.O., Morgan, J., White, S.V., Bell, M.E. and Patil, C.B. (2020) Spectral variability of radio sources at low frequencies. *Monthly Notices of the Royal Astronomical Society*. 501 (2021). p.6139-6155.

**White, S.V., Jarvis, M.J., Kalfountzou, E., Hardcastle, M.J., Verma, A., Orjales, J.M.O. and Stevens, J.** (2020) Accretion and star formation in 'radio-quiet' quasars. *Proceedings of the International Astronomical Union*. 356 (2019). p.204-208.

**White, S.V. and Thorat, K.**

White, S.V., Franzen, T.M.O., Riseley, C., Wong, O.I., Kapinska, A.D., Hurley-Walker, N., Callingham, J.R., Thorat, K., Wu, C., Hancock, P., Hunstead, R., Seymour, N., Swan, J., Wayth, R., Morgan, J., Chhetri, R., Jackson, C., Weston, S., Bell, M., For, B.Q., Gaensler, B.M., Johnston-Hollitt, M., Offringa, A. and Staveley-Smith, L. (2020) The GLEAM 4-Jy (G4Jy) Sample: I. Definition and the catalogue. *Publications of the Astronomical Society of Australia*. 37 (6). p.18.

White, S.V., Franzen, T.M.O., Riseley, C., Wong, O.I., Kapinska, A.D., Hurley-Walker, N., Callingham, J.R., Thorat, K., Wu, C., Hancock, P., Hunstead, R., Seymour, N., Swan, J., Wayth, R., Morgan, J., Chhetri, R., Jackson, C., Weston, S., Bell, M., Gaensler, B., Johnston-Hollitt, M., Offringa, A. and Staveley-Smith, L. (2020) The GLEAM 4-Jy (G4Jy) Sample: II. Host galaxy identification for individual sources. *Publications of the Astronomical Society of Australia*. 37 (6). p.17.

**Williams, J.A.**

Williams, J.A. (2020) From helicopter to lighthouse: the experiences of a lecturer in equipping first year university physics students to move away from 'answer making' towards 'sense making'. *Journal of Physics: Conference Series*. 1512 (2020). p.1-5.

## Peer Reviewed Proceedings

**Smirnov, O.M., Kenyon, J.S. and Hugo, B.**

Atemkeng Teufack, M., Smirnov, O.M., Perkins, S., Kenyon, J.S. and Hugo, B. Xova: Baseline-Dependent Time and Channel Averaging for Radio Interferometry. *Astronomical Data Analysis Software and Systems (ADASS)*. Spain, Granada. Spain. November 2020.



Photo: Simon Pamphilon

# Department of Political and International Studies

Associate Professor Sally Matthews  
Head of Department

## Introduction

As with other academic departments, our research plans and programmes were significantly disrupted by the COVID-19 pandemic and the resulting lockdown. Nevertheless, as we learnt to adjust to the online space, we managed to keep a research culture going. While we could not run our usual Friday seminar programme (except for a few seminars in February and March), Dr Siphokazi Magadla collaborated with colleagues at the Centre for Women and Gender Studies at the Nelson Mandela University to run several Zoom seminars from July onwards, and we were still able to run our annual *Teach In*, only this year it was virtual for the first time.

## Distinguished Visitors / International Visits

Just before lockdown, we managed to squeeze in an international visit from Dr Azrini Wahidin, who was visiting us from the University of Warwick in the United Kingdom. She presented a seminar to us on ex-combatants, gender and peace in Northern Ireland.

Our newly appointed Nelson Mandela Visiting Professor Siba Grovogui was unable to join us in 2020 due to the lockdown. However, he will be able to join us once the pandemic is over. We were also hoping to host some visitors as part of our African Peace and Conflict Postgraduate course, but as they could not come due to COVID-19 restrictions, we arranged for them to teach our students virtually and so our students still had the benefit of interacting with three international experts on Peace and Conflict who 'visited' us (in a virtual sense). We were also delighted to have Professor Ahmed Salem, who was able to visit us virtually to teach his course on Critical and Non-Western International Relations Theory.

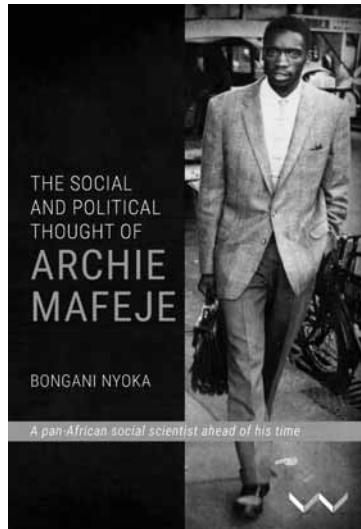


Our Postgraduate Orientation in February 2020.

Photo: Department of Political &amp; International Studies

## Significant Research Aligned Events

The Department was supposed to host the 2020 15th biennial conference of the South African Association of Political Studies (SAAPS), but unfortunately, this conference was postponed due to COVID-19. However, the Department will now be hosting the first-ever virtual SAAPS conference in 2021.



Dr Bongani Nyoka's latest book.

Photo: Department of Political & International Studies

## PUBLICATIONS

### Books/Chapters/Monographs

Bischoff, P.H.

Bischoff, P.H. (ed.) (2020) *African Foreign Policies: Selecting Signifiers to Explain Agency*. London: Routledge. ISBN: 9780367348281.

Bischoff, P.H. (2020) *Oxford Encyclopaedia of African Politics*. Oxford: Oxford University Press. ISBN: 9780190632342.

Diaz, F.A.

Diaz, F.A. and Jimenez, M.C. (2020) Trumping the Agenda? Continuity and Discontinuity in Foreign Affairs in U.S.-Colombia Relations. In: Gill, T.M. (ed.). *The Future of US Empire in the Americas: The Trump Administration and Beyond*. London: Routledge. p.128-142. ISBN: 9780429425073.

Diaz, F.A. (2020) *The Palgrave Encyclopedia of Global Security Studies*. Cham: Palgrave Macmillan. ISBN: 9783319743363.

Jordaan, E.

Jordaan, E. (2020) *South Africa and the UN Human Rights Council: The Fate of the Liberal Order*. Abingdon: Routledge. ISBN: 9781138609945.

Majavu, M.

Majavu, M. (2020) The White International: "The cause of the White man on the Pacific coast". In: *The Routledge Handbook on Africana Criminologies*. London: Routledge Taylor and Francis. p.205-215. ISBN: 9780367435721.

Nyoka, B.

Nyoka, B. (2020) *The Social and Political Thought of Archie Mafeje: A pan-African social scientist ahead of his time*. Johannesburg: Wits University Press. ISBN: 9781776145942.

## Creative Writing

Magadla, S.

Magadla, S. (2020) Opinion. In: *25 Years after Beijing: Changing the script about women's leadership*. South Africa: Mail & Guardian Online Newspaper.

Magadla, S. (2020) Mail & Guardian Supplement on the Centre for Women and Gender Studies, Nelson Mandela University. In: *Centering Women's Studies in Femicide Country*. Johannesburg: Mail & Guardian print newspaper.

## Other Publications

Jordaan, E.

Jordaan, E. (2020). In: *African States at the UN Human Rights Council in 2018*. Johannesburg: South African Institute of International Affairs.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Lock, E.

Lock, E. (2020) Nigeria: Understanding Boko Haram. *Conflict Studies Quarterly*. 2020 (30). p.72-86.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Acharya, A.

Acharya, A. (2020) The Myth of the "Civilization State": Rising Powers and the Cultural Challenge to World Order. *Ethics and International Affairs*. 34 (2). p.139-156.

Acharya, A. and Plesch, D. (2020) The United Nations: Managing and Reshaping a Changing World Order. *Global Governance*. 26 (2020). p.221-235.

Acharya, A., Estevadeordal, A. and Goodman, L.W. (2020) Reshaping Global Order in the 21st Century: G-Plus Leadership in a Multiplex World. *China and World Economy*. 27 (5). p.63-78.

Chipaika, R.

Chipaika, R. and Marufu, E. (2020) Chinese Construction Companies and the Question of Labour Rights in Zimbabwe. *Journal of Asian and African Studies*. 55 (8). p.1163-1175.

Mafuta, W., Zuwarimwe, J., Kamuzhanje, J., Mwale, M. and Chipaika, R. (2020) Sustainable Conflict Resolution through Community Based Water, Sanitation and Hygiene (WASH) Planning in Fragile and Conflict Situations: The Case of Somalia. *Journal of Asian and African Studies*. (2020). p.1-12.

Danielsen, J.W.

Danielsen, J.W. (2020) The storyteller. *Internet Policy Review*. 9 (1). p.1-8.

Majavu, M.

Majavu, M. (2020) African Americans and American Africans: Migration, history, race and identities. *Ethnic and Racial Studies*. p.1-3.

Matthews, S.

Matthews, S. (2020) Reviewing the South African Political Studies Curriculum: Evaluating Responses to Calls for Decolonisation. *Politikon*. 47 (3). p.321-341.

Mulu, N.N.T.

Angu, P.E. and Mulu, N.N.T. (2020) The Changing Material Conditions of Cameroonian Migrants in South Africa: What does this say about an "Aphobic" post-apartheid state? *African Human Mobility Review (AHMR)*. 6 (2). p.130-149.

Onokwai, J.C.

Onokwai, J.C. (2020) Political economy of Nigeria-South Africa foreign direct investment relations and challenges of the manufacturing sector in Nigeria, 1999- 2017. *Journal of Contemporary African Studies: JCAS*. 38 (3). p.331-347.



Photo: Simon Pamphilon

## Department of Psychology

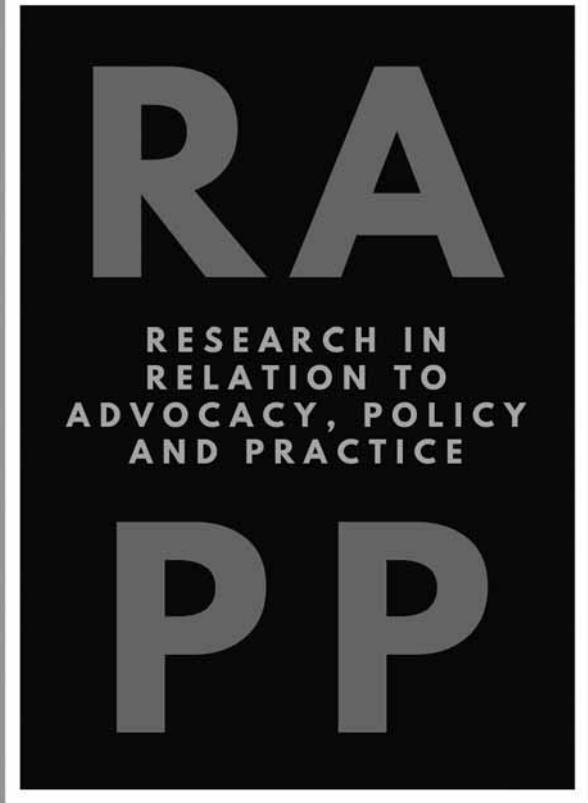
Professor Charles Young  
Head of Department

### Introduction

The year 2020 was a particularly challenging one for researchers in the field of psychology. While some were able to make good progress during the social isolation of the COVID-19 pandemic lockdown, many were negatively affected by extra domestic and care work that resulted, which is a burden that falls disproportionately on women academics. Others had limited access to their research participants that also slowed progress. Those with teaching commitments report that the sudden additional demand of converting teaching material for online delivery, while also preparing paper copies for students without reliable internet access and while managing the many email student queries, took all available time, leaving little for research activities.

### Graduations

Despite these challenges, the Department had an impressive number of senior research students graduate in 2020, including six (6) PhD candidates. These were Dr Judy Blain, Dr Susan McGarvie and Dr Lumka Qangule, all supervised by Professor Jaqui Akhurst; Dr Mathero Nkhalamba and Dr Mo Nagdee, both supervised by Professor Charles Young; and Dr Siobhan Sweeney, supervised by Professor Lisa Saville Young.



The CSSR's annual Research in Relation to Advocacy, Policy and Practice (RAPP) event in 2020 focused on abortion services.  
Photo: Department of Psychology

At the same time, another eighteen (18) Master's students and fifty-one (51) Honours students graduated in 2020.

## Significant Research Aligned Events

The Critical Studies in Sexualities and Reproduction (CSSR) research programme is a multi-disciplinary programme funded primarily by the National Research Foundation South African Research Chair Initiative (SARChI). It draws on the expertise of a number of researchers both within Rhodes University and at universities/NGOs in South Africa and across the world. The CSSR holds an annual Research in Relation to Advocacy, Policy and Practice (RAPP) event. In 2020 the focus was on abortion services. The three-day event was held online. On day one, the focus was on abortion services in rural areas. The CSSR presented the outcomes of a recent study assessing abortion seeking behaviours and preferences in rural Eastern Cape communities. A discussion followed, centred on what needs to be done in order to attain quality abortion services in rural areas. Day two's focus was on abortion counselling. The CSSR presented a variety of studies on abortion counselling in South Africa and the newly created abortion counselling guidelines produced by the unit. On day three, the discussion centred on methodologies used to research and improve abortion service provision, including discrete choice experiments, narrative-discursive and conversation analysis.

Other significant staffing events were that Professor Akhurst retired in 2020, though she maintains her association with the Department as an active Professor Emeritus. New permanent full-time academic staff members that joined the Department in 2020 include Nqobile Msomi and Professor Megan Campbell, both counselling psychologists, and Dr Tinashe Harry, an industrial psychologist.

Dineo Diale, a lecturer in Organisational Psychology, attended the 2020 SIOPSA virtual conference.

Photo: Department of Psychology

## PUBLICATIONS

### Books/Chapters/Monographs

Akhurst, J.

Akhurst, J., Olvitt, L.L. and Ward-Smith, C. (2020) Decolonising nature-based pedagogy: the importance of history, socio-cultural and socio-material context in mediating connectedness-with-nature. In: Cutter-Mackenzie, A., Malone, K. and Barratt Hacking, E. (eds.). New York: Springer. p.1549-1574.

Macleod, C.I.

Macleod, C.I. (2020) *The SAGE Encyclopedia of Children and Childhood Studies*. UK: SAGE Publications Ltd. ISBN: 9781529721959.

Macleod, C.I. (2020) *The SAGE Encyclopedia of Children and Childhood Studies*. UK: SAGE Publications Ltd. ISBN: 9781529721959.

Macleod, C.I. (2020) *The SAGE Encyclopedia of Children and Childhood Studies*. UK: SAGE Publications Ltd. ISBN: 9781529721959.

Macleod, C.I. (2020) *The SAGE Encyclopedia of Children and Childhood Studies*. UK: SAGE Publications Ltd. ISBN: 9781529721959.

Macleod, C.I. (2020) *The SAGE Encyclopedia of Children and Childhood Studies*. UK: SAGE Publications Ltd. ISBN: 9781529721959.

Macleod, C.I. and Feltham-King, T.

Macleod, C.I. and Feltham-King, T. (2020) 'Adolescent pregnancy': social problem, public health concern, or neither? In: Ussher, J.M., Chrisler, J.C. and Perz, J. (eds.) *Routledge International Handbook of Woman's Sexual and Reproductive Health*. New York: Routledge: Taylor and Francis. p.253-265. ISBN: 9781351035620.

Macleod, C.I., Feltham-King, T., Mavuso, J. and Morison, T.

Macleod, C.I., Feltham-King, T., Mavuso, J. and Morison, T. (2020) *Intersections of mothering: Feminist accounts*. London: University of London SOAS, Routledge, Taylor & Francis Group. ISBN: 9780429430411.

Mavuso, J. and Macleod, C.I.

Mavuso, J. and Macleod, C.I. (2020) *The Encyclopedia of Child and Adolescent Development*. New Jersey: John Wiley & Sons. ISBN: 9781119161899.

### Concerts, Exhibitions, Performances, Workshops, Events

Truter, S.

Truter, S. Presentation. Prediction of cognitive, educational and occupational achievement: Day 2- Cognitive Assessment. *Workshop presented with a team of actuaries from POPII, a mathematician (Professor Sarel Cilliers), statisticians (from Grass Roots) and an educational psychologist (Tiaan Ellis) who presented on Day 1. Workshops held on 4 & 5 March in Cape Town, 9 & 10 March in East London, 11 & 12 March in Durban and 16 & 17 March in Pretoria, 2020. Pretoria. South Africa. 4 March 2019.*

Truter, S. Presentation. Basics and Beyond: Comprehensive Course in Neuropsychology. *Course presented to eleven (11) selected psychologists including a one-day workshop on 6 February 2019 at Lord Charles Hotel, Somerset West, South Africa and smaller workshops with examinations on 7, 8 & 9 May, 6, 7 & 8 August, 27 & 28 November 2019, and 5 & 6 February at the Neuro-Network Centre, 209 Titanium House, Gardner Williams Avenue, Somerset West, South Africa. Somerset West. South Africa. 6 February 2019.*

### Other Publications

Bredenkamp, P.J., Matebese, S., Tsetse, A.N., Msomi, N.N., Macleod, C.I. and Molokoe, C.K.

Macleod, C.I., Jearey-Graham, N., Bredenkamp, P., Matebese, S., Tsetse, N., Msomi, N., Young C., and Molokoe, K. (2020) *Alcohol use during pregnancy in the Eastern Cape: Research in support of FASfacts intervention*. Report commissioned by the Eastern Cape Liquor Board, Rhodes University, Makhanda.

Du Plessis, U., Macleod, C.I., Mavuso, J. and Sanyangore, A.

Du Plessis, U., Macleod, C.I., Mavuso, J., Grapsa, E. and Sanyangore, A. (2020) *An assessment of abortion seeking*

behaviours and preferences in rural communities of the Eastern Cape.

**Macleod, C.I.**

Macleod, C.I. and Reynolds, J. (2020) *Strategic assessment of policies, programmes and research on unintended pregnancies, contraception, unsafe abortion and abortion services in Botswana*. Report commissioned by Ministry of Health, WHO and UNFPA, Rhodes University, Makhanda.

**Du Plessis, U. and Macleod, C.I.**

Du Plessis, U. and Macleod, C. (2020). *The CSSR/MSSA mixed methods research toolkit: Abortion-seeking behaviours and preferences*. Makhanda: Critical Studies in Sexualities and Reproduction.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

**Botha, D.**

Botha, D. (2020) Analysing Anorexia Nervosa: Digital Logic Provides Alternative Meanings of its Nature, Leading to Alternative Forms of Psychotherapy. *Psychological Thought*. 13 (2). p.286-307.

## Peer Reviewed Subsidy-Earning Journal Research Publications

**Akhurst, J.**

Ward-Smith, C., Naidoo, T., Olivitt, L.L. and Akhurst, J. (2020) Perceived benefits of nature-based experiences as mediators of connectedness with nature: the case of Mystic Mountain. *South African Journal of Psychology*. 2020 (2020). p.1-12.

Akhurst, J. (2020) A South African perspective on community psychology practice competencies. *Journal of Community Psychology*. 48 (2020). p.2108-2123.

Roehrle, B., Akhurst, J., Carr, N., Herrera Sanchez, I.M., Arcidiacono, C., Lawthom, R. and Stark, W. (2020) Community Psychology in higher education in Europe: Results of a survey and discussion of the basic competency approach. *Journal of Community & Applied Social Psychology*. 30 (2020). p.494-507.

Shachat, M., Hong, F., Lin, Y., Desivilya, H.S., Yassour-Borochowitz, D., Akhurst, J., Leach, M.M. and Malley-Morrison, K. (2020) Do state governments have the right to kill civilians to defeat international terrorism? Views from US, Israel and South Africa. *Journal of Aggression, Conflict and Peace Research*. 12 (2). p.87-98.

Akhurst, J., Magqamfana, S. and Day, J.

Akhurst, J., Magqamfana, S. and Day, J. (2020) An action research-based intervention to tackle intergroup conflict: A case study of work with educators in a South African secondary school. *Community Psychology in Global Perspective*. 6 (1). p.149-163.

Blaine, J. and Akhurst, J.

Blaine, J. and Akhurst, J. (2020) A South African exploration into outdoor adventure education and adolescent psychosocial development. *Journal of Psychology in Africa*. 30 (5). p.440-450.

**Boysen, D.D.**

Boysen, D.D. and Kagee, A. (2020) The feasibility of prolonged exposure therapy for PTSD in low- and middle-income countries: a review. *European Journal of Psychotraumatology*. 11 (2020). p.1-6.

Boysen, D.D. and Kagee, A. (2020) Implementing Prolonged Exposure Therapy for PTSD in a Context of Ongoing Adversity: A Clinical Case Study. *Clinical Case Studies*. 19 (4). p.258-269.

**Campbell, M.M.**

Matshabane, O.P., Campbell, M.M., Faure, M.C., Marshall, P.A., Mayosi, B.M., Stein, D.J., Appelbaum, P.S. and de Vries, J. (2020) Exploring how a genetic attribution to disease relates to stigma experiences of Xhosa patients with schizophrenia in South Africa. *Social Psychiatry and Psychiatric Epidemiology*. 55 (2020). p.1679-1686.

**Chiweshe, M.T.**

Betron, M., Thapa, A., Amatya, R., Thapa, K., Arlotti-Parish, E., Schuster, A., Bhattarai, J., Limbu, S., Chiweshe, M.T., Rishal, P. and Dhital, R. (2020) Should female community health volunteers (FCHVs) facilitate a response to gender-based violence (GBV)? A

mixed methods exploratory study in Mangalsen, Nepal. *Global Public Health*. DOI: 10.1080/17441692.2020.1839929. p.1-14.

**Haine, P.C. and Booyens, D.D.**

Haine, P.C. and Booyens, D.D. (2020) Life after training: Professional experiences of early career clinical and counselling psychologists in South Africa. *Journal of Psychology in Africa*. 30 (5). p.475-483.

**Jacobs, L. and Dabengwa, A.**

Jacobs, L. and Dabengwa, A. (2020) Substance use disorder and PTSD amongst Black South African women: Scoping review. *Gender & Behaviour*. 18 (3). p.15901-15908.

**Jacobs, L. and Keleme, A.K.**

Jacobs, L. and Keleme, A.K. (2020) Natural hair chronicles of black female vloggers: Influences on their psychological well-being. *Journal of Psychology in Africa*. 30 (4). p.342-347.

**Lynch, I.**

Isaacs, N., Lynch, I., Shabangu, C., Reygan, F. and Neluheni, M. (2020) Women in their full diversity? Provincial government responses to socio-economic exclusion of lesbian, bisexual and transgender women in Gauteng. *Agenda: a Journal About Women and Gender*. 34 (1). p.77-86.

**Macleod, C.I.**

Macleod, C.I., Bhatia, S. and Liu, W. (2020) Editorial - Feminisms and decolonising psychology: Possibilities and challenges. *Feminism & Psychology*. 30 (3). p.287-305.

**Macleod, C.I. and Du Toit, R.R.**

Macleod, C.I., Du Toit, R.R., Paphitis, S.A. and Kelland, L. (2020) Social and structural barriers related to menstruation across diverse schools in the Eastern Cape. *South African Journal of Education*. 40 (3). p.1-9.

**Macleod, C.I., Matebese, S. and Tsetse, A.N.**

Macleod, C.I., Matebese, S. and Tsetse, A.N. (2020) I drank because I wanted to deal with the frustration: explaining alcohol consumption during pregnancy in a low-resource setting - women's, partners and family members' narratives. *Social Work/Maatskaplike Werk*. 56 (7). p.88-96.

**Magqamfana, S. and Bazana, S.**

Magqamfana, S. and Bazana, S. (2020) Absent fathers: Psycho-



Dr Liezelle Jacobs and colleagues at SANCA SOWETO.

Photo: Department of Psychology

logical and socio-economic implications for black children and directions for future research. *Journal of Psychology in Africa*. 30 (2). p.169-173.

Mavuso, J., Chiweshe, M. and Macleod, C.I.

Mavuso, J., Chiweshe, M. and Macleod, C.I. (2020) 'Choice' in women's abortion decision-making narratives: Introducing a supportability approach. *Pins: Psychology in Society*. 1 (59). p.20-40.

Ndabula, Y.

Chakona, G., Ndabula, Y., Mason, P., Asfour, F.M. and Oluwole, D.O. (2020) Using Translanguaging in Higher Education to Empower Students' Voices and Enable Epistemological Becoming. *Alternation: Interdisciplinary Journal for the Study of the Arts and Humanities in Southern Africa (Formerly International Journal for the Study of Southern African Literature and Languages)*. 31 (2020). p.51-80.

Ndabula, Y., Macleod, C.I. and Saville Young, L.

Ndabula, Y., Macleod, C.I. and Saville Young, L. (2020) Sistering and sexual socialisation: a discursive study of Xhosa women's sisterly interactions concerning sex and reproduction. *Culture, Health & Sexuality*. <https://doi.org/10.1080/13691058.2020.1785551> 1 (1). p.1-15.

Toerien, M.

Toerien, M., Jackson, C. and Reuber, M. (2020) The Normativity of Medical Tests: Test Ordering as a Routine Activity in 'New Problem' Consultations in Secondary Care. *Research on Language and Social Interaction*. 53 (4). p.405-424.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Akhurst, J.

Akhurst, J. Auntie Stella reaching across borders: action research for sexual and reproductive health. *8th International Conference of Community Psychology*. Victoria University, Melbourne. Australia. November 2020.

Diale, C.D.

Diale, C.D. Exploration of Industrial Psychologist's role in a period of transitioning into Green economy: A selected review. *Society of Industrial and Organisational Psychology South Africa 2020 Virtual conference: Leading Through Innovation: Navigating the new world of work*. Virtual Conference hosted via Zoom and Whoova app. Virtual Conference hosted via Zoom and Whoova app. South Africa. December 2020.

Du Plessis, U.

Du Plessis, U. Discrete Choice Experiments and qualitative research underpinning it. *Research in Relation to Advocacy, Policy and Practice Conference: Abortion Services: Rural Interventions and Abortion Counselling*. Rhodes University, Makhanda. South Africa. October 2020.

Du Plessis, U. Abortion services in rural areas: Implications of current research. *Overcoming Barriers to Safe Abortion in the African Region*. University of Pretoria, Pretoria. South Africa. January 2020.

Kalyanaraman, Y.

Kalyanaraman, Y. Abortion counselling and training course. *Research in Relation to Advocacy, Policy and Practice Conference: Abortion Services: Rural Interventions and Abortion Counselling*. Rhodes University, Makhanda. South Africa. October 2020.

Macleod, C.I.

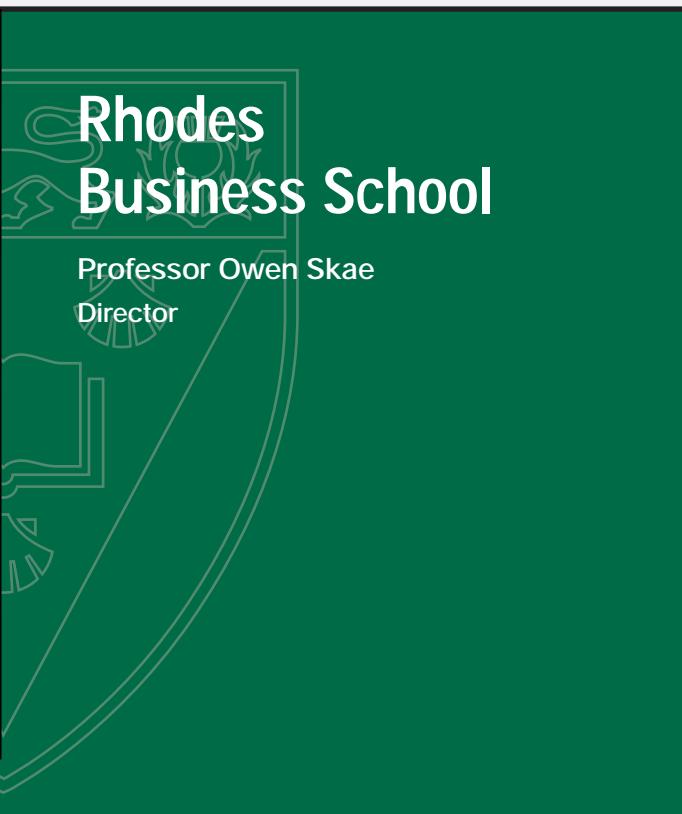
Macleod, C.I. and Reynolds, J. Strategic assessment of policies, programmes and research on unintended pregnancies, contraception and unsafe abortion in Botswana: Background paper. *Stakeholder meeting, Ministry of Health, Botswana, World Health Organisation and UNFPA*. Gaborone: Botswana. January 2020.

Sweeney, S.S.K.

Sweeney, S.S.K. Interrogating what is unconscious to a psychoanalytic reading of employing instrumental mothering. *Annual conference of the Association for the Psychoanalysis of Culture and Society*. Online, Not applicable. Not applicable. October 2020.



Photo: Simon Pamphilon



## Introduction

As with everybody else, the pandemic had a disruptive impact on our planned activities for the year, with the main focus being the switch to online and remote teaching to deliver our academic year. Nevertheless, we are still pleased to report some highlights.



Our 6th Speaker, at the Archbishop Thabo Makgoba Development Trust annual lecture on Values Based Leadership, which was delivered virtually, was Mcebisi Jonas, an Old Rhodian, former Deputy-Minister of Finance, one of four Presidential Investment Envoys appointed by the State President and Non-Executive Chairperson of MTN Ltd.

**Mcebisi Jonas, delivered virtually via Zoom the Archbishop Thabo Development Trust Lecture. 5th October 2020.**

Photo: Rhodes Business School

In a hard-hitting and very forthright lecture, Mcebisi Jonas warned us that South Africa had come close to being a fully-fledged kleptocracy. He highlighted that the primary challenge of transformation in relation to the model for creating sufficient wealth to sustain all citizens of the country was not working. Every single one of us had a role to play in changing this and mobilising around a new vision, which would require the urgent brokering of trade-offs that we all face. He outlined the following action areas that needed to be given the highest priority if we were to achieve this: macroeconomic risk pertaining to our sovereign debt; productivity and innovation; dynamic black entrepreneurship; high-quality education; energy provision; social protection and justice; deepening of our democracy's constituency-based system and building leadership capacity. Insofar as the latter was concerned, it was essential that values-based leadership was at the forefront, with ethical and authentic leaders committed to a corruption-free state that was admired and trusted and, most importantly, willing to be held accountable by the highest moral and ethical code. In this regard, civil society had a critical watchdog role to play.

During the course of 2020, we ran thirteen (13) short course programmes, most virtually, with two hundred and six (206) Certificates of Competence and hundred and nineteen (119) Letters of Attendance being issued.

## Postgraduates / Graduations

Twenty-three (23) Master of Business Administration (MBA), forty-five (45) (of whom sixteen (16) were part-time) Postgraduate Diploma in Enterprise Management (PGDipEntMgt) and fourteen (14) (of whom eight (8) were part-time) of our very first cohort of Postgraduate in Business Analysis (PGDipBusAnalysis) candidates, graduated. Simthembile Mapu, Ronny Ogwang and John Rohlandt obtained the PGDipEntMgt with distinction and Thapelo Jane, and Vanessa Mhlom obtained the PGDipBusAnalysis with distinction. The recipient of the Archbishop Thabo Makgoba award for the MBA Responsible Leadership essay was Matthew Shaw, and the First National Bank MBA Economics Prize recipient for best essay was John Rohlandt.

## Distinguished Visitors / International Visits

Jonas, M.

Mcebisi Jonas delivered virtually via Zoom. Archbishop Thabo Makgoba Development Trust Lecture. 5th October 2020.

## Significant Research Aligned Events

Professors Owen Skae and Noel Pearse undertook a significant research project to evaluate the status of Sector Education and Training Authority (SETA) governance, commissioned by the National Skills Authority and Bank-SETA, through the course of 2020. The findings and recommendations from this evaluation were presented and validated at a national stakeholder workshop conducted virtually on 20th November 2020.

## PUBLICATIONS

### Books/Chapters/Monographs

Sieff, G.

Sieff, G. (2020) *Passion, Power and Purpose: Engaging with strategy in your organisation, and your life*. Pretoria: Van Schaik Publishers. ISBN: 9780627038549.

Skae, F.O.

Williams, J.M. and Skae, F.O. (2020) *Principles of Management Accounting The Question Book*. 3rd Ed. South Africa: Oxford University Press. ISBN: 9780190750596.

### Peer Reviewed Proceedings

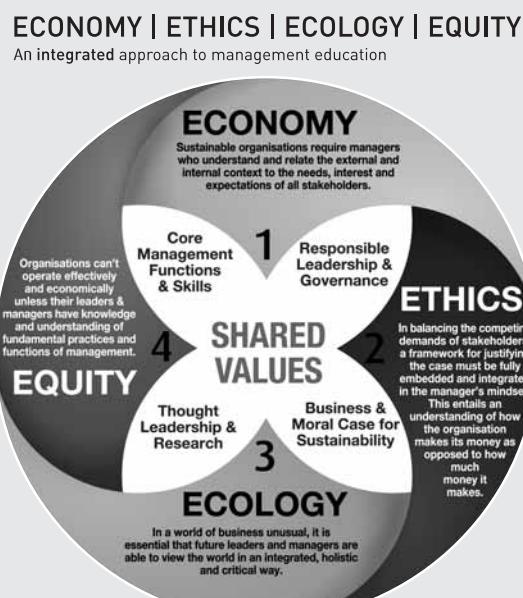
Pearse, N.J. and Skae, F.O.

Pearse, N.J., Skae, F.O. and Rahim, S. Structure and Membership of Boards for Inclusive Stakeholder Governance. *The 16th European Conference on Management, Leadership and Governance*. A Virtual Conference Supported by EM-Normandie Business School, Oxford. United Kingdom. October 2020.

### Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Cuthbert, C.

Cuthbert, C. Institutional employability drivers in difficult times. *SRHE Annual Research Conference: Creativity, criticality and conformity in Higher Education*. Celtic Manor, Newport, South Wales. United Kingdom. December 2020.



The 4E's of Sustainable Development Goals. Promoted by the Rhodes Business School.

Photo: Rhodes Business School



Photo: Simon Pamphilon

# School of Languages and Literatures

Professor Undine Weber  
Head of School

## Introduction

2020 proved to be a successful year for the seven (7) sections of the School of Languages and Literatures with regard to research, despite the challenges that the COVID-19 pandemic presented. Many colleagues, research affiliates, Postdoctoral Research Fellows and some Postgraduates embraced the opportunity of taking part in virtual conferences. While the direct contact with researchers and the accidental encounters at face-to-face conferences, often leading to research inspiration, were missed sorely, SoLL researchers could attend research meetings and conferences to which they otherwise would not have been able to go.

We were unfortunate to bid farewell to Professor Russell Kaschula until December 2020, the SARChI Chair holder for the Intellectualisation of African Languages. His personal research output, as well as that of his mentees and the Chair's research fellows, was impressive. Professor Dion Nkomo will continue his work and leave his own mark on the field, and we extend a warm welcome to him as the interim SARChI Chair holder.

## Postgraduates / Graduations

A major highlight for us were the graduations of Ignatius Mabasa and Gwyndolen Ortner. Dr Mabasa was awarded his PhD in African Language Studies after setting the record of the first PhD to be written in ChiShona at Rhodes University. His thesis "*Chave Chemutengure Vhiri Rengoro: Husarungano Nerwendo Rwengano Dzvezashona*". The folktale in confrontation with a changing world: a Shona storyteller's autoethnography" deals with his story as a Shona folklorist and creative writer and the story of the Shona people.

Dr Gwyndolen Ortner's PhD "Exploring teaching and learning German as a foreign language at a South African institution of higher education: blended learning and collocations" marks a highly topical contribution to the field of blended language learning as well as the first PhD completed in German Studies at Rhodes University by a student, not a staff member.

Heartfelt congratulations to them and all graduates and supervisors in the School of Languages and Literatures who continue to raise our research profile nationally and internationally.

# PUBLICATIONS

## Books/Chapters/Monographs

Doçrat, Z. and Kaschula, R.H.

Doçrat, Z. and Kaschula, R.H. (2020) Part II, 4 Multilingualism and Intellectualisation of African Languages: Transformative Power of Language Policies in Higher Education: A legal English Approach or a Linguistic African Language Approach. In: Kaschula, R.H. and Wolff, H.E. (eds.). *The Transformative Power of Language*. Cambridge: Cambridge University Press. p.85-108. ISBN: 9781108498821.

Engelbrecht, N.

Engelbrecht, N. (2020) Part IV, 17 Interlingual and Intercultural Cross-Fertilisation: Translation in Foreign Language Teaching: Cultivating Critical Reflection and Symbolic Competence. In: Kaschula, R.H. and Wolff, H.E. (eds.). *The Transformative Power of Language*. Cambridge: Cambridge University Press. p.351-367. ISBN: 9781108498821.

Kaschula, R.H.

Kaschula, R.H. (2020) Econo-language planning and transformation in South Africa: From localisation to Globalisation. In: Hickey, R. (ed.). *English in Multilingual South Africa: The Linguistics of Contact and Change*. Cambridge: Cambridge University Press. p.196-215. ISBN: 2154697815631.

Kaschula, R.H. and Wolff, E.

Kaschula, R.H. and Wolff, E. (ed.) (2020) *The Transformative Power of Language*. Cambridge: Cambridge University Press. ISBN: 9781108498821.

Moyo, W.N.

Moyo, W.N. (2020) Part 11, 9 Multilingualism and Intellectualisation of African Languages: An Analysis of the Language Legislation effects in the Bank Sector: Toward the Realisation of Multilingualism in South Africa. In: Kaschula, R.H. and Wolff, H.E. (eds.). *The Transformative Power of Language*. Cambridge: Cambridge University Press. p.193-206. ISBN: 9781108498821.

Mukenge, A.N.

Mukenge, A.N. (2020) *Les larmes du silence*. Enghien (Belgium): Les Editions du Pangolin. ISBN: 9782874670766.

Mukenge, A.N. (2020) Les méandres migratoires de Pius Ngandu Nkashama : une violence plurielle ou un cri de cœur. In *L'esthétique de la violence*. Paris: L'Harmattan. p.285-295. ISBN: 9782343202198.

Mukenge, A.N. (2020) La Malédiction : un livre-hache qui dérange, qui casse. In *L'esthétique de la violence*. Paris: L'Harmattan. p.273-284. ISBN: 9782343202198.

Mwepu, P.K.

Mwepu, P.K. (2020) Un monologue qui n'en est pas un. In: Banywesize, E.M. (ed.). *Hommage à Julien Kilanga Musinde. La traversée des mondes*. Paris: Editions du Cygne. p.23-40. ISBN: 9782849246160.

Ngaphu, N.

Ngaphu, N. (2020) Part IV, 16 Interlingual and Intercultural Cross-Fertilisation: Exploring the Potential of Increasing Epistemological Access for University Students of African Languages through the Translation of English Academic Texts. In: Kaschula, R.H. and Wolff, H.E. (eds.). *The Transformative Power of Language*. Cambridge: Cambridge University Press. p.326-350. ISBN: 9781108498821.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Nkomo, D.

Nkomo, D. (2020) Dictionary culture in African language communities: research, development, challenges and prospects. *Lexicographica*. 36 (1). p.11-37.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Anjugu, T.A.

Anjugu, T.A. (2020) Banywesize, Emmanuel Mukambilwa (dir.). 2020. *Hommage à Julien Kilanga Musinde. La traversée des*



Graduate Dr Gwyndolene Ortner.

Photo: School of Languages and Literatures

mondes. Paris : Editions du Cygne. ISBN : 978-2-84924-6160. 208 p. *French Studies in Southern Africa*. 50 (2020). p.221-256.

Engelbrecht, N.

Engelbrecht, N. (2020) A reflection on the 'non-place' character of German foreign language (GFL) courses and coursebooks in South African higher education. *The Independent Journal of Teaching and Learning*. 15 (2). p.36-50.

Kretzer, M.M.A.

Schrot, O.G., Traxler, J., Weifner, A. and Kretzer, M.M.A. (2020) Potential of 'future workshop' method for educating adolescents about climate change mitigation and adaptation: a case from Freistadt, Upper Austria. *Applied Environmental Education and Communication*. 2020 (2020). p.1-14.

Lambert, M.

Lambert, M. (2020) Herodotus and the 1820 settlers in South Africa: Historiographies of colonization and the 'cacophony of voices'. *Akroterion: Journal for the Classics in South Africa*. 65 (1). p.143-167.

Lambert, M. (2020) Fleur Marie Webb (1930-2019) and the Art of Translation. *Natalia: The Natal Society Foundation*. 50 (1). p.77-80.

Maseko, B.

Maseko, B. and Matunge, P. (2020) Language Ideologies and Language Practices in Health Services: Patients' Experiences in Post-Colonial Zimbabwe. *Alternation: Interdisciplinary Journal for the Study of the Arts and Humanities in Southern Africa*. 36 (2020). p.335-358.

Mose, P.

Mose, P. (2020) Debunking the myth of lack of vocabulary for teaching content knowledge in primary schools: Exploring terminology for science in Ekegusii of Kenya. *South African Journal of African Languages*. 40 (1). p.60-67.

Mwepu, P.K.

Mwepu, P.K. (2020) Editor. *French Studies in Southern Africa*. 50 (1). p.1-256.

Mwepu, P.K. (2020) Kilanga Musinde, Julien & Toka Karachaliou, Mélita. 2020. *L'œil du cœur*. Paris: Éditions du Cygne. Collection



Graduate Dr Ignatius Mabasa.

Photo: School of Languages and Literatures

« Poésie francophone ». ISBN: 9782849246153. 94 p. *French Studies in Southern Africa*. 50 (2020). p.221-256.

Nkomo, D.

Nkomo, D. (2020) New Frontiers in Forensic Linguistics: Themes and Perspectives in Language and the Law in Africa and beyond. *South African Journal of African Languages*. 40 (2). p.238-241.

Nkomo, D. (2020) Vernacular Lexicography in African Languages: From Early Days to the Digital Age. *Dictionaries: Journal of the Dictionary Society of North America*. 41 (2). p.213-243.

Weber, U.S.

Weber, U.S. (2020) 'a notalive undead too-nearishness'? Ein Kommentar zu E.E. Cummings in Wolfgang Koeppens. *Das Treibhaus. Acta Germanica, German Studies in Africa*. 48 (1). p.151-160.

Ortner, G.J. and Weber, U.S. (2020) Student approaches and attitudes towards writing in German as a foreign language, using corpus linguistic tools. *Journal for Language Teaching / Ijenali Yekufundzisa Lulwini / Tydskrif vir Taalonderrig*. 53 (2). p.27-51.

Weber, U.S. (2020) Co-Editor. *Acta Germanica, German Studies in Africa*. 48 (1). p.7-203.

## Peer Reviewed Proceedings

Mukenge, A.N.

Mukenge, A.N. Ecritures fragmentées/écritures transculturelles: les marges socio-esthétiques et la société dans les *Belle Ténèbres*. *Literatura Dialogos*. BUC, Bucharest. Romania. February 2020.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Docrat, Z.

Docrat, Z. Linguistic qualifications and training for legal professionals and judicial officers: South Africa's monolingual approach. 2020: *International Legal Linguistics Conference hosted by the Austrian Association of Legal Linguistics*. Online, Vienna, Austria. December 2020.

Docrat, Z. Language and the Criminal Justice System. 2020 *Indigenous Languages Action Forum (ILAF) Language and the Criminal Justice System Conference*. Via Zoom Online, Cape Town. South Africa. September 2020.

Docrat, Z. The practical ways of ensuring that the official African languages in South Africa attain the same level of equity as other official Languages. 2020 *CRL Commission Language Conference*. Via MS Teams. Online, Johannesburg. South Africa. September 2020.

Kaschula, R.H.

Kaschula, R.H. Language Colloquium. *Language Colloquium*. Online, Potchefstroom. South Africa. September 2020.

Kaschula, R.H. The importance of intellectualising African Languages and some best practices at South African Universities. *UNISA Language Management Week*. Online, Pretoria. South Africa. September 2020.

Kretzer, M.M.A.

Kretzer, M.M.A. Linguistic Landscape (LL) at coastal tourist areas in Eastern Cape, South Africa. *Multilingualism from various perspectives of applied linguistics*. University of Technology, Poland, Virtual. Poland. October 2020.

Kretzer, M.M.A. Lost in Translation: Multilingual Public Health Signage during the COVID-19 Pandemic in Australia. *Postgraduate Conference on Multilingualism*. Multilingualism Research Centre, Macquarie University, and School of Education, University of New South Wales, Australia, cohosted and virtual. Australia. October 2020.

Mukenge, A.N.

Mukenge, A.N. La littérature togolaise: histoire. *La littérature togolaise*. University of Lome, Lomé. Togo. January 2020.

Mukenge, A.N. Challenges of teaching French as Foreign Language or African Language to a multicultural audience. *International Conference on African Language and Culture Studies*. Beijing Foreign Studies University, Beijing. China. October 2020.

Nkomo, D.

Nkomo, D. African languages, scholarly voices and societal impact in South Africa. *Fort Hare Institute for Social and Economic Research Seminar Series*. Online, Alice. South Africa. November 2020.

Ortner, G.J.

Ortner, G.J. Exploring the Complex Adaptive Blended Language Learning System of German Studies. *NIHSS (National Institute for the Humanities and Social Sciences) Doctoral Conference*. Virtual, online. South Africa. November 2020.

Persohn, B.

Persohn, B. Exploring non-culmination in Bantu. *53rd Annual meeting of the Societas Linguistica Europaea*. Virtual, online. Romania. August 2020.

## Reviews

Lambert, M. (2020) Review of 'Queering Colonial Natal: Indigeneity and the Violence of Belonging in Southern Africa by T.J. Tallie'. *Natalia: The Natal Society Foundation*. 50 (1). p 87-89.



Photo: Simon Pamphilon

# Department of Sociology and Industrial Sociology

Associate Professor Gilton Klerck  
Head of Department

## Introduction

Despite the challenges of a rapid shift in teaching platforms and methodologies due to the COVID-19 pandemic and the vicissitudes of online teaching and learning, the Department has had another successful year in terms of research output and Postgraduate throughput. While all staff members and Associates contributed to this success, special mention must be made of the outstanding contributions to the Department's research output by Professors John Holloway and Patrick Gunnigle, who authored or co-authored thirteen (13) publications, and Professor Kirk Helliker, who supervised or co-supervised seven (7) PhD graduates in 2020! Meanwhile, the academic staff in the Department continued their extraordinary higher-degree supervision record with forty-one (41) Postgraduate students graduating in 2020.

## Postgraduates / Graduations

Twelve (12) Honours (two (2) with distinction), twenty-one (21) Masters (six (6) with distinction), and eight (8) Doctoral students graduated in 2020. As in the past, the research conducted by our Doctoral candidates, in particular, demonstrates the breadth of sociological interest as well as the multiple ways in which the discipline contributes to understanding social change and confronting social inequalities. The fieldwork of the eight (8) Doctoral candidates, who graduated in 2020, was conducted in a range of geographical settings and focused on the de-peasantisation process in Nepal, food insecurity in the communal areas of Zimbabwe, gender and conditional Cash-Based Transfers in Somalia, the effects of economic and political instability on secondary schools in Zimbabwe, contemporary child marriage in Harare, participatory practices by indigenous trusts and development NGOs in a communal area in Zimbabwe, regional non-governmental organisations responding to HIV/AIDS in Southern Africa, and climate change and rural livelihoods in Zimbabwe.

## Distinguished Visitors / International Visits

The restrictions imposed in 2020 to contend with the global COVID-19 pandemic severely constrained international travel to and from South Africa.

## Significant Research-Aligned Events

The Governance and Development Unit (GDU) continued to implement its research and training programme to strengthen Municipal Public Accounts Committees (MPACs) in the Eastern Cape Province during 2020. The certificate course on the Essentials of MPAC Oversight, offered by the GDU to MPAC councillors and their support staff, which had previously been

presented in a face-to-face format, had to be converted into an online course. By the end of 2020, sixty-six (66) participants from across eighteen (18) municipalities had successfully completed the course. GDU interns provided research support to MPACs in Amathole District Municipality in East London and Chris Hani District Municipality in Komani (Queenstown). In both instances, a detailed assessment of the municipality's annual report was undertaken to assist the MPAC to complete its annual Oversight Report. In addition, quarterly Financial Performance Analysis reports were produced to strengthen in-year oversight in both municipalities. These reports were provided to their respective MPACs. Finally, at the request of the Eastern Cape Department of Cooperative Government and Traditional Affairs (CoGTA), the GDU produced an additional Financial Performance Analysis of the Sundays River Local Municipality, along with a set of recommendations for improving its performance.

The Neil Aggett Labour Studies Unit (NALSU) had another fruitful year in terms of policy development, research and workers' education. "The year was a tough one," said NALSU Director Professor Lucien van der Walt, "but we expanded our footprint and partnerships. As a collegial, bottom-up hub for a wide range of activities, we draw on wide expertise, but our real strength is the commitment and generosity of our people." In March 2020, NALSU and the International Labour Research and Information Group (ILRIG) organised a packed one-day workshop in Makhanda on "An Alternative for a World in Crisis: The Rojava Revolution, Kurdish Freedom Movement and Prospects for South Africa's Incomplete Liberation." This was the opening event in NALSU's popular *Labour Studies Seminars* series, and the main speakers were Ercan Ayboga and Rohash Shexo from Kurdistan. It was funded by the Friedrich-Ebert-Stiftung (FES) and the Amazwi South African Museum of Literature and partnered with the East Cape Agricultural Research Project (ECARP) / *Phakamani Siyephambili*, the Unemployed People's Movement (UPM), and the Sakhuluntu Cultural Group / Workers World Media.

With the onset of the lockdown, NALSU moved the Labour Studies Seminars series online by launching an ongoing series of podcasts as well as live online events on the theme of "COVID-19 and the Working-Class Movement in South Africa." In addition, NALSU members spoke on a wide range of platforms. NALSU's Professor van der Walt spoke at events by the UPM, the Sundays River Valley Farm Workers Forum, the Labour Community Media Forum, and the South African Federation of Trade Unions (SAFTU), and co-organised a summit of Eastern Cape social movements, hosted by the UPM. Professor Mike Rogan spoke at the Overseas Development Institute's (ODI) online "Poverty monitoring in the context of COVID-19," on informal workers and COVID-19 at the Urban Thinkers Campus series and the UN Women Webinar, and the Capacity Building Programme for Employment Promotion (CBPEP).



Professor Lucien van der Walt handing over a certificate at the end of NALSU's course for trade unions.

Photo: Department of Sociology and Industrial Sociology

Publications - scholarly and popular - covered a wide range of areas, including labour history, union renewal, social protection and policy, with Professor Rogan also involved in the National Income Dynamics Study (NIDS) - Coronavirus Rapid Mobile Survey (CRAM). Professor Rogan and NALSU's Dr Laura Alfers were involved in the Advisory Committee of Women in Informal Employment: Globalizing and Organizing's (WIEGO) 12-city project on the "COVID-19 Crisis and the Informal Economy Study," funded by the IDRC in Canada. Associate Professor Nicole Ulrich was active in the new, international "Worlds of Related Coercions in Work" (WORCK) project, which links the stories of work and production with those of violence, expropriation and marginalisation. Professors Ulrich and van der Walt continued to work closely with the South African Municipal Workers Union (SAMWU) on its official history.

NALSU donated R25,000 to the Rhodes University COVID-19 Relief Fund: these funds were awarded to NALSU for Associate Professor Rogan's NIDS-CRAM policy analysis. (A fuller but incomplete list of outputs by NALSU Members can be found in the Economics and Economic History, History and Sociology sections of this Research Report).

NALSU's Lalitha Naidoo, director of ECARP, continued her work on rural livelihoods among small-scale farmers, agricultural value chains, and tracking decent work indicators as well as supporting the *Phakamani Siyephambili* farm-worker and farm-dwellers committees, which cover over five-hundred (500) farms in the Sarah Baartman and Amathole districts. In addition, she submitted her PhD on the political economy of agrarian minimum wages for examination. NALSU's Kanyiso Ntikinca is working on value chains in deciduous fruit towards his PhD and is involved in work with ECARP to support and empower farm-workers. Russel Grinker, former head of the Eastern Cape Socio-Economic Consultative Council (ECSECC), has become a NALSU Member, bringing extensive expertise.

Three (3) NALSU-funded students completed their degrees in 2020: two (2) students, supervised by Dr Alfers and

Professor Rogan, were awarded their Masters degrees (one (1) with distinction), and one (1) PhD candidate, supervised by Professor Rogan, was awarded a Doctorate and will be joining NALSU, as an NRF Postdoctoral Fellow. These graduates are, in addition to the many students, supervised by NALSU registered members in the Departments of Economics and Economic History, History, and Sociology. Meanwhile, Mattie Webb from the University of California, Santa Barbara, was affiliated with NALSU as a Fulbright Fellow.

NALSU was also able to run the second module of its acclaimed short-course programme “Policy, Theory and Research for Labour Movements” in late 2020. Coordinated by Professor van der Walt, this merSETA-funded university programme is directed at metal workers’ unions in the Eastern Cape. It follows NALSU’s commitment to inclusive, non-sectarian collaborations with a wide range of unions. However, due to COVID-19, it was not possible to hold the annual Vuyisile Mini Winter School, which is funded by the Freidich Elbert Stifting (FES) and brings together around fifty (50) trade unionists and worker organisers. Vuyisile Mini, a leader of the Dock Workers Union and *Umkhonto we Sizwe*, was executed by the apartheid state in 1964. NALSU continued its close relationship with the Mini family, with which it is engaged in an oral history project, and was honoured with an invitation to the reburial of Vuyisile Mini at his ancestral homestead in the hills of Tsomo in the former Transkei. Professor van der Walt, who was there, affirms: “We strive to honour the memory of martyred trade unionists Neil Aggett and Vuyisile Mini in our work.”

The Unit of Zimbabwean Studies (UZS) continued to be productive in relation to research and publications as well as the graduation of PhD candidates studying various aspects of Zimbabwean history and society. The head of the Unit, Professor Kirk Helliker, focused on finalising two (2) books (on fast-track land reform and crisis-living in contemporary Zimbabwe) while also producing a special edition on Zimbabwe for the *Journal of Contemporary African Studies*. He also engaged regularly with several civil society groups in Zimbabwe around questions of, for example, endemic corruption in Zimbabwe, the COVID-19 lockdown and the shrinking of civil space in Zimbabwe, and the activation of new forms of social and political accountability in Zimbabwe. Professor Helliker’s Postdoctoral Fellow, Dr Freedom Mazwi, was highly productive in publishing journal articles and in preparing his PhD for publication as a manuscript. Together, Professor Helliker and Dr Mazwi also initiated an edited book on neoliberalism, capital penetration and the peasantry in southern and east Africa.

## PUBLICATIONS

### Books/Chapters/Monographs

Alfers, L.

Alfers, L. (2020) Social Protection and Informal Workers: Rethinking the Terms of Inclusion. In: Chen, M.A. and Carre, F. (eds.). *The Informal Economy Revisited Examining the Past, Envisioning the Future*. London: Routledge. p.210-214. ISBN: 9780367191511.

Gunnigle, P.

Wallace, J., Gunnigle, P. and O’Sullivan, M. (2020) Industrial Relations in Ireland 5th Edition. 5th Ed. *Ireland: Institute of Public Administration*. ISBN: 9781910393291.

Lavelle, J., Gunnigle, P. and Monaghan, S. (2020) HR Function at Subsidiary Level: Mediating Challenges and Tensions. In: Dundon, T. and Wilkinson, A. (eds.). *Case Studies in Work, Employment and Human Resource Management*. Cheltenham, UK: Edward Elgar. p.216-221. ISBN: 9781788975582.

Murphy, C., Lavelle, J., Turner, T., Ryan, L., McMahon, J., O’Sullivan, M., O’Brien, M. and Gunnigle, P. (2020) Zero Hours Work in Ireland. In: *Zero Hours and On-call Work in Anglo-Saxon Countries*. London: Springer. p.21-40. ISBN: 9789811366130.

Hadebe, S.

Hadebe, S. (2020) Artistic expressions of the Ndebele genocide. In: Ncube, G., Sayi, S. and Ndebele, L. (eds.). *Power, Politics and Production*. Bulawayo: Amagugu Publishers. p.67-90. ISBN: 9781779016140.

Hadebe, S. (2020) The Ethnicization of Political Mobilization in Zimbabwe: The Case of Pro-Mthwakazi Movements. In: Ndlovu-Gatsheni, S.J. and Ruhanya, P. (eds.). *The History and Political Transition of Zimbabwe*. Switzerland: Palgrave Macmillan. p.1-458. ISBN: 9783030477325.

Holloway, J.P.

Holloway, J.P. (2020) The train. In: Holloway, J., Dinerstein, A.C., Vela, A.G. and Gonzalez, E. (eds.). *Open Marxism 4*. London: Pluto Press. p.168-176. ISBN: 9780745340258.

Holloway, J.P. (2020) Capital is the catastrophe of humanity: we must break it. And we are the catastrophe of capital: it must break us. In other words: Greece. In: Holloway, J.P., Nasioka, K. and Doulos, P. (eds.). *Beyond crisis*. Oakland, USA: PM Press. p.46-58. ISBN: 9781629635156.

Holloway, J.P. (2020) Jumping on the bus. In: International Initiative, (ed.). *Building free life: dialogues with Ocalan*. Oakland, USA: PM Press. p.8-10. ISBN: 9781629637044.

Holloway, J.P., Nasioka, K. and Doulos, P. (2020) Introduction. In: Holloway, J.P., Nasioka, K. and Doulos, P. (eds.). *Beyond crisis*. Oakland, USA: PM Press. p.1-10. ISBN: 9781629635156.

Holloway, J.P., Nasioka, K. and Doulos, P. (2020) Anti-epilogue. In: Holloway, J.P., Nasioka, K. and Doulos, P. (eds.). *Beyond crisis*. Oakland, USA: PM Press. p.245-256. ISBN: 9781629635156.

Holloway, J.P., Dinerstein, A.C., Vela, A.G. and Gonzalez, E. (2020) Open Marxism against a closing world. In: Holloway, J., Dinerstein, A.C., Vela, A.G. and Gonzalez, E. (eds.). *Open Marxism 4*. London: Pluto Press. p.1-14. ISBN: 9780745340258.

Holloway, J.P., Dinerstein, A.C., Vela, A.G. and Gonzalez, E. (ed.) (2020) *Open Marxism 4*. London: Pluto Press. ISBN: 9780745340258.

Holloway, J.P., Nasioka, K. and Doulos, P. (ed.) (2020) *Beyond crisis*. Oakland, USA: PM Press. ISBN: 9781629635156.

Jha, P.

Jha, P. and Sikdar, S. (2020) Contemporary capitalism and employment challenges: some reflections on India. In: Mishra, N.K. (ed.). *Development challenges of India after twenty-five years of economic reforms*. Switzerland: Springer Nature Switzerland. p.157-182. ISBN: 9789811582646.

Jha, P. and Sikdar, S. (2020) Public provisioning for secondary education in India: a situation assessment. In: Tilak, JBG (ed.). *Universal secondary education in India*. Switzerland: Springer Nature Switzerland. p.367-393. ISBN: 9789811553653.

## Concerts, Exhibitions, Performances, Workshops, Events

Helliker, K.

Helliker, K. Presentation. The state and legal struggles. *Unemployed Peoples Movement (UPM) workshop, Makhanda*. Rhodes University, Makhanda. South Africa. 26 January 2020.

Lupindo, E.

Lupindo, E. Performance. African Street in the Solo Ball. *Virtual National Arts Festival (vNAF)*. Online, Makhanda. South Africa. 25 June - 5 July 2020.

Reynolds, J.

Reynolds, J. Presentation. The policy process at provincial level. *Development Policy Lecture Series*. Department of Development Studies, Nelson Mandela University. 19 August 2020.

Van Der Walt, L.

Van Der Walt, L. Presentation. Critically assessing social programmes to mitigate COVID-19: Long march to rebuilding bottom-up, working class-led change in South Africa. #SAFTUWorkersConversations: *Coronavirus and the Working Class*, South African Federation of Trade Unions (SAFTU). Online webinar, Johannesburg. South Africa. 26 May 2020.

Van Der Walt, L. Presentation. The working class and the crisis: Mapping a long march. *Labour Community Media Forums EC Provincial Workshop Programme*. Noluthando Hall, Joza, Makhanda. South Africa. 22 October 2020.

Van Der Walt, L. Presentation. Working-class heritage: The creation of the working class and its struggles in South Africa. *Heritage Day workshop, Sundays River Valley Farm Workers Forum*. Masizakhe Community Hall, Nomathamsanqa township, Addo. South Africa. 26 September 2020.

Van Der Walt, L. Design, facilitation, presentation. Understanding South Africa's Incomplete Liberation: How did we end up here? *Makhanda Workshop, Rojava Speaking Tour: An Alternative for a World in Crisis: The Rojava Revolution, Kurdish Freedom Movement and Prospects for South Africa's Incomplete Liberation*, Neil Aggett Labour Studies Unit (NALSU)/ International Labour Research and Information Group (ILRIG). Amazwi South African Museum of Literature, Makhanda. South Africa. 9 March 2020.

Van Der Walt, L. Presentation. Political implications of the successful UPM Case to dissolve Makana Municipality. *Unemployed Peoples Movement (UPM) workshop, Makhanda*. Rhodes University, Makhanda. South Africa. 27 January 2020.

Van Der Walt, L. Presentation. Can we Mix Litigation and Mass-Democratic Mobilisation? Critical Reflections on Current Community-Based Legal Challenges in the Eastern Cape, and the Lessons of the 1980s and 1990s. *Workshop/ summit of Eastern Cape social movements on Participatory Budgeting*, hosted by *Unemployed Peoples Movement (UPM)*. Settlers Monument, Makhanda. South Africa. 30 November 2020.

Van Der Walt, L. and Maisiri, L.J.

Van Der Walt, L., Ulrich, N., Maisiri, L.J. and Hagemeier, L. Design, facilitation, presentation. History and Debates in the Workers' Movement. *Policy, Theory and Research for Labour Movements programme*. Neil Aggett Labour Studies Unit (NALSU)/ Sociology Department, Rhodes University. Graham Hotel, Makhanda. South Africa. 12 November - 6 December 2020.

## Other Publications

Reynolds, J.

Macleod, C.I. and Reynolds, J. (2020) Strategic assessment of policies, programmes and research on unintended pregnancies, contraception, unsafe abortion and abortion services in Botswana. In: Macleod, C.I. (ed.). *Strategic assessment of policies, programmes and research on unintended pregnancies, contraception, unsafe abortion and abortion services in Botswana*. Grahamstown: Critical Studies in Sexualities and Reproduction.

Macleod, C.I. and Reynolds, J. (2020). In: *Strategic assessment of policies, programmes, and research on unintended pregnancies, contraception, unsafe abortion and abortion services in Eswatini*. Grahamstown: Rhodes University.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Bhatasara, S.

Bhatasara, S. (2020) Women's access to land and security of tenure post-2013 constitution in Zimbabwe. *African Journal of Land Policy and Geospatial Sciences (AJLP & GS)*. 38 (1). p.186-194.

Chiweshe, M.K.

Chiweshe, M.K., Nyatara, A. and Mahiya, I. (2020) Rural women as entrepreneurs in the context of patriarchy: experiences of female entrepreneurs in Mudzi district, Zimbabwe. *Africanus: Journal of Development Studies*. 49 (2). p.1-17.

Chiweshe, M.K. (2020) Money, power and the complexities of urban land corruption in Zimbabwe. *African Journal of Land Policy and Geospatial Sciences (AJLP & GS)*. 3 (1). p.131-141

Jha, P.

Jha, P. and Paris, Y. (2020) Late neocolonialism: monopoly capitalism in permanent crisis. *Agrarian South: Journal of Political Economy*. 9 (1). p.78-93.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Alfers, L.

Bhan, G., Surie, A., Horwood, C., Dobson, R., Alfers, L., Portela, A. and Rollins, N. (2020) Informal work and maternal and child health: A blind spot in public health and research. *World Health Organization. Bulletin of the World Health Organization*. 98 (3). p.219-221.

Shezi, B., Mathee, A., Alfers, L., Dobson, R., Ndlovu, P., Reddy, T. and Street, RA (2020) Respiratory outcomes among plant processing workers in Durban, South Africa. *International Journal of Occupational Safety and Ergonomics*. (2020). p.1-5.

Bialakowsky, A.L.

Bialakowsky, A.L. and DÍAZ, L.M.M. (2020) Pablo gonzález casanova: Science, method and paradigms, necessary insurgencies. *Utopia y Praxis Latinoamericana*. 25 (91). p.18-34.

Chiweshe, M.K.

Chiweshe, M.K., Mutanana, N. and Tsvere, M. (2020) General side effects and challenges associated with anti-epilepsy medication: a review of related literature. *African Journal of Primary Health Care and Family Medicine*. 12 (1). p.1-5.

Gunnigle, P.

O'Sullivan, M., Lavelle, J., Turner, T., McMahon, J., Murphy, C., Ryan, L. and Gunnigle, P. (2020) Employer-led flexibility, working time uncertainty, and trade union responses: The case of academics, teachers and school secretaries in Ireland. *Journal of Industrial Relations*. p.1-24.

Monaghan, S.M., Gunnigle, P. and Lavelle, J. (2020) Subnational Location Capital: The Role of Subnational Institutional Actors and Socio-spatial Factors on Firm Location. *British Journal of Management*. 31 (1). p.618-635.

Helliker, K.

Helliker, K. and Musira, T. (2020) Zimbabwe: continuities and changes. *Journal of Contemporary African Studies: JCAS*. 38 (1). p.5-17.

Jha, P.

Jha, P. and Parvati, P. (2020) National education policy, 2020: long on rhetoric, short on substance. *Economic and Political Weekly*. 55 (34). p.14-16.

Mahiya, I.T.

Mahiya, I.T. (2020) An exploratory study into the establishment of agricultural innovation platforms to improve agricultural efficiency in Hwedza district, Zimbabwe. *African Journal of Science, Technology, Innovation and Development*. p.1-12.

Mahiya, I.T. (2020) An empirical chronicling of how agricultural innovation platforms were established in Hwedza, Zimbabwe. *Journal of Asian and African Studies*. p.1-15.



**Patience Chadabuka.**

Photo: Department of Sociology and Industrial Sociology

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**Lupindo, E.**

Lupindo, E. How bodies remember: The Truth and Reconciliation Commission and the silences of sexualities in prison wardrobes. *Anthropology and Development Studies Seminar Series*. University of Johannesburg, Johannesburg. South Africa. August 2020.

**Reynolds, J.**

Macleod, C.I. and Reynolds, J. Strategic assessment of policies, programmes and research on unintended pregnancies, contraception and unsafe abortion in Botswana: Background paper. *Ministry of Health, Botswana, World Health Organisation and UNFPA*. Botswana. January 2020.

**Wilson, J.K.**

Wilson, J.K. How bodies remember: The Truth and Reconciliation Commission and the silences of sexualities in prison wardrobes. *Anthropology and Development Studies Seminar Series*. University of Johannesburg, Johannesburg. South Africa. June 2020.

**Maisiri, L., Nyalungu, P. and Van Der Walt, L.**  
 Maisiri, L., Nyalungu, P. and Van Der Walt, L. (2020) Anarchist/syndicalist and independent Marxist intersections in post-apartheid struggles, South Africa: the WSF/ZACF current in Gauteng, 1990s-2010s. *Globalizations*. 17 (5). p.797-819.

**Mazwi, F.**

Mazwi, F. (2020) Sugar production dynamics in Zimbabwe: an analysis of contract farming at Hippo Valley. *Review of African Political Economy*. 47 (166). p.568-584.

Mazwi, F., Chambati, W. and Mudimu, T. (2020) Tobacco contract farming in Zimbabwe: power dynamics, accumulation trajectories, land use patterns and livelihoods. *Journal of Contemporary African Studies: JCAS*. 38 (1). p.55-71.

**Muparamoto, N.**

Muparamoto, N. and Moen, K. (2020) Gay, ngochani, ordaa, gumutete and mwana waEriza: 'globalised' and 'localised' identity labels among same-sex attracted men in Harare, Zimbabwe. *Culture, Health and Sexuality*. 2020 (2020). p.1-15.

**Mwonzora, G.**

Mwonzora, G. (2020) Social media and citizen mobilisation in the biometric voter registration (BVR) process in Zimbabwe. *Journal of Contemporary African Studies: JCAS*. 38 (1). p.103-120.

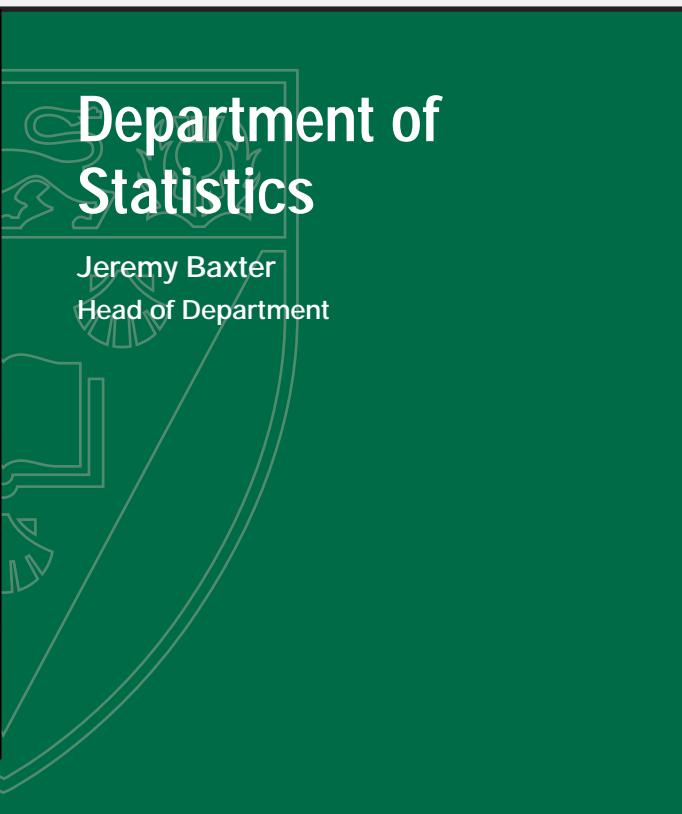
Mwonzora, G. and Xaba, M.B. (2020) From the Booth to the Dock: 2018 elections in Zimbabwe and the elusive search for electoral integrity. *Commonwealth and Comparative Politics*. 58 (4). p.433-451.

**Mwonzora, G. and Helliker, K.**

Mwonzora, G. and Helliker, K. (2020) Learning and performing political violence: ZANU-PF Youth and the 2008 presidential run-off election in Zimbabwe. *African Studies*. 2020 (2020). p.1-20.



Photo: Simon Pamphilon



## Introduction

Professor Raubenheimer and Langston were appointed to the Department in January 2021. Despite the COVID-19 restrictions, the Department of Statistics continued pursuing a broad range of teaching and research interests and activities during 2020.

The staff and students of the Department of Statistics mourn the untimely passing of Dr Jaap van Wyk (Rhodes University, 2012-2013). We offer our heartfelt condolences to Professor Tertius and Lynette de Wet on the passing of their son Chris.

The staff and students wish Professor Sarah Radloff all the best in her retirement. Emeriti Professor Radloff joined the staff of the Department in 1972. During her distinguished career, she taught extensively, published over 200 accredited publications and was awarded the Senior Vice-Chancellor's Distinguished Research Award (2005). Sarah, your optimism, fabulous sense of humour and enthusiasm motivated us. You made an immense contribution to the growth and development of all the students and staff in the department. Thank you.

The Department wishes to thank Thina Maqubela (2014-2021) for her contributions to the Department, in particular for her concerted efforts in teaching (Vice-Chancellor's Distinguished Teaching Award, 2019). *Ndikunqwenelela konke okuhle kwiphulolakho elitsha, huntshuuuu!*

## Postgraduates / Graduations

Olwethu Dlangamandla completed her Masters of Science. Her thesis was titled *A Modelling Approach to the Analysis of Complex Survey Data*. In her thesis, Dlangamandla discussed the development of appropriate complex survey methodological theory that is derived by extending and adapting the concepts of survey sampling to incorporate complex models. Dlangamandla implemented an extensive simulation study of these complex survey models.

Philip Mostert completed his Masters of Science with distinction. His thesis was titled *Bayesian Accelerated Life Tests for the Weibull Distribution under Non-informative Priors*. In his thesis, Mostert derived and subsequently inspected five (5) non-informative Bayesian estimates for the Weibull distribution in accelerated life testing. Mostert conducted an extensive, detailed simulation study to investigate the appropriateness of the various estimation methods, including the coverage rates. These methods were subsequently applied to a real-life time-to-failure application.

Three (3) students graduated with a Bachelor of Science Honours in Mathematical Statistics, one with joint Bachelor of Science Honours in Mathematical Statistics and Mathematics. Nicolas Thekiso and Vuyolwethu Zumani attained distinctions.

Daniel Proestos attained a distinction for Mathematical Statistics 3.

## Distinguished Visitors and Significant Research Aligned Events

Standard Bank presented highly informative banking career seminars to the third year and Postgraduate students during the course of the year. Jurie Schoeman and the Business Systems Group (BSG) team discussed the BSG internship and graduate placement programmes. The BSG took the students through a complete statistical analysis of a current BSG consulting project. This fascinating and highly informative seminar clearly demonstrated the practical application of the statistical concepts and theory that the students are learning in their courses. The BSG team strongly recommended that the students consider a career as a data scientist and provided many practical and valuable tips and suggestions for the students with regards to further study and career opportunities.



Amy Langston, BSc and BScH (Rhodes) completed a MRes in Advanced Statistics from the University of Glasgow, Scotland. She was appointed as a Lecturer in the Department of Statistics in January 2020.

Photo: Department Statistics

## PUBLICATIONS

### Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Correa, F.M.

dos Santos Fernandes, L., Correa, F.M., Ingram, K.T., Furtado deAlmeida, A.A. and Royaert, S. (2020) QTL mapping and identification of SNP-haplotypes affecting yield components of *Theobroma cacao* L. *Horticulture Research*. 7 (26). p.1-18.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Correa, F.M.

Gradela, A.G., Pires, I.C., Matos, M.H.T.M., Correa, F.M., Faria, M.D., Silva, J.S.S., Torres, L.R.C.T. and Milanelo, L.M. (2020) Reproductive biology, morphology, and morphometry of ovaries and oviducts of *Trachemys scripta elegans* in Brazilian Cerrado. *Pesquisa Veterinaria Brasileira*. 40 (2). p.141-154.

Gradela, A.G., Souza, V.P., Queiroz, M.M., Constantino, A.C., Faria, M.D., Pires, I.C. and Correa, F.M. (2020) Serum biochemistry of *Trachemys scripta elegans* and *Trachemys dorbignyi* (Testudines: Emydidae) bred in captivity in the Northeastern semiarid region of Brazil. *Veterinary World*. 13 (6). p.1083-1090.



Photo: Simon Pamphilon

# Department of Zoology and Entomology

Professor Nicole B Richoux

Head of Department

## Introduction

Despite the devastating impacts of COVID-19 that continue to be felt worldwide, the Department of Zoology and Entomology maintained strong research momentum during 2020. The staff and associates contributed to more than hundred and thirty (130) peer-reviewed subsidy-earning journal publications, six (6) book chapters, two (2) popular articles, and a variety of conference presentations. Academic staff continued to contribute to research initiatives occurring around the world through manuscript, project and programme reviews while simultaneously adapting to remote/online teaching and supervision. To say that it was a challenging year is stating things mildly.

## Postgraduates / Graduations

The Department continues to supervise to completion significant numbers of Postgraduate students each year. During 2020, we applauded eight (8) Honours, fourteen (14) MSc, and ten (10) PhD candidates as successful graduates of their programmes. We wish all of them the very best as they continue their journeys as young scientists.

Here are a few spotlights on some of the excellent work completed by Postgraduates of 2020:

One (1) PhD graduate in Zoology, Dr Jessica Comley, looked at carnivore intra-guild competition in Selati Game Reserve, Limpopo Province. Dr Comley found that interactions among carnivores and their associated impacts varied within the carnivore guild, and their successful co-existence within small, enclosed reserves was facilitated by trade-offs between various risks and benefits. Her research revealed that the effects of large carnivores (i.e., lions, spotted hyaenas and leopards) are not homogenous; thus, more research on carnivore interactions is needed to conserve biodiversity and ecosystem dynamics successfully. She has published three (3) research articles from this work in accredited journals with impact factors of  $\leq 2.5$ .

Mavis Acheampong successfully graduated with a PhD in Entomology. Her research focused on the biological traits of several insect pathogenic fungi that have been investigated for use against various pests of economic importance in citrus orchards across South Africa. Her research was essential to understand better the performance of these fungi in relation to their temperature and humidity requirements for successful infection, as well as their tolerance to UV radiation. She highlighted that UV radiation was highly detrimental to these fungi and concluded that the development of a formulation that offers protection against this is imperative to ensure the effectiveness of these fungi in the field, especially against the foliar insect pests. This will improve their future success as a non-chemical control alternative of citrus pests and encourage their adoption

in integrated pest management programmes in citrus orchards across South Africa. Dr Acheampong is currently a lecturer in the Department of Crop Science at the University of Ghana.

Dr Evans Mauda completed his PhD in Entomology in 2020. Evans worked on *Lycium ferocissimum* (Solanaceae), a noxious weed in Australia that is native to South Africa. He aimed to develop a biological control programme for this species with the ultimate goal of reducing the negative consequences of its growth in Australia. One of the primary considerations of this programme was to clarify the taxonomic uncertainty relating to the plant in South Africa and Australia, to ensure that candidate agents were collected from the correct species and to prioritise candidate insect and fungal biological control agents for *L. ferocissimum*. Evans was able to clarify a number of the morphological and taxonomic uncertainties about the weed. He also discovered close to sixty (60) insects associated with the plant, some of which were new species to Science. Mauda's work resulted in four candidate agents being exported to Australia. Mauda is currently holding a permanent position as Research Entomologist at Citrus Research International, South Africa.

Tapiwa Mushore successfully graduated with an MSc in Entomology. His research focused on two species of insect pests, the Keurboom moth and the blue-winged leafhopper

*Molopopterus* sp. Both species are endemic to South Africa and have the potential to negatively impact the cultivation of honeybush, an indigenous crop grown in the fynbos region for the production of honeybush tea. His research showed that although the Keurboom moth may be destructive as a stem borer, its presence in honeybush fields was minimal and thus, control of this enigmatic species is likely not necessary. He also identified essential aspects of the leafhopper biology and feeding preferences. This information is vital should control options need to be developed against this insect in the future. Mushore has since embarked on a PhD in Entomology at Rhodes University, where he continues to research insect pests of agricultural importance.

## Distinguished Visitors/ International Visits

The Department was unable to host any Distinguished Visitors in 2020.

## Significant Research Aligned Events

**Centre for Biological Control:** One of the highlights of 2020 was the dramatic collapse of water hyacinth on Hartbeespoort Dam under herbivore pressure from the planthopper *Megamelus scutellaris*. Professor Julie Coetze and her team persevered with their hard work at this site, characterised by both cold winters and high nutrient concentrations. This success story has shown us the value of the mass-rearing and inundating releases of biological control agents, essentially using them as a green herbicide. Having a geography student on the team who, through satellite imagery, has shown landscape changes in the water hyacinth infestation levels over time has been crucial in showing landowners and water resource managers what can be achieved. The situation at Hartbeespoort has also been an eye-opener in terms of community engagement and has taught us some valuable lessons in how we communicate what we do. On the agricultural side, there has been considerable ongoing research over the last year, mainly in collaboration with Citrus Research International, to develop entomopathogenic fungi and viruses for pests on citrus. A significant number of growers are now putting orchards under netting to reduce wind damage, and we have a number of studies on how netting might change pest complexes and their natural enemies.



Tapiwa Mushore sampling for leafhoppers in the field.

Photo: Department of Zoology and Entomology

# PUBLICATIONS

## Books/Chapters/Monographs

Coetzee, J.A., Hill, M.P. and Martin, G.D.

Coetzee, J.A., Hill, M.P., Martin, G.D., Smith, R. and Strange, E. (2020) More than a century of Biological control against invasive alien plants in South Africa: A synoptic view of what has been accomplished. In: van Wilgen, B., Measey, J., Richardson, D.M., Wilson, J.R. and Zengeya, T.A. (eds.). *Biological Invasions of South Africa*. London: Springer. p.553-572. ISBN: 9783030323936.

Hill, M.P.

Hill, M.P. and Coetzee, J.A. (2020) Chapter 20: How can progress in the understanding of antagonistic interactions be applied to improve biological control of plant invasions? In: Travest, A. and Richardson, D.M. (eds.). *Plant Invasions: The Role of Biotic Interactions*. Wallingford, UK: CABI. p.361-374. ISBN: 9781789242171.

Coetzee, J.A. and Hill, M.P. (2020) Chapter 19: More than a century of biological control against invasive alien plants in South Africa: A synoptic view of what has been accomplished. In: van Wilgen, B.W., Richardson, D.M., Measey, J., Wilson, J.R. and Zengeya, T.A. (eds.). *Invading Nature - Springer Series in Invasion Ecology: Biological Invasions in South Africa*. Switzerland: Springer Open. p.553-572. ISBN: 9783030323943.

Coetzee, J.A. and Hill, M.P. (2020) Chapter 4: Invasive alien aquatic plants in freshwater ecosystems. In: van Wilgen, B.W., Richardson, D.M., Measey, J., Wilson, J.R. and Zengeya, T.A. (eds.). *Invading Nature - Springer Series in Invasion Ecology: Biological Invasions in South Africa*. Switzerland: Springer Open. p.67-96. ISBN: 9783030323943.

Hill, M.P., Coetzee, J.A. and Martin, G.D.

Hill, M.P., Coetzee, J.A., Martin, G.D., Smith, R. and Strange, E. (2020) Invasive alien aquatic plants in freshwater ecosystems. In: van Wilgen, B., Measey, J., Richardson, D.M., Wilson, J.R. and Zengeya, T.A. (eds.). *Biological Invasions of South Africa*. London: Springer. p.97-114. ISBN: 9783030323936.

Ivey, P.J. and Weaver, K.N.

Bryne, M.J., Du Plessis, D., Ivey, P.J., Measey, J., Robertson, M.P., Robinson, T.B. and Weaver, K.N. (2020) Education, Training and Capacity-Building in the Field of Biological Invasions in South Africa. In: van Wilgen, B., Measey, J., Richardson, D.M., Wilson, J.R. and Zengeya, T.A. (eds.). *Biological Invasions of South Africa*. London: Springer. p.731-755. ISBN: 9783030323936.

Moore, S.D.

Moore, S.D. and Jukes, M.D. (2020) Advances in microbial control in IPM: entomopathogenic viruses. In: Kogan, M. and Heinrichs, E.A. (eds.). *Integrated management of insect pests: Current and future developments*. Cambridge: Burleigh Dodds Science Publishing Limited. p.1-57. ISBN: 9781786762603.

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Craig, A.J.F.K. and Hulley, P.E.

Craig, A.J.F.K. and Hulley, P.E. (2020) The birds of Fort Fordyce Reserve, Eastern Cape. *Biodiversity Observations*. 11 (1:1). p.1-17.

Reid, M.K. and Hill, M.P.

Reid, M.K., Coetzee, J.A., Hill, M.P., Diaz, R., Gettys, L., Cuda, J. and Reid, C. (2020) Insect Herbivores Associated with *Nymphaea mexicana* (Nymphaeaceae) in Southern United States: Potential Biological Control Agents for South Africa. *Florida Entomologist*. 103 (1). p.54-63.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Acheampong, M.A.A.

Traoré, S., Cornelius, E.U., Samaké, F., Essilfie, G., Babana, A.H., Bengaly, M., Koné, A., Cissé, H. and Acheampong, M.A.A. (2020) Efficiency of common washing treatments in reducing microbial

levels on lettuce in mali. *West African Journal of Applied Ecology*. 28 (2). p.64-74.

Acheampong, M.A.A., Coombes, C.A., Moore, S.D. and Hill, M.P.

Acheampong, M.A.A., Coombes, C.A., Moore, S.D. and Hill, M.P. (2020) Temperature tolerance and humidity requirements of select entomopathogenic fungal isolates for future use in citrus IPM programmes. *Journal of Invertebrate Pathology*. 174 (107436). p.1-9.

Aigbedion-Atalor, P.O.

Aigbedion-Atalor, P.O. (2020) Weed or not a weed? Density, perceptions and management of *Chromolaena odorata* (Asteraceae) in West Africa: Voices from Ghana. *Weed Research*. 60 (2020). p.406-414.

Aigbedion-Atalor, P.O. and Hill, M.P.

Aigbedion-Atalor, P.O., Abuelgasim Mohamed, S., Hill, M.P., Zalucki, M.P., Azrag, A.G.A., Srinivasan, R. and Ekesi, S. (2020) Host stage preference and performance of *Dolichogenidea gelechiidivorus* (Hymenoptera: Braconidae), a candidate for classical biological control of *Tuta absoluta* in Africa. *Biological Control*. 144 (104215). p.1-8.

Albertyn, S., Moore, S.D., Marsberg, T., Coombes, C.A. and Hill, M.P.

Albertyn, S., Moore, S.D., Marsberg, T., Coombes, C.A. and Hill, M.P. (2020) The influence of citrus orchard age on the ecology of entomopathogenic fungi and nematodes. *Biocontrol Science and Technology*. 31 (1). p.80-96.

Barnes, R.S.K.

Barnes, R.S.K. (2020) Interspecific relationship of patchiness to occupancy and abundance, as exemplified by seagrass macrobenthos. *Ecological Indicators*. 2020 (2020). p.1-11.

Barnes, R.S.K. (2020) Do species display characteristic intraspecific levels of patchiness in a given habitat type? The case of intertidal seagrass macrobenthos. *Marine Biology*. 167 (177). p.1-12.

Barnes, R.S.K. (2020) Do different sympatric seagrasses support macrobenthic faunas of differing composition, abundance, biodiversity or patchiness? *Marine Environmental Research*. 160 (2020). p.1-10.

Barnes, R.S.K. and Claassens, L.

Barnes, R.S.K. and Claassens, L. (2020) Do beds of subtidal estuarine seagrass constitute a refuge for macrobenthic biodiversity threatened intertidally? *Biodiversity and Conservation*. 29. (2020). p.3227-3244.

Baso, N.C., Delport, R.G. and Coetzee, J.A.

Baso, N.C., Delport, R.G. and Coetzee, J.A. (2020) Nutrient-mediated silica uptake from agricultural runoff in invasive floating macrophytes: implications for biological control. *Hydrobiologia*. 847 (2020). p.3397-3407.

Canavan, K.

Mapaura, A., Canavan, K., Richardson, D., Steenhuisen, S. and Clark, V.R. (2020) Invasive *Nassella* species in South Africa: a review. *South Africa. Journal of Botany*. 135 (2020). p.336-348.

Canavan, K. and Paterson, I.D.

Canavan, K., Canavan, S., Harms, N.E., Lambertini, C., Paterson, I.D. and Thum, R.A. (2020) The potential for biological control on cryptic plant invasions. *Biological Control*. 144 (2020). p.1-9.

Caputo, M. and Froneman, P.W.

Caputo, M., Bouveroux, T., Froneman, P.W., Shaanika, T. and Plon, S. (2020) Occurrence of Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) off the Wild Coast of South Africa using photographic identification. *Marine Mammal Science*. 37 (1). p.220-234.

Caputo, M., Froneman, P.W. and Plon, S. (2020) Common dolphin *Delphinus delphis* occurrence off the Wild Coast of South Africa. *African Journal of Marine Science*. 42 (4). p.439-448.

Chari, L.D.

Dalu, M.T.B., Cuthbert, R.N., Muhali, H., Chari, L.D., Manyani, A., Masunungure, C. and Dalu, T. (2020) Is Awareness on Plastic Pollution Being Raised in Schools? Understanding Perceptions of Primary and Secondary School Educators. *Sustainability*. 12 (2020). p.1-17.

Chari, L.D. and Martin, G.D.

Chari, L.D., Martin, G.D., Steenhuisen, S., Adams, L.D. and Clark, V.R. (2020) Biology of Invasive Plants. 1. *Pyracantha angustifolia* (Franch.) C.K. Schneid. *Invasive Plant Science and Management*. 13 (2020). p.120-142.

Chari, L.D., Mauda, E.V. and Martin, G.D.

Chari, L.D., Mauda, E.V., Martin, G.D. and Raghu, S. (2020) Insect herbivores associated with *Lycium ferocissimum* (Solanaceae) in South Africa with reference to potential biological control. *African Entomology*. 28 (2). p.359-373.

Chari, L.D., Motitsoe, S.N. and Wasserman, R.J.

Netshiongolwe, N.R., Cuthbert, R.N., Maenette, M.M., Chari, L.D., Motitsoe, S.N., Wasserman, R.J., Munyai, L.F. and Dalu, T. (2020) Quantifying metal contamination and potential uptake by *Phragmites* (australis Poaceae) along a subtropical river system. *Plants-Basel*. 9 (846). p.1-17.

Chari, L.D., Richoux, N.B., Moyo, S. and Villet, M.H.

Chari, L.D., Richoux, N.B., Moyo, S. and Villet, M.H. (2020) Dietary fatty acids of spiders reveal spatial and temporal variations in aquatic-terrestrial linkages. *Food Webs*. 24 (2020). p.1-9.

Claassens, L.

Short, G., Claassens, L., Smith, R., De Brauwer, M., Hamilton, H., Stat, M. and Harasti, D. (2020) @*Hippocampus nalu*, a new species of pygmy seahorse from South Africa, and the first record of a pygmy seahorse from the Indian Ocean (Teleostei, Syngnathidae). *ZooKeys*. 934 (2020). p.141-156.

Claassens, L. and Harasti, D. (2020) Life history and population dynamics of an endangered seahorse (*Hippocampus capensis*) within an artificial habitat. *Journal of Fish Biology*. 2020 (2020). p.1-13.

Waltham, N.J., Elliott, M., Lee, S., Lovelock, C., Duarte, C.M., Buelow, C., Simenstad, C., Nagelkerken, I., Claassens, L. and Wen, C.K.C. (2020) UN Decade on Ecosystem Restoration 2021? 2030? What Chance for Success in Restoring Coastal Ecosystems? *Frontiers in Marine Science*. 7 (2020). p.1-10.

Wasserman, J., Claassens, L. and Adams, J.B. (2020) Mapping subtidal estuarine habitats with a remotely operated underwater vehicle (ROV). *African Journal of Marine Science*. 42 (1). p.123-128.

Claassens, L. and Barnes, R.S.K.

Claassens, L., Barnes, R.S.K., Wasserman, J., Lamberth, S.J., Miranda, N.A.F., Van Niekerk, L. and Adams, J.B. (2020) Knysna Estuary health: ecological status, threats and options for the future. *African Journal of Aquatic Science*. 45 (1-2). p.65-82.

Coetzee, J.A.

Hofstra, D., Schoelynck, J., Ferrell, J., Coetzee, J.A., De Winton, M., Bickel, T.O., Champion, P., Madsen, J., Bakker, E.S., Hilt, S., Matheson, F., Netherland, M. and Gross, E.M. (2020) On the move: New insights on the ecology and management of native and alien macrophytes. *Aquatic Botany*. 162 (2020). p.1-7.

Coetzee, J.A., Langa, S.F., Motitsoe, S.N. and Hill, M.P.

Coetzee, J.A., Langa, S.F., Motitsoe, S.N. and Hill, M.P. (2020) Biological control of water lettuce L. facilitates macroinvertebrates biodiversity recovery: a mesocosm study. *Hydrobiologia*. 847 (2020). p.3917-3929.

Cole, M.L.

Raphalo, E.M., Cole, M.L. and Daniels, S.R. (2020) Climatic oscillations during the Mio/Pliocene epochs induced cladogenesis in the terrestrial snail genus *Gittenedouardia* (Mollusca: Gastropoda: Cerastidae) from South Africa. *Molecular Phylogenetics and Evolution*. 2020 (1). p.1-14.

Comley, J. and Parker, D.M.

Comley, J., Mgqatsa, N. and Parker, D.M.

Comley, J., Joubert, C.J., Mgqatsa, N. and Parker, D.M. (2020) Do spotted hyenas outcompete the big cats in a small, enclosed system in South Africa? *Journal of Zoology*. 311 (2020). p.145-153.

Comley, J., Joubert, C.J., Mgqatsa, N. and Parker, D.M. (2020) Lions do not change rivers: complex African savannas preclude top-down forcing by large predators. *Journal for Nature Conservation*. 56 (-). p.125844.

Comley, J., Joubert, C.J., Mgqatsa, N. and Parker, D.M. (2020) Battle of the carnivores: spatial partitioning in a small, enclosed reserve. *African Journal of Wildlife Research*. 50 (-). p.176-189.

Compton, S.G.

Yuan, C., Wang, Q., Chen, Y., Zhang, L.D., Tan, L., Fu, R.H., Yang, J.T., Li, Y., Lui, M. and Compton, S.G. (2020) Impacts of a biocontrol agent on invasive *Ageratina adenophora* in Southwest China: Friend or foe? *Biological Control*. 2020 (2020). p.1-7.

Compton, S.G. and Greeff, J.M. (2020) Few figs for frugivores: Riparian fig trees in Zimbabwe may not be a dry season keystone resource. *African Journal of Ecology*. p.1-8.

Deng, J.Y., van Noort, S., Compton, S.G., Chen, Y. and Greeff, J.M. (2020) Conservation implications of fine scale population genetic structure of *Ficus* species in South African forests. *Forest Ecology and Management*. 474 (2020). p.1-9.

Deng, J.Y., Fu, R.H., Compton, S.G., Liu, M., Wang, Q., Yuan, C., Zhang, L.S. and Chen, Y. (2020) Sky islands as foci for divergence of fig trees and their pollinators in southwest China. *Molecular Ecology*. 2020 (29). p.762-782.

Craig, A.J.F.K.

Mullins, R.L.G. and Craig, A.J.F.K. (2020) Counting waterbirds on holiday: a snapshot for one Eastern Cape estuary. *Ostrich*. 9 (12). p.1-6.

Craig, A.J.F.K. and Hulley, P.E.

Craig, A.J.F.K. and Hulley, P.E. (2020) Pied Crows in the Eastern Cape: what bird club records reveal. *Ostrich*. 91 (2). p.1-4.

Craig, A.J.F.K., Hulley, P.E. and Mullins, R.L.G. (2020) Urban birds in the Eastern Cape: local observations from Makhanda (Grahamstown) and future questions observations from Makhanda (Grahamstown) and future questions future questions. *Ostrich*. 1 (2020). p.1-13.

Edwards, S.

Conradie W., Nicolau G.K., Kemp L., Edwards S., Klein Snaken-Borg and Reeves B. (2020). *Lygodactylus capensis*: New records for Makhanda area. *African Herp News*. 74: 78-82.

Egbon, I.N., Paterson, I.D., Compton, S.G. and Hill, M.P.

Egbon, I.N., Paterson, I.D., Compton, S.G. and Hill, M.P. (2020) Evolution of growth traits in invasive *Pereskia aculeata* (Cactaceae): testing the EICA hypothesis using its specialist herbivore, *Catorhintha schaffneri* (Coreidae). *Pest Management Science*. 2020 (76). p.4046-4056.

Faure, S.

Cruaud, A., Delvare, G., Nidelet, S., Saune, L., Ratnasingham, S., Chartois, M., Blaimer, B.B., Gates, M., Brady, S.G., Faure, S., van Noort, S., Rossi, J.P. and Rasplus, J.R. (2020) Ultra-conserved Elements and morphology reciprocally illuminate conflicting phylogenetic hypotheses in *Chalcididae* (Hymenoptera, Chalcidoidea). *Cladistics*. 37 (1). p.1-35.

Froneman, P.W.

Cuthbert, R.N., Sithagu, R., Weyl, O.L.F., Wasserman, R.J., Dick, J.T.A., Callaghan, A., Froneman, P.W., Foord, S. and Dalu, T. (2020) Water volume differentially modifies copepod predatory strengths on two prey types. *Limnologica*. 81 (2020). p.1-4.

Cuthbert, R.N., Dalu, T., Wasserman, R.J., Weyl, O.L.F., Froneman, P.W., Callaghan, A., Coughlan, N.E. and Dick, J.T.A. (2020) Alternative prey impedes the efficacy of a natural enemy of mosquitoes. *Biological Control*. 141 (1). p.1-28.

Cuthbert, R.N., Dalu, T., Wasserman, R.J., Weyl, O.L.F., Froneman, P.W., Callaghan, A. and Dick, J.T.A. (2020) examining intraspecific multiple predator effects across shifting predator sex ratios. *Basic and Applied Ecology*. 45 (2020). p.12-21.

Froneman, P.W. and Cuthbert, R.N. (2020) Ratio-independent prey preferences by an estuarine mysid. *Journal of Plankton Research*. p.1-4.

Froneman, P.W. and Wasserman, R.J.

Dalu, T., Cuthbert, R.N., Taylor, J., Magoro, M.L., Weyl, O.L.F., Froneman, P.W. and Wasserman, R.J. (2020) Benthic diatom-based indices and isotopic biomonitoring of nitrogen pollution in a warm temperate Austral river system. *Science of the Total Environment*. 748 (2020). p.1-9.

Gilson, A.R.

Gilson, A.R. and Davies, A.J. (2020) Habitat modification by *Ascophyllum* canopy negatively impacts macrofaunal communities on soft-sediment shores. *Marine Environmental Research*. 162 (2020). p.1-10.



**Evans Mauda in the field.**

Photo: Department of Zoology and Entomology

**Heyns-Veale, E.R. and Froneman, P.W.**

Plon, S., Heyns-Veale, E.R., Smale, M.J. and Froneman, P.W. (2020) Life history parameters and diet of Risso's dolphins, *Grampus griseus*, from southeastern South Africa. *Marine Mammal Science*. 2020 (1). p.1-16.

**Hill, M.P.**

Schaffner, U., Hill, M.P., Dudley, T. and D'Antonio, C. (2020) Post-release monitoring in classical biological control of weeds: assessing impact and testing pre-release hypotheses. *Current Opinion in Insect Science*. 38 (2020). p.99-106.

**Coetzee, J.A. and Hill, M.P. (2020)** *Salvinia molesta* D. Mitch. (Salviniacae): impact and control. *CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources*. 15 (33). p.1-11.

Gervazoni, P., Sosa, A., Franceschini, C., Coetzee, J.A., Falthauer, A., Fuentes-Rodriguez, D., Martinez, A. and Hill, M.P. (2020) The alien invasive yellow flag (*Iris pseudacorus L.*) in Argentinian wetlands: assessing geographical distribution through different data sources. *Biological Invasions*. 22 (2020). p.3183-3193.

**Ismail, M.**

Ismail, M., Brooks, M., van Baaren, J. and Albittar, L. (2020) Synergistic effects of temperature and plant quality, on development time, size and lipid in *Eccritotarsus eichhorniae*. *Journal of Applied Entomology*. 2020 (2020). p.1-11.

**James, H.**

Malzacher, P. and James, H. (2020) Two new Caenis species (Insecta: Ephemeroptera: Caenidae) from the Kruger National Park, South Africa. *African Entomology*. 28 (1). p.62-77.

**Langa, S.F., Hill, M.P. and Compton, S.G.**

Langa, S.F., Hill, M.P. and Compton, S.G. (2020) Agents sans frontiers: cross-border aquatic weed biological control in the rivers of southern Mozambique. *African Journal of Aquatic Science*. 45 (3). p.329-335.

**Lourenco, C.S.E., Nicastro, K., McQuaid, C.D. and Zardi, G.I.** Lourenco, C.S.E., Nicastro, K., McQuaid, C.D., Krug, L.A. and Zardi, G.I. (2020) Strong upwelling conditions drive differences in

species abundance and community composition along the Atlantic coasts of Morocco and Western Sahara. *Marine Biodiversity*. 50 (15). p.1-19.

**Ma, K.C.K.**

Ma, K.C.K., McKinsey, C.W. and Johnson, L.E. (2020) Larval supply is a limited determinant of settlement at mesoscales across an anthropogenic seascape. *Hydrobiologia*. 847 (2020). p.4015-4029.

**Ma, K.C.K., Glon, H.E., Hawk, H.L. and Chapman, C.N. (2020)** Reconstructing the distribution of the non-native sea anemone, *Diadumene lineata* (Actiniaria), in the Canadian Maritimes: Local extinction in New Brunswick and no regional range expansion in Nova Scotia since its initial detection. *Regional Studies in Marine Science*. 34 (2020). p.2352-2455.

**Ma, K.C.K. and McQuaid, C.D.**

Ma, K.C.K., McQuaid, C.D., Pulfrich, A. and Robinson, T.B. (2020) Status of a decennial marine invasion by the bisexual mussel *Semimytilus algosus* (Gould, 1850) in South Africa. *African Journal of Marine Science*. 42 (4). p.507-515.

**Ma, K.C.K., Zardi, G.I., McQuaid, C.D. and Nicastro, K.**

Ma, K.C.K., Zardi, G.I., McQuaid, C.D. and Nicastro, K. (2020) Historical and contemporary range expansion of an invasive mussel, *Semimytilus algosus*, in Angola and Namibia despite data scarcity in an infrequently surveyed region. *PLoS ONE*. 2020 (1). p.1-13.

**Mafanya, S. and Pattrick, P.**

Strain, E.M.A., Steinberg, P.D., Vozzo, M., Johnston, E.L., Abbiati, M., Aguilera, M.A., Mafanya, S., Pattrick, P., Porri, F. and *et al.*, (2020) A global analysis of complexity-biodiversity relationships on marine artificial structures. *Global Ecology and Biogeography*. 2020 (2020). p.1-14.

**Mann, G.K.H. and Parker, D.M.**

Mann, G.K.H., O'Riain, M.J. and Parker, D.M. (2020) A leopard's favourite spots: habitat preference and population density of leopards in an arid biodiversity hotspot. *Journal of Arid Environments*. 181 (-). p.104218.

**Martin, G.D., Magengelele, N.L., Paterson, I.D. and Sutton, G.F.** Martin, G.D., Magengelele, N.L., Paterson, I.D. and Sutton, G.F. (2020) Climate modelling suggests a review of the legal status of Brazilian pepper, *Schinus terebinthifolia*, in South Africa is required. *South African Journal of Botany*. 132 (2020). p.95-102.

**Mauda, E.V., Chari, L.D. and Martin, G.D.**

McCulloch, A., Mauda, E.V., Chari, L.D., Martin, G.D., Gurdasani, K., Morin, L., Walter, G.H. and Raghu, S. (2020) Genetic diversity and morphological variation in African boxthorn (*Lycium ferocissimum*)- Characterising the target weed for biological control. *Biological Control*. 143 (2020). p.1-8.

**McQuaid, C.D.**

Marshall, D.J. and McQuaid, C.D. (2020) Metabolic Regulation, Oxygen Limitation and Heat Tolerance in a Subtidal Marine Gastropod Reveal the Complexity of Predicting Climate Change Vulnerability. *Frontiers in Physiology*. 11 (1106). p.1-10.

**Hudson, J., McQuaid, C.D. and Rius, M. (2020)** Contemporary climate change hinders hybrid performance of ecologically dominant marine invertebrates. *Journal of Evolutionary Biology*. 2020. p.1-13.

**Humphries, A.T., McClanahan, T.R. and McQuaid, C.D. (2020)** Algal turf consumption by sea urchins and fishes is mediated by fisheries management on coral reefs in Kenya. *Coral Reefs*. 2020 (39). p.1137-1146.

**Midgley, J.M.**

Theron, G.L., Grenier, F., Anderson, B.C., Ellis, A.G., Johnson, S.D., Midgley, J.M. and van der Niet, T. (2020) Key long-proboscid fly pollinator overlooked: morphological and molecular analyses reveal a new Prosoeca (Nemestrinidae) species. *Biological Journal of The Linnean Society*. 131 (2020). p.26-38.

**Midgley, J.M. and Villet, M.H.**

Midgley, J.M. and Villet, M.H. (2020) Metrological framework for selecting morphological characters to identify species and estimate developmental maturity of forensically significant insect specimens. *Forensic Sciences Research*. 2020 (2020). p.1-9.

**Miller, B.E., Coetzee, J.A. and Hill, M.P.**

Miller, B.E., Coetzee, J.A. and Hill, M.P. (2020) Mind the gap: the delayed recovery of a population of the biological control agent *Megamelus scutellaris* Berg. (Hemiptera: Delphacidae) on water

hyacinth after winter. *Bulletin of Entomological Research*. 111 (1). p.120-128.

**Minuti, G.M., Ngxande-Koza, S.W. and Hill, M.P.**

Minuti, G.M., Coetze, J.A., Ngxande-Koza, S.W., Hill, M.P. and Stiers, I. (2020) Prospects for the biological control of *Iris pseudacorus* L. (Iridaceae). *Biocontrol Science and Technology*. (2020). p.1-23.

**Monaco, C.J.**

Cuthbert, R.N., Dalu, T., Wasserman, R.J., Monaco, C.J., Callaghan, A., Weyl, O.L.F. and Dick, J.T.A. (2020) Assessing multiple predator, diurnal and search area effects on predatory impacts by ephemeral wetland specialist copepods. *Aquatic Ecology*. 54 (1). p.181-191.

**Monsinjon, J.R.**

Laloë, J.O., Monsinjon, J.R., Gaspar, C., Touron, M., Genet, Q., Stubbs, J., Girondot, M. and Hays, G.C. (2020) Production of male hatchlings at a remote South Pacific green sea turtle rookery: conservation implications in a female-dominated world. *Marine Biology*. 167 (70). p.1-13.

Moore, S.D., Goddard, M.K., Thackeray, S.R. and Peyer, M. Hattingh, V., Moore, S.D., Kirkman, W., Goddard, M.K., Thackeray, S.R., Peyer, M., Sharp, G., Cronjé, P. and Pringle, K. (2020) An Improved Systems Approach as a Phytosanitary Measure for *Thaumatotibia leucotreta* (Lepidoptera: Tortricidae) in Export Citrus Fruit From South Africa. *Journal of Economic Entomology*. 113 (711). p.700-711.

**Motitsoe, S.N.**

Blanckenberg, M., Mlambo, M.C., Parker, D., Motitsoe, S.N. and Reed, C. (2020) Protected and unprotected urban wetlands have similar aquatic macroinvertebrates communities: A case study from the Cape Flats Sand Fynbos region of southern Africa. *PLoS One*. 15 (5). p.1-18.

**Motitsoe, S.N. and Hill, M.P.**

Motitsoe, S.N., Coetze, J.A., Hill, J.M. and Hill, M.P. (2020) Biological Control of *Salvinia molesta* (D.S. Mitchell) Drives Aquatic Ecosystem Recovery. *Diversity*. 12 (204). p.1-22.

**Moyo, S.**

Mafuwe, K. and Moyo, S. (2020) Dragonfly (Odonata) community structure in the Eastern Highlands Biodiversity Hotspot of Zimbabwe: potential threats of land use changes on freshwater invertebrates. *International Journal of Odonatology*. 23 (4). p.291-304.

**Mphephu, T.E.**

Mukwevho, L. and Mphephu, T.E. (2020) The role of the flower-galling mite, *Aceria lantanae*, in integrated control of the light pink 163LP variety of *Lantana camara* (L.) in South Africa. *Biological Control*. 149 (2020). p.1-5.

**Muniz, C., McQuaid, C.D. and Weidberg, N.F.**

Muniz, C., McQuaid, C.D. and Weidberg, N.F. (2020) Seasonality of primary productivity affects coastal species more than its magnitude. *Science of the Total Environment*. 757 (1). p.1-11.

**Musedeli, J.N. and Hill, M.P.**

Musedeli, J.N., Simelane, D.O., Hill, M.P. and Marais, M. (2020) Additive interaction between a root-knot nematode *Meloidogyne javanica* and root-feeding flea beetle *Longitarsus bethae* on their host *Lantana camara*. *Pest Management Science*. 76 (2020). p.198-204.

**Muskett, P.C. and Paterson, I.D.**

Muskett, P.C., Paterson, I.D. and Coetze, J.A. (2020) Ground-truthing climate-matching predictions in a post-release evaluation. *Biological Control*. 144 (2020). p.1-9.

**Ndhlovu, A., McQuaid, C.D. and Monaco, C.J.**

Ndhlovu, A., McQuaid, C.D. and Monaco, C.J. (2020) Ectoparasites reduce scope for growth in a rocky-shore mussel (*Perna perna*) by raising maintenance costs. *Science of the Total Environment*. 720 (2020). p.1-8.

**Ndhlovu, A., McQuaid, C.D., Nicastro, K. and Zardi, G.I.**

Ndhlovu, A., McQuaid, C.D., Nicastro, K. and Zardi, G.I. (2020) Community succession in phototrophic shell-degrading endoliths attacking intertidal mussels. *Journal of Molluscan Studies*. 2020 (2020). p.1-8.



PhD candidate Frank Akamagwuna at a study site in the Kat River catchment.

Photo: Nicole Richoux

Ndlovu, M.S. and Coetzee, J.A.

Ndlovu, M.S., Coetzee, J.A., Nxumalo, M.M., Lalla, R., Shabalala, N. and Martin, G.D. (2020) The establishment and Rapid Spread of *Sagittaria Platiphylla* in South Africa. *Water Research*. 12 (5). p.1-14.

Nicastro, K. and Zardi, G.I.

Cozzolino, L., Nicastro, K., Zardi, G.I. and de los Santos, C.B. (2020) Species-specific plastic accumulation in the sediment and canopy of coastal vegetated habitats. *Science of the Total Environment*. 723 (2020). p.1-10.

Nicastro, K., Assis, J., Serrao, E.A., Pearson, A., Neiva, J., Valero, M., Jacinto, R. and Zardi, G.I. (2020) Congruence between fine-scale genetic breaks and dispersal potential in an estuarine seaweed across multiple transition zones. *Ices Journal of Marine Science*. 77 (1). p.371-378.

Nicastro, K., McQuaid, C.D. and Zardi, G.I.

Velez, N., Nicastro, K., McQuaid, C.D. and Zardi, G.I. (2020) Small scale habitat effects on anthropogenic litter material and sources in a coastal lagoon system. *Marine Pollution Bulletin*. 160 (2020). p.1-10.

Nicastro, K., McQuaid, C.D., Dievart, A.M.A. and Zardi, G.I.

Nicastro, K., McQuaid, C.D., Dievart, A.M.A. and Zardi, G.I. (2020) Intraspecific diversity in an ecological engineer functionally trumps interspecific diversity in shaping community structure. *Science of the Total Environment*. 743 (2020). p.1-9.

Nicastro, K., Zardi, G.I. and McQuaid, C.D.

Ntuli, N., Nicastro, K., Zardi, G.I., Assis, J., McQuaid, C.D. and Teske, P.R. (2020) Rejection of the genetic implications of the "Abundant Centre Hypothesis" in marine mussels. *Scientific Reports*. 10 (604). p.1-12.

Orostica Vega, M.H.

Orostica Vega, M.H., Hawkins, S.J., Broitman, B.R. and Jenkins, S.R. (2020) Performance of a warm-water limpet species towards its poleward range edge compared to a colder-water congener. *Marine Ecology Progress Series*. 656 (2020). p.207-225.

Oswald, K.N. and Smit, B.

Oswald, K.N., Diener, E.F., Diener, J.P., Cunningham, S.J., Smit, B. and Lee, A.T.K. (2020) Increasing temperatures increase the risk of reproductive failure in near threatened alpine ground-nesting bird, the Cape Rockjumper *Chaetops frenatus*. *IBIS*. 162 (2020). p.1363-1369.

Oswald, K.N., Lee, A.T.K. and Smit, B. (2020) Seasonal metabolic adjustment in an avian evolutionary relict restricted to mountain habitat. *Journal of Thermal Biology*. 95 (1). p.1-14.

Parker, D.M.

Parker, D.M. and *et al.*, (2020) Envisioning the future with 'Compassionate Conservation': an ominous projection for biodiversity conservation: An ominous /projection for native wildlife and biodiversity. *Biological Conservation*. 241 (1). p.108365.

Parker, D.M. (2020) Response to comments on Compassionate Conservation deserves a morally serious rather than dismissive response reply to Callen *et al.*, 2020. *Biological Conservation*. 244 (1). p.108517.

Taylor, P.J., Nelufule, M., Parker, D.M., Toussaint, D.C. and Weier, S.M. (2020) The Limpopo River exerts a powerful but spatially limited effect on bat communities in a semi-arid region of South Africa. *Acta Chiropterologica*. 22 (1). p.75-86.

Weier, S.M., Keith, M., Neef, G., Parker, D.M. and Taylor, P.J. (2020) Bat species richness and community composition along a mega-transect in the Okavango River Basin. *Diversity*. 12 (5). p.188.

Parker, D.M., Van De Vyver, D.B. and Bissett, C.

Parker, D.M., Van De Vyver, D.B. and Bissett, C. (2020) The influence of an apex predator introduction on an already established subordinate predator. *Journal of Zoology*. (2020). p.1-12.

Paterson, I.D.

Paynter, Q., Paterson, I.D. and Kwong, R.M. (2020) Predicting non-target impacts. *Current Opinion in Insect Science*. 2020 (38). p.79-83.

Richoux, N.B.

Dawson, J., Pillay, D., Perissinotto, R. and Richoux, N.B. (2020) Fatty acid analyses provide insights into hippo defecation and its consequences for aquatic food webs. *Scientific Reports*. 10 (12039). p.1-15.

Rogers, D.J. and Owen, C.A.

Rogers, D.J., Terblanche, J. and Owen, C.A. (2020) Low temperature physiology of climatically-distinct South African populations of the biological control agent *Neochetina eichhorniae*. *Ecological Entomology*. 46 (2020). p.138-141.

Seuront, L.J.J.

Schapira, M. and Seuront, L.J.J. (2020) Nutrient Patchiness, Phytoplankton Surge-Uptake, and Turbulent History: A Theoretical Approach and its Experimental Validation. *Fluids*. 5 (80). p.1-18.

Nakano, T., Okumura, Y., Nakayama, R. and Seuront, L.J.J. (2020) Movement patterns of the epizoic limpet *Lottia tenuisculpta* on two host snails *Omphalius nigerrimus* and *Reishia clavigera*. *Molluscan Research*. 40 (4). p.313-319.

Moisez, E., Spilmont, N. and Seuront, L.J.J. (2020) Microhabitats choice in intertidal gastropods is species-, temperature- and habitat-specific. *Journal of Thermal Biology*. 94 (2020). p.1-10.

Boucheta, V.M.P., Deldicq, N., Baux, N., Dauvin, J.-C., Pezy, J.-P., Seuront, L.J.J. and Méar, Y. (2020) Benthic foraminifera to assess ecological quality statuses: The case of salmon fish farming. *Ecological Indicators*. 117 (2020). p.1-10.

Langlet, D., Boucheta, V.M.P., Delaeter, C. and Seuront, L.J.J. (2020) Motion behavior and metabolic response to microplastic leachates in the benthic foraminifera *Haynesina germanica*. *Journal of Experimental Marine Biology and Ecology*. 529 (1). p.1-6.

Roveiello, Q., Dervaux, J., Wang, Y., Rouyer, F., Zanchi, D., Seuront, L.J.J. and Elias, F. (2020) Trapping of swimming microalgae in foam. *Journal of the Royal Society Interface*. 17 (2020). p.1-9.

Deldicq, N., Seuront, L.J.J., Langlet, D. and Boucheta, V.M.P. (2020) Assessing behavioural traits of benthic foraminifera: implications for sediment mixing. *Marine Ecology Progress Series*. 643 (1). p.21-31.

Moisez, E. and Seuront, L.J.J. (2020) Deciphering the known unknowns in the behavioural ecology of the intertidal gastropod *Littorina littorea*. *Journal of Experimental Marine Biology and Ecology*. 524 (2020). p.1-8.

Seuront, L.J.J., Nicastro, K., McQuaid, C.D. and Zardi, G.I.

Seuront, L.J.J., Nicastro, K., McQuaid, C.D. and Zardi, G.I. (2020) Microplastic leachates induce species-specific trait strengthening in intertidal mussels. *Ecological Applications*. 31 (1). p.1-10.

Smit, B.

Lee, A.T.K., Barnard, P., Fraser, M., Lennard, C., Smit, B. and Oschadleus, H.D. (2020) Body mass and condition of a fynbos bird community: investigating impacts of time, weather and raptor abundance from long-term citizen-science datasets. *Ostrich*. 91 (2). p.142-157.

Czenze, Z.J., Kemp, R.A., van Jaarsveld, B., Freeman, M.T., Smit, B., Wolf, B.O. and McKechnie, A.E. (2020) Regularly drinking desert birds have greater evaporative cooling capacity and higher heat tolerance limits than non-drinking species. *Functional Ecology*. 2020 (34). p.1589-1600.

Pattinson, N.B., Thompson, M., Griego, M., Russell, G., Mitchell, N.J., Martin, R.O., Wolf, B.O., Smit, B., Cunningham, S.J., McKechnie, A.E. and Hockey, P.A.R. (2020) Heat dissipation behaviour of birds in seasonally hot arid-zones: are there global patterns? *Journal of Avian Biology*. 2020 (e02350). p.1-11.

Taylor, C.L. and Villet, M.H.

Taylor, C.L., Barker, N.P., Barber-James, H.M., Villet, M.H. and Pereira-da-Conceicao, L.L. (2020) Habitat requirements affect genetic variation in three species of mayfly (Ephemeroptera, Baetidae) from South Africa. *ZooKeys*. 936 (2020). p.1-24.

Tocco, C., Midgley, J.M. and Villet, M.H.

Tocco, C., Midgley, J.M. and Villet, M.H. (2020) Intermediate disturbance promotes diversity and the conservation of dung beetles (Scarabaeoidea: Scarabaeidae and Aphodiidae) in the Eastern Cape, South Africa. *Basic and Applied Ecology*. 49 (2020). p.45-56.

Tweddle, D.

Russell, B.C. and Tweddle, D. (2020) A new species of *Nemipterus* (Pisces: Nemipteridae) from the Western Indian Ocean. *Zootaxa*. 4895 (4). p.573-580.



**Byron Soetland, employed with the CBC to mass-rear, release and monitor the impact of cactus biocontrol agents.**

Photo: Department of Zoology and Entomology

**Van Steenderen, C.J.M., Paterson, I.D. and Edwards, S.**  
**Van Steenderen, C.J.M., Paterson, I.D., Edwards, S. and Day, M.D. (2020) Addressing the red flags in cochineal identification: The use of molecular techniques to identify cochineal insects that are used as biological control agents for invasive alien cacti.** *Biological Control*. 2020 (2020). p.1-10.

**Villet, M.H.**

**Sanborn, A.F. and Villet, M.H. (2020) *Afromelampsalta*, a new genus, a new species, and five new combinations of African *cicadettine cicadas* (Hemiptera: Cicadidae: Cicadettinae).** *Zootaxa*. 4731 (4). p.531-542.

**Sanborn, A.F. and Villet, M.H. (2020) A new genus and three new species of South African *Cicadettini* (Hemiptera: Cicadidae: Cicadettinae).** *Zootaxa*. 4885 (4). p.1-10.

**Vorsatz, L.D. and Patrick, P.**

**Vorsatz, L.D., Patrick, P. and Porri, F. (2020) Quantifying the in situ 3-dimensional structural complexity of mangrove tree root systems: Biotic and abiotic implications at the microhabitat scale.** *Ecological Indicators*. 2020 (2020). p.1-8.

**Wasserman, R.J.**

**Dalu, T., Tshivhase, R., Cuthbert, R.N., Murungweni, F.M. and Wasserman, R.J. (2020) Metal Distribution and Sediment Quality Variation across Sediment Depths of a Subtropical Ramsar Declared Wetland.** *Water*. 12 (12). p. 2779.

**Tladi, M., Nyamukondiwa, C., Cuthbert, R.N. and Wasserman, R.J. (2020) Emergent effects of light and temperature on hatching success of *Streptocephalus cafer* (Branchiopoda: Anostraca) resting eggs.** *Austral Ecology*. 2020 (45). p. 1062-1066.

**Jackson, M.C., Fourie, H.E., Dalu, T., Wasserman, R.J., Zengeya, T.A., Ellender, B.R., Kimberg, P.K., Chimimba, C.T., Weyl, O.L.F., Woodford, D.J. and Jordaan, M.S. (2020) Food web properties vary with climate and land use in South African streams.** *Functional Ecology*. 34. p. 1653-1665.

**Cuthbert, R.N., Wasserman, R.J., Dalu, T., Kaiser, H., Weyl, O.L.F., Dick, J.T.A., Sentis, A., McCoy, M.W. and Alexander, M.E. (2020) Influence of intra- and interspecific variation in predator-prey body size ratios on trophic interaction strengths.** *Ecology and Evolution*. 10 (12). p.5946-5962.

**Mutshekwa, T., Cuthbert, R.N., Wasserman, R.J., Murungweni, F.M. and Dalu, T. (2020) Nutrient Release Dynamics Associated with Native and Invasive Leaf Litter Decomposition: A Mesocosm Experiment.** *Water*. 12 (2350). p.1-12.

**Cuthbert, R.N., Wasserman, R.J. and Dalu, T. (2020) Arid-adapted paradiaptomid copepods contribute to mosquito regulation.** *African Zoology*. 55 (3). p.185-186.

**Buxton, M., Wasserman, R.J. and Nyamukondiwa, C. (2020) Spatial *Anopheles arabiensis* (Diptera: Culicidae) insecticide resistance patterns across malaria-endemic regions of Botswana.** *Malaria Journal*. 19 (415). p.1-9.

**Buxton, M., Nyamukondiwa, C., Dalu, T., Cuthbert, R.N. and Wasserman, R.J. (2020) Implications of increasing temperature stress for predatory biocontrol of vector mosquitoes.** *Parasites & Vectors*. 13 (604). p.1-11.

**Mutshekwa, T., Cuthbert, R.N., Wasserman, R.J., Murungweni, F.M. and Dalu, T. (2020) Macroinvertebrate colonisation associated with native and invasive leaf litter decomposition.** *Knowledge and Management of Aquatic Ecosystems*. 421 (32). p.1-9.

**Mbedzi, R., Wasserman, R.J., Murungweni, F.M., Dalu, T. and Cuthbert, R.N. (2020) Spatiotemporal variation in microplastic contamination along a subtropical reservoir shoreline.** *Environmental Science and Pollution Research*. 2020 (12). p.1-8.

**Wasserman, R.J., Sanga, S., Buxton, M., Dalu, T. and Cuthbert, R.N. (2020) Does invasive river red gum (*Eucalyptus camaldulensis*) alter leaf litter decomposition dynamics in arid zone temporary rivers?** *Inland Waters*. 2020 (1). p.1-11.

Buxton, M., Wasserman, R.J. and Nyamukondiwa, C. (2020) Spatial *Anopheles arabiensis* (Diptera: Culicidae) insecticide resistance patterns across malaria-endemic regions of Botswana. *Malaria Journal*. 19 (2020). p.1-9.

Wasserman, R.J. and Chari, L.D.

Dalu, T., Murudi, T.T., Wasserman, R.J., Chari, L.D., Murungweni, F.M. and Cuthbert, R.N. (2020) Balloon milkweed *Gomphocarpus physocarpus* distribution and drivers in an internationally protected wetland. *BioInvasions Records*. 9 (3). p.627-641.

Wasserman, R.J. and Froneman, P.W.

Cuthbert, R.N., Dalu, T., Wasserman, R.J., Weyl, O.L.F., Froneman, P.W., Callaghan, A. and Dick, J.T.A. (2020) Inter-Population Similarities and Differences in Predation Efficiency of a Mosquito Natural Enemy. *Journal of Medical Entomology*. 57 (6). p.1983-1987.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

Canavan, K., Paterson, I.D. and Hill, M.P.

Canavan, K., Paterson, I.D., Lambertini, C. and Hill, M.P. *Phragmites australis* - alien invasion or disturbed wetlands. *46th Annual Conference South African Association of Botanists*. Qwaqwa, Qwaqwa. South Africa. January 2020.

Martin, G.D.

Moloi, K., Martin, G.D. and Steenhuisen, S. A review of the invasive genus *Cotoneaster* (Rosaceae) in Southern Africa. *55th Annual Congress & Webinar Series. Virtual Congress & Webinars*. Virtual conference, Virtual conference. South Africa. June 2020.

Martin, G.D. and Thabethe, A.S.

Adams, L.D., Martin, G.D., Clark, V.R., Downes, C.T., Thabethe, A.S., Raji, A.T. and Steenhuisen, S. The effects of Birds on seed dispersal and germination of invasive firethorn. *46th Annual Conference South African Association of Botanists*. Qwaqwa, Qwaqwa. South Africa. January 2020.

Martin, G.D. and Westwood, T.P.

Martin, G.D., Fraser, G. and Westwood, T.P. Guns and Rosehips. *46th Annual Conference South African Association of Botanists*. Qwaqwa, Qwaqwa. South Africa. January 2020.

Mason, B.A. and Martin, G.D.

Mason, B.A., Martin, G.D., Fraser, G. and Zachariades, C. 2020 invasive alien plants in a economic crucible: conducting an economic evaluation of the invasive Rubus genus in South Africa. *46th Annual Conference South African Association of Botanists*. Qwaqwa, Qwaqwa. South Africa. January 2020.

Mnciva, S.T.

Mnciva, S.T. Tackling water scarcity issues caused by the destruction of water weeds in South Africa. *Rhodes University's Centre for Postgraduate Studies Virtual Conference*. Virtual conference, Makhanda. South Africa. October 2020.

Sutton, G.F., Canavan, K. and Paterson, I.D.

Sutton, G.F., Canavan, K., Visser, V. and Paterson, I.D. Invasive grasses as suitable biological control targets: a South African perspective. *46th Annual Conference South African Association of Botanists*. Qwaqwa, Qwaqwa. South Africa. January 2020.

Van Steenderen, C.J.M.

Van Steenderen, C.J.M. A tale of two weevils: hybridisation in the biological control agents of water hyacinth. *Rhodes University's Centre for Post-Graduate Studies Virtual Conference*. Virtual conference, Makhanda. South Africa. October 2020.

Wasserman, R.J.

Mofu L., Wasserman R.J., Dalu T., Woodford D.J., Weyl O.L.F. Feeding Ecology of co-occurring fishes in the Sundays River Valley irrigation ponds using gut content and stable isotope analyses. *American Fisheries Society Virtual Annual Meeting*. Virtual Conference. Columbus, Ohio, USA. September 2020, oral presentation.



Tapiwa Mushore sampling for leafhoppers in the field.

Photo: Department of Zoology & Entomology

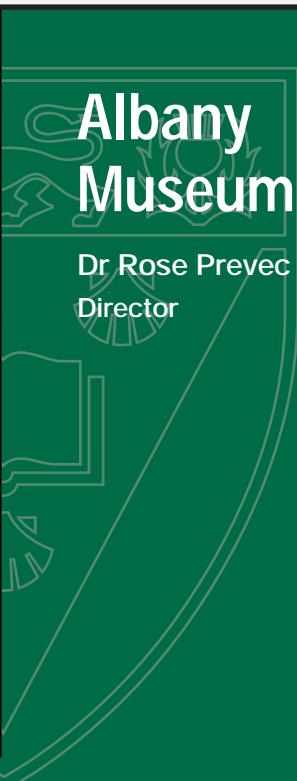


2020  
RHODES UNIVERSITY  
RESEARCH REPORT

# Affiliates & Institutes



Photo: Simon Pamphilon



## Introduction

As with all researchers around the world, 2020 was a challenging year with regard to meeting fieldwork goals, engaging with students and the public, and with the cancellation of all in-person conferences and international visits. Even with more time available for writing up results, stress, grief, uncertainty and mental health issues experienced by many did not create a productive working environment. Nevertheless, research staff at the Albany Museum were able to produce sixteen (16) research articles, and most attended online seminars and conferences and continued collaborations with both local and international colleagues across the globe.

Staff also continued the supervision of five (5) Rhodes Masters and PhD students and ran online undergraduate and Honours courses at Rhodes. Significant progress was also made with current efforts to transfer all of our catalogues of natural sciences collections to Specify, and to meet international curation standards, under the guidance of the very dynamic National Collections Facility (NSCF), with the active engagement of the national community of natural sciences collections managers.

## Postgraduates / Graduations

Naadiya Hoosen (Department of Geology, RU) graduated with an Honours (cum laude). Her project on the geochemistry of the Coombs Hill shale was co-supervised by Dr Rob Gess.

Benjamin Kirkaldy (Department of Zoology, RU) graduated after completing an excellent Masters dissertation on the phylogenetics and palaeontology of Plecoptera (stoneflies), for which he received a well-deserved distinction. Kirkaldy incorporated a wide range of interdisciplinary techniques



Rob Gess excavating early Devonian shales in the Humansdorp district.

Photo: Department of Earth Sciences

in his study, and his cutting-edge results will lead to at least three publications. He was co-supervised by Drs Helen James and Rose Prevec (Albany Museum) and collaborated with Dr Alex Sutherland (Albany Museum) and Dr Arnold Staniczek at Stuttgart State Museum of Natural History. During his studies, Kirkaldy travelled to Germany to work with Dr Staniczek. He presented his work at the Palaeontological Society of South Africa biennial congress (for which he received the Bob Brain award) and was an engaged, enthusiastic and lovely member of our team at the museum.

## Significant Research Aligned Events

### Department of Earth Sciences

#### Dr Rose Prevec

With all fieldwork postponed due to the pandemic, research efforts focused on the writing of manuscripts and the preparation and curation of new collections from two exciting plant and insect fossil localities near Sutherland. Dr Prevec was appointed to the National Executive Committee of the South African Commission for Stratigraphy.

#### Dr Robert Gess

In 2020 Dr Gess received the results of his first NRF rating application and was given a C1 rating. The feedback on the reviewers' comments was also highly positive, encouraging him to expand his research and to try to get a position suitable for starting a South African school of Devonian studies. An extensive 23-page review of Waterloo Farm was published in *Biological Reviews* (Impact Factor 8) with Dr Gess as the senior author. This paper referenced all publications on Waterloo Farm (to date). It examined



Researchers inspecting samples collected with a zooplankton net at Sterkfontein cave, Gauteng (Gauteng Province).

Photo: Department of Freshwater Invertebrates

these records from an ecological perspective, using depositional and biological clues to reconstruct the palaeoecosystem holistically. A comparative review of the analogous contemporary Swartvlei estuarine ecosystem was contributed by Dr Alan Whitfield of SAIAB, and the two systems were compared and contrasted. This paper provides the world's most complete picture of a stem tetrapod habitat and reveals important new insights on the role of estuaries as fish nursery areas through time. The effects that utilization of ovovipary or vivipary by different fish groups may have had on their ability to utilize these environments effectively was discussed, as well as how this may have impacted their potential to radiate before and after the End Devonian Mass Extinction. In addition, new ideas were postulated regarding the ecological drivers of the morphological evolution of stem tetrapods - including the probability that they evolved to exploit the food source provided by shallow water fish nurseries better. Ongoing excavation of the earliest Devonian fossiliferous lenses was conducted during two field trips to early Devonian strata in the Humansdorp district. Novel plant material continues to be uncovered, as well as limited animal remains from the adjacent lagoonal environment, which comprises the depositional environment. Plant remains represent the earliest flora from Africa. A three-week field trip was also conducted to explore the strata of the mid-Devonian Klipbokkopp Formation (Bokkeveld Group) in the western Karoo. This led to the discovery of significant new material from this age.



Crawling through the narrow tunnel of Bakwena cave, Irene Campus, Gauteng Province.

Photo: Department of Freshwater Invertebrates



Entrance to Peppercorn cave, Makapans Valley, Limpopo, to collect subterranean amphipods.

Photo: Department of Freshwater Invertebrates



Researchers lowering down zooplankton net to collect samples at Boesmansgat, Northern Cape. This cave is the third deepest wet cave in the world.

Photo: Department of Freshwater Invertebrates

## Department of Entomology and Arachnology Dr Terence Bellingan

Research with the Department of Entomology and Arachnology focused primarily on hoverflies (Diptera: Syrphidae), with several field trips undertaken to type localities for the genera *Syritta* Le Peletier & Serville, *Chrysogaster* Meigen and *Orthonevra* Macquart in collaboration with colleagues from the KwaZulu-Natal Museum. Valuable collections of specimens were made, contributing to global barcode initiatives through international collaboration on the Pollinator Information Network for Sub-Saharan Two-Winged Insects “PINDIP” Project.

## Department of Freshwater Invertebrates Dr Helen James

Dr Helen James was invited to be a Section Editor for the *European Journal of Taxonomy* and was listed in Directory of African Scientists: <http://africanscientists.africa/business-directory/barber-james/>

She was also invited by the SAEON grasslands node (KZN) to join a collaborative project on the Tugela River with a new Postdoctoral Fellow, Londiwe Khuzwayo.

## Musa Mlambo

Two new Masters students in the Department of Freshwater Invertebrates, Zizile Mlengo and Nonka Mdidimba struggled at first with both their fieldwork and lab work because of COVID-19 restrictions. However, as a brief window opened, they managed to go out and collect valuable data for their projects and also started with the molecular analysis done

at SAIAB. In addition to this, they also managed to participate in international conferences to present their studies, under the supervision of Musa Mlambo, in collaboration with Dr Sam Motitsoe at the Department of Zoology & Entomology. Mlengo's exciting project is aimed at revising the subterranean amphipod genus *Sternophysinx* using an integrative taxonomic approach. Fieldwork involved visiting a lot of caves, sinkholes and boreholes to look for freshwater amphipods, and more samples are still needed. Mdidimba, on the other hand, is doing DNA barcoding of the invasive crayfishes and their co-introduced parasites, as well as testing the potential of eDNA for the bioassessment of these invasives. Her fieldwork involved visiting old and a new site infested by the red swamp crayfish (*Procambarus clarkii*), which signified an alarming expansion of this invader in South Africa.



**Mdidiimba working in the Molecular lab at SAIAB, analyses her eDNA work.**

Photo: Department of Freshwater Invertebrates

## PUBLICATIONS

### Peer Reviewed Non-Subsidy-Earning Journal Research Publications

**De Moor, F.C.**

McLleron, W.G. and De Moor, F.C. (2020) New techniques for improving resolution and visual information on flight activity in Trichoptera. *Zoosymposia*. 18 (2020). p.160-178.

**De Moor, F.C. and Ferreira, I.S.**

De Moor, F.C. and Ferreira, I.S. (2020) Preliminary report on Trichoptera from the headwaters of the Cuanavale, Cuito, Cuembo and Cuanza Rivers in Angola. *Zoosymposia*. 18 (2020). p.34-45.

**Gess, R.W.**

Miyashita, T., Gess, R.W. and Coates, M. (2020) The Evolutionary Origin of the Filter-feeding Larval Phase in Lampreys. *Integrative and Comparative Biology*: 60: E164. Oxford University Press. (Abstract of The Society for Integrative and Comparative Biology annual meeting in Austin, Texas, January 3-7, 2020).

### Peer Reviewed Subsidy-Earning Journal Research Publications

**Barber-James, H.M.**

Malzacher, P. and Barber-James, H.M. (2020) Two new *Caenis* species (Insecta: Ephemeroptera: Caenidae) from the Kruger National Park, South Africa. *African Entomology*. 28 (1). p.62-77. <https://doi.org/10.4001/003.028.0062>.

**Taylor, C.L., Barker, N.P., Barber-James, H.M., Villet, M.H. and Pereira-da-Conceicoa, L.L.** (2020) Habitat requirements affect genetic variation in three species of mayfly (Ephemeroptera, Baetidae) from South Africa. *ZooKeys*. 936 (2020). p.1-24. doi: 10.3897/zookeys.936.38587.

**Barber-James, H.M., Zrelli, S., Yanai, Z. and Satori, M.** (2020) A reassessment of the genus *oligoneuriopsis* crass, 1947 (Ephemeroptera, oligoneuriidae, oligoneuriellini). *ZooKeys*. 2020 (985). p.15-47.

**Bellingan, T.A.**

Dalu, T., Bellingan, T.A., Gouws, J., Impson, N.D., Jordaan, M.S., Khosa, D., Marr, S.M., Mofu, L., Schumann, M., Slabbert, E.,

van der Walt, J.A., Wasserman, R.J. and Weyl, O.L.F. (2020) Ecosystem responses to the eradication of common carp *Cyprinus carpio* using rotenone from a reservoir in South Africa. *Aquatic conservation - marine and freshwater ecosystems*. 30: 2284-2297.

**Cimi, P.V.**

Cimi, P.V., Ngcoza, K.M. and Dold, A.P. (2020) The role of ethnobotany in integrating Indigenous Knowledge in the discipline of science education: a study by the herbarium of the Albany Museum in South Africa. *South African Museums Association Bulletin (SAMAB)*. 42 (2020). p.1-9.

**de Moor, F.C.**

Rivers-Moore, N.A. and de Moor, F.C. (2020) Longitudinal species turnover rates are predictable and should guide location of sampling sites for South African river surveys to assess aquatic biodiversity. *African Journal of Aquatic Science*. 2020 (2020). p.1-10.

Wells, A. and de Moor, F.C. (2020) Hydropsycheidae (Trichoptera) of Angola, a new genus, seven new species, and five new records. *Zootaxa*. 4868 (4). p.495-514.

Rivers-Moore, N.A. and de Moor, F.C. (2020) Climate-linked freshwater habitat change will have cost implications: Pest blackfly outbreaks in two linked South African rivers. *River Research and Applications*. 2020 (2020). p.1-12.

**Dold, A.P.**

Cimi, P.V., Ngcoza, K.M. and Dold, A.P. (2020) The role of ethnobotany in integrating Indigenous Knowledge in the discipline of science education: a study by the herbarium of the Albany Museum in South Africa. *South African Museums Association Bulletin (SAMAB)*. 42 (2020). p.1-9.

**Gess, R.W.**

Gess R.W. and Whitfield, A.K. (2020) Estuarine fish and tetrapod evolution: insights from a Late Devonian (Famennian) Gondwanan estuarine lake and a southern African Holocene equivalent. *Biological Reviews*: 95, pp. 865-888. doi: 10.1111/brv.12590.

**Mlambo, M.C.**

Blanckenberg, M., Mlambo, M.C., Parker, D., Motitsoe, S.N. and Reed, C. (2020) Protected and unprotected urban wetlands have similar aquatic macroinvertebrates communities: A case study from the Cape Flats Sand Fynbos region of southern Africa. *PLoS One*. 15 (5). p.1-18.

Meyer-Milne, E., Mlambo, M.C. and Rogers, D.C. (2020) Distribution of Clam Shrimps (Crustacea: Laevicaudata and Spinicaudata) in South Africa, with New Records from the Northern Cape Province. *Zoological Studies*. 59 (39). p.1-9.

**Pereira Da Conceicoa, L.L. and Barber-James, H.M.**

Pereira Da Conceicoa, L.L., Elbrecht, V., Hall, A., Briscoe, A., Barber-James, H.M. and Price, B. (2020) Metabarcoding unsorted kick-samples facilitates macroinvertebrate-based biomonitoring with increased taxonomic resolution, while outperforming environmental DNA. *Environmental DNA*. 2020 (2020). p.1-19.

**Prevec, R.**

Botha, J., Huttonlocker, A., Smith, R., Prevec, R., Viglietti, P., Modesto, S. 2020. New geochemical and palaeontological data from the Permo-Triassic boundary in the South African Karoo Basin test the synchronicity of terrestrial and marine extinctions. *Palaeogeography, Palaeoclimatology, Palaeoecology*. 540: 109467. DOI: 10.1016/j.palaeo.2019.109467

### Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**Mlambo, M.C.**

Mdidiimba, N.D., Mlambo, M.C. and Zengeya, T. (2020). The use of eDNA to detect alien freshwater crayfish in South African Freshwater Systems. *4th Annual eDNA Technical Exchange Workshop (4eDTEW) 2020*. 4- 6 November 2020. Virtual Conference. Oral presentation.

Mlungu, Z., Mlambo, M.C., Motitsoe, S. and Griffiths, C. (2020). Taxonomic revision of the highly cryptic monotypic genus of *Sternophysingidae* (Crustacea, Amphipoda). *Young Systematists' Forum 2020, The Systematics Association*. UK. 18- 24 November 2020. Virtual Conference. Poster presentation.

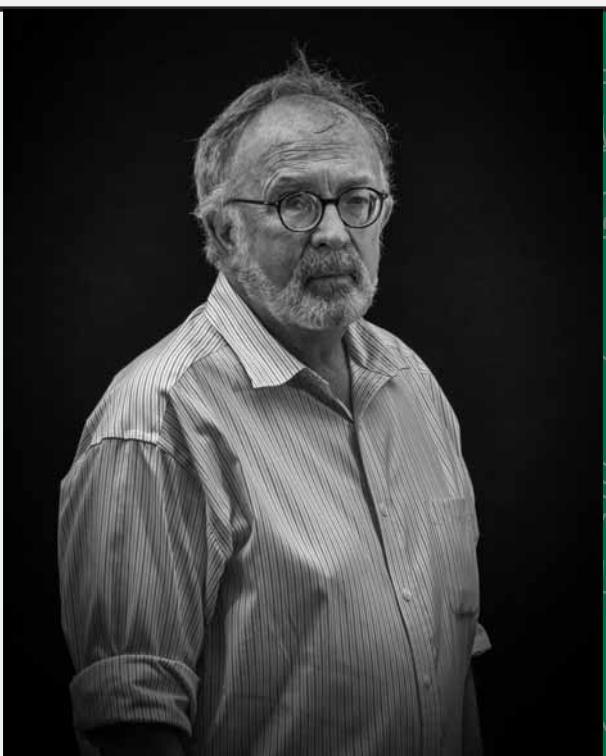


Photo: Simon Pamphilon

# Institute for Environmental Biotechnology, Rhodes University (EBRU)

Professor A Keith Cowan  
Director

## Introduction

The Institute for Environmental Biotechnology Unit (EBRU) targets research and development in environmental biotechnology at the interface between the fundamental and applied sciences. Environmental biotechnology is the branch of biotechnology that addresses environmental problems, such as pollutant removal, renewable bio-energy generation, and biomass and production of commodity and high-value products, by exploiting biological processes. As such, environmental biotechnology may be regarded as the cornerstone of a circular economic process aimed at minimising the impact on the environment, lowering waste and making the most of resources. Rather than the more traditional 'take, make, waste' model of production, environmental biotechnology has a regenerative approach to resources.

Focus areas include wastewater treatment and beneficiation, renewable energy derivation and implementation (e.g. biomass-to-biogas), biological systems, land rehabilitation and decontamination technology (e.g. post-mining, hydrocarbon spillages, etc.), natural products, agricultural and microalgae biotechnology. Basic activities are supported by a strong emphasis on technology transfer from laboratory to full-scale commercial/industrial process application and implementation. In brief, the use of natural products/microbes to perform industrially essential tasks in an environmentally sustainable way is the focus of attention.

Unfortunately, the outbreak of the global COVID-19 pandemic in early 2020 caused by the SARS-CoV-2 virus curtailed staff and student research and prevented EBRU from pursuing and fulfilling its mandate. So severe was the impact of the reaction to the pandemic that the Institute was forced to shed almost all contracted staff. On the plus side, Dr Yinka Titilawo, recipient of a prestigious Rhodes University Postdoctoral Fellowship, continued in this capacity through 2020, which allowed the then research projects at EBRU to conclude successfully. During the course of the extended lockdown, EBRU was invited to participate in proposals submissions in response to the ERA-NET call titled, 'Cofund on Food Systems and Climate (FOSC)' and the Horizon 2020 call, 'Innovative, systemic zero-pollution solutions to protect health, environment and natural resources from persistent and mobile chemicals'. Both will undoubtedly lead to the forging of new working relationships with a distinct possibility for further collaboration.

Attention has recently turned to focus on the commercialisation of technologies incubated at EBRU, such as re-engineering the IAPS from its current 'deconstructed' bioprocess configuration to a self-contained modular system of appropriate design capacity for both temporary and permanent deployment. Furthermore, production specifications and formulation of a viable

ready-to-use biofertilizer with both pollutant degrading and plant growth-promoting activity for invigoration and regenerative restoration of organic matter in degraded soils. The principal objective of this project is to focus on the fungal and bacterial biocatalysts of the Fungcoal system for rehabilitation of soil from opencast mining and for the covering of waste coal discard dumps.

## Postgraduates / Graduations

Despite the collapse of a flagship project, the global pandemic and associated lockdown, and termination of staff contracts, several Postgraduate studies were successfully completed, and the respective degrees were awarded.

Richard Taylor received his PhD degree for a thesis co-supervised by EBRU and titled, 'Resource recovery options in brewery effluent treatment using high rate algal ponds and activated sludge: assessing environmental impacts'. Moreover, the degree of Master of Science in Environmental Biotechnology was awarded to Linda Sibelo, Anele Dube, and Leon Masudi for their studies relating to aspects of integrated algal pond system (IAPS) treatment of domestic sewage and beneficiation of co-products streams, including production of biofuels and biofertilizers. These, together with a further PhD study on the role of microalgal-bacterial flocs and extra polymeric substances as significant factors for optimum function of IAPS, brings to a conclusion the current phase of research into biotechnological aspects of IAPS as a water and sanitation technology.



EBRU PHD candidate Elly Mboneni minding a biogester.

Photo: EBRU

## PUBLICATIONS

### Peer Reviewed Subsidy-Earning Journal Research Publications

Laubscher, R.

Vhiriri, E.P., Irwin, Y.L., Laubscher, R. and Tandlich, R. (2020) Legislation and policy analysis on management of listeriosis epidemic disaster in South Africa. *American journal of disaster medicine*. 15 (2). p.113-128.

Taylor, R.P., Jones, C.L.W. and Laubscher, R. (20202021) Empirical comparison of activated sludge and high rate algal ponding technologies used to recover water, nitrogen and carbon from brewery effluent. *Journal of Water Process Engineering*. 40. (101840). p.1-9.

Taylor, R., Jones, C.L.W. and Laubscher, R. (20202021) Recovery of methane and adding value to the digestate of biomass produced by high rate algal ponds or waste activated sludge, used to treat brewery effluent. *Journal of Water Process Engineering*. 256 40 (0101797). p.1-8. 780-804.

Laubscher, R. and Cowan, K.A.K.

Laubscher, R. and Cowan, K.A.K. (2020) Elaboration of an algae-to-energy system and recovery of water and nutrients from municipal sewage. *Engineering in Life Sciences*. 20 (7). p.305-315.

Olawale, J.T., Edeki, O.G. and Cowan, K.A.K.

Olawale, J.T., Edeki, O.G. and Cowan, K.A.K. (2020) Bacterial degradation of coal discard and geologically weathered coal. *International Journal of Coal Science and Technology*. 7 (2). p.405-416.

Titilawo, O.Y., Masudi, W.L., Olawale, J.T., Sekhohola-Dlamini, L.M. and Cowan, K.A.K.

Titilawo, O.Y., Masudi, W.L., Olawale, J.T., Sekhohola-Dlamini, L.M. and Cowan, K.A.K. (2020) Coal-Degrading Bacteria Display Characteristics Typical of Plant Growth Promoting Rhizobacteria. *Processes*. 8 (2020) *Processes*. 2020, 8 (9), 1111. p.1-15.



BRU PHD candidate Lerato Baloyi-Mokwena at the bench.

Photo: EBRU



Photo: Simon Pamphilon

# Institute for the Study of the Englishes of Africa (ISEA)

Professor Monica Hendricks  
Director

## Introduction

This year, like no other, was hard on all educational institutions and especially for researchers involved in school-based settings, such as the ISEA is mainly engaged in. While it was possible to maintain our academic programmes, it was much harder to persevere with independent research and writing. This was due partly to the closure of schools and subsequent ban on outside visitors, which put paid to all our school-dependent research projects. We need to rebuild our research culture and regain our momentum in 2021 as we come to terms with a changed world.

## Postgraduates / Graduations

A total of twenty-three (23) out of twenty-six (26) BEd in English Language Teaching students successfully completed their third and final year of the course. This pass rate of 88.4% was awe-inspiring given the hardship of the COVID-19 lockdowns that dominated 2020.

Two (2) Master's in English Language Teaching students, supervised by Professor Mbelani, Zolile Patrick Mbuqe, and another co-supervised with McCarthy, Sibongile Dlamini, graduated *in absentia* in April 2020.

## Distinguished Visitors / International Visits

The residency of Dr Qiana Gray was extended for another ten (10) months in 2020. Sadly, when she was repatriated



Honorary Research Associate Dr Brian Willan received a second prestigious National Institute for the Humanities and Social Sciences Book Award at a glittering event on Constitution Hill, in March 2020. This time, for Best Non-Fiction Biography, for *Sol Plaatje: A Life of Solomon Tshekisho Plaatje 1876-1932*. He has generously donated a portion of his prize towards a Postgraduate bursary for an ISEA-registered student.

Photo: ISEA

to the USA in April because of the national lockdown, her role became purely online.

In January 2020, ISEA staff members, Ntombekhaya Fulani, Sikhumbuzo Sibanda and a BEd student, Estel Bezuidenhout, were part of a delegation of twenty-five (25) South African teachers and teacher educators who took part in a two-week exchange programme in Boston, Massachusetts, USA. They were hosted by the University of Massachusetts. This was an initiative of the American Embassy, which focused on Restorative Justice, collaborative learning strategies for English Foreign Language classrooms and strengthening teacher associations. The Restorative Justice sessions focused on Positive Behaviour Intervention Strategies (PBIS) in strengthening learner-teacher relations. To see the effectiveness of these strategies, the delegation visited Consentino Middle School to observe the implementation of PBIS. The visit offered an experience of alternatives to corporal punishment, which is still a concern in South African schools. The visit also prompted consideration of the addition of Restorative Justice in the Professional and Ethical development module of BEd in ELT course. Highlights were the collaborative learning sessions which introduced various strategies to use for collaborative teaching and learning. These were valuable lessons because, in most instances, teachers work in isolation and are sometimes very protective of their classrooms, but the sessions displayed how colleagues could work together in supporting each other and acknowledging each others' strengths. Games were discussed as activities that encourage collaborative learning in classrooms, and we were expected to participate in collaborative activities.

## Significant Research Aligned Events

We extend warm congratulations also to Emeritus Professor of Poetry, Chris Mann, who, together with Lynthia Julius, was joint winner of the Patricia Schonstein Poetry in McGregor Award for 2019. The award was announced this year. Chris was also honoured by being chosen by the Independent Examinations Board (IEB) to be a prescribed poet for this year's Advanced English Programme.

Honorary Research Associate Dr Brian Willan received a second prestigious National Institute for the Humanities and Social Sciences Book Award at a glittering event on Constitution Hill in March 2020. This time, for Best Non-Fiction Biography, for *Sol Plaatje: A Life of Solomon Tshekiso Plaatje 1876-1932*. He has generously donated a portion of his prize towards a Postgraduate bursary for an ISEA-registered student.

## PUBLICATIONS

### Creative Writing

Leff, C.

Leff, C. (2020) poem: scenting. In: Mahlangu, K.S. Skinner, D.R., Motinyane, M., Hugo, D., Mashego, G. and possa, (eds.). *scenting*. online: Avbob Poetry Project.

Mann, C.M.

Mann, C.M. (2020) Granadillas. In: Schonstein, P. (ed.). *Granadillas*. Cape Town: Africa Sun Press.

Mann, C.M. (2020) Aubergines . In: Schonstein, P. (ed.). *Aubergines*. Cape Town: Africa Sun Press.

Mann, C.M. (2020) Gold Medal Acceptance Speech. In: Gray, R. (ed.). *Gold Medal Acceptance Speech*. Johannesburg: English Academy of SA.

Mann, C.M. (2020) The Funfair of the Damned. In: *The Funfair of the Damned*. Oxford: Rhodes House.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Mann, C.M.

Mann, C.M. (2020) Rosarium: A four-part collage. *Literator*. 41 (1). p.1.

Mann, C.M. (2020) The plague of Athens. *Literator*. 41 (1). p.1-2.

Mann, C.M. (2020) Black Socks. *English Academy Review*. 37 (2). p.75-76.

### Chapters in Peer Reviewed Books

Mawela, R.

Mawela, R. (2020) "Bridging the Early Childhood Literacy Gap through the Scaffolding Interaction Cycle" in *Let us Enable our Children to Read and Write* (Eds.) Nomlomo, V. Z. Desai, M. Mbelani, N. Dlamini & J. September. University of Western Cape and British Council South Africa. First Edition 2020. ISBN 978-1- 990944- 73-84.

Willan, B.

Willan, B. (2020) *Sol Plaatje: A Life of Solomon Tshekiso Plaatje 1876-1932*. Johannesburg: Jacana.



Group shots of the 25 South African teachers and teacher educators who were part of a two-week exchange programme on *Restorative Justice, Collaborative Learning Strategies for EFL Classrooms and Strengthening Teacher Associations* at the University of Massachusetts in January 2020.

Photo: ISEA



Photo: Simon Pamphilon



## Introduction

In May 2020, the Institute of Social and Economic Research (ISER) welcomed its new director, Professor Nhlanhla Cyril Mbatha. This was followed by the immediate appointment of the institute's new Advisory Board, whose members represent a wealth of experience from academia, civic society, the public and private sectors. Based on the Director's experiences, the ISER's vision and mission have been revised extensively to focus on four research areas, namely, the management of environmental resources (with a particular focus on water and land policies), skills development and education challenges for positive labour market outcomes, economic and human development, and research on international trade (with a focus on African cross border trade).

In the effort to rebuild the ISER's research profile, new strategic research partnerships inside and outside Rhodes University are being forged in line with the Institute's new mission. These include partnerships with the Institute of Water Research, the Environmental Learning Research Centre (ELRC), other departments at Rhodes University, and partnerships with the University of Fort Hare (UFH), the University of South Africa (UNISA), the University of Stellenbosch, the Human Sciences Research Council (HSRC) and the Academy of African Business and Development (AABD) (a global professional organization, dedicated to discussing, analysing, and advancing solutions to the challenges facing the development of African business).

## Projects and associated events

- a. In collaboration with the British Council (BC), the ISER launched its British Council funded final research report on *Inclusive Education in Teacher Professional Development in South Africa* in December 2020. This was a collaborative project between the ISER, MIET Africa, UNISA and the Department of Basic Education (DBE) and was led by Professor Yusuf Sayed. The final report is also available on the ISER's webpage.
- b. The Rhodes ELRC and the ISER collaborated to submit a proposal to the Water Research Commission to develop a participatory course strengthening co-learning in water security networks. The project forms part of the GEF6 Ecological Infrastructure for Water Security Project (EI4WS), focused on developing strategies to support social learning, knowledge mediation and management for deepening capacities in existing organisations and networks to address issues in the water and biodiversity sectors.
- c. The ISER, with the School of Journalism and Media Studies (SJMS), is also developing a strategic partnership with the Office of the Premier in the Eastern Cape province around a research project aimed at understanding the socio-economic dynamics of human development at the local municipalities level.

- d. A report on Carbon Taxes and the Attainment of Emissions Reduction Targets in South Africa was launched, led by Professor Martin Gustafsson of the University of Stellenbosch in 2020. The report will be made available on the ISER's web page when concluded.

## Seminars / Webinars

The ISER hosted and/or participated in seminars aimed at highlighting its ongoing research and those of strategic partners. The seminars were held online due to the COVID-19 pandemic restrictions.

- a. During Women's Month, Professor Mike Rogan led a discussion on how the first wave of the National Income Dynamics Study (NIDS) - Coronavirus Rapid Mobile Survey (CRAM) indicated that the current COVID-19 disaster interventions needed to be significantly scaled up and far better targeted at protecting the more vulnerable informal sector workers, particularly women, who are currently bearing the highest costs of the pandemic. Respondent: Professor Naledi Nomalanga Mkhize, Head of Department in the Department of History at the Nelson Mandela University.
- b. In October 2020, Drs Binganidzo Muchara and Charity Nhemachena of UNISA led a discussion on how increased investment in the agriculture and seed industry in South Africa has triggered a significant debate around Intellectual Property rights. This webinar presented work that analysed the evolving landscape of Sunflower Plant Breeders' Rights in South Africa and discussed the critical collaboration and policy factors necessary to progress. Respondent: Professor Michael Aliber, Department of Agricultural Economics, University of Fort Hare.
- c. In November 2020, following the tabling of the Land Reform Appropriation Bill in South Africa's parliament, Dr Siyabulela Manona, Department of Geography, Rhodes University and Professor Thembela Kepe, Department of Geography, University of Toronto, and a Visiting Professor at Rhodes University, discussed how the most common critiques of land reform, including inadequate state capacity, lack of political support, limited budget, and so forth, are only manifestations of a deeper problem. These critiques limit debates and actions on land reform to the same platforms that were fundamental in colonization and apartheid. It is essential to take a step back and broaden our diagnosis of the problem through understanding the broader concept of land and what it means.

- d. In December 2020, Professor Yusuf Sayed, Honorary Visiting Professor at the ISER, presented the research findings of the project on Embedding Inclusive Education in Teacher Professional Development in South Africa: An evaluation of the impact of the Teaching for All project. The project's primary researcher was Thomas Salmon, ISER's PhD student. The discussion was facilitated by Malaika Mahlatsi, City of Ekurhuleni and Rhodes University's alumna.

## Postgraduates / Graduations

2020 graduates:

1. **Siviwe Mhlana:** MA, Supervisor (Professor Mike Rogan). Topic: "The Changing Nature of Work: Understanding Precarity and the Gendered Individualisation of Risk in Post-Apartheid South Africa" (Awarded *cum laude* 2020).
2. **Reesha Kara:** PhD, Supervisor (Professor Mike Rogan). Topic: "Non-marital fertility in South Africa: trends, determinants and implications" (Awarded 2020).

## Distinguished Visitors / International Visits

COVID travel restrictions prevented our Research Associates from being able to visit in person in 2020. Our ISER Fellows continue to contribute to the Institute's research agenda, with ongoing collaborations that have resulted in publications and shared research projects, leading to an increase in Fellowships for 2021.

# PUBLICATIONS

## Peer Reviewed Subsidy-Earning Journal Research Publications

Grapsa, E.  
 Posel, D., Casale, D. and Grapsa, E. (2020) Household variation and inequality: The implications of equivalence scales in South Africa. *African Review of Economics & Finance (The Journal of the African Centre for Economics & Finance)*. 12 (1). p.1-21.

Moller, V.  
 Moller, V. (2020) Lawrence Schlemmer - South African Pioneer of Social Indicators and Applied Quality of Life Research. *Applied Research in Quality of Life*. 2020 (2020). p.1-6.

Otterbach, S.  
 Otterbach, S., Oskorouchi, H.R., Rogan, M. and Qaim, M. (2020) Using Google data to measure the role of Big Food and fast food in South Africa's obesity epidemic. *World Development*. 140 (1). p.1-13.

Webster, E.  
 Webster, E. 2020. "The Uberisation of work: the challenge of regulating platform capitalism. A commentary." *International Review of Applied Economics*. DOI: 10.1080/02692171.2020.1773647.

## Other Publications

Grapsa, E.  
 Du Plessis, U., Macleod, C.I., Mavuso, J., Grapsa, E. and Sanyangore, A. (2020) An assessment of abortion seeking behaviours and preferences in rural communities of the Eastern Cape. In: Du Plessis, U., Macleod, C.I., Grapsa, E., Sanyangore, A. and Mavuso, (eds.). *An assessment of abortion seeking behaviours and preferences in rural communities of the Eastern Cape*. Grahamstown: Critical Studies in Sexualities and Reproduction.

## Technical Report

Sayed Y., Salmon T. & Balie L. 2020. Embedding Inclusive Education in Teacher Professional Development in South Africa: Impact evaluation report on the Teaching for All project. *Johannesburg: British Council Technical Research Report*.

## Working Papers

Mbatha, CN.  
 Mbatha, CN. and Mkhize, N.N., 2020. *The weak to strong state involvement and political accountability levels schema*. ISER Working Papers 2020.

## Print media articles

Mbatha, CN. 23 June 2020, The Business Day and African Farmers Review: Digital farming platforms hold the key to success for SA's emerging farmers.

Mbatha, CN. 17 August 2020, Bizcommunity (revised): Digital small-scale models could help SA's pandemic-stricken farmers.

Moller, V. 27 August 2020, News24.com, Family life critical to mitigating the impact of the pandemic on the elderly.

RHODES ISER WEBINAR SERIES

THE COVID-19 CRISIS AND THE SOUTH AFRICAN INFORMAL ECONOMY



Prof Rogan      Prof Mbatha      Prof Mkhize

**VIEW ON DEMAND**

2020 Webinar series. The COVID-19 Crisis and the South African Informal Economy.

Photo: ISER



Photo: Simon Pamphilon

# Institute for Water Research (IWR)

Professor CG (Tally) Palmer  
Director

## Introduction

In common with the whole world, 2020 has been an extraordinary and bruising year for the IWR. Our staff and students have suffered illness, bereavement, isolation, gender-related violence and mental health stress. Field and laboratory work have been interrupted, and everyone has had to adapt to online communication. In this context, we were proud to conduct our biennial Strategic Adaptive Management planning process. ([https://iwr.ru.ac.za/iwr/download/IWR\\_SAM\\_2020\\_Summary\\_Report.pdf](https://iwr.ru.ac.za/iwr/download/IWR_SAM_2020_Summary_Report.pdf)).

The IWR is the hub and host of the African Research Universities (ARUA) Water Centre of Excellence (CoE). Our node partners are Addis Ababa University, Ethiopia; University Cheikh Anta Diop, Senegal; Dar es Salaam University, Tanzania; Makerere University, Uganda; University of Rwanda, Rwanda; Lagos University, Nigeria; the University of Cape Town and the University of KwaZulu-Natal.

A highlight of 2020 was the March 2020 announcement by UK Research and Innovation (UKRI) that the Water CoE is one of four ARUA Centres awarded a £2M Research Excellence Grant to undertake a project entitled: *Unlocking resilient benefits from African water resources (RESBEN)*. RESBEN applies the innovative Adaptive Systemic Approach, developed by the Water CoE, in case studies addressing water issues in six of the Water CoE countries. The UKRI Capacity Development Grant for the project *Water for African SDGs* awarded in 2019 is closely linked to RESBEN. In a covid-19 adaptation, *Water for African SDGs* has moved from a plan for each node to run an in-person course related to their RESBEN research to nodes collaborating to prepare six OpenCourseWare online courses that will be uploaded in 2022.

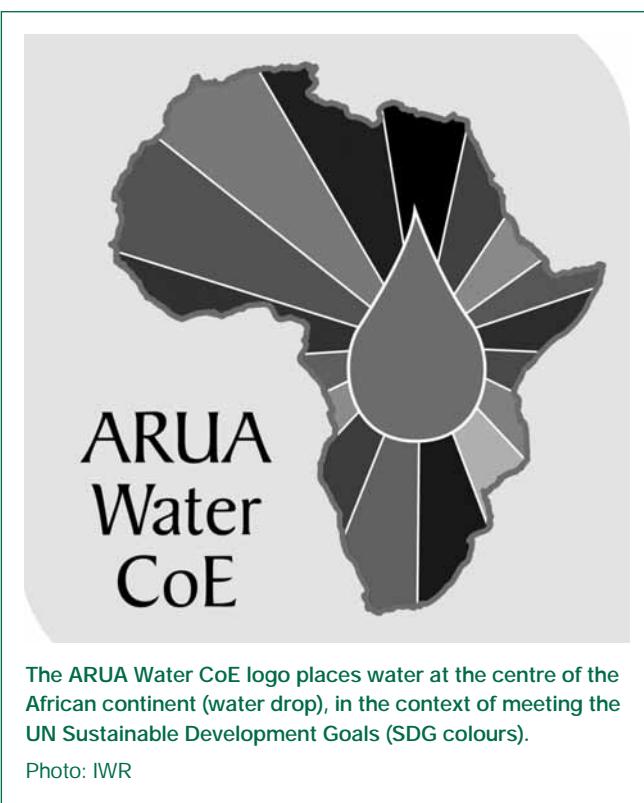
Associate Professor Nelson Odume continues to lead a number of large, internationally funded, cross-continental projects that are an integral part of the Water CoE profile: two Leading Integrated Research for Agenda 2030 in Africa (LIRA) projects funded by the International Science Council and the Network of the African Science Academies (NASAC). The first project is a collaborative project between Rhodes University, Nnamdi Azikiwe University, Awka, Nigeria; Federal Ministry of Environment, Nigeria; Delta State School of Marine Technology, Nigeria; Nelson Mandela Bay Metro and the Gqeberha Office of the Department of Water and Sanitation, South Africa. The second project is a partnership between Rhodes University, CSIR-Water Research Institute, Ghana; Mnandi Azikiwe University, Nigeria; Kwame Nkrumah University of Science and Technology, Ghana; Stellenbosch University and Institute for Health Research, Epidemiological Surveillance and Training (IRESSEF), Senegal. Both projects focused on the Sustainable development goals, their interlinkages and the role of science-policy-society interactions in the achievement of the SDGs.

Dr Neil Griffin and Dr Notiswa Libala have successfully led a WRC-funded project on the localisation of SDG 6, the indicators and targets for South Africa. Khaya Mgaba has courageously taken on the leadership of the microplastic project under the

mentorship of Associate Professor Nelson Odume, Dr Paul Mensah and Dr Neil Griffin. For the first time in South Africa, a Decision Support System (DSS) was developed to link the resource quality objectives (RQOs) and water quality standards in water use licences. The outcome of this project, which was led by Associate Professor Nelson Odume, Dr Andrew Slaughter and Dr Neil Griffin, will assist both the DWS and resource users on water quality licensing and protection of the water resource. A project on ethics and water governance is providing innovative and insightful ways of navigating the complexity of ethical challenges, water governance and management in South Africa. We are delighted to announce that in 2020 we secured another WRC project on the Revision of the 1996 South African Water Quality Guidelines for Aquatic Ecosystems. This project is being implemented in partnership with the University of South Africa (UNISA).

Associate Professor Nelson Odume and other African Freshwater Scientists are in the process of establishing the African Chapter of the Society for Freshwater Science (SFS). The Chapter, once fully established, should provide a solid platform for trans-Atlantic Scientific collaboration and cooperation between African and North American Scientists.

The African Studies Centre at Rhodes is one of the Africa Multiple Clusters of Excellence funded by the University of Bayreuth, Germany. UCEWQ is a lead partner of the Rhodes University African Studies Centre (RASC). RASC is a space for disciplinary, interdisciplinary and transdisciplinary scholarships, and we are very excited to be part of this initiative.



The Royal Society-DFID Africa Capacity Building Initiative CRuHM (Congo River User Hydraulic and Morphology) project continues to be a large active project led by Emeritus Professor Denis Hughes. The project is a collaboration between the IWR, the University of Kinshasa in DRC, the University of Dar es Salaam in Tanzania, the University of Bristol, and the University of Leeds in the UK. The aim is to carry out large scale hydraulic and geomorphological science research on the main navigable channels of the Congo River to address the severe lack of basic scientific knowledge and understanding in these water engineering fields for the world's second-largest river.

In 2019, the IWR was visited by representatives from OOWV, a German public utility that supplies drinking water in Germany and from the Technical University of Braunschweig. Dr Jane Tanner led this collaboration into 2020 with two (2) publications between the institutions (one of these is under review). One of these publications was as a result of PhD Hydrology student David Gwapedza's visit to Germany on exchange in late 2019, where he assisted in setting up a hydrological model for the Buffalo City Municipality.

## Postgraduates / Graduations

During the 2020 virtual graduation, two (2) PhD students, Dr Ovie Augustine Edgebene and Dr Dennis Choruma, were awarded their Doctoral degrees, after both having received excellent examiner's reports, under the supervision of Associate Professor Nelson Odume. Two (2) Honours students supervised by Dr Jane Tanner and Dr Sukhmani Mantel graduated in 2020.

## Distinguished Visitors / International Visits

The Water CoE has established strong links with the UK N8 network: Sheffield and Lancaster Universities are partners in the UKRI project, and Professor Frances Cleaver (Lancaster University), and Drs Vanessa Speight (Sheffield University), Claire Walsh (Newcastle University), and Jed Stevenson (Durham University) serve on the UKRI project boards. Professor Tally Palmer was an invited speaker at the Newcastle University *Global Water Security Symposium*, which celebrated both 70 years of water and environmental health research and the establishment of the UKRI Global Water Security and Development Hub. Preceding the symposium, the N8 hosted a Water CoE-N8 Colloquium that included in-person and online CoE participants across Africa on the theme: *Research for development as catalyst of change towards social ecological justice*. From that, Professor Tally Palmer was an invited panellist for a Universities UK International and UK ODA (Official Development Assistance) webinar that attracted more than 300 participants on: *Research and Innovation for international development: a focus on impact*.

In January 2020, Associate Professor Nelson Odume, together with the LIRA team in Nigeria, organised a workshop

on urban river ecosystem health and water quality governance. The workshop was aimed at exploring ways of improving urban river ecosystem health and water quality by looking at institutional governance practices as well as barriers. Building on the success of the first workshop, the team organised a second workshop focusing on water quality practices in Nigeria and available tools, methods and approaches for monitoring river health, as well as the linkage to relevant policies. Both workshops attracted participants from various Nigerian Federal Ministries, Departments and Agencies (MDAs). Representative MDAs include the Federal Ministries of Environment, Water Resources; the Nigerian Hydrological Services Agency, Abuja Environmental Protection Board, Abuja Municipal Council, National Environmental Standards Regulatory and Enforcement Agency, University of Abuja, among others. A similar online workshop was also organised in South Africa, which was aimed at exploring ways to improve the Swartkops River water quality, ecosystem health and governance practices. Through the LIRA project, the Swartkops River catchment management forum is being established. Earlier in the year, Associate Professor Nelson Odume also attended the LIRA structured programme in Addis Ababa, Ethiopia. The LIRA programme was aimed at capacity building for project principal and co-principal investigators on transdisciplinary research and other research skills and leadership.

## Significant Research Aligned Events

The IWR presented a 5-day ASA course at Addis Ababa University, attended by participants from each of the Water CoE nodes and four participants sponsored by the N8 (Northern Eight Group) Universities network, UK.

The IWR is a key partner in the transformational learning project jointly led by the Rhodes University Environmental Learning Research Centre (ELRC) and the Institute of Environmental Systems Research at the University of Osnabrück, Germany. IWR staff and students, including Professor Tally Palmer, Associate Professor Nelson Odume and Dr Matthew Weaver participated in a workshop hosted by the ELRC and subsequently an online Summer School on transformative learning, including the role of transdisciplinarity.

Associate Professor Nelson Odume also leads the African Water Resources Mobility Network (AWaRMN) project. The AWaRMN project is a multi-partner project funded by the European Union. The partners are the University of Kinshasa, Democratic Republic of Congo; Federal University of Technology, Minna, Nigeria; Makerere University, Uganda; National Higher School of Hydraulic, Algeria; and TuDelft Netherlands (European, Technical partner). IWR Visiting Professor, Jill Slinger, leads the TU Delft supporting role. The partnership has already recruited twelve (12) PhD and six (6) Masters students for the 2021 Academic year. The Institute will host four (4) of these PhD candidates and two (2) MSc students.

## PUBLICATIONS

### Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Libala, N. Cockburn, J., Rosenberg, E., Copteros, A., Cornelius, S.F.A., Libala, N., Metcalfe, L. and Van Der Waal, B.W. (2020) A Relational Approach to Landscape Stewardship: Towards a New Perspective for Multi-Actor Collaboration. *Land.* 9 (224). p.1-20.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Akamagwuna, F.C. and Odume, N.O. Akamagwuna, F.C. and Odume, N.O. (2020) Ephemeroptera, Plecoptera and Trichoptera (EPT) functional feeding group responses to fine grain sediment stress in a river in the Eastern Cape, South Africa. *Environmental Monitoring and Assessment.* 192 (214). p.1-11.

Bester, R. Bester, R., Blignaut, J.N. and Van Niekerk, P.H. (2020) The cost-effectiveness of water augmentation and management: Assessing the Unit Reference Value. *Journal of the South African Institution of Civil Engineering.* 62 (2). p.39-44.

Clifford-Holmes, J.K. Carnohan, S., Clifford-Holmes, J.K., Retief, H., McKnight, U.S. and Pollard, S. (2020) Climate change adaptation in rural South Africa: Using stakeholder narratives to build system dynamics models in data-scarce environments. *Journal of Simulation.* (2020). p.1-7.

Edegbe, O.A. and Odume, N.O. Edegbe, O.A., Arimoro, F.O. and Odume, N.O. (2020) Exploring the distribution patterns of macroinvertebrate signature traits and ecological preferences and their responses to urban and agricultural pollution in selected rivers in the Niger Delta ecoregion, Nigeria. *Aquatic Biology.* 54 (2020). p.553-573.

Edegbe, O.A., Arimoro, F.O. and Odume, N.O. (2020) How does Urban Pollution Influence Macroinvertebrate Traits in Forested Riverine Systems? *Water (Switzerland).* 12 (3111). p.1-17.

Griffin, N., Muller, W.J. and Gordon, A.K. Griffin, N., Muller, W.J. and Gordon, A.K. (2020) Toxicity testing: ecological relevance and relative efficacy and costs of toxicity tests in the South African context. *Water SA.* 46 (2). p.259-266.

Gwapedza, D., Hughes, D.A., Slaughter, A.R. and Mantel, S.K. Gwapedza, D., Nyamela, N., Hughes, D.A., Slaughter, A.R., Mantel, S.K. and Van Der Waal, B.W. (2020) Prediction of sediment yield of the Inxu River catchment (South Africa) using the MUSLE. *International Soil and Water Conservation Research.* 2020 (2020). p.1-46.

Hughes, D.A. Munoz-Carpena, R., Batelaan, O., Willems, P. and Hughes, D.A. (2020) Editorial: Why it is a blessing to be rejected: improving science with quality journals. *Journal of Hydrology.* 31 (2020). p.1-5.

Hughes, D.A. and Farinosi, F. (2020) Assessing development and climate variability impacts on water resources in the Zambezi River basin. Simulating future scenarios of climate and development. *Journal of Hydrology: Regional Studies.* 32 (2020). p.1-21.

Hughes, D.A. and Mantel, S.K. Hughes, D.A., Mantel, S.K. and Farinosi, F. (2020) Assessing development and climate variability impacts on water resources in the Zambezi River basin: Initial model calibration, uncertainty issues and performance. *Journal of Hydrology: Regional Studies.* 32 (2020). p.1-15.

Kabuya, P.M. and Hughes, D.A. Kabuya, P.M., Hughes, D.A., Tshimanga, R.M., Trigg, M.A. and Bates, P. (2020) Establishing uncertainty ranges of hydrologic indices across climate and physiographic regions of the Congo River Basin. *Journal of Hydrology.* 30 (2020). p.1-20.

Mantel, S.K.



Participants at the Adaptive Systemic Approach ARUA Water CoE course, Addis Ababa University.

Photo: IWR



Zoom: the iconic 2020 communication experience. Participants in the ARUA Water CoE - N8 colloquium: Research for development as catalyst of change towards social-ecological justice.

Photo: IWR

Januchowski-Hartley, S., **Mantel, S.K.**, Celi, J., Hermoso, V., White, J., Blankenship, S. and Olden, J.D. (2020) Small instream infrastructure: Comparative methods and evidence of environmental and ecological responses. *Ecological Solutions and Evidence*. 1 (2020). p.1-7.

**Mensah, P.K.**

Farounbi, A.I., **Mensah, P.K.**, Olawode, E.O. and Ngqwala, N. (2020) H-NMR Determination of Organic Compounds in Municipal Wastewaters and the Receiving Surface Waters in Eastern Cape Province of South Africa. *Molecules*. 25 (2020). p.1-13.

**Odume, N.O.**

Mwedzi, T., Siziba, N., **Odume, N.O.**, Nyamazana, E. and Mabika, I. (2020) Responses of macroinvertebrate community metrics to urban pollution in semi-arid catchments around the city of Bulawayo, Zimbabwe. *Water SA*. 46 (4). p.583-592.

**Odume, N.O. and Edegbe, O.A.**

Keke, U., Arimoro, F.O., Ayanwale, A., **Odume, N.O.** and **Edegbe, O.A.** (2020) Biodiversity patterns along seasonality and environmental factors of stream macroinvertebrate communities of North-Central Nigeria. *Egyptian Journal of Aquatic Biology and Fisheries*. 24 (4). p.521-534.

**Palmer, A.R.**

Vos, H.C., Fister, W., Eckardt, F.D., **Palmer, A.R.** and Kuhn, N.J. (2020) Physical Crust Formation on Sandy Soils and Their Potential

to Reduce Dust Emissions from Croplands. *Land*. 9 (12). p.1-20. Eckardt, F.D., Bekiswa, S., Von Holdt, J.R., Jack, C., Kuhn, N., Mogane, F., Murray, J.E., Ndara, N. and **Palmer, A.R.** (2020) South Africa's agricultural dust sources and events from MSG SEVIRI. *Aeolian Research*. 47 (2020). p.1-12.

**Palmer, A.R., Ezenne, G.I., Choruma, D.J., Gwate, O., Mantel, S.K. and Tanner, J.L.**

**Palmer, A.R., Ezenne, G.I., Choruma, D.J., Gwate, O., Mantel, S.K. and Tanner, J.L.** (2020) A comparison of three models used to determine water fluxes over the Albany Thicket, Eastern Cape, South Africa. *Agricultural and Forest Meteorology*. 107984 (2020). p.288-289.

**Slaughter, A.R.**

**Slaughter, A.R.** and Razavi, S. (2020) Paleo-hydrologic reconstruction of 400 years of past flows at a weekly time step for major rivers of Western Canada. *Earth System Science Data*. 12 (1). p.231-243.

**Slinger, J.H.**

Owusu, A.G., Mul, M., van der Zaag, P. and **Slinger, J.H.** (2020) Re-operating dams for environmental flows: From recommendation to practice. *River Research and Applications*. 2020 (2020). p.1-11.

Janssen, S., Vreugdenhil, H., Hermans, L. and **Slinger, J.H.** (2020) On the nature based flood defence dilemma and its Resolution: A game theory based analysis. *Science of the Total Environment*. 705 (2020). p.1-9.

**Slinger, J.H.** and Vreugdenhil, H.S.I. (2020) Coastal Engineers Embrace Nature: Characterizing the Metamorphosis in Hydraulic Engineering in Terms of Four Continua. *Water (Switzerland)*. 12 (2020). p.1-12.

McEvoy, S., van de Ven, F.H.M., Broelsma, R. and **Slinger, J.H.** (2020) Evaluating a Planning Support System's Use and Effects in Urban Adaptation: An Exploratory Case Study from Berlin, Germany. *Sustainability*. 12 (2020). p.1-27.

Aukes, E.J., Bontje, L.E. and **Slinger, J.H.** (2020) Narrative and Frame Analysis: Disentangling and Refining Two Close Relatives by Means of a Large Infrastructural Technology Case. *Forum Qualitative Sozialforschung*. 21 (2). p.1-18.

Taljaard, S., **Slinger, J.H.**, Arabi, S., Weerts, S.P. and Vreugdenhil, H. (2020) The natural environment in port development: A 'green handbrake' or an equal partner? *Ocean and Coastal Management*. 2020 (2020). p.1-11.

**Tanner, J.L. and Weaver, M.J.T.**

Scheibling, K.W., **Tanner, J.L.**, **Weaver, M.J.T.** and Schoniger, M. (2020) A strategy to enhance management of free basic water via communal taps in South Africa. *Utilities Policy*. 64 (0). p.1-5.

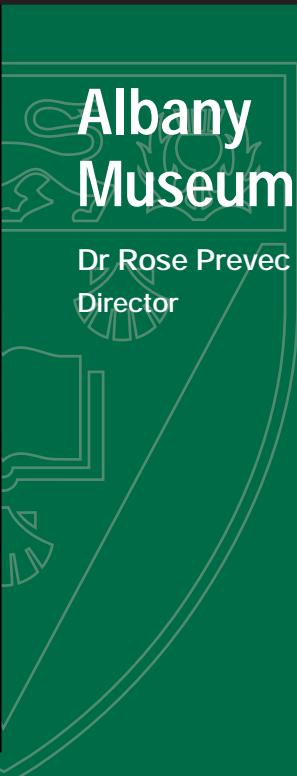


2020  
RHODES UNIVERSITY  
RESEARCH REPORT

# Affiliates & Institutes



Photo: Simon Pamphilon



## Introduction

As with all researchers around the world, 2020 was a challenging year with regard to meeting fieldwork goals, engaging with students and the public, and with the cancellation of all in-person conferences and international visits. Even with more time available for writing up results, stress, grief, uncertainty and mental health issues experienced by many did not create a productive working environment. Nevertheless, research staff at the Albany Museum were able to produce sixteen (16) research articles, and most attended online seminars and conferences and continued collaborations with both local and international colleagues across the globe.

Staff also continued the supervision of five (5) Rhodes Masters and PhD students and ran online undergraduate and Honours courses at Rhodes. Significant progress was also made with current efforts to transfer all of our catalogues of natural sciences collections to Specify, and to meet international curation standards, under the guidance of the very dynamic National Collections Facility (NSCF), with the active engagement of the national community of natural sciences collections managers.

## Postgraduates / Graduations

Naadiya Hoosen (Department of Geology, RU) graduated with an Honours (cum laude). Her project on the geochemistry of the Coombs Hill shale was co-supervised by Dr Rob Gess.

Benjamin Kirkaldy (Department of Zoology, RU) graduated after completing an excellent Masters dissertation on the phylogenetics and palaeontology of Plecoptera (stoneflies), for which he received a well-deserved distinction. Kirkaldy incorporated a wide range of interdisciplinary techniques



Rob Gess excavating early Devonian shales in the Humansdorp district.

Photo: Department of Earth Sciences

in his study, and his cutting-edge results will lead to at least three publications. He was co-supervised by Drs Helen James and Rose Prevec (Albany Museum) and collaborated with Dr Alex Sutherland (Albany Museum) and Dr Arnold Staniczek at Stuttgart State Museum of Natural History. During his studies, Kirkaldy travelled to Germany to work with Dr Staniczek. He presented his work at the Palaeontological Society of South Africa biennial congress (for which he received the Bob Brain award) and was an engaged, enthusiastic and lovely member of our team at the museum.

## Significant Research Aligned Events

### Department of Earth Sciences

#### Dr Rose Prevec

With all fieldwork postponed due to the pandemic, research efforts focused on the writing of manuscripts and the preparation and curation of new collections from two exciting plant and insect fossil localities near Sutherland. Dr Prevec was appointed to the National Executive Committee of the South African Commission for Stratigraphy.

#### Dr Robert Gess

In 2020 Dr Gess received the results of his first NRF rating application and was given a C1 rating. The feedback on the reviewers' comments was also highly positive, encouraging him to expand his research and to try to get a position suitable for starting a South African school of Devonian studies. An extensive 23-page review of Waterloo Farm was published in *Biological Reviews* (Impact Factor 8) with Dr Gess as the senior author. This paper referenced all publications on Waterloo Farm (to date). It examined



Researchers inspecting samples collected with a zooplankton net at Sterkfontein cave, Gauteng (Gauteng Province).

Photo: Department of Freshwater Invertebrates

these records from an ecological perspective, using depositional and biological clues to reconstruct the palaeoecosystem holistically. A comparative review of the analogous contemporary Swartvlei estuarine ecosystem was contributed by Dr Alan Whitfield of SAIAB, and the two systems were compared and contrasted. This paper provides the world's most complete picture of a stem tetrapod habitat and reveals important new insights on the role of estuaries as fish nursery areas through time. The effects that utilization of ovovipary or vivipary by different fish groups may have had on their ability to utilize these environments effectively was discussed, as well as how this may have impacted their potential to radiate before and after the End Devonian Mass Extinction. In addition, new ideas were postulated regarding the ecological drivers of the morphological evolution of stem tetrapods - including the probability that they evolved to exploit the food source provided by shallow water fish nurseries better. Ongoing excavation of the earliest Devonian fossiliferous lenses was conducted during two field trips to early Devonian strata in the Humansdorp district. Novel plant material continues to be uncovered, as well as limited animal remains from the adjacent lagoonal environment, which comprises the depositional environment. Plant remains represent the earliest flora from Africa. A three-week field trip was also conducted to explore the strata of the mid-Devonian Klipbokkopp Formation (Bokkeveld Group) in the western Karoo. This led to the discovery of significant new material from this age.



Crawling through the narrow tunnel of Bakwena cave, Irene Campus, Gauteng Province.

Photo: Department of Freshwater Invertebrates



Entrance to Peppercorn cave, Makapans Valley, Limpopo, to collect subterranean amphipods.

Photo: Department of Freshwater Invertebrates



Researchers lowering down zooplankton net to collect samples at Boesmansgat, Northern Cape. This cave is the third deepest wet cave in the world.

Photo: Department of Freshwater Invertebrates

## Department of Entomology and Arachnology Dr Terence Bellingan

Research with the Department of Entomology and Arachnology focused primarily on hoverflies (Diptera: Syrphidae), with several field trips undertaken to type localities for the genera *Syritta* Le Peletier & Serville, *Chrysogaster* Meigen and *Orthonevra* Macquart in collaboration with colleagues from the KwaZulu-Natal Museum. Valuable collections of specimens were made, contributing to global barcode initiatives through international collaboration on the Pollinator Information Network for Sub-Saharan Two-Winged Insects “PINDIP” Project.

## Department of Freshwater Invertebrates Dr Helen James

Dr Helen James was invited to be a Section Editor for the *European Journal of Taxonomy* and was listed in Directory of African Scientists: <http://africanscientists.africa/business-directory/barber-james/>

She was also invited by the SAEON grasslands node (KZN) to join a collaborative project on the Tugela River with a new Postdoctoral Fellow, Londiwe Khuzwayo.

## Musa Mlambo

Two new Masters students in the Department of Freshwater Invertebrates, Zizile Mlengo and Nonka Mdidimba struggled at first with both their fieldwork and lab work because of COVID-19 restrictions. However, as a brief window opened, they managed to go out and collect valuable data for their projects and also started with the molecular analysis done

at SAIAB. In addition to this, they also managed to participate in international conferences to present their studies, under the supervision of Musa Mlambo, in collaboration with Dr Sam Motitsoe at the Department of Zoology & Entomology. Mlengo's exciting project is aimed at revising the subterranean amphipod genus *Sternophysinx* using an integrative taxonomic approach. Fieldwork involved visiting a lot of caves, sinkholes and boreholes to look for freshwater amphipods, and more samples are still needed. Mdidimba, on the other hand, is doing DNA barcoding of the invasive crayfishes and their co-introduced parasites, as well as testing the potential of eDNA for the bioassessment of these invasives. Her fieldwork involved visiting old and a new site infested by the red swamp crayfish (*Procambarus clarkii*), which signified an alarming expansion of this invader in South Africa.



**Mdidiimba working in the Molecular lab at SAIAB, analyses her eDNA work.**

Photo: Department of Freshwater Invertebrates

## PUBLICATIONS

### Peer Reviewed Non-Subsidy-Earning Journal Research Publications

**De Moor, F.C.**

McLleron, W.G. and De Moor, F.C. (2020) New techniques for improving resolution and visual information on flight activity in Trichoptera. *Zoosymposia*. 18 (2020). p.160-178.

**De Moor, F.C. and Ferreira, I.S.**

De Moor, F.C. and Ferreira, I.S. (2020) Preliminary report on Trichoptera from the headwaters of the Cuanavale, Cuito, Cuembo and Cuanza Rivers in Angola. *Zoosymposia*. 18 (2020). p.34-45.

**Gess, R.W.**

Miyashita, T., Gess, R.W. and Coates, M. (2020) The Evolutionary Origin of the Filter-feeding Larval Phase in Lampreys. *Integrative and Comparative Biology*: 60: E164. Oxford University Press. (Abstract of The Society for Integrative and Comparative Biology annual meeting in Austin, Texas, January 3-7, 2020).

### Peer Reviewed Subsidy-Earning Journal Research Publications

**Barber-James, H.M.**

Malzacher, P. and Barber-James, H.M. (2020) Two new *Caenis* species (Insecta: Ephemeroptera: Caenidae) from the Kruger National Park, South Africa. *African Entomology*. 28 (1). p.62-77. <https://doi.org/10.4001/003.028.0062>.

**Taylor, C.L., Barker, N.P., Barber-James, H.M., Villet, M.H. and Pereira-da-Conceicoa, L.L.** (2020) Habitat requirements affect genetic variation in three species of mayfly (Ephemeroptera, Baetidae) from South Africa. *ZooKeys*. 936 (2020). p.1-24. doi: 10.3897/zookeys.936.38587.

**Barber-James, H.M., Zrelli, S., Yanai, Z. and Satori, M.** (2020) A reassessment of the genus *oligoneuriopsis* crass, 1947 (Ephemeroptera, oligoneuriidae, oligoneuriellini). *ZooKeys*. 2020 (985). p.15-47.

**Bellingan, T.A.**

Dalu, T., Bellingan, T.A., Gouws, J., Impson, N.D., Jordaan, M.S., Khosa, D., Marr, S.M., Mofu, L., Schumann, M., Slabbert, E.,

van der Walt, J.A., Wasserman, R.J. and Weyl, O.L.F. (2020) Ecosystem responses to the eradication of common carp *Cyprinus carpio* using rotenone from a reservoir in South Africa. *Aquatic conservation - marine and freshwater ecosystems*. 30: 2284-2297.

**Cimi, P.V.**

Cimi, P.V., Ngcoza, K.M. and Dold, A.P. (2020) The role of ethnobotany in integrating Indigenous Knowledge in the discipline of science education: a study by the herbarium of the Albany Museum in South Africa. *South African Museums Association Bulletin (SAMAB)*. 42 (2020). p.1-9.

**de Moor, F.C.**

Rivers-Moore, N.A. and de Moor, F.C. (2020) Longitudinal species turnover rates are predictable and should guide location of sampling sites for South African river surveys to assess aquatic biodiversity. *African Journal of Aquatic Science*. 2020 (2020). p.1-10.

Wells, A. and de Moor, F.C. (2020) Hydropsycheidae (Trichoptera) of Angola, a new genus, seven new species, and five new records. *Zootaxa*. 4868 (4). p.495-514.

Rivers-Moore, N.A. and de Moor, F.C. (2020) Climate-linked freshwater habitat change will have cost implications: Pest blackfly outbreaks in two linked South African rivers. *River Research and Applications*. 2020 (2020). p.1-12.

**Dold, A.P.**

Cimi, P.V., Ngcoza, K.M. and Dold, A.P. (2020) The role of ethnobotany in integrating Indigenous Knowledge in the discipline of science education: a study by the herbarium of the Albany Museum in South Africa. *South African Museums Association Bulletin (SAMAB)*. 42 (2020). p.1-9.

**Gess, R.W.**

Gess R.W. and Whitfield, A.K. (2020) Estuarine fish and tetrapod evolution: insights from a Late Devonian (Famennian) Gondwanan estuarine lake and a southern African Holocene equivalent. *Biological Reviews*: 95, pp. 865-888. doi: 10.1111/brv.12590.

**Mlambo, M.C.**

Blanckenberg, M., Mlambo, M.C., Parker, D., Motitsoe, S.N. and Reed, C. (2020) Protected and unprotected urban wetlands have similar aquatic macroinvertebrates communities: A case study from the Cape Flats Sand Fynbos region of southern Africa. *PLoS One*. 15 (5). p.1-18.

Meyer-Milne, E., Mlambo, M.C. and Rogers, D.C. (2020) Distribution of Clam Shrimps (Crustacea: Laevicaudata and Spinicaudata) in South Africa, with New Records from the Northern Cape Province. *Zoological Studies*. 59 (39). p.1-9.

**Pereira Da Conceicoa, L.L. and Barber-James, H.M.**

Pereira Da Conceicoa, L.L., Elbrecht, V., Hall, A., Briscoe, A., Barber-James, H.M. and Price, B. (2020) Metabarcoding unsorted kick-samples facilitates macroinvertebrate-based biomonitoring with increased taxonomic resolution, while outperforming environmental DNA. *Environmental DNA*. 2020 (2020). p.1-19.

**Prevec, R.**

Botha, J., Huttonlocker, A., Smith, R., Prevec, R., Viglietti, P., Modesto, S. 2020. New geochemical and palaeontological data from the Permo-Triassic boundary in the South African Karoo Basin test the synchronicity of terrestrial and marine extinctions. *Palaeogeography, Palaeoclimatology, Palaeoecology*. 540: 109467. DOI: 10.1016/j.palaeo.2019.109467

### Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**Mlambo, M.C.**

Mdidiimba, N.D., Mlambo, M.C. and Zengeya, T. (2020). The use of eDNA to detect alien freshwater crayfish in South African Freshwater Systems. *4th Annual eDNA Technical Exchange Workshop (4eDTEW) 2020*. 4- 6 November 2020. Virtual Conference. Oral presentation.

Mlungu, Z., Mlambo, M.C., Motitsoe, S. and Griffiths, C. (2020). Taxonomic revision of the highly cryptic monotypic genus of *Sternophysingidae* (Crustacea, Amphipoda). *Young Systematists' Forum 2020, The Systematics Association*. UK. 18- 24 November 2020. Virtual Conference. Poster presentation.

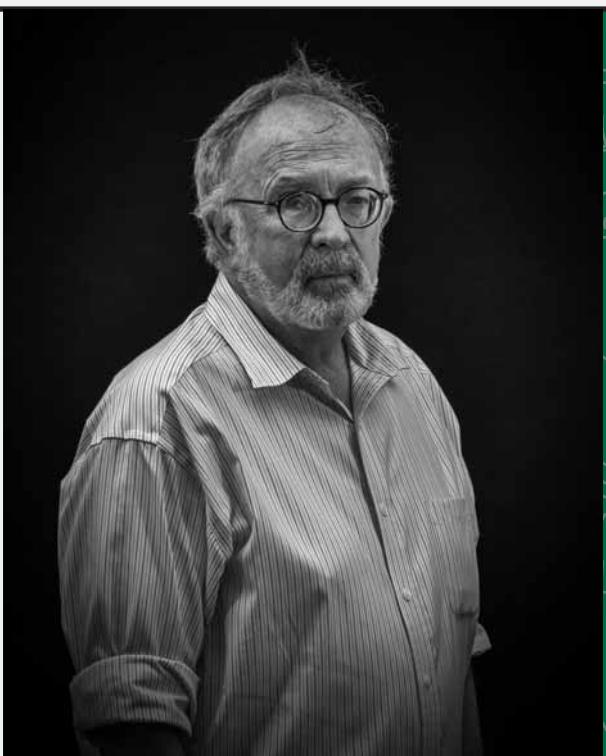


Photo: Simon Pamphilon

# Institute for Environmental Biotechnology, Rhodes University (EBRU)

Professor A Keith Cowan  
Director

## Introduction

The Institute for Environmental Biotechnology Unit (EBRU) targets research and development in environmental biotechnology at the interface between the fundamental and applied sciences. Environmental biotechnology is the branch of biotechnology that addresses environmental problems, such as pollutant removal, renewable bio-energy generation, and biomass and production of commodity and high-value products, by exploiting biological processes. As such, environmental biotechnology may be regarded as the cornerstone of a circular economic process aimed at minimising the impact on the environment, lowering waste and making the most of resources. Rather than the more traditional 'take, make, waste' model of production, environmental biotechnology has a regenerative approach to resources.

Focus areas include wastewater treatment and beneficiation, renewable energy derivation and implementation (e.g. biomass-to-biogas), biological systems, land rehabilitation and decontamination technology (e.g. post-mining, hydrocarbon spillages, etc.), natural products, agricultural and microalgae biotechnology. Basic activities are supported by a strong emphasis on technology transfer from laboratory to full-scale commercial/industrial process application and implementation. In brief, the use of natural products/microbes to perform industrially essential tasks in an environmentally sustainable way is the focus of attention.

Unfortunately, the outbreak of the global COVID-19 pandemic in early 2020 caused by the SARS-CoV-2 virus curtailed staff and student research and prevented EBRU from pursuing and fulfilling its mandate. So severe was the impact of the reaction to the pandemic that the Institute was forced to shed almost all contracted staff. On the plus side, Dr Yinka Titilawo, recipient of a prestigious Rhodes University Postdoctoral Fellowship, continued in this capacity through 2020, which allowed the then research projects at EBRU to conclude successfully. During the course of the extended lockdown, EBRU was invited to participate in proposals submissions in response to the ERA-NET call titled, 'Cofund on Food Systems and Climate (FOSC)' and the Horizon 2020 call, 'Innovative, systemic zero-pollution solutions to protect health, environment and natural resources from persistent and mobile chemicals'. Both will undoubtedly lead to the forging of new working relationships with a distinct possibility for further collaboration.

Attention has recently turned to focus on the commercialisation of technologies incubated at EBRU, such as re-engineering the IAPS from its current 'deconstructed' bioprocess configuration to a self-contained modular system of appropriate design capacity for both temporary and permanent deployment. Furthermore, production specifications and formulation of a viable

ready-to-use biofertilizer with both pollutant degrading and plant growth-promoting activity for invigoration and regenerative restoration of organic matter in degraded soils. The principal objective of this project is to focus on the fungal and bacterial biocatalysts of the Fungcoal system for rehabilitation of soil from opencast mining and for the covering of waste coal discard dumps.

## Postgraduates / Graduations

Despite the collapse of a flagship project, the global pandemic and associated lockdown, and termination of staff contracts, several Postgraduate studies were successfully completed, and the respective degrees were awarded.

Richard Taylor received his PhD degree for a thesis co-supervised by EBRU and titled, 'Resource recovery options in brewery effluent treatment using high rate algal ponds and activated sludge: assessing environmental impacts'. Moreover, the degree of Master of Science in Environmental Biotechnology was awarded to Linda Sibelo, Anele Dube, and Leon Masudi for their studies relating to aspects of integrated algal pond system (IAPS) treatment of domestic sewage and beneficiation of co-products streams, including production of biofuels and biofertilizers. These, together with a further PhD study on the role of microalgal-bacterial flocs and extra polymeric substances as significant factors for optimum function of IAPS, brings to a conclusion the current phase of research into biotechnological aspects of IAPS as a water and sanitation technology.



EBRU PHD candidate Elly Mboneni minding a biogester.

Photo: EBRU

## PUBLICATIONS

### Peer Reviewed Subsidy-Earning Journal Research Publications

Laubscher, R.  
Vhiriri, E.P., Irwin, Y.L., Laubscher, R. and Tandlich, R. (2020) Legislation and policy analysis on management of listeriosis epidemic disaster in South Africa. *American journal of disaster medicine*. 15 (2). p.113-128.

Taylor, R.P., Jones, C.L.W. and Laubscher, R. (20202021) Empirical comparison of activated sludge and high rate algal ponding technologies used to recover water, nitrogen and carbon from brewery effluent. *Journal of Water Process Engineering*. 40. (101840). p.1-9.

Taylor, R., Jones, C.L.W. and Laubscher, R. (20202021) Recovery of methane and adding value to the digestate of biomass produced by high rate algal ponds or waste activated sludge, used to treat brewery effluent. *Journal of Water Process Engineering*. 256 40 (0101797). p.1-8. 780-804.

Laubscher, R. and Cowan, K.A.K.  
Laubscher, R. and Cowan, K.A.K. (2020) Elaboration of an algae-to-energy system and recovery of water and nutrients from municipal sewage. *Engineering in Life Sciences*. 20 (7). p.305-315.

Olawale, J.T., Edeki, O.G. and Cowan, K.A.K.  
Olawale, J.T., Edeki, O.G. and Cowan, K.A.K. (2020) Bacterial degradation of coal discard and geologically weathered coal. *International Journal of Coal Science and Technology*. 7 (2). p.405-416.

Titilawo, O.Y., Masudi, W.L., Olawale, J.T., Sekhohola-Dlamini, L.M. and Cowan, K.A.K.  
Titilawo, O.Y., Masudi, W.L., Olawale, J.T., Sekhohola-Dlamini, L.M. and Cowan, K.A.K. (2020) Coal-Degrading Bacteria Display Characteristics Typical of Plant Growth Promoting Rhizobacteria. *Processes*. 8 (2020) *Processes*. 2020, 8 (9), 1111. p.1-15.



BRU PHD candidate Lerato Baloyi-Mokwena at the bench.

Photo: EBRU



Photo: Simon Pamphilon

# Institute for the Study of the Englishes of Africa (ISEA)

Professor Monica Hendricks  
Director

## Introduction

This year, like no other, was hard on all educational institutions and especially for researchers involved in school-based settings, such as the ISEA is mainly engaged in. While it was possible to maintain our academic programmes, it was much harder to persevere with independent research and writing. This was due partly to the closure of schools and subsequent ban on outside visitors, which put paid to all our school-dependent research projects. We need to rebuild our research culture and regain our momentum in 2021 as we come to terms with a changed world.

## Postgraduates / Graduations

A total of twenty-three (23) out of twenty-six (26) BEd in English Language Teaching students successfully completed their third and final year of the course. This pass rate of 88.4% was awe-inspiring given the hardship of the COVID-19 lockdowns that dominated 2020.

Two (2) Master's in English Language Teaching students, supervised by Professor Mbelani, Zolile Patrick Mbuqe, and another co-supervised with McCarthy, Sibongile Dlamini, graduated *in absentia* in April 2020.

## Distinguished Visitors / International Visits

The residency of Dr Qiana Gray was extended for another ten (10) months in 2020. Sadly, when she was repatriated



Honorary Research Associate Dr Brian Willan received a second prestigious National Institute for the Humanities and Social Sciences Book Award at a glittering event on Constitution Hill, in March 2020. This time, for Best Non-Fiction Biography, for *Sol Plaatje: A Life of Solomon Tshekisho Plaatje 1876-1932*. He has generously donated a portion of his prize towards a Postgraduate bursary for an ISEA-registered student.

Photo: ISEA

to the USA in April because of the national lockdown, her role became purely online.

In January 2020, ISEA staff members, Ntombekhaya Fulani, Sikhumbuzo Sibanda and a BEd student, Estel Bezuidenhout, were part of a delegation of twenty-five (25) South African teachers and teacher educators who took part in a two-week exchange programme in Boston, Massachusetts, USA. They were hosted by the University of Massachusetts. This was an initiative of the American Embassy, which focused on Restorative Justice, collaborative learning strategies for English Foreign Language classrooms and strengthening teacher associations. The Restorative Justice sessions focused on Positive Behaviour Intervention Strategies (PBIS) in strengthening learner-teacher relations. To see the effectiveness of these strategies, the delegation visited Consentino Middle School to observe the implementation of PBIS. The visit offered an experience of alternatives to corporal punishment, which is still a concern in South African schools. The visit also prompted consideration of the addition of Restorative Justice in the Professional and Ethical development module of BEd in ELT course. Highlights were the collaborative learning sessions which introduced various strategies to use for collaborative teaching and learning. These were valuable lessons because, in most instances, teachers work in isolation and are sometimes very protective of their classrooms, but the sessions displayed how colleagues could work together in supporting each other and acknowledging each others' strengths. Games were discussed as activities that encourage collaborative learning in classrooms, and we were expected to participate in collaborative activities.

## Significant Research Aligned Events

We extend warm congratulations also to Emeritus Professor of Poetry, Chris Mann, who, together with Lynthia Julius, was joint winner of the Patricia Schonstein Poetry in McGregor Award for 2019. The award was announced this year. Chris was also honoured by being chosen by the Independent Examinations Board (IEB) to be a prescribed poet for this year's Advanced English Programme.

Honorary Research Associate Dr Brian Willan received a second prestigious National Institute for the Humanities and Social Sciences Book Award at a glittering event on Constitution Hill in March 2020. This time, for Best Non-Fiction Biography, for *Sol Plaatje: A Life of Solomon Tshekiso Plaatje 1876-1932*. He has generously donated a portion of his prize towards a Postgraduate bursary for an ISEA-registered student.

## PUBLICATIONS

### Creative Writing

Leff, C.

Leff, C. (2020) poem: scenting. In: Mahlangu, K.S. Skinner, D.R., Motinyane, M., Hugo, D., Mashego, G. and possa, (eds.). *scenting*. online: Avbob Poetry Project.

Mann, C.M.

Mann, C.M. (2020) Granadillas. In: Schonstein, P. (ed.). *Granadillas*. Cape Town: Africa Sun Press.

Mann, C.M. (2020) Aubergines . In: Schonstein, P. (ed.). *Aubergines*. Cape Town: Africa Sun Press.

Mann, C.M. (2020) Gold Medal Acceptance Speech. In: Gray, R. (ed.). *Gold Medal Acceptance Speech*. Johannesburg: English Academy of SA.

Mann, C.M. (2020) The Funfair of the Damned. In: *The Funfair of the Damned*. Oxford: Rhodes House.

### Peer Reviewed Subsidy-Earning Journal Research Publications

Mann, C.M.

Mann, C.M. (2020) Rosarium: A four-part collage. *Literator*. 41 (1). p.1.

Mann, C.M. (2020) The plague of Athens. *Literator*. 41 (1). p.1-2.

Mann, C.M. (2020) Black Socks. *English Academy Review*. 37 (2). p.75-76.

### Chapters in Peer Reviewed Books

Mawela, R.

Mawela, R. (2020) "Bridging the Early Childhood Literacy Gap through the Scaffolding Interaction Cycle" in *Let us Enable our Children to Read and Write* (Eds.) Nomlomo, V. Z. Desai, M. Mbelani, N. Dlamini & J. September. University of Western Cape and British Council South Africa. First Edition 2020. ISBN 978-1- 990944- 73-84.

Willan, B.

Willan, B. (2020) *Sol Plaatje: A Life of Solomon Tshekiso Plaatje 1876-1932*. Johannesburg: Jacana.



Group shots of the 25 South African teachers and teacher educators who were part of a two-week exchange programme on *Restorative Justice, Collaborative Learning Strategies for EFL Classrooms and Strengthening Teacher Associations* at the University of Massachusetts in January 2020.

Photo: ISEA



Photo: Simon Pamphilon



## Introduction

In May 2020, the Institute of Social and Economic Research (ISER) welcomed its new director, Professor Nhlanhla Cyril Mbatha. This was followed by the immediate appointment of the institute's new Advisory Board, whose members represent a wealth of experience from academia, civic society, the public and private sectors. Based on the Director's experiences, the ISER's vision and mission have been revised extensively to focus on four research areas, namely, the management of environmental resources (with a particular focus on water and land policies), skills development and education challenges for positive labour market outcomes, economic and human development, and research on international trade (with a focus on African cross border trade).

In the effort to rebuild the ISER's research profile, new strategic research partnerships inside and outside Rhodes University are being forged in line with the Institute's new mission. These include partnerships with the Institute of Water Research, the Environmental Learning Research Centre (ELRC), other departments at Rhodes University, and partnerships with the University of Fort Hare (UFH), the University of South Africa (UNISA), the University of Stellenbosch, the Human Sciences Research Council (HSRC) and the Academy of African Business and Development (AABD) (a global professional organization, dedicated to discussing, analysing, and advancing solutions to the challenges facing the development of African business).

## Projects and associated events

- a. In collaboration with the British Council (BC), the ISER launched its British Council funded final research report on *Inclusive Education in Teacher Professional Development in South Africa* in December 2020. This was a collaborative project between the ISER, MIET Africa, UNISA and the Department of Basic Education (DBE) and was led by Professor Yusuf Sayed. The final report is also available on the ISER's webpage.
- b. The Rhodes ELRC and the ISER collaborated to submit a proposal to the Water Research Commission to develop a participatory course strengthening co-learning in water security networks. The project forms part of the GEF6 Ecological Infrastructure for Water Security Project (EI4WS), focused on developing strategies to support social learning, knowledge mediation and management for deepening capacities in existing organisations and networks to address issues in the water and biodiversity sectors.
- c. The ISER, with the School of Journalism and Media Studies (SJMS), is also developing a strategic partnership with the Office of the Premier in the Eastern Cape province around a research project aimed at understanding the socio-economic dynamics of human development at the local municipalities level.

- d. A report on Carbon Taxes and the Attainment of Emissions Reduction Targets in South Africa was launched, led by Professor Martin Gustafsson of the University of Stellenbosch in 2020. The report will be made available on the ISER's web page when concluded.

## Seminars / Webinars

The ISER hosted and/or participated in seminars aimed at highlighting its ongoing research and those of strategic partners. The seminars were held online due to the COVID-19 pandemic restrictions.

- a. During Women's Month, Professor Mike Rogan led a discussion on how the first wave of the National Income Dynamics Study (NIDS) - Coronavirus Rapid Mobile Survey (CRAM) indicated that the current COVID-19 disaster interventions needed to be significantly scaled up and far better targeted at protecting the more vulnerable informal sector workers, particularly women, who are currently bearing the highest costs of the pandemic. Respondent: Professor Naledi Nomalanga Mkhize, Head of Department in the Department of History at the Nelson Mandela University.
- b. In October 2020, Drs Binganidzo Muchara and Charity Nhemachena of UNISA led a discussion on how increased investment in the agriculture and seed industry in South Africa has triggered a significant debate around Intellectual Property rights. This webinar presented work that analysed the evolving landscape of Sunflower Plant Breeders' Rights in South Africa and discussed the critical collaboration and policy factors necessary to progress. Respondent: Professor Michael Aliber, Department of Agricultural Economics, University of Fort Hare.
- c. In November 2020, following the tabling of the Land Reform Appropriation Bill in South Africa's parliament, Dr Siyabulela Manona, Department of Geography, Rhodes University and Professor Thembela Kepe, Department of Geography, University of Toronto, and a Visiting Professor at Rhodes University, discussed how the most common critiques of land reform, including inadequate state capacity, lack of political support, limited budget, and so forth, are only manifestations of a deeper problem. These critiques limit debates and actions on land reform to the same platforms that were fundamental in colonization and apartheid. It is essential to take a step back and broaden our diagnosis of the problem through understanding the broader concept of land and what it means.

- d. In December 2020, Professor Yusuf Sayed, Honorary Visiting Professor at the ISER, presented the research findings of the project on Embedding Inclusive Education in Teacher Professional Development in South Africa: An evaluation of the impact of the Teaching for All project. The project's primary researcher was Thomas Salmon, ISER's PhD student. The discussion was facilitated by Malaika Mahlatsi, City of Ekurhuleni and Rhodes University's alumna.

## Postgraduates / Graduations

2020 graduates:

1. **Siviwe Mhlana:** MA, Supervisor (Professor Mike Rogan). Topic: "The Changing Nature of Work: Understanding Precarity and the Gendered Individualisation of Risk in Post-Apartheid South Africa" (Awarded *cum laude* 2020).
2. **Reesha Kara:** PhD, Supervisor (Professor Mike Rogan). Topic: "Non-marital fertility in South Africa: trends, determinants and implications" (Awarded 2020).

## Distinguished Visitors / International Visits

COVID travel restrictions prevented our Research Associates from being able to visit in person in 2020. Our ISER Fellows continue to contribute to the Institute's research agenda, with ongoing collaborations that have resulted in publications and shared research projects, leading to an increase in Fellowships for 2021.

# PUBLICATIONS

## Peer Reviewed Subsidy-Earning Journal Research Publications

Grapsa, E.  
 Posel, D., Casale, D. and Grapsa, E. (2020) Household variation and inequality: The implications of equivalence scales in South Africa. *African Review of Economics & Finance (The Journal of the African Centre for Economics & Finance)*. 12 (1). p.1-21.

Moller, V.  
 Moller, V. (2020) Lawrence Schlemmer - South African Pioneer of Social Indicators and Applied Quality of Life Research. *Applied Research in Quality of Life*. 2020 (2020). p.1-6.

Otterbach, S.  
 Otterbach, S., Oskorouchi, H.R., Rogan, M. and Qaim, M. (2020) Using Google data to measure the role of Big Food and fast food in South Africa's obesity epidemic. *World Development*. 140 (1). p.1-13.

Webster, E.  
 Webster, E. 2020. "The Uberisation of work: the challenge of regulating platform capitalism. A commentary." *International Review of Applied Economics*. DOI: 10.1080/02692171.2020.1773647.

## Other Publications

Grapsa, E.  
 Du Plessis, U., Macleod, C.I., Mavuso, J., Grapsa, E. and Sanyangore, A. (2020) An assessment of abortion seeking behaviours and preferences in rural communities of the Eastern Cape. In: Du Plessis, U., Macleod, C.I., Grapsa, E., Sanyangore, A. and Mavuso, (eds.). *An assessment of abortion seeking behaviours and preferences in rural communities of the Eastern Cape*. Grahamstown: Critical Studies in Sexualities and Reproduction.

## Technical Report

Sayed Y., Salmon T. & Balie L. 2020. Embedding Inclusive Education in Teacher Professional Development in South Africa: Impact evaluation report on the Teaching for All project. *Johannesburg: British Council Technical Research Report*.

## Working Papers

Mbatha, CN.  
 Mbatha, CN. and Mkhize, N.N., 2020. *The weak to strong state involvement and political accountability levels schema*. ISER Working Papers 2020.

## Print media articles

Mbatha, CN. 23 June 2020, The Business Day and African Farmers Review: Digital farming platforms hold the key to success for SA's emerging farmers.

Mbatha, CN. 17 August 2020, Bizcommunity (revised): Digital small-scale models could help SA's pandemic-stricken farmers.

Moller, V. 27 August 2020, News24.com, Family life critical to mitigating the impact of the pandemic on the elderly.

RHODES ISER WEBINAR SERIES

THE COVID-19 CRISIS AND THE SOUTH AFRICAN INFORMAL ECONOMY



Prof Rogan      Prof Mbatha      Prof Mkhize

**VIEW ON DEMAND**

2020 Webinar series. The COVID-19 Crisis and the South African Informal Economy.

Photo: ISER



Photo: Simon Pamphilon

# Institute for Water Research (IWR)

Professor CG (Tally) Palmer  
Director

## Introduction

In common with the whole world, 2020 has been an extraordinary and bruising year for the IWR. Our staff and students have suffered illness, bereavement, isolation, gender-related violence and mental health stress. Field and laboratory work have been interrupted, and everyone has had to adapt to online communication. In this context, we were proud to conduct our biennial Strategic Adaptive Management planning process. ([https://iwr.ru.ac.za/iwr/download/IWR\\_SAM\\_2020\\_Summary\\_Report.pdf](https://iwr.ru.ac.za/iwr/download/IWR_SAM_2020_Summary_Report.pdf)).

The IWR is the hub and host of the African Research Universities (ARUA) Water Centre of Excellence (CoE). Our node partners are Addis Ababa University, Ethiopia; University Cheikh Anta Diop, Senegal; Dar es Salaam University, Tanzania; Makerere University, Uganda; University of Rwanda, Rwanda; Lagos University, Nigeria; the University of Cape Town and the University of KwaZulu-Natal.

A highlight of 2020 was the March 2020 announcement by UK Research and Innovation (UKRI) that the Water CoE is one of four ARUA Centres awarded a £2M Research Excellence Grant to undertake a project entitled: *Unlocking resilient benefits from African water resources (RESBEN)*. RESBEN applies the innovative Adaptive Systemic Approach, developed by the Water CoE, in case studies addressing water issues in six of the Water CoE countries. The UKRI Capacity Development Grant for the project *Water for African SDGs* awarded in 2019 is closely linked to RESBEN. In a covid-19 adaptation, *Water for African SDGs* has moved from a plan for each node to run an in-person course related to their RESBEN research to nodes collaborating to prepare six OpenCourseWare online courses that will be uploaded in 2022.

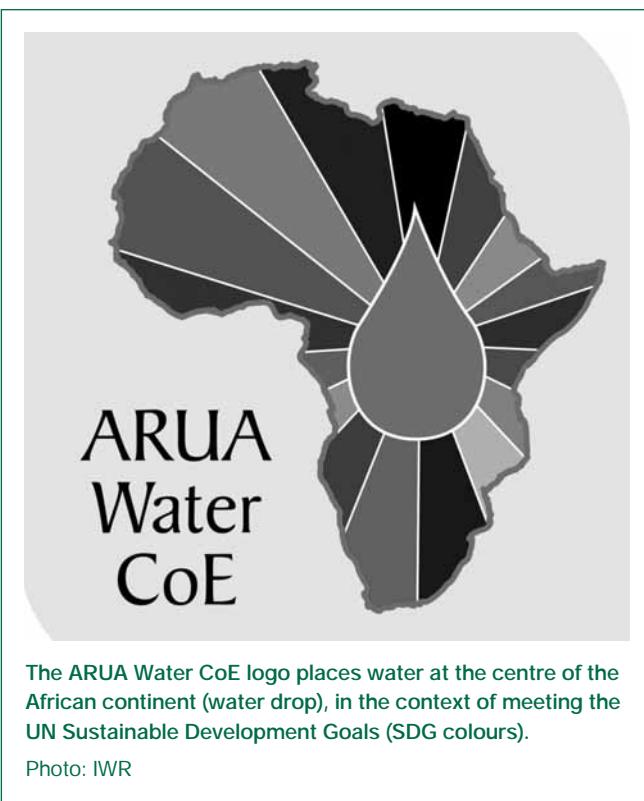
Associate Professor Nelson Odume continues to lead a number of large, internationally funded, cross-continental projects that are an integral part of the Water CoE profile: two Leading Integrated Research for Agenda 2030 in Africa (LIRA) projects funded by the International Science Council and the Network of the African Science Academies (NASAC). The first project is a collaborative project between Rhodes University, Nnamdi Azikiwe University, Awka, Nigeria; Federal Ministry of Environment, Nigeria; Delta State School of Marine Technology, Nigeria; Nelson Mandela Bay Metro and the Gqeberha Office of the Department of Water and Sanitation, South Africa. The second project is a partnership between Rhodes University, CSIR-Water Research Institute, Ghana; Mnandi Azikiwe University, Nigeria; Kwame Nkrumah University of Science and Technology, Ghana; Stellenbosch University and Institute for Health Research, Epidemiological Surveillance and Training (IRESSEF), Senegal. Both projects focused on the Sustainable development goals, their interlinkages and the role of science-policy-society interactions in the achievement of the SDGs.

Dr Neil Griffin and Dr Notiswa Libala have successfully led a WRC-funded project on the localisation of SDG 6, the indicators and targets for South Africa. Khaya Mgaba has courageously taken on the leadership of the microplastic project under the

mentorship of Associate Professor Nelson Odume, Dr Paul Mensah and Dr Neil Griffin. For the first time in South Africa, a Decision Support System (DSS) was developed to link the resource quality objectives (RQOs) and water quality standards in water use licences. The outcome of this project, which was led by Associate Professor Nelson Odume, Dr Andrew Slaughter and Dr Neil Griffin, will assist both the DWS and resource users on water quality licensing and protection of the water resource. A project on ethics and water governance is providing innovative and insightful ways of navigating the complexity of ethical challenges, water governance and management in South Africa. We are delighted to announce that in 2020 we secured another WRC project on the Revision of the 1996 South African Water Quality Guidelines for Aquatic Ecosystems. This project is being implemented in partnership with the University of South Africa (UNISA).

Associate Professor Nelson Odume and other African Freshwater Scientists are in the process of establishing the African Chapter of the Society for Freshwater Science (SFS). The Chapter, once fully established, should provide a solid platform for trans-Atlantic Scientific collaboration and cooperation between African and North American Scientists.

The African Studies Centre at Rhodes is one of the Africa Multiple Clusters of Excellence funded by the University of Bayreuth, Germany. UCEWQ is a lead partner of the Rhodes University African Studies Centre (RASC). RASC is a space for disciplinary, interdisciplinary and transdisciplinary scholarships, and we are very excited to be part of this initiative.



The Royal Society-DFID Africa Capacity Building Initiative CRuHM (Congo River User Hydraulic and Morphology) project continues to be a large active project led by Emeritus Professor Denis Hughes. The project is a collaboration between the IWR, the University of Kinshasa in DRC, the University of Dar es Salaam in Tanzania, the University of Bristol, and the University of Leeds in the UK. The aim is to carry out large scale hydraulic and geomorphological science research on the main navigable channels of the Congo River to address the severe lack of basic scientific knowledge and understanding in these water engineering fields for the world's second-largest river.

In 2019, the IWR was visited by representatives from OOWV, a German public utility that supplies drinking water in Germany and from the Technical University of Braunschweig. Dr Jane Tanner led this collaboration into 2020 with two (2) publications between the institutions (one of these is under review). One of these publications was as a result of PhD Hydrology student David Gwapedza's visit to Germany on exchange in late 2019, where he assisted in setting up a hydrological model for the Buffalo City Municipality.

## Postgraduates / Graduations

During the 2020 virtual graduation, two (2) PhD students, Dr Ovie Augustine Edgebene and Dr Dennis Choruma, were awarded their Doctoral degrees, after both having received excellent examiner's reports, under the supervision of Associate Professor Nelson Odume. Two (2) Honours students supervised by Dr Jane Tanner and Dr Sukhmani Mantel graduated in 2020.

## Distinguished Visitors / International Visits

The Water CoE has established strong links with the UK N8 network: Sheffield and Lancaster Universities are partners in the UKRI project, and Professor Frances Cleaver (Lancaster University), and Drs Vanessa Speight (Sheffield University), Claire Walsh (Newcastle University), and Jed Stevenson (Durham University) serve on the UKRI project boards. Professor Tally Palmer was an invited speaker at the Newcastle University *Global Water Security Symposium*, which celebrated both 70 years of water and environmental health research and the establishment of the UKRI Global Water Security and Development Hub. Preceding the symposium, the N8 hosted a Water CoE-N8 Colloquium that included in-person and online CoE participants across Africa on the theme: *Research for development as catalyst of change towards social ecological justice*. From that, Professor Tally Palmer was an invited panellist for a Universities UK International and UK ODA (Official Development Assistance) webinar that attracted more than 300 participants on: *Research and Innovation for international development: a focus on impact*.

In January 2020, Associate Professor Nelson Odume, together with the LIRA team in Nigeria, organised a workshop

on urban river ecosystem health and water quality governance. The workshop was aimed at exploring ways of improving urban river ecosystem health and water quality by looking at institutional governance practices as well as barriers. Building on the success of the first workshop, the team organised a second workshop focusing on water quality practices in Nigeria and available tools, methods and approaches for monitoring river health, as well as the linkage to relevant policies. Both workshops attracted participants from various Nigerian Federal Ministries, Departments and Agencies (MDAs). Representative MDAs include the Federal Ministries of Environment, Water Resources; the Nigerian Hydrological Services Agency, Abuja Environmental Protection Board, Abuja Municipal Council, National Environmental Standards Regulatory and Enforcement Agency, University of Abuja, among others. A similar online workshop was also organised in South Africa, which was aimed at exploring ways to improve the Swartkops River water quality, ecosystem health and governance practices. Through the LIRA project, the Swartkops River catchment management forum is being established. Earlier in the year, Associate Professor Nelson Odume also attended the LIRA structured programme in Addis Ababa, Ethiopia. The LIRA programme was aimed at capacity building for project principal and co-principal investigators on transdisciplinary research and other research skills and leadership.

## Significant Research Aligned Events

The IWR presented a 5-day ASA course at Addis Ababa University, attended by participants from each of the Water CoE nodes and four participants sponsored by the N8 (Northern Eight Group) Universities network, UK.

The IWR is a key partner in the transformational learning project jointly led by the Rhodes University Environmental Learning Research Centre (ELRC) and the Institute of Environmental Systems Research at the University of Osnabrück, Germany. IWR staff and students, including Professor Tally Palmer, Associate Professor Nelson Odume and Dr Matthew Weaver participated in a workshop hosted by the ELRC and subsequently an online Summer School on transformative learning, including the role of transdisciplinarity.

Associate Professor Nelson Odume also leads the African Water Resources Mobility Network (AWaRMN) project. The AWaRMN project is a multi-partner project funded by the European Union. The partners are the University of Kinshasa, Democratic Republic of Congo; Federal University of Technology, Minna, Nigeria; Makerere University, Uganda; National Higher School of Hydraulic, Algeria; and TuDelft Netherlands (European, Technical partner). IWR Visiting Professor, Jill Slinger, leads the TU Delft supporting role. The partnership has already recruited twelve (12) PhD and six (6) Masters students for the 2021 Academic year. The Institute will host four (4) of these PhD candidates and two (2) MSc students.

# PUBLICATIONS

## Peer Reviewed Non-Subsidy-Earning Journal Research Publications

Libala, N.

Cockburn, J., Rosenberg, E., Copteros, A., Cornelius, S.F.A., Libala, N., Metcalfe, L. and Van Der Waal, B.W. (2020) A Relational Approach to Landscape Stewardship: Towards a New Perspective for Multi-Actor Collaboration. *Land.* 9 (224). p.1-20.

## Peer Reviewed Subsidy-Earning Journal Research Publications

Akamagwuna, F.C. and Odume, N.O.

Akamagwuna, F.C. and Odume, N.O. (2020) Ephemeroptera, Plecoptera and Trichoptera (EPT) functional feeding group responses to fine grain sediment stress in a river in the Eastern Cape, South Africa. *Environmental Monitoring and Assessment.* 192 (214). p.1-11.

Bester, R.

Bester, R., Blignaut, J.N. and Van Niekerk, P.H. (2020) The cost-effectiveness of water augmentation and management: Assessing the Unit Reference Value. *Journal of the South African Institution of Civil Engineering.* 62 (2). p.39-44.

Clifford-Holmes, J.K.

Carnohan, S., Clifford-Holmes, J.K., Retief, H., McKnight, U.S. and Pollard, S. (2020) Climate change adaptation in rural South Africa: Using stakeholder narratives to build system dynamics models in data-scarce environments. *Journal of Simulation.* (2020). p.1-7.

Edegbe, O.A. and Odume, N.O.

Edegbe, O.A., Arimoro, F.O. and Odume, N.O. (2020) Exploring the distribution patterns of macroinvertebrate signature traits and ecological preferences and their responses to urban and agricultural pollution in selected rivers in the Niger Delta ecoregion, Nigeria. *Aquatic Biology.* 54 (2020). p.553-573.

Edegbe, O.A., Arimoro, F.O. and Odume, N.O. (2020) How does Urban Pollution Influence Macroinvertebrate Traits in Forested Riverine Systems? *Water (Switzerland).* 12 (3111). p.1-17.

Griffin, N., Muller, W.J. and Gordon, A.K.

Griffin, N., Muller, W.J. and Gordon, A.K. (2020) Toxicity testing: ecological relevance and relative efficacy and costs of toxicity tests in the South African context. *Water SA.* 46 (2). p.259-266.

Gwapedza, D., Hughes, D.A., Slaughter, A.R. and Mantel, S.K. Gwapedza, D., Nyamela, N., Hughes, D.A., Slaughter, A.R., Mantel, S.K. and Van Der Waal, B.W. (2020) Prediction of sediment yield of the Inxu River catchment (South Africa) using the MUSLE. *International Soil and Water Conservation Research.* 2020 (2020). p.1-46.

Hughes, D.A.

Munoz-Carpena, R., Batelaan, O., Willems, P. and Hughes, D.A. (2020) Editorial: Why it is a blessing to be rejected: improving science with quality journals. *Journal of Hydrology.* 31 (2020). p.1-5.

Hughes, D.A. and Farinosi, F. (2020) Assessing development and climate variability impacts on water resources in the Zambezi River basin. Simulating future scenarios of climate and development. *Journal of Hydrology: Regional Studies.* 32 (2020). p.1-21.

Hughes, D.A. and Mantel, S.K.

Hughes, D.A., Mantel, S.K. and Farinosi, F. (2020) Assessing development and climate variability impacts on water resources in the Zambezi River basin: Initial model calibration, uncertainty issues and performance. *Journal of Hydrology: Regional Studies.* 32 (2020). p.1-15.

Kabuya, P.M. and Hughes, D.A.

Kabuya, P.M., Hughes, D.A., Tshimanga, R.M., Trigg, M.A. and Bates, P. (2020) Establishing uncertainty ranges of hydrologic indices across climate and physiographic regions of the Congo River Basin. *Journal of Hydrology.* 30 (2020). p.1-20.

Mantel, S.K.



Participants at the Adaptive Systemic Approach ARUA Water CoE course, Addis Ababa University.

Photo: IWR



Zoom: the iconic 2020 communication experience. Participants in the ARUA Water CoE - N8 colloquium: Research for development as catalyst of change towards social-ecological justice.

Photo: IWR

Januchowski-Hartley, S., **Mantel, S.K.**, Celi, J., Hermoso, V., White, J., Blankenship, S. and Olden, J.D. (2020) Small instream infrastructure: Comparative methods and evidence of environmental and ecological responses. *Ecological Solutions and Evidence*. 1 (2020). p.1-7.

**Mensah, P.K.**

Farounbi, A.I., **Mensah, P.K.**, Olawode, E.O. and Ngqwala, N. (2020) H-NMR Determination of Organic Compounds in Municipal Wastewaters and the Receiving Surface Waters in Eastern Cape Province of South Africa. *Molecules*. 25 (2020). p.1-13.

**Odume, N.O.**

Mwedzi, T., Siziba, N., **Odume, N.O.**, Nyamazana, E. and Mabika, I. (2020) Responses of macroinvertebrate community metrics to urban pollution in semi-arid catchments around the city of Bulawayo, Zimbabwe. *Water SA*. 46 (4). p.583-592.

**Odume, N.O. and Edegbe, O.A.**

Keke, U., Arimoro, F.O., Ayanwale, A., **Odume, N.O.** and **Edegbe, O.A.** (2020) Biodiversity patterns along seasonality and environmental factors of stream macroinvertebrate communities of North-Central Nigeria. *Egyptian Journal of Aquatic Biology and Fisheries*. 24 (4). p.521-534.

**Palmer, A.R.**

Vos, H.C., Fister, W., Eckardt, F.D., **Palmer, A.R.** and Kuhn, N.J. (2020) Physical Crust Formation on Sandy Soils and Their Potential

to Reduce Dust Emissions from Croplands. *Land*. 9 (12). p.1-20. Eckardt, F.D., Bekiswa, S., Von Holdt, J.R., Jack, C., Kuhn, N., Mogane, F., Murray, J.E., Ndara, N. and **Palmer, A.R.** (2020) South Africa's agricultural dust sources and events from MSG SEVIRI. *Aeolian Research*. 47 (2020). p.1-12.

**Palmer, A.R., Ezenne, G.I., Choruma, D.J., Gwate, O., Mantel, S.K. and Tanner, J.L.**

**Palmer, A.R., Ezenne, G.I., Choruma, D.J., Gwate, O., Mantel, S.K. and Tanner, J.L.** (2020) A comparison of three models used to determine water fluxes over the Albany Thicket, Eastern Cape, South Africa. *Agricultural and Forest Meteorology*. 107984 (2020). p.288-289.

**Slaughter, A.R.**

**Slaughter, A.R.** and Razavi, S. (2020) Paleo-hydrologic reconstruction of 400 years of past flows at a weekly time step for major rivers of Western Canada. *Earth System Science Data*. 12 (1). p.231-243.

**Slinger, J.H.**

Owusu, A.G., Mul, M., van der Zaag, P. and **Slinger, J.H.** (2020) Re-operating dams for environmental flows: From recommendation to practice. *River Research and Applications*. 2020 (2020). p.1-11.

Janssen, S., Vreugdenhil, H., Hermans, L. and **Slinger, J.H.** (2020) On the nature based flood defence dilemma and its Resolution: A game theory based analysis. *Science of the Total Environment*. 705 (2020). p.1-9.

**Slinger, J.H.** and Vreugdenhil, H.S.I. (2020) Coastal Engineers Embrace Nature: Characterizing the Metamorphosis in Hydraulic Engineering in Terms of Four Continua. *Water (Switzerland)*. 12 (2020). p.1-12.

McEvoy, S., van de Ven, F.H.M., Broelsma, R. and **Slinger, J.H.** (2020) Evaluating a Planning Support System's Use and Effects in Urban Adaptation: An Exploratory Case Study from Berlin, Germany. *Sustainability*. 12 (2020). p.1-27.

Aukes, E.J., Bontje, L.E. and **Slinger, J.H.** (2020) Narrative and Frame Analysis: Disentangling and Refining Two Close Relatives by Means of a Large Infrastructural Technology Case. *Forum Qualitative Sozialforschung*. 21 (2). p.1-18.

Taljaard, S., **Slinger, J.H.**, Arabi, S., Weerts, S.P. and Vreugdenhil, H. (2020) The natural environment in port development: A 'green handbrake' or an equal partner? *Ocean and Coastal Management*. 2020 (2020). p.1-11.

**Tanner, J.L. and Weaver, M.J.T.**

Scheibling, K.W., **Tanner, J.L.**, **Weaver, M.J.T.** and Schoniger, M. (2020) A strategy to enhance management of free basic water via communal taps in South Africa. *Utilities Policy*. 64 (0). p.1-5.



Photo: Simon Pamphilon

# Rhodes University Mathematics Education Project (RUMEP)

Thomas Penlington  
Director

## Introduction

RUMEP, as a professional development project, continues to be committed to improving the quality of teaching and learning of Mathematics in schools in the Eastern and Northern Cape. With a strong emphasis on teaching content and pedagogy, RUMEP remains a beacon of light in a landscape mirrored by poverty and gloom.

With the COVID-19 pandemic taking everyone by surprise, it was a challenging year for the RUMEP staff as we had to reimagine a 'new normal.' However, we soldiered on and managed to complete a successful year, albeit in a different format. Research took a back seat as we had to manoeuvre ourselves around the pandemic and adapt to new forms of technology and online teaching. Three staff members were, however, able to present conference papers at the SAARMSTE Congress in Gqeberha.

Our third cohort of twenty-five (25) Northern Cape students, who were sponsored by the Sishen Iron-Ore Community Trust (SIOC), presented the findings of the research they had conducted within their own classrooms at the beginning of December in Kuruman. The topics were diversified and exciting, with a general focus on number sense, geometry and algebra. The RUMEP staff assessed the performance of the students, after which a question and answer session followed.

## Postgraduates/Graduations

At the virtual graduation ceremony in September, two staff members, Ronald Griqua and Philani Mhlongo, graduated with M Ed degrees, the former with a distinction. Silence



2020 How I Teach Conference in Kuruman. Dr Kangela, a RUMEP staff member presenting a student with a goody bag.  
Photo: RUMEP



Left to right: Malgas presenting his research findings. Mokgoje presenting her research findings. Bekaardt presenting her research topic on quadratic factoring. Mlambo presenting her research findings on addition and subtraction of whole numbers.

Photos: RUMEP

Balele graduated with a Postgraduate Certificate in Higher Education.

Thirty-six (36) B Ed (in-service) Mathematics students also graduated, twenty-one (21) Intermediate Phase, and fifteen (15) Senior Phase teachers, one (1) Intermediate Phase student graduated with a distinction.

## Distinguished Visitors / International Visits

Three researchers from Hungary, Professors Szitányi Judit, Bernadett Svraka and Csaba Csikos from the Faculty of Primary and Pre-School Education at the Eotvos Lorand University in Budapest, visited RUMEP to share their expertise on Problem Solving, Number Sense and Common Fractions.

Charles Olyn, Subject Advisor for FET Mathematics, Department of Education, addressed students at the 2020 How I Teach Conference in Kuruman. He expressed the hope that the performance of learners would be positively impacted in years to come due to the high-quality in-service teacher development programme.

## Significant Research Aligned Events

### Workshops

**Balele, S.** (2020). Virtual Mathematics and Revision Workshops for Grade 12 learners, Ntsika Senior Secondary School, Makhanda.

**Mhlongo, P., Mkhwane, F., and Penlington, T.** (2020). HCI Foundation Virtual Workshop 21 October.

### Conferences attended, and papers presented

**Griqua, R., and Schafer, M.** (2020). Number Sense and visualisation: Rediscovering the beauty of mathematics through visual teaching. In P. Vale, L. Westaway, Z. Nhase & I. Schudel (Eds). *Fostering delight in Mathematics, Science and Technology Education: Proceedings of the 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Hosted collaboratively by Rhodes University and Nelson Mandela University, Port Elizabeth.



Class of 2020 at the How I teach Conference in Kuruman.

Photo: RUMEP

*Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Hosted collaboratively by Rhodes University and Nelson Mandela University, Port Elizabeth.

**Kangela, N.** (2020). The extent to which mathematics teachers enable or constrain deep conceptual understanding. In P. Vale, L. Westaway, Z. Nhase and I. Schudel (Eds). *Fostering delight in Mathematics, Science and Technology Education: Proceedings of the 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Hosted collaboratively by Rhodes University and Nelson Mandela University, Port Elizabeth.

**Penlington, T.** (2020). Using a mathematics reflective journal to document teachers' professional growth. In P. Vale, L. Westaway, Z. Nhase and I. Schudel (Eds). *Fostering delight in Mathematics, Science and Technology Education: Proceedings of the 28th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)*. Hosted collaboratively by Rhodes University and Nelson Mandela University, Port Elizabeth.

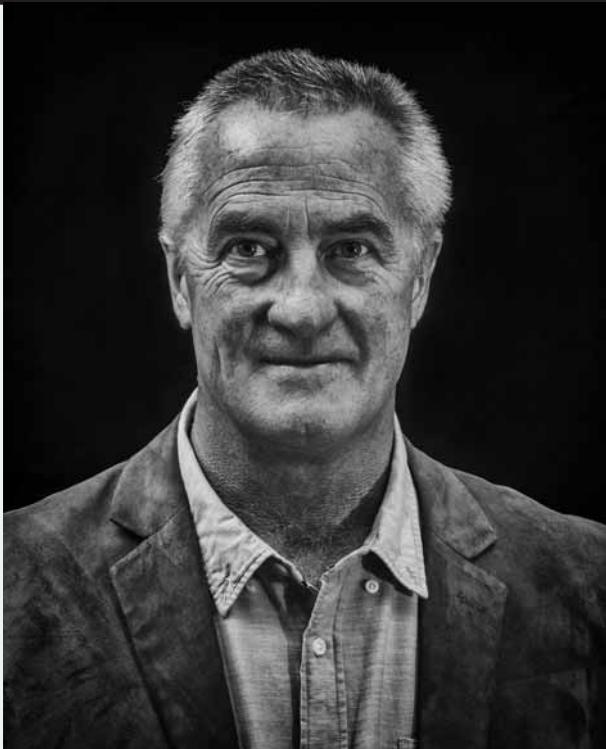


Photo: Simon Pamphilon

# South African Institute for Aquatic Biodiversity (SAIAB)

Professor Paul D Cowley  
Acting Chief Scientist

## Introduction

The South African Institute for Aquatic Biodiversity (SAIAB) serves as a hub for national and international scientific research into the country's most precious resource - water - and the diversity of life supported by our marine, coastal and inland freshwater ecosystems. SAIAB's mandate is to undertake research for the sustainability of Africa's marine and freshwater environments. To this end, SAIAB provides research platforms and infrastructure that enable a wide range of multi-disciplinary and multi-institutional research into inland fisheries and freshwater ecology, constantly changing coastal systems and the movement ecology of marine animals.

All the research undertaken at SAIAB contributes knowledge about how water-based ecosystems function, including the impact of societal demands on the country's coastal, estuarine and freshwater resources. This information is crucial for understanding and managing these essential natural resources for the long-term benefit of South Africa's people.

In line with its status as a National Facility, SAIAB's unique research platforms are available to the broader research community in the National System of Innovation (NSI). These platforms include the aquatic biodiversity collections, associated specialist laboratories and services which integrate modern molecular and bio-banking systems, a community-driven marine flagship programme (the African Coelacanth Ecosystem Programme - ACEP); and marine platform provision, including coastal crafts, *in situ* instrumentation, a Remotely Operated Vehicle (ROV), Remote Underwater Video Systems, the Acoustic Tracking Array Platform (ATAP) and the Geophysics and Mapping Platform (GeMap). SAIAB also hosts the DSI/NRF Research Chair



ACEP Deep Secrets Project PhD candidate, Zoleka Filander, with a "ski-monkey" benthic camera sled system on board RV Algoa.

Photo: SAIAB

in Inland Fisheries and Freshwater Ecology and provides a regional platform for freshwater African aquatic biodiversity research through collaborations and project management with a number of sub-Saharan countries.

SAIAB interacts with a broad range of universities and local and national government departments regarding current environmental issues, which require the integration of evidence-based science with management and providing scientific advice that policymakers can apply in the formulation of national environmental policy. Areas of national concern in which SAIAB is involved are socio-economic development, water security issues, ecosystem degradation and the influence of climate change on food security.

Rhodes University is a vital partner institution for SAIAB with researchers interacting across disciplines, but mainly with the Departments of Ichthyology and Fisheries Science, Environmental Science, Microbiology and Zoology. All SAIAB scientists are members of the Faculty of Science at Rhodes, and, as a result, the majority of supervised students are hosted at Rhodes University.

## Postgraduates / Graduations

Of the sixty-three (63) Postgraduate students supervised by SAIAB researchers, forty-four (44) were registered at Rhodes University in 2020, which comprised twenty-one (21) MSc and twenty-three (23) PhD students. Transformation is a critical performance area for SAIAB, and 84% of Rhodes students supervised by SAIAB researchers were South African, of which 57% were black, and 65% were women. Thirteen (13) SAIAB students registered through Rhodes graduated in 2020.

## Distinguished Visitors to SAIAB and International Visits

The SAIAB fish collection is an internationally acclaimed research resource. In early 2020 international visitors to the platform included Dr Jay Stauffer (Pennsylvania State University, USA), Dr George Turner (Bangor University, UK) and Dr Antonia Ford (University of Roehampton, UK).

US collaborators Dr John Hargrove, Dr Mathew Campbell, Dr Amanda Carr (Idaho Dept of Fish and Game, USA), Dr Eric Peatman (Auburn University, USA) and UK Collaborator Dr Robert Britton (Bournemouth University, UK) visited SAIAB to collaborate in a workshop with the freshwater group on "Genetic bottlenecks and the success of alien fish populations".

Dr Johann Mourier (Institut de Recherche pour le Développement (IRD), France) spent a month at SAIAB, collaborating with Dr Paul Cowley and the ATAP team.

Dr Albert Chakona visited the Royal Museum for Central Africa (MRAC, Belgium), the Bavaria State Collections (ZSM, Germany), and Cornell University Museum of Vertebrates

(CUMV, USA) to work with collaborators on fish taxonomy, to gain expertise in next generation sequences techniques and to gain expertise in the analysis of electric organ discharges (EODs), which are integral to the systematics of weakly electric fishes (Mormyridae) endemic to Africa.

Postdoctoral Fellow Dr Josie South was invited to give talks at the British Ecological Society Invasions Symposium in Northumbria, University of Essex and Queen's University Belfast, while Postdoctoral Fellow Dr Jessica Glass attended an Adaptation Genomics workshop in Berlin, Germany.

## Significant Research Aligned Events

The productivity of SAIAB research staff, students, Postdoctoral Fellows and Honorary Research Associates continued at a high level during 2020, with a record 143 ISI rated scientific papers being published. Some research highlights follow.

During 2020, more than one million detections were recorded on ATAP's nationwide array of receivers, bringing the total number of detections in the database to just shy of 25 million. In addition, two new Vulnerable species (lesser guitarfish and spinner sharks) were equipped with transmitters, bringing the total number of animals tagged and monitored to more than 1 600 from 48 species.

The year started with a return visit to Breede Estuary to tag more bull sharks. The ATAP local team was accompanied by collaborators from the Institute of Research for Development (IRD) in France. Professor Paul Cowley also joined NRF-SAIAB's freshwater group to tag alien carp in



PhD candidate, Mpilo Nyawo, preparing an agarose gel in order to evaluate environmental DNA samples for subsequent analysis on the MiSeq next-generation sequencer.

Photo: SAIAB



While the ATAP network monitors the movements and migrations of many fish, shark and stingray species, in 2020 the first batch of acoustically tagged turtles were released in Algoa Bay.

Photo: Ryan Daly

the Groenvlei Lake acoustically. Further fieldwork during the year was limited due to COVID-19 travel restrictions. However, ATAP obtained an essential services exemption permit to ensure that all deployed receivers within the national ATAP array could be serviced.

Professor Paul Cowley and the ATAP team continued to assist three ACEP-funded projects in 2020 (which collectively saw the tagging of approximately 60 animals), and ATAP also provided infrastructure and data management support to two (2) newly funded projects managed by the WILDOCEANS programme of the WILDTRUST that aim to tag over 200 new animals with a focus on selected South African threatened endemic sharks and rays, as well as trans-boundary movements and MPA connectivity by selected species. To date, over 40 animals of seven (7) different species have been tagged, with significant tagging efforts to be undertaken in 2021.

With funding support from an NRF-Marine and Coastal Research Grant, Dr Anthony Bernard and his team commenced their project investigating the potential for environmental DNA (eDNA) to assess diversity and assemblage structure on benthic and demersal fishes found on photic and mesophotic reef habitats in South Africa. They began collaborative research on two (2) new WILDOCEANS projects: Oceans Alive and the Shark and Ray Conservation project, which build on research carried out previously in the iSimangaliso Wetland Park, on eDNA research and on national stereo-BRUVS research. The planned research collaboration with Nekton on the First Descent project in the Seychelles and Maldives was postponed to 2022.

2020 saw the commissioning of MARIP's light-weight deep-sea stereo-camera landers and mid-water drifting baited remote underwater stereo-video systems (stereo-BRUVS) to sample fishes found on the deep mesophotic habitats on South Africa's continental shelf and to investigate the shallow and deep-sea pelagic and demersal fish assemblages. MARIP remained an integral platform within

ACEP by successfully completing the data collection for the Canyon Connections and SALPA projects and being included in all the new ACEP projects approved in 2020. Additional research support was provided for the Blue Action Fund Oceans Alive project, the Shark Conservation Fund Shark and Ray conservation project, and the NRF Reef Fish eDNA project.

Under the leadership of Dr Errol Wiles, the Geophysics and Mapping Platform's new inertial navigation system was successfully commissioned on RV *uKwabelana*. The commissioned system was put through its paces conducting nearshore surveys off Durban's Bluff and uMdloti reef complexes with the benefit of SBG's post-processing software, Qinertia, to deal with motion-induced data artefacts common when working along South Africa's wave-dominated and energetic coastline. The Geophysics and Mapping Platform is primed to support geospatial marine research, providing high-resolution and high-accuracy bathymetry and backscatter intensity data to the marine scientific community.

The second edition of the International Symposium on Coastal Hazards in Africa, hosted by NRF-SAIAB and chaired by Dr Errol Wiles, took place in October 2020. The symposium provided opportunities to develop relationships between research, industry, and national/local government. A Special Issue in *Estuarine, Coastal and Shelf Science* will highlight the most relevant research emanating from the symposium and invited additional contributions which grapple with coastal hazards in Africa.

In 2020, Dr Nikki James and her research team continued to focus on the relative value of different coastal nursery habitats for marine and estuarine fish species, as well as the impact of climate change on fish species. This research is collaborative and multidisciplinary: examining and mapping habitat, autotrophs (seaweed and seagrass), resources (invertebrates and diatoms), as well as fish assemblages. A team of six (6) PhD students were involved in this research in 2020. The students in this team are 67% female and 67% black, helping to address equity and transformation of the science sector in South Africa.

During the unprecedented 2020 year, the Coastal and Ocean Sciences Team (COST), led by Dr Francesca Porri, saw through several student graduations, successfully signalling the end of several projects. The associated research outputs for the year primarily include novel knowledge on the architectural complexity of mangrove roots used as micro-habitats by fish and invertebrate larvae, as well as on the role of ecological engineering on the associated intertidal biodiversity (World Harbour Project). Much of the research progress during 2020 was achieved thanks to home-relocated laboratories, where several morphometric traits have been measured for the research on the resilience of sea urchin populations along the coast of South Africa. Once back in the molecular laboratory, good progress has

been made in terms of unravelling the taxonomy of several groups of larvae (including fish and crustaceans) collected from coastal microhabitats, such as jetties and pontoons, within an urban marina.

Dr Albert Chakona's research visits to the Royal Museum for Central Africa (MRAC, Belgium) and the Bavarian State Collection of Zoology (ZSM, Germany) enabled examination of primary type-specimens from various museums in Europe and the USA, training on next generation sequencing techniques, and analysis of electric organ discharges (EODs). This information is integral to the ongoing revisionary taxonomy and systematic research for freshwater fishes of southern Africa. A Special Issue on the biology and ecology of African freshwater fishes, co-edited with Professor Olaf Weyl, was published in the *Journal of Fish Biology*.

Dr Gavin Gouws's research group expanded its research footprint to include behavioural ecology and evolutionary biology as research themes through a focus on the reproductive behaviour of and sexual selection in clinid fishes. Dr Gavin Gouws resigned from SAIAB at the end of August of 2020, emigrating to the UK with his family.



Dr JD Filmalter preparing to tag two juvenile dusky kob (*Argyrosomus japonicus*) with acoustic transmitters in the De Hoop Marine Protected Area (MPA).

Photo: SAIAB

Professor Olaf Weyl contributed to high impact papers on global issues such as climate change and fisheries, and invasion impacts. The outputs of a workshop drawing together African and international experts in inland fisheries science and management published in the *African Journal of Aquatic Science* reports on aspects of crucial importance to national policy development. Whilst many conferences were cancelled due to COVID-19 in 2020, the group attended the online American Fisheries Society annual meeting. Professor Olaf Weyl gave an invited talk titled "The importance of respecting culture, practising inclusivity, and enabling participation when leading diverse teams in southern Africa". The 2020 field season started well; however, it ended abruptly in March due to the COVID-19 lockdown. As a result, several student projects had to be significantly amended or replaced with new projects. Lack of access to both NRF-SAIAB and analytical facilities made work difficult for some team members. Over the course of the year, significant efforts were made to remedy this within the limits of what could be safely achieved.

Sadly, on 14 November 2020, Professor Olaf Weyl passed away while doing what he loved most; he was in the mountains exploring new sites to sample trout genetics. SAIAB lost a formidable leader, highly respected scientist and a loved colleague and friend. Despite his untimely passing, Olaf's contributions to science will resonate for a long time.

After the passing of Professor Olaf Weyl, his research group continued to engage at multiple levels with key research contributions, including comments on long-term sustainable fisheries in the African Great Lakes; an evaluation of the current extent and potential spread of black bass invasions in South Africa; thermal tolerances of native freshwater fishes in South Africa's Cape Fold Ecoregion; assessments of predator-prey interactions in a chemically altered aquatic environment; and a global review and meta-analysis of applications of the freshwater Fish Invasiveness Screening Kit.



Breede River Redfin, *Pseudobarbus* sp. 'burchelli Breede' in the Witte River in Bainskloof, upstream of a waterfall that shields native fish populations from predatory invasive fish.

Photo: Jeremy Shelton

# PUBLICATIONS

## Peer Reviewed Subsidy-Earning Journal Research Publications

### Bernard, A.T.F.

Langlois, T., Goetze, J., Bond, T., Monk, J., Abesamis, R.A., Asher, J., Barrett, N., **Bernard, A.T.F.**, Bouchet, P.J., Birt, M.J., Cappo, M., Currey-Randall, L.M., Driessen, D., Fairclough, D.V., Fullwood, L.A.F., Gibbons, B.A., Harasti, D., Heupel, M.R., Hicks, J., Holmes, T.H., Huveneers, C., Ierodiaconou, D., Jordan, A., Knott, N.A., Lindfield, S., Malcolm, H.A., McLean, D., Meekan, M., Miller, D., Mitchell, P.J., Newman, S.J., Radford, B., Rolim, F.A., Saunders, B.J., Stowar, M., Smith, A.N.H., Travers, M.J., Wakefield, C.B., Whitmarsh, S.K., Williams, J. and Harvey, E.S. (2020) A field and video annotation guide for baited remote underwater stereo-video surveys of demersal fish assemblages. *Methods in Ecology and Evolution*. 11. p.1401-1409.

MacNeil, M.A., Chapman, D.D., Heupel, M., Simpfendorfer, C.A., Heithaus, M., Meekan, M., Harvey, E., Goetze, J., Kiszka, J., Bond, M.E., Currey-Randall, L.M., Speed, C.W., Sherman, C.S., Rees, M.J., Udyawer, V., Flowers, K.I., Clementi, G., Valentini-Albanese, J., Gorham, T., Adam, M.S., Ali, K., Pina-Amargós, F., Angulo-Valdés, J.A., Asher, J., Barcia, L.G., Beaufort, O., Benjamin, C., **Bernard, A.T.F.**, Berumen, M.L., Bierwagen, S., Bonnema, E., Bown, R.M.K., Bradley, D., Brooks, E., Brown, J.J., Buddo, D., Burke, P., Cáceres, C., Cardeñosa, D., Carrier, J.C., Caselle, J.E., Charloo, V., Claverie, T., Clua, E., Cochran, J.E.M., Cook, N., Cramp, J., D'Alberto, B., de Graaf, M., Dornhege, M., Estep, A., Fanovich, L., Farabaugh, N.F., Fernando, D., Flam, A.L., Floros, C., Fourqurean, V., Garla, R., Gastrich, K., George, L., Graham, R., Guttridge, T., Hardenstine, R.S., Heck, S., Henderson, A.C., Hertler, H., Hueter, R., Johnson, M., Jupiter, S., Kasana, D., Kessel, S.T., Kiili, B., Kirata, T., Kuguru, B., Kyne, F., Langlois, T., Lédée, E.J.I., Lindfield, S., Luna-Acosta, A., Maggs, J., Manjaji-Matsumoto, B.M., Marshall, A., Matich, P., McCombs, E., McLean, D., Meggs, L., Moore, S., Mukherji, S., Murray, R., Kaimuddin, M., Newman, S.J., Nogués, J., Obota, C., O'Shea, O., Osuka, K., Papastamatiou, Y.P., Perera, N., Peterson, B., Ponzo, A., Prasetyo, A., Quamar, L.M.S., Quinlan, J., Ruiz-Abierno, A., Sala, E., Samoilys, M., Schärer-Umpierre, M., Schlaff, A., Simpson, N., Smith, A.N.H., Sparks, L., Tanna, A., Torres, R., Travers, M.J., van Zinnicq Bergmann, M., Vigliola, L., Ward, J., Watts, A.M., Wen, C., Whitman, E., Wirsing, A.J., Wothke, A., Zarza-González, E. and Cinner, J.E. (2020) Global status and conservation potential of reef sharks. *Nature*. 585 (7825). p.E11.

### Bills, R.

Mojekwu, T.O., Cunningham, M.J., **Bills, R.**, Pretorius, P.C. and Hoareau, T.B. (2020) Utility of DNA barcoding in native Oreochromis species. *Journal of Fish Biology*. 1 (1). p.1-9.

### Braganca, P.H.N.

Henschel, E., **Braganca, P.H.N.**, Rangel-Pereira, F. and Costa, W.J.E.M. (2020) A new psammophilic species of the catfish genus *Ammoglanis* (Siluriformes, Trichomycteridae) from the Amazon River basin, Northern Brazil. *Zoosystoma*. 96 (1). p.67-72.

Ottoni, F.P., Katz, A.M. and **Braganca, P.H.N.** (2020). Correction of the type locality of *Australoheros ipatinguensis* (Teleostei: Cichlidae). *Ichthyological Exploration of Freshwaters*. 1128. p.17-19.

### Braganca, P.H.N., Smith, T.G. and Chakona, A.

**Braganca, P.H.N.**, Smith, T.G., Vreven, E.J.W.M.N. and Chakona, A. (2020) Integrative taxonomy reveals hidden diversity in the southern African darters genus *Nannocharax* Günther 1867 (Characiformes: Distichodontidae). *Journal of Fish Biology*. 97. P.1713-1723.

**Braganca, P.H.N.**, van Zeeventer, R.M., **Bills, R.**, Tweddle, D. and Chakona, A.

**Braganca, P.H.N.**, van Zeeventer, R.M., **Bills, R.**, Tweddle, D. and Chakona, A. (2020) Diversity of the Southern Africa *Lacustricola* Myers, 1924 and redescription of *Lacustricola johnstoni* (Günther, 1894) and *Lacustricola myoposae* (Boulenger, 1908) (Cyprinodontiformes, Procatopodidae). *ZooKeys*. 923 (1). p.91-113.



**PhD candidate, Nawa Nawa, and DST/NRF intern, Siphamandla Mceleli, carry out electrofishing on the margins of the Orange River.**

Photo: SAIAB

### Castaneda, R.A. and Weyl, O.

Crookes, S., Heer, T., **Castaneda, R.A.**, Mandrak, N.E., Heath, D.D., **Weyl, O.**, MacIsaac, H.J. and Foxcroft, L.C. (2020) Monitoring the silver carp invasion in Africa: a case study using environmental DNA (eDNA) in dangerous watersheds. *NeoBiota*. 56 (1). p.31-47.

### Castaneda, R.A. and Weyl, O.L.F.

**Castaneda, R.A.**, **Weyl, O.L.F.** and Mandrak, N.E. (2020) Using occupancy models to assess the effectiveness of underwater cameras to detect rare stream fishes. *Aquatic Conservation-Marine and Freshwater Ecosystems*. 30 (1). p.565-576.

### Castaneda, R.A., Ellender, B.R., Mandrak, N.E. and Weyl, O.L.F.

**Castaneda, R.A.**, Van Nynatten, A., Crookes, S., **Ellender, B.R.**, Heath, D.D., MacIsaac, H.J., **Mandrak, N.E.** and **Weyl, O.L.F.** (2020) Detecting Native Freshwater Fishes using Novel Non-Invasive methods. *Frontiers in Environmental Science*. 8 (29). p.1-16.

### Castaneda, R.A., Mandrak, N.E. and Weyl, O.L.F.

**Castaneda, R.A.**, **Mandrak, N.E.**, Barrow, S. and **Weyl, O.L.F.** (2020) Occupancy dynamics of rare cyprinids after invasive fish eradication. *Aquatic Conservation-Marine and Freshwater Ecosystems*. 30 (1). p.1424-1436.

### Chakona, A.

Jordan, M.S., **Chakona, A.** and Van der Colff, D. (2020) Protected areas and Endemic Freshwater Fishes of the Cape Fold Ecoregion: Missing the boat for fish conservation? *Frontiers in Environmental Science*. 8 (1). p.1-13.

### Chakona, A., Gouws, G. and Skelton, P.H.

**Chakona, A.**, Gouws, G., Kadye, W.T., Mpopetsi, P.P. and Skelton, P.H. (2020) Probing hidden diversity to enhance conservation of the endangered narrow-range endemic Eastern Cape rocky, *Sandelia bainsii* (Castelnau 1861). *KOEDOE*. 62 (1). p.1627.

### Connell, A.D. and Whitfield, A.K.

Adams, J.B., **Connell, A.D.**, Lamberth, S.J., MacKay, C.F., Snow, G.C., van Niekerk, L., **Whitfield, A.K.** and James, N.C. (2020) High

flow variability and storm events shape the ecology of the Mbhashe Estuary, South Africa. *African Journal of Aquatic Science*. 45 (1-2). p.131-151.

**Cowley, P.D.**

Elston, C., Cowley, P.D., von Brandis, R. and Fisk, A. (2020). Dietary niche differentiation in a mesopredatory dasyatid assemblage. *Marine Biology*. 167 (7). 10.1007/s00227-020-03695-w.

**Potts, W.M., Attwood, C.G. and Cowley, P.D.** (2020) Linefish resilience in the Anthropocene. *African Journal of Marine Science*. 42 (3). p.iii.

**Cowley, P.D., Duncan, M.I. and Murray, T.S.**

Potts, W.M., Attwood, C.G., Cowley, P.D., Childs, A.R., Winkler, A.C., Duncan, M.I., Murray, T.S., Mann, B.Q. and Mann-Lang J.B. (2020) Editorial overview: recommendations for the promotion of a resilient linefishery in the Anthropocene. *African Journal of Marine Science*. 42(3). p.255-267.

**Cuthbert, R.N.**

Cuthbert, R.N., Wasserman, R.J. and Dalu, T. (2020) Arid-adapted paradiaptomid copepods contribute to mosquito regulation. *African Zoology*. 55 (3). p.185-186.

**Cuthbert, R.N. and Weyl, O.L.F.**

Cuthbert, R.N., Dalu, T., Wasserman, R.J., Weyl, O.L.F., Froneman, P.W., Callaghan, A. and Dick, J.T.A. (2020) Inter-Population Similarities and Differences in Predation Efficiency of a Mosquito Natural Enemy. *Journal of Medical Entomology*. 57 (6). p.1983-1987.

**Cuthbert, R.N., Sithagu, R., Weyl, O.L.F., Wasserman, R.J., Dick, J.T.A., Callaghan, A., Froneman, P.W., Foord, S. and Dalu, T.** (2020) Water volume differentially modifies copepod predatory strengths on two prey types. *Limnologica*. 81 (2020). p.1-4.

**Cuthbert, R.N., Magoro, M.L. and Weyl, O.L.F.**

Dalu, T., Cuthbert, R.N., Taylor, J., Magoro, M.L., Weyl, O.L.F., Froneman, P.W. and Wasserman, R.J. (2020) Benthic diatom-based indices and isotopic biomonitoring of nitrogen pollution in a warm temperate Austral river system. *Science of the Total Environment*. 748 (2020). p.1-9.

**Cuthbert, R.N., Wasserman, R.J. and Weyl, O.L.F.**

Cuthbert, R.N., Dalu, T., Wasserman, R.J., Weyl, O.L.F., Froneman, P.W., Callaghan, A., Coughlan, N.E. and Dick, J.T.A. (2020) Alternative prey impedes the efficacy of a natural enemy of mosquitoes. *Biological Control*. 141 (1). p.1-28.

**Cuthbert, R.N., Dalu, T., Wasserman, R.J., Monaco, C.J., Callaghan, A., Weyl, O.L.F. and Dick, J.T.A.** (2020) Assessing multiple predator, diurnal and search area effects on predatory impacts by ephemeral wetland specialist copepods. *Aquatic Ecology*. 54 (1). p.181-191.

**Cuthbert, R.N., Dalu, T., Wasserman, R.J., Weyl, O.L.F., Froneman, P.W., Callaghan, A. and Dick, J.T.A.** (2020) examining intraspecific multiple predator effects across shifting predator sex ratios. *Basic and Applied Ecology*. 45 (2020). p.12-21.

**Dames, V. and Bernard, A.**

Dames, V., Bernard, A., Floros, C., Mann, B., Speed, C., Maggs, J., Laing, S., Meekan, M. and Olbers, J. (2020) Zonation and Reef Size Significantly Influence Fish Population Structure in an Established Marine Protected Area, iSimangaliso Wetland Park, South Africa. *Ocean & Coastal Management*. 185. p.105040.

**Duncan, M.I.**

Arkert, N.K., Childs, A.R., Duncan, M.I., Farthing, M. and Potts, W.M. (2020) Physiological stress response and recovery of an important estuarine fishery species, dusky kob *Argyrosomus japonicus*, after a simulated catch-and-release event. *African Journal of Marine Science*. 42 (3). p.339-345.

**Butler, E.C., Childs, A.R., Duncan, M.I., Potts, W.M.** (2020) Understanding the effects of recreational catch-and-release angling on an increasingly important foreign fishing tourism species, the giant African threadfin *Polydactylus quadrifilis* (Cuvier). *Fisheries Management and Ecology*. 27. p.603- 614.

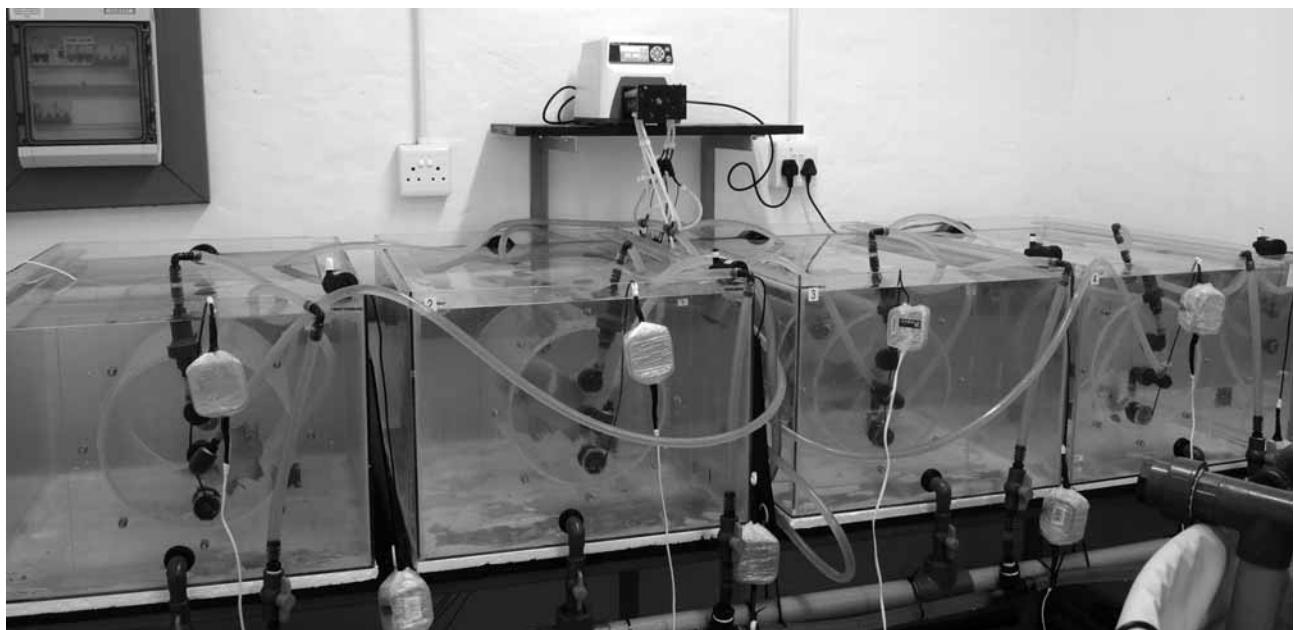
**Pringle, B.A., Childs, A.R., Butler, E.C., Winkler, A.C., Duncan, M.I., Teta, C. and Potts, W.M.** (2020) Time-course of the physiological-stress response in bronze bream *Pachymetopon grande* following a simulated catch-and-release angling event. *African Journal of Marine Science*. 42(3). p.375-380.

**Duncan, M.I. and James, N.C.**

**Duncan, M.I., James, N.C., Potts, W.M. and Bates, A.E.** (2020) Different drivers, common mechanism; the distribution of a reef fish is restricted by local-scale oxygen and temperature constraints on aerobic metabolism. *Conservation Physiology*. 8 (1). p.1-16.

**Duncan, M.I., James, N.C. and van der Walt, K.A.**

**Skeelees, M.R., Winkler, A.C., Duncan, M.I., James, N.C., van der Walt, K.A. and Potts, W.M.** (2020) The use of internal heart rate loggers in determining cardiac breakpoints of fish. *Journal of Thermal Biology*. 89. p.102524.



High volume respirometry experiments conducted on adult red roman (*Chrysoblephus laticeps*) in the Aquatic Ecophysiology Research Platform (AERP) Laboratory.

Photo: SAIAB

**Edworthy, C.**

Kisten, Y., **Edworthy, C.** and Strydom, N.A. (2020) Fine-scale habitat use by larval fishes in the Swartkops Estuary, South Africa. *Environmental Biology of Fishes*. 103. p.125-136.

Rishworth, G.M., Dodd, C., Perissinotto, R., Bornman, T.G., Adams, J.B., Anderson, C.R., Cawthra, H.C., **Dorrington, R.A.**, du Toit, H., Isemonger, E.W., *et al.*, and **Edworthy, C.** (2020) Modern supratidal microbialites fed by groundwater: functional drivers, value and trajectories. *Earth-Science Reviews*. 210 (2020). p.1-24.

**Ellender, B.R. and Weyl, O.L.F.**

Jackson, M.C., Fourie, H.E., Dalu, T., **Wasserman, R.J.**, Zengeya, T.A., **Ellender, B.R.**, Kimberg, P.K., Chimimba, C.T., **Weyl, O.L.F.**, Woodford, D.J. and Jordaan, M.S. (2020) Food web properties vary with climate and land use in South African streams. *Functional Ecology*. 2020. p.1-13.

**Filmalter, J.D.**

Forget, F., Cowley, P.D., Capello, M., **Filmalter, J.D.** and Dagorn, L. (2020) Drifting along in the open ocean: The associative behaviour of oceanic triggerfish and rainbow runner with floating objects. *Marine Environmental Research*. 161 (1). p.1-12.

**Forget, F. and Cowley, P.D.**

Forget, F., Dagorn, L., Mérigot, B., Gaertner, J.C., Robinson, J., **Cowley, P.D.**, Adam, M.S., Rilwan, Y., Koonjul, M., Mangar, V., Taquet, M. and Ménard, F. (2020) Beta diversity of pelagic assemblages at fish aggregating devices in the open ocean. *African Journal of Marine Science*. 42 (2). p.247-254.

**Gennari, E., Parkinson, M. and Watson, R.G.A.**

van Staden, M., Gledhill, K.S., Gennari, E., McCord, M.E., **Parkinson, M.**, **Watson, R.G.A.**, Rhode, C. and Bester-van der Merwe, A.E. (2020). Microsatellite development and detection of admixture among three sympatric *Haplblepharus* species (Carcharhiniformes: Scyliorhinidae). *Aquatic Conservation: Marine and Freshwater Ecosystems*. 30. P.2336-2350.

**Glass, J.R. and Cowley, P.D.**

**Glass, J.R.**, Daly, R., **Cowley, P.D.** and Post, D.M. (2020) Spatial trophic variability of a coastal apex predator, the giant trevally *caranx ignobilis*, in the western Indian Ocean. *Marine Ecology Progress Series*. 641 (1). p.195-208.

**Gon, O.**

**Mayekiso, S.**, **Gouws, G.**, Mwale, M. and **Gon, O.** (2020) Evidence of genetic differentiation in *cigar wrasse* *Cheilio inermis* (Labridae) within the western Indian Ocean. *Genome*. 63 (1). p.493-502.

**Gouws, G**

Russell, B.C. and **Gouws, G.** (2020) A new species of *Nemipterus* (Pisces: Nemipteridae) from the Western Indian Ocean. *Zootaxa*. 4895 (4). p.573-580.

**Gouws, G., James, N.C. and Cowley, P.D.**

**Gouws, G.**, Kerwath, S.E., Potts, W.M., **James, N.C.**, Vine, N.G. and **Cowley, P.D.** (2020) High genetic diversity and limited spatial structure in an endangered, endemic South African sparid, the red steenbras *Petrus rupestris*. *African Journal of Marine Science*. 42 (3). p.295-306.

**Jacobs, J.F., Weyl, O.L.F. and Naesje, T.F.**

**Jacobs, J.F.**, **Weyl, O.L.F.**, Ulvan, E.M., Hay, C.J. and **Naesje, T.F.** (2020) First observation of fouling of externally attached radio transmitters in an African river. *Water SA*. 46 (4). p.672-674.

**James, N.C. and Gouws, G.**

Daniels, S.R., **James, N.C.** and **Gouws, G.** (2020) Phylogeographic structure and continued surveys of a Vulnerable South African freshwater crab (Potamonautidae, *Potamonautes lividus*): Implications for the IUCN Red Listing of the Afrotropical fauna. *Aquatic Conservation: Marine and Freshwater Ecosystems*. 30. p.2221- 2239.

**James, N.C. and Whitfield, A.K.**

van Niekerk, L., Adams, J.B., **James, N.C.**, Lamberth, S.J., MacKay, C.F., Turpie, J.K., Rajkaran, A., Weerts, S.P. and **Whitfield, A.K.**



Professor Olaf Weyl with a small tigerfish. Photo: SAIAB



**Dr Dumisani Khosa, NRF-SAIAB Postdoctoral Fellow, deploying gillnets during a fish biodiversity survey in the Breede River, Western Cape.**

Photo: SAIAB

(2020) An Estuary Ecosystem Classification that encompasses biogeography and a high diversity of types in support of protection and management. *African Journal of Aquatic Science*. 45 (1-2). p.199-216.

Jordan, M.S., Khosa, D., Marr, S.M., Mofu, L., Schumann, M., Wasserman, R.J. and Weyl, O.L.F.

Dalu, T., Bellinger, T.A., Gouws, J., Impson, N.D., Jordan, M.S., Khosa, D., Marr, S.M., Mofu, L., Schumann, M., Slabbert, E., van der Walt, J.A., Wasserman, R.J. and Weyl, O.L.F. (2020) Ecosystem responses to the eradication of common carp *Cyprinus carpio* using rotenone from a reservoir in South Africa. *Aquatic Conservation-Marine and Freshwater Ecosystems*. 30 (2020). p.2284-2297.

Khosa, D., South, J., Cuthbert, R.N., Wasserman, R.J. and Weyl, O.L.F.

Khosa, D., South, J., Cuthbert, R.N., Wasserman, R.J. and Weyl, O.L.F. (2020) Temperature regime drives differential predatory performance in Largemouth Bass and Florida Bass. *Environmental Biology of Fishes*. 103. p.67-76.

Lipinski, M.R.

Lipinski, M.R., Mwanangombe, C.H., Durholtz, D., Yemane, D., Githaiga-Mwicigi, J. and Sauer, W.H.H. (2020) Age estimates of chokka squid *Loligo reynaudii* off South Africa and their use to test the effectiveness of a closed season for conserving this resource. *African Journal of Marine Science*. 42 (4). p.461-471.

Luger, A.M., South, J., Ellender, B.R. and Weyl, O.L.F.

Luger, A.M., South, J., Alexander, M.E., Ellender, B.R., Weyl, O.L.F. and Nagelkerke, L.A.J. (2020) Ecomorphology of largemouth bass relative to a native trophic analogue explains its high invasive impact. *Biological Invasions*. 22 (1). p.2223-2233.

Madzivanzira, T.C.

Mhlanga, L., Madzivanzira, T.C., Nhlwatiwa, T., Tendaupenyu, P., Barson, M., Marufu, L. and Songore, N. (2020) Physico-chemical limnology during the filling phase of Tugwi-Mukosi, a tropical reservoir in Zimbabwe. *African Journal of Aquatic Science*. 45 (4). p.412-420.

Mhlanga, L., Madzivanzira, T.C., Nhlwatiwa, T., Tendaupenyu, P., Barson, M., Marufu, L. and Songore, N. (2020) A survey of phytoplankton and zooplankton communities in the newly created Tugwi-Mukosi reservoir, Zimbabwe, during the filling phase. *African Journal of Aquatic Science*. 45 (4). p.466-474.

Madzivanzira, T.C., South, J. and Weyl, O.L.F.

Madzivanzira, T.C., South, J., Wood, L., Nunes, A.L. and Weyl, O.L.F. (2020) A Review of Freshwater Crayfish introductions in Africa. *Reviews in Fisheries Science & Aquaculture*. 1 (1). p.1-25.

Mafanya, S., Pattrick, P. and Porri, F.

Strain, E.M.A., Steinberg, P.D., Vozzo, M., Johnston, E.L., Abbiati, M., Aguilera, M.A., Airoldi, L., Aguirre, J.D., Ashton, G., Bernardi, M., Brooks, P., Chan, B.K.K., Cheah, C.B., Chee, S.Y., Coutinho, R., Crowe, T., Davey, A., Firth, L.B., Fraser, C., Hanley, M.E., Hawkins, S.J., Knick, K.E., Lau, E.T.C., Leung, K.M.Y., McKenzie, C., Macleod, C., Mafanya, S., Mancuso, F.P., Messano, L.V.R., Naval-Xavier, L.P.D., Ng, T.P.T., O'Shaughnessy, K.A., Pattrick, P., Perkins, M.J., Perkol-Finkel, S., Porri, F., Ross, D.J., Ruiz, G., Sella, I., Seitz, R., Shirazi, R., Thiel, M., Thompson, R.C., Yee, J.C., Zabin, C. and Bishop, M.J. (2020) A global analysis of complexity-biodiversity relationships on marine artificial structures. *Global Ecology and Biogeography*. 30 (1). p.140-153.

Marr, S.M. and Weyl, O.L.F.

Hannweg, B., Marr, S.M., Bloy, L.E. and Weyl, O.L.F. (2020) Habitat utilisation of *Pseudobarbus afer* and *Sandelia capensis* in headwaters of the Swartkops river, Eastern Cape, South Africa. *African Journal of Aquatic Science*. 45 (3). p.364-371.

Hannweg, B., Marr, S.M., Bloy, L.E. and Weyl, O.L.F. (2020) Using action cameras to estimate the abundance and habitat use of threatened fish in clear headwater streams. *African Journal of Aquatic Science*. 45 (3). p.372-377.

Murray, T.S.

Murray, T.S. and *et al.* (2020) A novel framework to protect animal data in a world of Ecosurveillance. *BioScience*. 70 (6). p.468-476.

Muller, C., Childs, A.R., Duncan, M.I., Skeeles, M.R., James, N.C., Van Der Walt, K.A., Winkler, A.C. and Potts, W.M. (2020) Implantation, orientation and validation of a commercially produced heart-rate logger for use in a perciform teleost fish. *Conservation Physiology*. 8 (1). p.1-35.

Pegg, J.

Pegg, J., Nagler, M., Praeg, N., Niedrist, G.H., Attermeyer, K., Catalan, N., Pilotto, F., Roberts, C.G., Bors, C., Fenoglio, S. and *et al.* (2020) Abundance and biogeography of methanogenic and methanotrophic microorganism across European streams. *Journal of Biogeography*. 1 (1). p.1-14.

Sifundza, D.S. and Chakona, A.

Sifundza, D.S., Chakona, A. and Kadye, W.T. (2020) Distribution pattern and habitat associations of *Sandelia bainsii* (Teleostei: Anabantidae), a highly threatened narrow-range endemic freshwater fish. *Journal of Fish Biology*. 98 (1). p.292-303.

Sithole, Y. and Gouws, G.

Sithole, Y., Smith, D.G., Mwale, M. and Gouws, G. (2020). A taxonomic revision of *Gymnothorax undulatus* (Anguilliformes: Muraenidae) in the Western Indian Ocean, with description of a new species. *Zootaxa*. 4767. p.161-181.

South, J.

Oliveira, E.S., Guimaraes, E.C., De Brito, P.S., Vieira, L.O., de Oliveira, R.F., Campos, D.S., Katz, A.M., South, J., Nunes, J.L.S. and Ottoni, F.P. (2020) Ichthyofauna of the Mata de Itamacaoca, an urban protected area from the upper Munim River basin, Northern Brazilian Cerrado. *Biota Neotropica*. 20 (4). p.1-14.

South, J. and Weyl, O.L.F.

South, J., Botha, T.L., Wolmarans, N.J., Wepener, V. and Weyl, O.L.F. (2020) Playing with food: Detection of prey injury cues stimulates increased functional foraging traits in *Xenopus laevis*. *African Zoology*. 55 (1). p.25-33.

South, J., Madzivanzira, T.C. and Weyl, O.L.F.

South, J., Madzivanzira, T.C., Tshali, N., Measey, J. and Weyl, O.L.F. (2020) In a Pinch: Mechanisms behind potential biotic resistance toward Two Invasive Crayfish by Native African Freshwater Crabs. *Frontiers in Ecology and Evolution*. 8 (1). p.1-11.

South, J., Wasserman, R.J. and Weyl, O.L.F.

South, J., Wasserman, R.J., Weyl, O.L.F., Dickey, J.W.E., Cuthbert, R.N., Britton, J.R., Caffrey, J., Chang, X., Crane, K. and Coughlan, N.E. (2020) On the RIP: using relative impact potential to assess the ecological impact of invasive alien species. *NeoBiota*. 55 (1). p.27-60.

**Stauffer, J.R.J., Bills, R., Skelton, P.H. and Weyl O.L.F.**  
**Stauffer, J.R.J., Bills, R., Skelton, P.H. and Weyl O.L.F. (2020)**  
 Re-elevation to species level and redescription of *Serranochromis jallae* and *Serranochromis robustus* (Teleostei: Cichlidae). *Zootaxa*. 4858 (1). doi: 10.11646/zootaxa.4858.1.9.

**Swartz, E.R.**  
 Bronaugh, W.M., Swartz, E.R. and Sidlauskas, B.L. (2020) Between an ocean and a high place: coastal drainage isolation generates endemic cryptic species in the Cape kurper *Sandelia capensis* (Anabantiformes: Anabantidae), Cape Region, South Africa. *Journal of Fish Biology*. 96 (2020). p.1087-1099.

**Taylor, J.C.**  
 Szinte, A.L., Taylor, J.C., Abosede, A.T. and Vis, M.L. (2020) Current status of freshwater red algal diversity (Rhodophyta) of the African continent including description of new taxa (Batrachospermales). *Phycologia*. 59 (3). p.187-199.

**Uiblein, F. and Gouws, G.**  
**Uiblein, F., Gouws, G., Lisher, M. and Malauene, B.S. (2020)**  
 Upeneus floros, a new goatfish from South Africa and Mozambique, with updated taxonomic accounts for U. pori and a key to Western Indian Ocean *Upeneus* species (Mullidae). *Zootaxa*. 4834 (4). p.523-555.

**Wasserman, R.J. and Whitfield, A.K.**  
 Dalu, T., Magoro, M.L., Naidoo, L.S., Wasserman, R.J., Human, L.R.D., Adams, J.B., Perissinotto, R., Deyzel, S.H.P., Wooldridge, T.H. and Whitfield, A.K. (2020) Microphytobenthos diversity and community structure across different micro-estuaries and micro-outlets: Effects of environmental variables on community structure. *Environmental Pollution*. 260 (1). p.1-8.

**Wasserman, R.J., Whitfield, A.K. and Hugo, S.**  
**Wasserman, R.J., Whitfield, A.K., Deyzel, S.H.P., James, N.C. and Hugo, S. (2020)** Seagrass (*Zostera capensis*) bed development as a predictor of size structured abundance for a ubiquitous estuary-dependent marine fish species. *Estuarine Coastal and Shelf Science*. 238 (1). p.1-9.

**Weyl, O.L.F.**  
 Camp, E.V., Kaemingk, M.A., Ahrens, R., Potts, W.M., Pine, W.E., Weyl, O.L.F. and Pope, K.L. (2020) Resilience Management for Conservation of Inland Recreational Fisheries. *Frontiers in Ecology and Evolution*. 7 (1). p.498-505.

**Cuthbert, R.N., Wasserman, R.J., Dalu, T., Kaiser, H., Weyl, O.L.F., Dick, J.T.A., Sentis, A., McCoy, M.W. and Alexander, M.E. (2020)** Influence of intra- and interspecific variation in predator-prey body size ratios on trophic interaction strengths. *Ecology and Evolution*. 10 (12). p.5946-5962.

**Kao, Y.C., Rogers, M.W., Burnell, D.B., Cowx, I.G., Weyl, O.L.F. and et al., (2020)** Effects of climate and land-use changes on fish catches across lakes at a global scale. *Nature Communications*. 11 (2526). p.1-14.

**de Andrade Frehse, F., Vitule, J.R.S. and Weyl, O.L.F. (2020)** Comparison of visual census and underwater video for fish sampling in Neotropical reservoirs. *Environmental Biology of Fishes*. 103 (2020). p.1269-1277.

**Frankowski, J., Lubke, K., Coke, M. and Weyl, O.L.F. (2020)** Genetic variability and demographic history of *Anguilla mossambica* (Peters, 1852) from continental Africa and Madagascar. *Journal of Fish Biology*. 96 (1). p.1251-1259.

**Barkhuizen, L.M. and Weyl, O.L.F. (2020)** Evaluating the suitability of fyke nets for small scale fisheries in the Free State Province of South Africa. *Water SA*. 46 (1). p.153-157.

**Weyl, O.L.F., Novoa, A., Richardson, D.M., Pysek, P., Meyerson, L.A., Bacher, S., Canavan, S., Catford, J.A., Cuda, J., Essl, F. and et al., (2020)** Invasion syndromes: a systematic approach for predicting biological invasions and facilitating effective management. *Biological Invasions*. 22 (1). p.1801-1820.



Dr Lizaan de Necker, NRF-SAIAB Postdoctoral Fellow, carrying out fieldwork with North West University Honours students.

Photo: SAIAB

**Weyl, O.L.F. and Chakona, A.** (2020) Journal of Fish Biology special issue on The Biology and Ecology of African Freshwater Fishes. *Journal of Fish Biology.* 96 (1). p.1075-1076.

**Weyl, O.L.F. and Swartz, E.R.**

**Ramoejane, M., Weyl, O.L.F., Swartz, E.R. and Gouws, G.** (2020) Identifying multiple geographically restricted phylogeographic lineages of Moggel (Cyprinidae: *Labeo umbratus*) in South Africa. *African Journal of Aquatic Science.* 1 (2020). p.1-11.

**Weyl, O.L.F., Marr, S.M. and Tweddle, D.**

**Weyl, O.L.F., Marr, S.M., Tweddle, D., Barkhuizen, L.M., Dalu, T., Christison, K.W., Hlungwana, H.A., Impson, D., Sankar, K. and Mandrak, N.E.** (2020) Ten research questions to support South Africa's Inland Fisheries Policy. *African Journal of Aquatic Science.* 1 (1). p.1-10.

**Whitfield, A.K.**

**Gess, R. and Whitfield, A.K.** (2020) Estuarine fish and tetrapod evolution: insights from a Late Devonian (Famennian) Gondwanan estuarine lake and a southern African Holocene equivalent. *Biological Reviews.* 95 (2020). p.865-888.

**Magoro, M.L., Perissinotto, R., Wooldridge, T.H. and Whitfield, A.K.** (2020) Micro-estuaries and micro-outlets as incipient estuarine systems- Does size and coastal connectivity count? *Science of the Total Environment.* 703 (1). p.1-10.

**Magoro, M.L., Perissinotto, R., Dalu, T. and Whitfield, A.K.** (2020) Fish and tadpole composition as an indication of differences between micro-estuaries and micro-outlets in the Eastern Cape Province, South Africa. *Estuarine Coastal and Shelf Science.* 242 (1). p.1-10.

**Adams, J.B., Whitfield, A.K. and van Niekerk, L.** (2020) A socio-ecological systems approach towards future research for the restoration, conservation and management of southern African estuaries. *African Journal of Aquatic Science.* 45 (1-2). p.231-241.

**Whitfield, A.K.** (2020) Fish species in estuaries ? From partial association to complete dependency. *Journal of Fish Biology.* 97 (4). p.1262-1264.

**Whitfield, A.K. and Harrison, T.D.** (2020) Fish species redundancy in estuaries: A major conservation concern in temperate estuaries under global change pressures. *Aquatic Conservation-Marine and Freshwater Ecosystems.* (2020). p.1-5.

**Whitfield, A.K.** (2020) Littoral habitats as major nursery areas for fish species in estuaries: a reinforcement of the reduced predation paradigm. *Marine Ecology Progress Series.* 649 (2020). p.219-234.

**Whitfield, A.K.** (2020) Fish food webs in a South African estuary: a spatial and temporal assessment. *Environmental Biology of Fishes.* 103 (12). p.1495-1512.

**Whitfield, A.K. and Cowley, P.D.**

**Whitfield, A.K., Attwood, C.G., Cowley, P.D., Lamberth, S.J. and Mann, B.O.** (2020) No-take estuarine-protected areas: The missing armour for the conservation of fishes. *KOEDOE.* 62 (1). p.1-7.

**Wasserman, R.J. and Weyl, O.L.F.**

**Mofu, L., Woodford, D.J., Wasserman, R.J. and Weyl, O.L.F.** (2020) Life history of the river goby *Glossogobius callidus* (Teleostei: Gobiidae). *Journal of Fish Biology.* 2020 (2020). p.1-7.

## Research Papers Presented at Academic/Scientific Conferences (Non-Peer Reviewed Proceedings)

**Patrick, P. and Porri, F.**

**Vorsatz, L.D., Patrick, P. and Porri, F.** (2020) The role of mangrove microhabitats: an invertebrate and fish larval perspective. *Bulletin of Marine Science.* 96 (3). p.558-559.



Professor Paul Cowley tagging a stingray with a long-life acoustic transmitter.

Photo: SAIAB



