



## UESM Newsletter

Summer Edition 2022







Accolades

*Academic Performance*

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Ethics

Calliper



Message from the Director

Visiting Scientists

Student Association:  
FNAS Chapter

Lower Quality Cameras:  
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Lower Quality Cameras:  
Macro-organism / Wildlife

Lower Quality Cameras:  
Micro-organism /  
Microscopy

Lower Quality Cameras:  
Funny Features and  
Creatures / Humorous

Professional Cameras:  
Landscape

Professional Cameras:  
Macro-organism / Wildlife

Professional Cameras:  
Micro-organism /  
Microscopy

Professional Cameras:  
Funny Features and  
Creatures / Humorous

Videos:  
Spectacular /  
Extraordinary

Videos:  
Funny Features and  
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*Photography Competition*

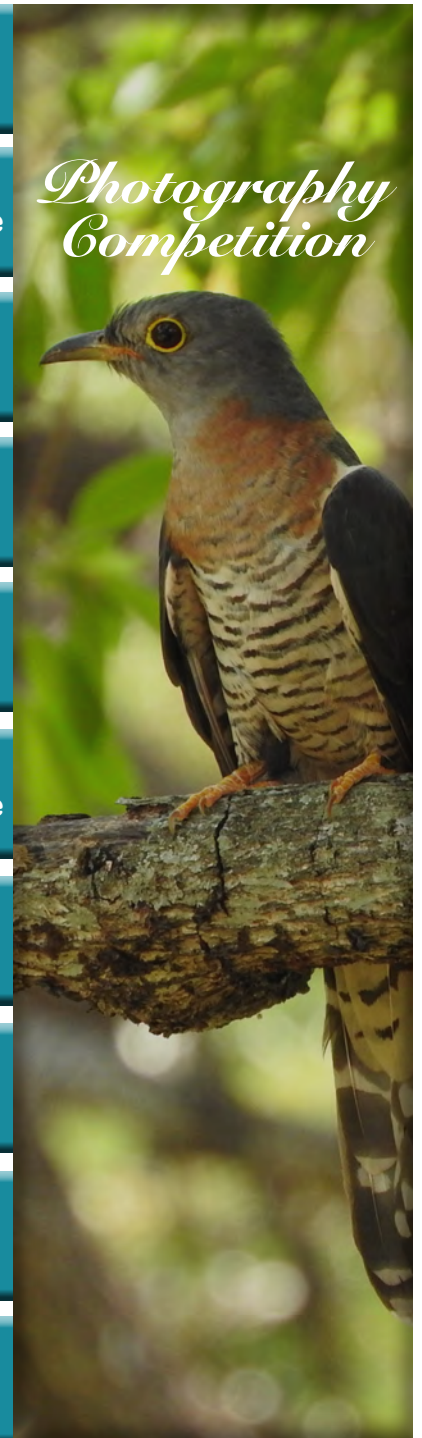


Wakkerstroom Workshop

GYPWORLD Africa 2022 Expedition

SASDiR conference in Malawi

WRG: 10-years of accomplishments





## Editorial

Reflecting on the year 2022, one might find that there is much to be grateful for. Since COVID-19 restrictions were dropped, 2022 was booming with conferences, workshops, field trips and get-togethers on a national and international scale.

The ENVIRA editions of 2022 testify to a year filled with growth, accomplishments, exciting research, phenomenal researchers, and has proved the UESM to be an exceptional team.

With the days of 2022 numbered and festive season just around the corner, join us for one last showcase of the passion for- and dedication to the environment shared among all UESM members. We view the summer editions as a light read, with stunning imagery submitted for the ENVIRA Photography Competition as the *crème de la crème*, wrapping up the year.

We thank you for the year's support and we're excited to be a part of what the UESM has in store for new year!

*Good-bye 2022!*

Clarissa Minnaar (Sub-editor) and Frances Siebert (Editor)



# ANNOUNCEMENTS

## COMMUNICATE YOUR NEWS

### Corporate Communication is requesting your news

Share your newsworthy events, achievements (staff and students), projects, community engagement research, teaching-learning breakthroughs, or any relevant news that may position the NWU. These news items are used on various internal and external university platforms and are also made available to the media.

Complete this [template](#) and submit it to [louis.jacobs@nwu.ac.za](mailto:louis.jacobs@nwu.ac.za).

Academics are also encouraged to submit opinion pieces to Corporate Communications whereby these pieces will be directed to the appropriate media houses.

## UESM: eFUNDI FORMS

### Get all the admin forms here - UESM One-Stop Source

Did you know that all the latest procedures and documents for UESM staff and students are uploaded onto a single eFundi page?

Click [here](#) to visit the UESM eFundi portal.

## CAMPUS TREE ROUTE

Stretch your legs, go outside and explore campus on the 2km Tree Route.

### Important information:

- Full length [article](#) to the tree route (as seen in the [ENVIRA Autumn Edition 2022](#))
- [Species List](#)
- [Map](#)

## ARE YOUR DETAILS CORRECT?

Updates have been made to the UESM website.

Please check your details on the staff page

If you are a senior member or the head of a sub-programme or research group, please also go visit these pages and make sure the content is correct and up to date.

Contact Clarissa Minnaar at [25161873@nwu.ac.za](mailto:25161873@nwu.ac.za) for any necessary amendments

Have you followed the UESM on social media yet? Here are the links:



## ETHICS

Visit the [FNAS eFundi link](#) for a detailed summary of the ethics process.

If you do not have access to the page view the guide [here](#).

For any queries or assistance, please contact:

Ms Madelien Burgers: [37630067@nwu.ac.za](mailto:37630067@nwu.ac.za)

Prof Roelof Burger: [Roelof.Burger@nwu.ac.za](mailto:Roelof.Burger@nwu.ac.za)

More information on Ethics [here](#).

## CHANGE YOUR AFFILIATION ON RESEARCH GATE

### Change your affiliation to the Unit for Environmental Sciences and Management on Research Gate

This is easy to do! You can complete it in less than a minute the next time you log on to your Research Gate 'profile' page. This is the page with your name, photo and other info. On the right there is a box with the heading 'Current Affiliation'. If under 'Department' it states 'Unit for Environmental Sciences and Management' you have nothing further to do. If anything else, then click on 'edit' to the right of 'Current Affiliation' and then 'edit current affiliation'. Under 'Department' scroll and choose 'Unit for Environmental Sciences and Management'. Do not copy and paste, just start typing and it will appear. Right at the bottom click 'save'.



## Research ethics risk categories: The role of FNASREC

**Roelof Burger & Madelien Burgers**

The Faculty of Natural and Agricultural Sciences Research Ethics Committee (FNASREC) deals with zero / no-risk and low-risk studies that are not health-related.

The scientific review committee (i.e. the internal committee of a sub-programme under which the research falls, comprised by researchers with the relevant expertise) plays a central role in ensuring that the quality and potential ethical risk are promoted in the faculty. The committee needs to make sure that the proposed research meets the discipline's requirements and suggests the relevant REC and the risk level.

The research proposal must include the details necessary for the REC to confirm the essential aspects of the research methods that might have ethical implications. The first aspect to consider is whether the research topic falls under the auspices of HREC (Health). If the subject matter is human health related, and the research aims to speak to, and inform health bodies, or publish in health journals, the study has to be submitted to HREC. This is true even if the risk level is zero. Should animals or animal products are directly involved in the study, the proposal must be submitted to Animcare or Animprod. Should the study is submitted to FNASREC and possible conflicts arise (i.e. the study suggests human participants), the research proposal has to clearly indicate why the research topic fits best with FNASREC.

The second consideration of the research proposal is the risk level. All aspects of risk need to be clearly articulated in the research proposal. The proposal also has to state how that risk will be managed. The following includes components of research that will impact the study's risk level: human participants in the study, any direct involvement of animals, any potential impact on the environment, any sensitive topic or data set. Details should be provided in the research proposal that will convince FNASREC that the risk level does not exceed their mandate (No/Low-Risk review). The strategies to manage the risk should also be mentioned specifically.

More information on the Ethics Process [here](#).

If you are interested in contributing towards ethics in FNAS, contact:



Ms Madelien Burgers:  
[37630067@nwu.ac.za](mailto:37630067@nwu.ac.za)



Prof Roelof Burger:  
[Roelof.Burger@nwu.ac.za](mailto:Roelof.Burger@nwu.ac.za)



UNIVERSITY TEACHING EXCELLENCE AWARDS  
DR CLAUDINE ROOS  
FACULTY NATURAL & AGRICULTURAL SCIENCE



Prof Claudine Roos receiving the University Teaching Excellence Award

## Congratulations

The following awards and accolades demonstrate the high quality and significant impact of research within the UESM.

### Prof Claudine Roos - University Teaching Excellence Award (UTEA)

Prof Claudine Roos was honoured with the University Teaching Excellence Award (UTEA) at the NWU Excellence Awards presented on 24 November 2022.

Prof Roos, from the School of Geography and Environmental Studies, shared her expertise in waste management, environmental auditing, environmental management systems and integrated water resource management.

The University Teaching Excellence Award (UTEA) is the most prestigious teaching recognition award bestowed upon teaching participants at the North West University (NWU). Participants of this award are expected to compete in a national space at the Council of Higher Education (CHE), Higher Education Learning and Teaching Association of Southern Africa (HELTASA), teaching excellence awards. Therefore, this award's criterion is pitched at the same level as that of CHE/HELTASA.

The purpose of the award is to yield recognition, and award distinguished scholars in Teaching and Learning at NWU. It is also to recognise scholars as role models of exceptional teaching. In this way, a unique set of participants, who provide leadership in teaching in their disciplines, universities and regions, are identified. Participation in the TEA is determined by the Faculty (and must have been honoured for a teaching award in the past).

### UESM staff members - Faculty Teaching Awards

The NWU Teaching Excellence programme further acknowledged a total of nine UESM staff members. Prof Wynand Malherbe and Dr Lesego Molale-Tom (School of Biological Sciences), and Prof Livhuwani Nemaconde, Dr Leandri Kruger, Dr Gerhard Du Preez, Dr Lindah Muzangwa, Prof Sheldon Strydom, Dr Delia Ah Goo and Dr Reece Alberts (School of Geo- and Spatial Sciences) were among the recipients of prestigious Faculty Teaching Award. This award for excellent teaching acknowledges lecturers who make important contributions to the promotion of students' learning through creating and developing innovative learning environments.







**Danielle Botha presenting at the 3MT competition**



**Franco de Ridder receiving recognition for the Mildred van der Merwe-Radloff award**



**Prof Kerry Malherbe and Prof Courtney Cook**

### Ms Danielle Botha - Three-minute-thesis (3MT)

The [3MT competition](#), developed by the University of Queensland, challenges students to communicate their entire research project in three minutes. This competition facilitates out-of-the-box thinking when it comes to communicating complex research themes in an entertaining, but informative manner. Ms Danielle Botha won first place in the master's category with her presentation titled: "Scat scan: uncovering plant diversity through poop", based on her master's research. She was supervised by Prof Sandra Barnard, Prof Frances Siebert and Dr Morné du Plessis. Read more about the institutional competition hosted at the NWU Mafikeng Campus [here](#).

### Mr Franco de Ridder - Mildred van der Merwe-Radloff award

The North-West University's Mildred van der Merwe-Radloff 'MSc Award' is made to a student specialising in a botanical field and graduating *Cum Laude* with the highest mark during a given period. The 2021-2022 prize was awarded to Mr Franco de Ridder for his [dissertation](#): "The diatom types of M. Giffen from Kidd's Beach, Eastern Cape, South Africa". Franco was supervised by Prof Jonathan Taylor. Read more about Franco's research [here](#).

### The UESM Water Research Group clears the trophy cabinet at 4th International Congress on Parasites of Wildlife (ICPOW)

During the recent International Congress on Parasites of Wildlife (ICPOW) held in conjunction with the Parasitological Society of Southern Africa (PARSA) members of the Water Research Group (WRG) cleared the awards cabinet. This was also the first time that one university received all four of the available medals that are presented annually to postgraduates and researchers. During the conference, the next executive committee (2022-2025) for PARSA was also announced, with NWU staff members **Prof Kerry Malherbe** and **Prof Courtney Cook** elected as president and vice-president, respectively.







The Junior Neitz Medal for the best MSc dissertation submitted during 2021/2022 at any southern African university went to **Ms Linda van der Spuy**. She conducted taxonomic analysis of tapeworms (cestodes) that infect elasmobranchs (sharks and batoids) off the coast of South Africa. She has already identified and described 7 new species of *Acanthobothrium* and 1 new species of *Phoreiobothrium* through this research. She is currently focusing on parasites of the evil-eye blaasop, *Amblyrhynchotes honckenii* Bloch, as a case study for her PhD research at the NWU, and the role of marine protected areas towards the conservation of marine fish parasites.

<https://www.parsa.ac.za/annual-medals>



"The assessment of metazoan parasite diversity in native and extralimital *Clarias gariepinus* (Burchell, 1822) populations: a holistic approach" won **Dr Marliese Truter** the Senior Neitz Medal for the best PhD thesis submitted during 2021/2022 at any southern African university. Her PhD work focused on the African sharptooth catfish (barbel/baber) that has the most diversified parasite population in Africa. She is currently involved in research on parasite communities of southern African fish species. Dr Marliese obtained her PhD in July 2022 and is presently completing a joint postdoctoral position at the NWU and South African Institute for Aquatic Biodiversity (SAIAB).

<https://www.parsa.ac.za/annual-medals>



For her article, "Metazoan parasite diversity in the endemic South African intertidal klipfish, *Clinus superciliosus*: Factors influencing parasite community composition," **Dr Anja Erasmus** was awarded the Angela Davis-Russell Medal for the best publication in parasitology by a postgraduate student during 2021/2022. This paper was one of three from her PhD thesis that examined environmental parasitology in intertidal marine environments throughout the South African coast. She graduated her PhD in July 2022 and is currently a Postdoctoral research fellow at the NWU.

<https://www.parsa.ac.za/angela-davies-russell-award>

### Prof Nico Smit receives the Elsdon-Dew Medal

The Elsdon-Dew Medal was awarded to Prof Nico Smit in recognition of his significant contributions to the development of parasitology in Africa in terms of research (> 200 papers) and training of postgraduate students (> 50 MSc & PhDs) in this field. In the 50-year history of PARSA, this esteemed prize has only been awarded to 24 researchers. This medal is the highest honour presented by the society and granted to recognize an individual's lifetime contributions, making Professor Smit's accomplishment all the more impressive.

<https://www.parsa.ac.za/awards-c786>



From left to right: Dr Anja Erasmus, Prof Nico Smit, Ms Linda van der Spuy and Dr Marliese Truter





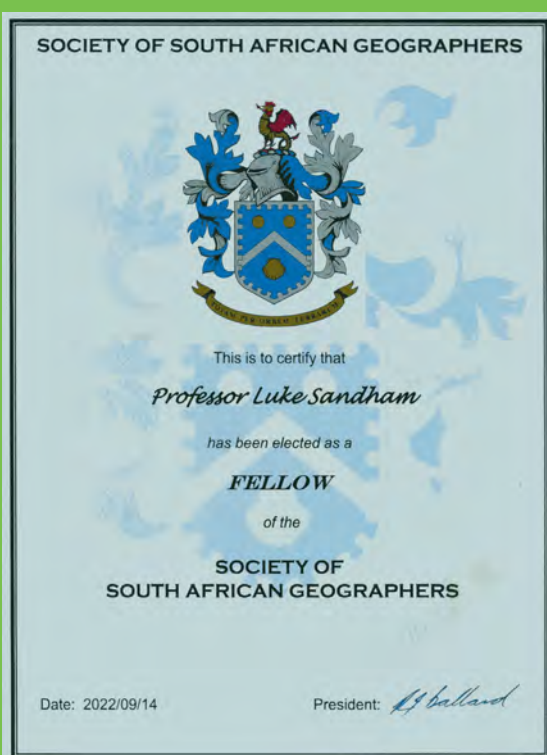


### Professor Luke Sandham receives the Society of South African Geographers (SSAG) - Fellowship Award

Prof Luke Sandham has dedicated his life to the service of the Geography community in South Africa, and especially at the North-West University. With a career at Potchefstroom campus that dates back to the mid-1980's, one of his nominees quipped 'if it were not for his steady, remarkable and cumulative academic record across various platforms, one would mistakenly regard Prof Sandham as 'part of the furniture' in the Department of Geography and Environmental Management!

Over his long career, Prof Sandham has contributed to the scholarly advancement of Geography through his dedicated and sustained work primarily in the field of Environmental Management. This has been not only through his noteworthy publications and conference contributions, journal article reviews, external examination etc. but also through the significant number of graduates he has supervised in the senior years. Prof Sandham's ability to publish consistently with other researchers and academics, and his postgraduate students testifies to his remarkable and unique ability to be inclusive, to develop young researchers and academics, and share his expertise with fellow colleagues and emerging students.

This year marks 10 years of service to the Council of the SSAG. Over the years, the Council has benefitted from his administrative and diplomatic skills. He has served on the executive committee as President-Elect, co-President and now Past-President since 2016. Prof Sandham's steady hand and leadership have shaped the Society, and will have a long tail moving into the future.







## UESM High Impact Research

Most citations in SCOPUS from 1 January to 8 December 2022

Citations	Paper
154	Sarel Cilliers & Stefan Siebert (2014): A global analysis of the impacts of urbanization on bird and plant diversity reveals key anthropogenic drivers. <i>Proceedings of the Royal Society B: Biological Sciences</i> 281: 20133330.
134	Ché Weldon (2019): Amphibian fungal panzootic causes catastrophic and ongoing loss of biodiversity. <i>Science</i> 363: 1459-1463.
110	Henk Bouwman (2012): Bisphenol A (BPA) in China: a review of sources, environmental levels, and potential human health impacts. <i>Environment International</i> 42: 91-99.
63	Rasheed Adeleke (2017): Origins, roles and fate of organic acids in soils: A review. <i>South African Journal of Botany</i> 108: 393-406.
50	Stuart Piketh (2021): A global observational analysis to understand changes in air quality during exceptionally low anthropogenic emission conditions. 2021. <i>Environment International</i> 157: 106818.

## UESM Hot Off The Press

Most citations in SCOPUS of papers published during 2022

Citations	Paper
10	Oriel Thekisoe (2022): Development of acaricide resistance in tick populations of cattle: A systematic review and meta-analysis. <i>Heliyon</i> 8: e08718.
8	Victor Wepener (2022): Environmentally relevant lead (Pb) water concentration induce toxicity in zebrafish ( <i>Danio rerio</i> ) larvae. <i>Comparative Biochemistry and Physiology Part C: Toxicology &amp; Pharmacology</i> 252: 109215.
6	Gerhard du Preez & Hendrika Fourie (2022): Nematode-based indices in soil ecology: Application, utility, and future directions. <i>Soil Biology and Biochemistry</i> 169 (2022): 108640.
6	Rasheed Adeleke (2022): Insights into organic loading rates of anaerobic digestion for biogas production: a review. <i>Critical Reviews in Biotechnology</i> 42: 487-507.
5	Rialet Pieters & Victor Wepener (2022): Nanoarchitectonics of ZnO nanoparticles mediated by extract of <i>Tulbaghia violacea</i> and their cytotoxicity evaluation. <i>Journal of Inorganic and Organometallic Polymers and Materials</i> (2022): 1-11.
5	Stefan Siebert (2022): Influence of land use and topography on distribution and bioaccumulation of potentially toxic metals in soil and plant leaves: A case study from Sekhukhuneland, South Africa. <i>Science of the Total Environment</i> 806: 150659.



## Letter from the Director Professor Carlos Bezuidenhout



Dear Colleagues this is the 4<sup>th</sup> and final edition of ENVIRA in 2022. It comes at the end of a very productive year. During 2022, the COVID-19 protocols were completely repealed, and we could return to work under normal circumstances. Laboratories and vehicles for field work were allowed to function under normal conditions. However, one year ago this was not the case. We are all grateful for this form of normality. COVID-19 has unfortunately not been eradicated and caution is still required.

In 2021 we started preparing for the External Program Evaluation. All documents were completed and submitted in March this year. A critical reader provided a response. Some comments were included in the final documents and the onsite visit took place in September. I want to thank everyone that participated in the process, those that were interviewed, those of you that provided the names of individuals associated with the UESM, etc. In particular, I would like to mention JC, Anita, Tsebo, Corene and the rest of the admin staff who sparked to ensure the comfort of the panel members and that sessions could start and finish on time.

In 2022 several staff members completed PhD degrees. The number of staff obtaining NRF ratings has improved, and all others increased their ratings. The number of articles published in peer reviewed journals has increased. Citations of these articles are also on an increased trajectory. UESM staff thus once again performed way above the norm in most categories and this is evident from international ranking agencies such as the Academic Ranking of World Universities (ARWU) of the world's top 1 000 research universities and Centre for World University Rankings (CWUR) (Top 1000 Universities).

Furthermore, the Water Research Group had their 10-year celebration. As part of this they reflected on their achievements during this period. Listening to the presentations from staff in this group made me realise that there is a lot of excellence that is being produced by our groups that does not get reported. I would thus encourage all research groups to really sit down, take stock and record their achievements in written format.

UESM staff, postdocs and students have attended a number of national and international conferences, workshops and symposia. Our students and postdocs have performed well at these conferences and won prestigious prizes. Several of our staff have been awarded life-time awards by national and international agencies. We had the ENVIRA awards function at which certificates of appreciation was awarded to these persons. At the function Prof Nishi Rajakaruna, our US Fulbright Scholar presented a message to the young upcoming science stars of how important personal contact with other scientists are. This message is so true for all of us in the UESM. In the light of this, several initiatives will be spearheaded in 2023. One such initiative is the ENVIRA Talks that Prof Frank Neumann is organizing. Another one is a symposium bringing NWU staff that work in Gobabeb together to discuss their projects. We should also find ways to revive aspects from the EFTEON application. More about this in 2023 editions of ENVIRA.

On a sad note: Two senior staff retired, and some resigned. Contingency plans are in place to manage these vacancies to ensure business continuation.

Development on the M campus is on-going and should be completed in 2023. One of the major improvements on this campus will be the security, with permanent personnel being deployed, and the installation of a periphery camera system. The building of laboratories at G23 has started with a potential completion date of June 2023. Acquisition of facilities at the ARC are in the pipeline.

Colleagues, we have almost reached the end of 2022. You may go on holiday during this festive season, knowing that as a staff complement, we have achieved a lot and must thus take this opportunity to rest. May you have a blessed and a joyous Christmas filled with love, happiness, and may 2023 be prosperous.



## Laura de la Puente: Spanish PhD student extending her experiences abroad

Laura is visiting South Africa on a secondment from the Pyrenean Institute of Ecology of the Spanish Council of Research (CSIC). She is funded by the European GYPWORLD project to spend two months in the GeoEco Lab, led by Prof Stefan Siebert, to work on gypsum ecosystems and to benefit from knowledge exchange among international researchers. As part of the final year of her PhD, she is expanding her scientific knowledge about different methodologies and new research carried out at the North-West University. She is also actively sharing her own findings with the lab as her thesis progresses and she interacts regularly with geobotanists and ecologists in the Unit for Environmental Sciences and Management. She is currently processing plant, lichen and soil material collected during the GYPWORLD Africa 2022 expedition, and receiving valuable input from colleagues regarding the write-up of her current manuscript.

Laura's thesis, under the supervision of Dr Sara Palacio and Dr Juan Pedro Ferrio, is opening new interesting scientific questions on gypsum life mysteries. Her thesis is concerned with the use of gypsum crystallization water, an unexplored water source for plants in arid ecosystems. Not only has the topic been barely studied before, but most of the techniques used in Laura's research is innovative. The field and laboratory experiments constitute an accurate approach to assess root physiology and water use of several gypsum tolerant and specialist species.

As a biologist, Laura is also a nature lover and she is completely overwhelmed by the abundance of wildlife in South Africa. She had the opportunity to visit some local natural reserves, including Pilanesberg National Park and the Kruger National Park. This has reinforced her passion for caring for the planet and raising awareness. One of her biggest desires is for the scientific community to unite and find ways to improve the degraded status of nature as a first priority in the current ecological crisis.

Laura is looking forward to the remainder of her stay, collaborating with international researchers and experiencing more of what South Africa has to offer.



Laura explaining her first PHD results  
in a GYPWORLD Congress



A



B

Visiting a lion recovery centre (A) and  
Clarens mountains (B) in South Africa







TJ with his hand lense: Ready to take on South Africa's serpentine plants



X-Ray Fluorescence (XRF) Analyses Workshop in the AP Goossens Herbarium, NWU

## Thomas (TJ) Samojedny: Assisting in the search for new nickel hyperaccumulator plants

Thomas (TJ) Samojedny, an undergraduate from the California Polytechnic State University (Cal Poly), visited the Geoecology Lab at the NWU to introduce a novel methodology to 'discover' plants with high levels of metal accumulation. TJ is a 4th year BSc student majoring in Biological Sciences with a focus on Ecology and Conservation. He is also pursuing two minors: Landscape Architecture and Indigenous Studies in Natural Resources and the Environment. TJ attended the North Carolina School of Science & Mathematics, a world class public school for talented high school juniors and seniors.

TJ has been conducting research with Prof Nishi Rajakaruna, Extraordinary Professor and current Fulbright US Scholar at the NWU, over the last three years. TJ's undergraduate research has led to a book chapter on [\*the impact of atmospheric nitrogen deposition on low-nutrient environments\*](#) and a paper on the specific leaf area of serpentine-adapted plants across biogeographic regions (currently under consideration for publication in *Plant Ecology and Diversity*). TJ is the lead author of both these publications, with the latter also involving Prof Stefan Siebert.

TJ presented his research on the use of X-Ray Fluorescence (XRF) Analyses of Herbarium Specimens in the search for nickel hyperaccumulating plants in California. He also conducted a two-day workshop at the AP Goossens Herbarium on the use of XRF for the Geoecology Lab and students of Dr Jaco Koch and Ricart Boneschans from the School for Geo- and Spatial Sciences. Thereafter, TJ, along with a core group of NWU participants, visited the C.E. Moss Herbarium, University of the Witwatersrand (Wits), to examine specimens of species with close relatives known to hyperaccumulate nickel. Nickel hyperaccumulating plants have attracted much attention as candidates for green technologies. Six South African species hyperaccumulate Nickel, including one discovered by [\*Professors Siebert, Rajakaruna, and colleagues\*](#). While it is costly and time consuming to field collect and analyze leaves of target species, the method used by TJ allows for rapid (100s of specimens/day) and non-destructive measurement of Nickel in dry specimens. It is cheap, effective, extremely efficient and will be key to discovering new hyperaccumulators in South Africa.

Finally, TJ accompanied Professors Siebert and Rajakaruna on a field trip to the serpentine outcrops of the Barberton Mountains to collect seeds and soils for a greenhouse study. During this field trip, TJ met [\*Prof Kevin Balkwill\*](#) from Wits, a pioneer in the research of serpentine ecology in South Africa.



## Reflections and Expectations - Student Academic Chapter 2022/2023

**Kenneth Ngobeni**

*FNAS Chapter Chairperson*

The Faculty Dine (view FNAS Chapter article in previous edition of [ENVIRA](#)) marked the end of the 2021/2022 FNAS Chapter term. We had the privilege to celebrate everyone's achievements and socialize before the rush of the semester tests and exams. Not only did this event signify the end of the previous chapter, but of course it also brought forth the rise of a new chapter, new chairperson and a new committee.

The 2022/2023 term commenced with a transfer meeting between the new and the old chapter. Positions were confidently handed over to the new committee, after which a separate introduction meeting was held. During this meeting the new chapter had the opportunity to align themselves with the vision and mission for the faculty.

We, as the new chapter plan on bringing new and exciting events to the table. Such events include *Mr and Ms Faculty* which will be running all year round and *Movie Night* which aims to bring all FNAS students closer. We will also be re-introducing some older traditions such as hoodies of different schools in the faculty. Our hope is to achieve a sense of unity and pride within the university by taking part in activities such as inter-faculty sports, academic games and liaising with different faculties to enrich student life and support students academically.

In 2023, we hope to bring out the best in everybody academically and socially and to make sure all NWU values are represented within our faculty. Let's make this next term an enjoyable, yet productive term for all students and staff alike.



From left to right: Kenneth Bongani Ngobeni (Chairperson), Pieter-Jan Rossouw (Deputy Chairperson), Morgan Jerling (Secretary), Leandri Viviers (Finances and Sponsors), Juan Botha (Academic Officer), Tshifhiwa Tseli (Media, Marketing and Recruitment), Rebecca Mantso (Liaisons Officer), Saba Debreseilassie (Transformation and Diversity with Current Affairs), Bongani Adams (SRCS), Mia Buys (Sports Officer).



FNAS Student Academic Chapter 2022/2023



# Reflecting on the Final Quarter of 2022

## Workshop and community engagement in Wakkerstroom

Rialet Pieters

Water quality in South Africa is a contentious issue, whether you are the consumer of potable piped water or the farmer irrigating crops or the industry returning used water to the river. And even though South Africa has some of the best legislation regarding water provision and quality requirements, as citizens of this country we are too aware of numerous shortcomings.

This is the second year of an involved Water Research Commission (WRC) funded project which I am part of and one of the case studies included is the Wakkerstroom area. For two years now my MSc student, Annika Kruger, and I have been sampling sediment and water in and around this small town on the border of Mpumalanga and KwaZulu-Natal. The community contacted the principal investigator of the project, Dr Natalie Aneck-Hahn at the University of Pretoria, and requested that we investigate their town's water. They were mainly interested in their drinking water, but we know that good quality drinking water starts in the environment of the source water. We included Wakkerstroom in the big WRC project: "In connection with implementation of effect-based methods for water quality assessment". We sampled water from the dam from which Wakkerstroom draws their drinking water, which is upstream of their wetland; three areas inside

their wetland; downstream from the wetland in the river, and a tributary. We also sampled their treated drinking water, borehole water and bottled water sold under the 'Wakkerstroom' brandname. One of the overarching themes of the WRC project is to advise on which combination of biological assays to use in assessing the various types of water for good quality. So, we ran several biological assays on these samples.

During the week of 17–21 October this year, key role players in the project participated in a community engagement workshop where we provided feedback to the town's people of Wakkerstroom and addressed some questions. The latter part of the evening was spent by candlelight ("Thanks, ESKOM!") rubbing shoulders with the attendees and snacking on good food.

The rest of the week went into preparing the interim project report and designing of a pamphlet on effect-based bioassays to be distributed to the stakeholders responsible for water quality.



The key role players of the Water Research Commission funded project: "In connection with implementation of effect-based methods for water quality assessment" at one of the Wakkerstroom sampling sites in the background. In the back from left to right: Dr Natalie Aneck-Hahn (UP), Dr Catherina van Zijl (UP), Mrs Hesmarie Pearson (ToxSolutions) and in the front on the left Dr Suranie Horn (NWU) and Prof Rialet Pieters (NWU).



Snacking by candlelight in the aftermath when the official side of the community engagement was done.



Wakkerstroom community members attentively listening to feedback provided by the research team members.



# Reflecting on the Final Quarter of 2022

## International GYPWORLD Africa 2022 Expedition

**Stefan Siebert, Sarina Claassens & Chris van Niekerk**

On 12 August 2022, 26 geoecologists from six countries came together in Henties Bay, Namibia, to trek south along the west coast to conduct the first ever, in-depth research of gypsum soil and vegetation in southern Africa. The North-West University (NWU) was represented by three staff members and four students.

Why the sudden focus on gypsum ecosystems? Globally, these ecosystems are poorly understood compared to those of other harsh substrates, despite the unusual mineral content of gypsum soils which is a significant barrier to the growth of most plants. Yet, these soils host highly diverse endemic floras that have evolved independently on five continents but of which we know very little.

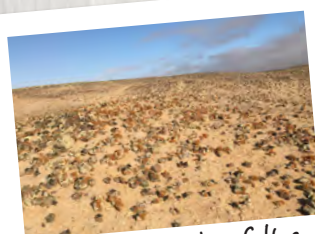
The month-long GYPWORLD Africa Expedition, funded by the European H2020-MSCA-RISE GYPWORLD project, started at Cape Cross in Namibia and ended at Langebaan in South Africa. The expedition was organised and led by the GeoEco Lab, the Soil Ecology, Ecotoxicology & Microbiology (SEEM) research group and the NWU Botanical Garden, with ample assistance from our partners, Prof Sara Palacio (Spanish Research

Council) and Prof Gillian Maggs-Kolling (Gobabeb Namib Research Institute). The study involved the placement of permanent plots for future follow-up studies and surveys to collect data for four work packages of the GYPWORLD project, namely to 1) assess the plant and lichen diversity on gypsum; 2) evaluate the functional structure of gypsum plant and lichen communities, and the soil processes that regulate gypsum ecosystem function; 3) promote the study of gypsum ecosystems; and 4) communicate the ecological and conservation value of these ecosystems to the public.

The surveys were centred in four main gypsum areas. In Namibia we sampled the gypsum plains of Cape Cross to Swakopmund in the Dorob National Park and from Walvis Bay to Gobabeb in the Namib Naukluft Park. In South Africa, we sampled gypsum areas in reserves and municipal land between Alexander Bay and Port Nolloth, and from Nuwerus to Vanrhynsdorp. This expedition strengthened our existing international collaborative network and has already led to many current and future collaborative initiatives to address questions of global concern.



Spanish researchers enjoying the unique flora of the Namib Desert



Lichen fields of the gypsum plains



Biodiversity and soil sampling of permanent plots



The 'Great Trek' across the desert plains



Gypsum crystals



Photos by J Scott Turner and Chris van Niekerk

Members of the GYPWORLD Expedition 16



# Reflecting on the Final Quarter of 2022

## Reflecting on the 5<sup>th</sup> Biennial Southern Africa Society for Disaster Reduction (SASDiR) conference in the “Warm Heart of Africa”

**Basetsana Kokwe**

*African Centre for Disaster Studies (ACDS)*

Attending the 5<sup>th</sup> Biennial Southern Africa Society for Disaster Reduction (SASDiR) conference in Malawi was a marvelous opportunity filled with both academic- as well as cultural experiences. During this conference (26-28 October) student papers were presented to fellow students, academics, government officials and practitioners in the field of Disaster Risk Management (DRM) nationally and internationally. We gained insight into some pressing issues in DRM, the future of DRM as well as the current work that is being put into the field of DRM within the region. Some of the topics that were presented throughout the conference include climate change, Covid-19, multidisciplinary collaborations in DRM, DRM in the context of gender, building resilient communities, governance, frameworks, and policies in DRM. As a postgraduate diploma student in DRM, the SASDiR conference served as a great platform to present my research for the first time. It was a privilege to do so at an international conference in front of an audience of such stature.

Some activities planned for the conference included an excursion to the flood prone Chikhwawa District, where we learnt about the devastating effects of Cyclone Ana. We also got to visit the Kapichira Dam hydroelectric project site. Cyclone Ana caused immense destruction to the river, which subsequently influenced the current project aimed at building large tunnels to divert water and help lessen the effects of the floods. The day of the excursion was concluded with a gala dinner during which local artists and dancers entertained delegates with their talents.

On the final day we had some time to roam the streets of Blantyre and see all the marketplaces. As we made our way back to the airport around 6:00 the following morning, I was shocked to see people already at work, businesses operating and people still as welcoming as the first day we arrived for the conference. That is when I finally understood why Malawi is called the “Warm Heart of Africa”, the hospitality of the Malawi people simply cannot be matched.



Mama Mandisa Kalako-Williams (Keynote speaker) alongside Prof Dewald van Niekerk (NWU)



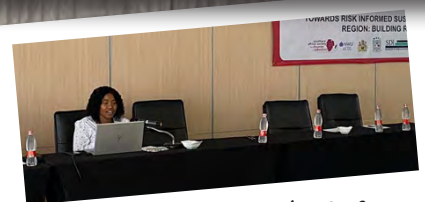
Blantyre Market place



Excursion at the Chikhwawa District



Disaster Risk Management students (post-graduate diploma, MSc and PhD) from the North West University (NWU).



Ms Basetsana Kokwe, a Postgraduate Diploma student in Disaster Risk Management, presenting at the SASDiR conference in Malawi as part of the postgraduate student papers





# Reflecting on the Final Quarter of 2022

The Water Research Group celebrates 10-years of accomplishments in 2022

Anja Erasmus

Water Research Group (WRG)

The Water Research Group (WRG) forms part of the Unit for Environmental Sciences and Management (UESM) at the North-West University (NWU), Potchefstroom Campus. Established in 2012 by Prof Nico Smit, Prof Victor Wepener, and Dr Gordon O'Brien, the WRG quickly developed into a productive research group with numerous research projects, funded by local and international funders.

It was a great honour to host a weekend event in October, where current members and alumni had the opportunity to reconnect and share in the full extent of the multidisciplinary research conducted over the last 10 years. The weekend started with a 'braai' on Friday evening, followed by a brunch workshop on Saturday morning which highlighted the contributions and advances the WRG has made to aquatic sciences over the last 10 years. Twenty-three postdoctoral fellows, 58 doctoral, 118 master's, and numerous honours students have gained invaluable experiences on field trips, local and international conferences, and various national and international collaborative opportunities. During the 10 years, the WRG has acquired more

than R80 million in national and international research funding that has led to more than 700 publications, and almost 100 international travel opportunities for postgraduate students to attend conferences, training and research visits. WRG members presented 503 conference contributions, and 42 awards were received at these conferences. The WRG also prides itself in continuous community engagement that include River Clean-Up events, Mini-SASS, Science Week and Fish Migration Days. Alumni, Chantelle Pretorius and Dr Nico Wolmarans, currently working as a Junior Environmental Assessment Practitioner and Application Chemist respectively, shared their career journey with current students, inspiring the next generation to work in industry. Drs Tarryn Lee Botha, Mathapelo Seopela and Gordon O'Brien gave some background and advice on pursuing a career in academia. There were also special video contributions from extraordinary appointed members located all over the world.

This event would not have been possible without donations from Symbiolab, Labotec (Pty) Limited, and Inqaba Biotech.



Group photo of current members and alumni taken at the brunch with the special edition shirts printed for the event



Profile pictures of all the past and present WRG members and collaborators, without whom all these accomplishments would not have been possible



The special edition shirt, with the logos of Symbiolab, Labotec (Pty) Limited, and Inqaba Biotech, and the special printed booklet with 10 years of accomplishments



Click [here](#) to view all photographs and videos submitted for this year's ENVIRA Photography Competition

## Photography Competition Need-to-Knows

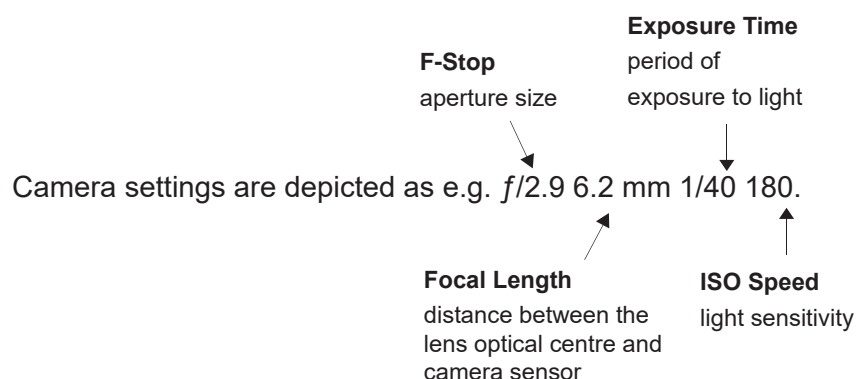
A panel of judges were invited to determine the winning image under the specified categories. Images were judged anonymously based on a pre-set list of criteria.

Creativity and originality of **image titles** contributed a fair amount to the overall point allocation.

In short, images were further judged based on:

- **Impact** – The sense or intense emotion one gets upon viewing an image for the first time.
- **Creativity** – The original, fresh, and external expression of the maker's art or imagination by using the medium to convey an idea, message or thought.
- **Storytelling** – The image's ability to deliver a message or evoke the imagination.
- **Technical Excellence** – The quality of the image e.g. sharpness, exposure, processing, and correct colour.
- **Focus** – The sharp and detailed portion of the main subject of the image.
- **Colour Balance** – An image in which the tones work together, effectively supporting the image, can enhance its emotional appeal.
- **Lighting** – Defines dimension and shape in an image. The lighting can be natural or artificial and should enhance the image.
- **Composition** – Bringing all visual elements together to express the purpose of the image. Proper composition holds the viewer in the image and prompts the viewer to look where the creator intends.
- **Centre(s) of Interest** – The point(s) on the image where the viewer should pause as they view the image.
- **Subject Matter** should always be appropriate to the topic or story being told in an image.

When viewing the winning images that follow:







**Sunrise in the dunes** by Prof Sarina Claassens

Samsung SM-A515F, f/2.2 1.7 mm 1/1277 40 No Flash

*Additional information:*

*This picture was taken at Gobabeb Research Institute, Namibia in April 2022. It's an incredible privilege to witness and experience the dunes in Namibia. During the day, the sand dunes get extremely hot but just before sunrise the sand is so cold that your feet get numb while walking.*







**Heavenly water** by Mr Willie Landman  
Apple iPhone 5s, f/2.2 4.2 mm 1/342 32 No Flash



**Still waters, Injaka Dam** by Mr Anru Kock  
Xioami Mi 9 Lite, f/2.2 1.7 mm 1/500 100 No Flash





1<sup>st</sup> Place

**Flight on fire** by Mr Willie Landman

Apple iPhone 11, back dual wide camera, 4.25mm f/1.8 f/1.8 4.2 mm 1/724 32 No Flash

Additional information:

This picture was taken at Hans Merensky, Limpopo in October 2021. This Red-headed weaver (*Anaplectes rubriceps*) is a male, as the females is typically pale.







**Between a rock and a hard place** by Mr Tiaan Botha  
Huawei P20, f/2.2 3.8 mm 1/120 80 Flash



**Aloe there!** by Ms Marlize Muller  
Samsung SM-A315F, f/2.0 4.6 mm 1/625 25 Flash





1<sup>st</sup> Place



**Please sir, may I have a fly?** by Dr Lizaan de Necker

Samsung SM-GP20F, f/1.9 4.3 mm 1/159 200 No Flash

Additional information:

*This picture of a jumping spider was taken at Ndumo Game Reserve in December 2016.*

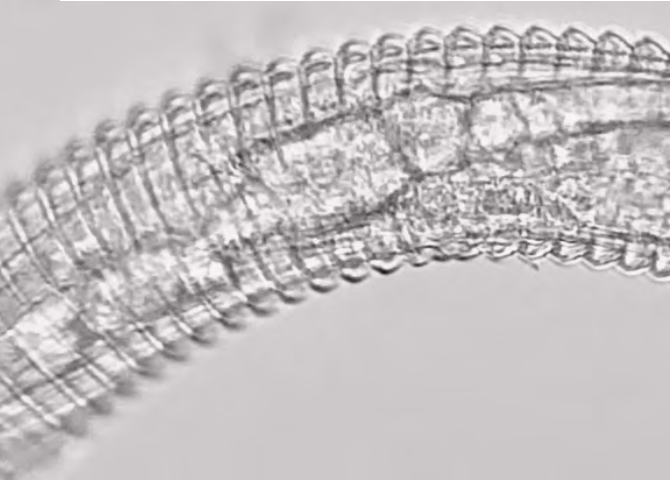






2<sup>nd</sup> Place

**I'm just a big beetle in a little pond** by Dr Lizaan de Necker  
*Huawei P9, unknown camera specifications*



3<sup>rd</sup> Place

**Nematode** by Ms Bongiwe Mhlongo  
*Huawei P Smart (AQM-LX1), f/1.8 5.4 mm 1/100 320 No Flash*





1<sup>st</sup> Place

**Teamwork makes the stink work** by Mr Anru Kock

*Xiaomi Mi 9 Lite, Exposure time 1 No Flash*

*Additional information:*

*This picture was taken on a farm near Vanderbijlpark, Gauteng in November 2020. On average, dung beetles can roll a ball of dung 50 times their own weight. One specific species can pull a dung ball 1,141 times their body weight. This is equivalent to a human pulling six double-decker buses full of people.*







*2<sup>nd</sup> Place*

**The Joy of Discovery - A botanist encounters a 'new' plant!** by Prof Nishanta Rajakaruna  
*iPhone SE, unknown camera specifications*



*3<sup>rd</sup> Place*

**Herpetology class photo 2022** by Mr Willie Landman  
*Apple iPhone 11, back dual wide camera, f/1.8 4.2 mm 1/33 500 No Flash*







1<sup>st</sup> Place

**All your ducks in a row** by Ms Coréne van der Merwe

Canon EOS 5D Mark III, f/2.8 85.0 mm 1/320 400 No Flash

Additional information:

*This picture was taken in May 2017. An unplanned snap of ducks off to bed under a magnificent farm sunset.*







**Everyone enjoys a good view!** by Ms Anja Vermaak

*Nikon CORPORATION COOLPIX W300, f/4.3 8.5 mm 1/640 125 No Flash*



**Rhino Peak Cascade** by Prof Sheldon Strydom

*Nikon D750, f/11.0 24.0 mm 0.6 100 No Flash*





1<sup>st</sup> Place

**Blue Cranes in Namaqualand: South Africa's National Bird on a Carpet of Native Spring Wildflowers**  
by Prof Nishanta Rajakaruna

Nikon CORPORATION COOLPIX P950, f/6.3 268.0 mm 1/640 100 No Flash

Additional information:

This picture was taken in September 2022. A spectacular moment capturing South Africa's National Bird, the Blue Crane (*Anthropoides paradisea*), among the native Wildflowers of Namaqualand, Nieuwoudtville, Northern Cape, South Africa.







2<sup>nd</sup> Place

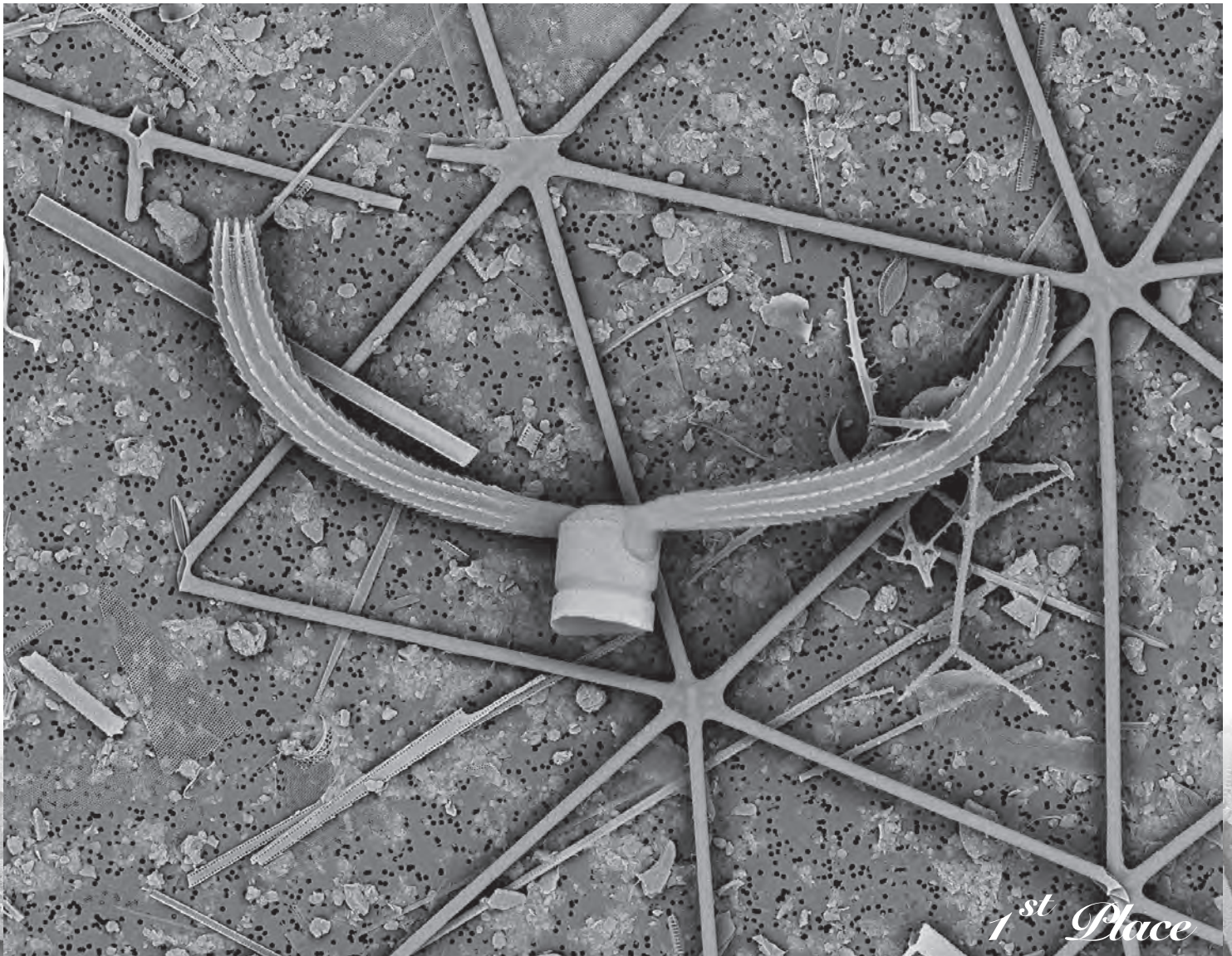
**I've been spotted!** by Ms Vickey-Luanne Harris  
*Canon EOS 1100D, unknown camera specifications*



3<sup>rd</sup> Place

**Oh crab!** by Ms Anja Vermaak  
*Nikon CORPORATION COOLPIX W300, f/2.8 4.3 mm 1/320 125 No Flash*





1<sup>st</sup> Place

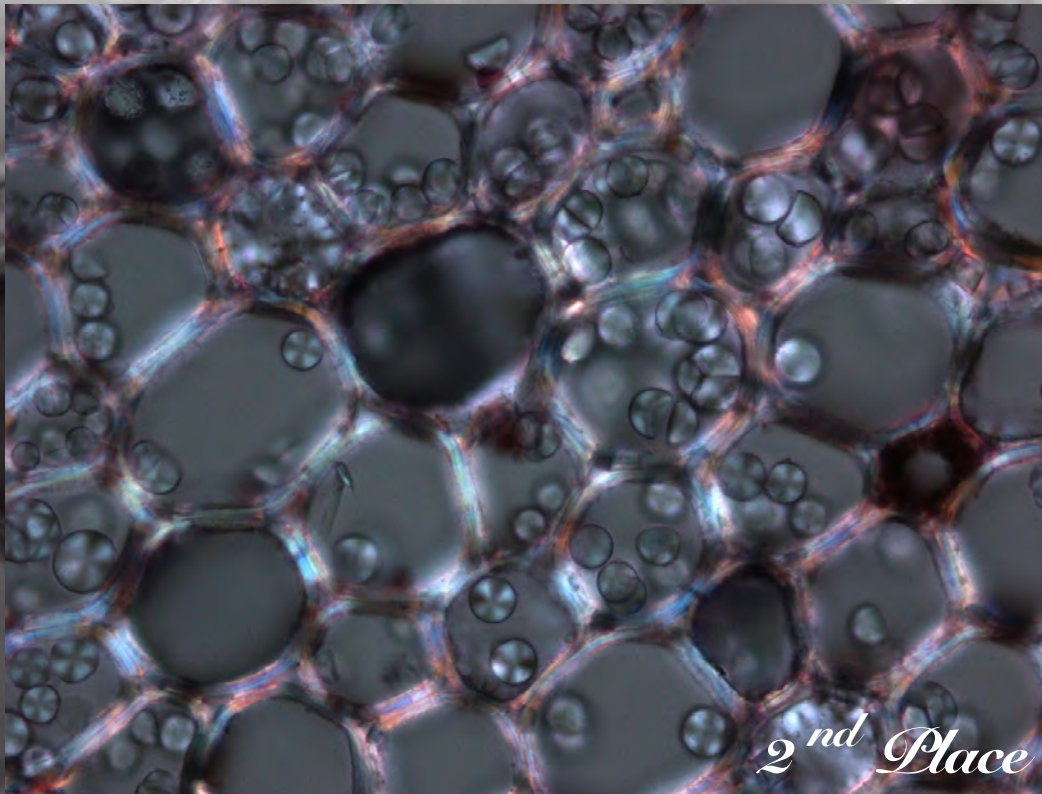
**Viking Diatom** by Mr Willie Landman

Phenom Desktop Pro Scanning Electron Microscope

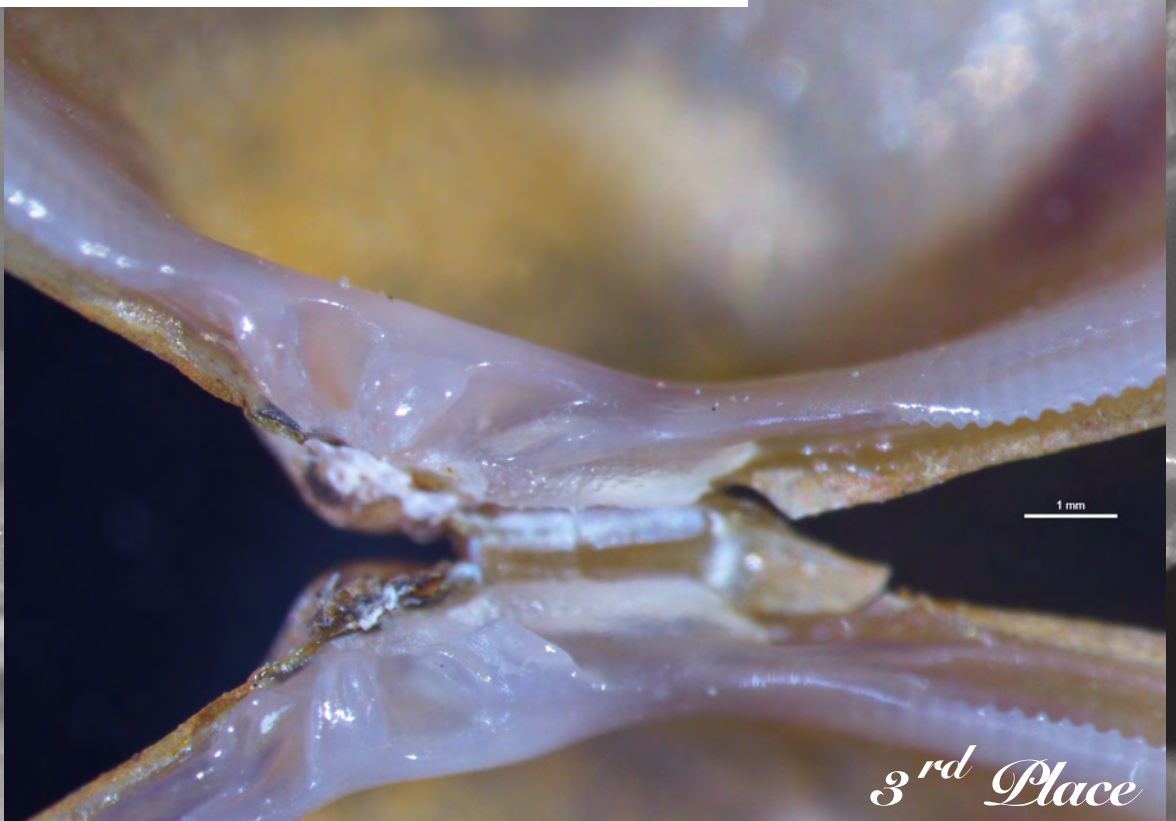
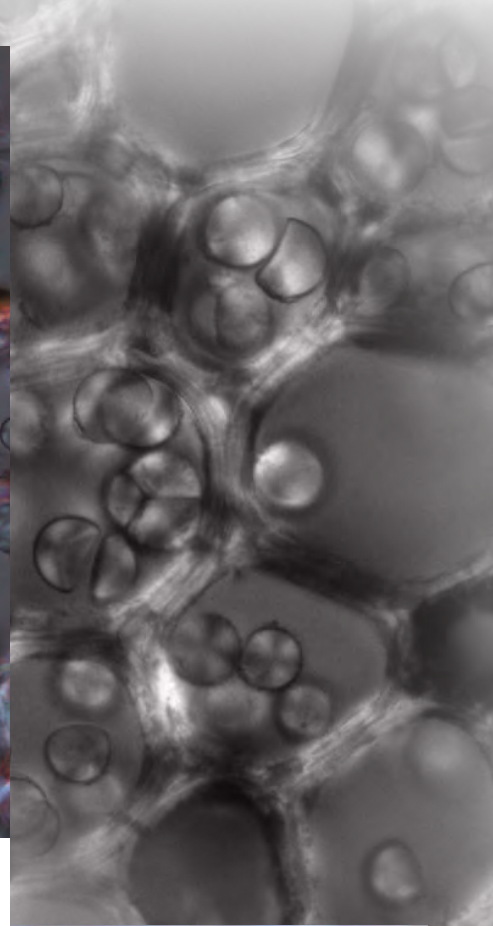
Additional information:

This picture was taken at the AACRG Microscopy Laboratory in 2018. These marine diatoms (*Chaetoceros* sp.) grow special extensions (horns) to regulate their position in the water column (buoyancy).





**A constellation of starch grains** by Dr João Marcelo Silva  
*Leica Microscope*



**Cardinal of all cardinal teeth** by Ms Chelsea Withfield  
*Nikon digital sight DS-Fi1*





**Do elephants also know French?** by Mr Mark Swart

Canon EOS 2000D, f/14.0 324.0 mm 1/1000 1600 No Flash

Additional information:

*This picture was taken at Thula Thula Privavte Game Reserve, Empangeni, KwaZulu Natal in August 2020. These two bulls were playing and wrestling to gain mating rights. This specific herd of elephants does not have a regular hierarchy system. As opposed to the normal system where bulls would leave the herd and be on their own, the bull in this herd always remains with the group.*







*2<sup>nd</sup> Place*

**Love at first bite** by Ms Vickey-Luanne Harris  
Canon EOS 1100D, f/5.6 300.0 mm 1/320 100 No Flash



*3<sup>rd</sup> Place*

**How you doin'??** by Ms Anja Vermaak  
Nikon CORPORATION COOLPIX W300, f/4.4 10.1 mm 1/160 125 No Flash



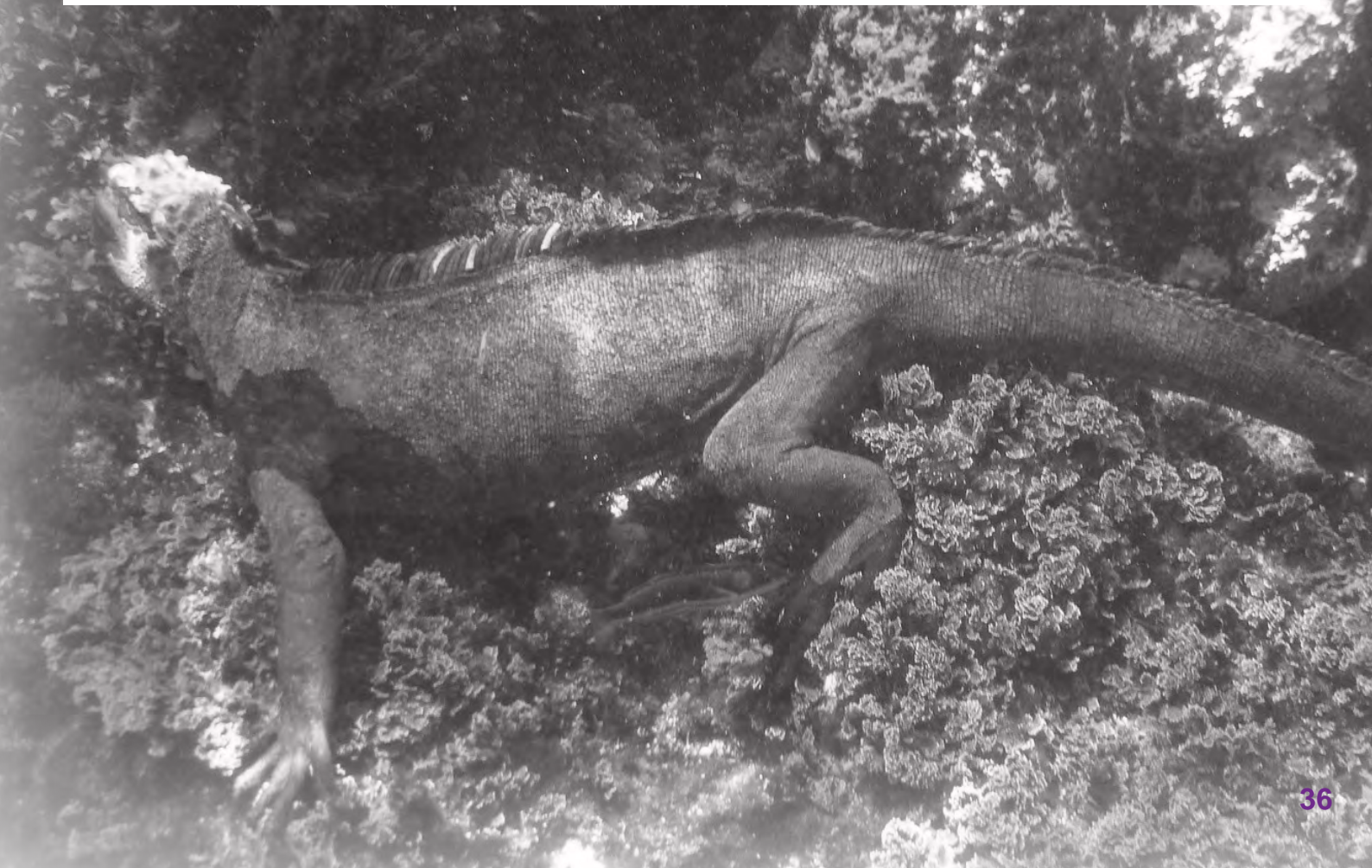


**Is Godzilla a marine iguana?** by Ms Danielle Fourie

GoPro Hero 7 Black

Additional information:

This video was taken at the Galapagos Islands in July 2019. Marine iguanas (*Amblyrhynchus cristatus*) are endemic to the Galapagos islands. The males can dive up to 20m while females and juveniles will forage at a depth of 5 - 8m.

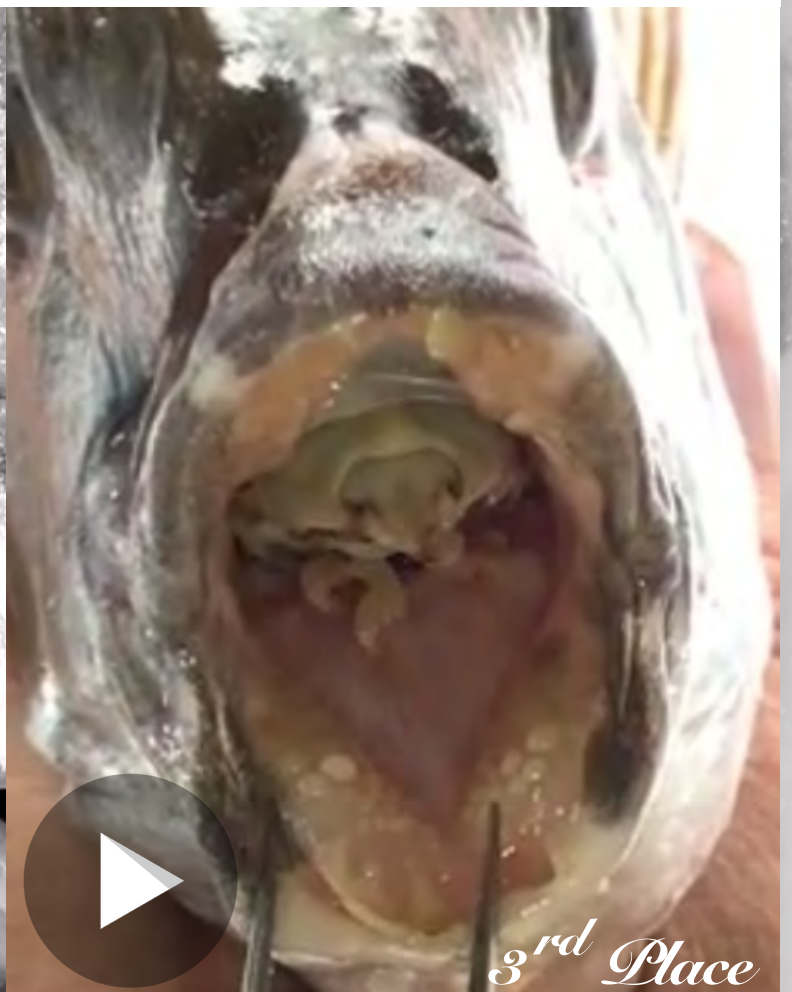






*2<sup>nd</sup> Place*

**Calling for a girl in morse code** by Mr Willie Landman  
*Iphone 7*



*3<sup>rd</sup> Place*

**It's alive! - a tongue with its own mind** by Prof Nico Smit  
*Iphone 7*





**Talk about reverse parking!** by Ms Anja Vermaak

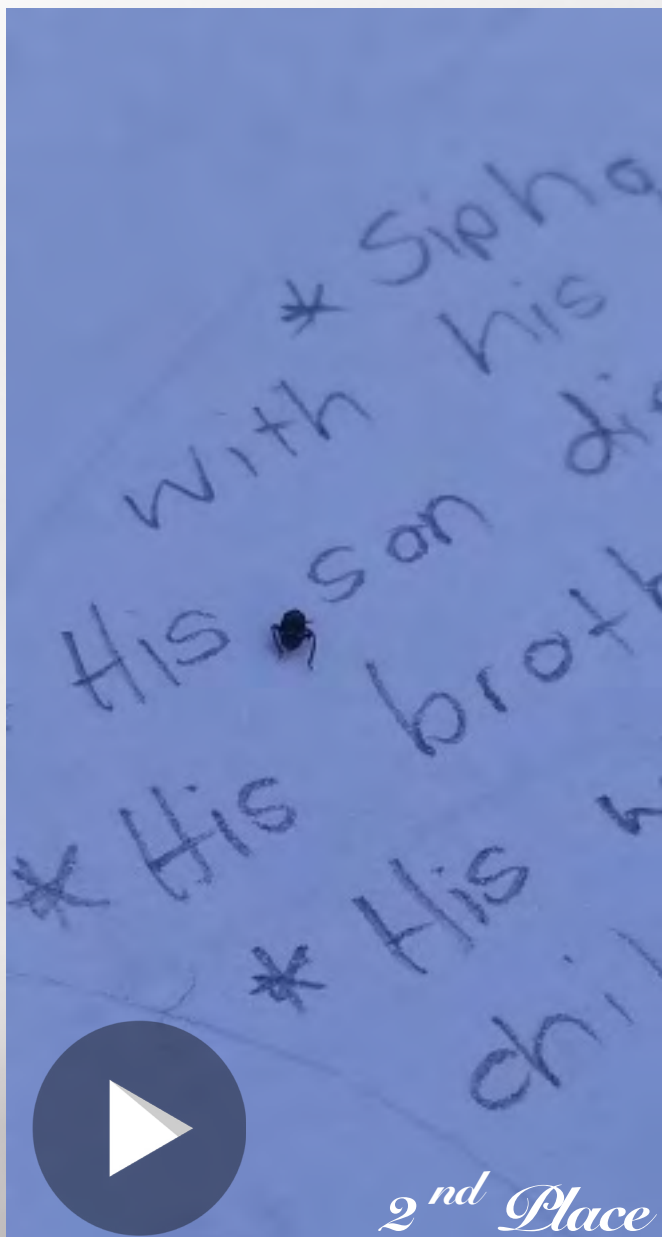
*Nikon Coolpix W300*

*Additional information:*

*This video was taken at the Sodwana Bay in January 2017. It was amazing to see these little fish (Horned Blennies) live in all types of cracks and crevices, especially to see the manner in which they returned to their homes.*







2<sup>nd</sup> Place

**Check out my moves!** by Dr João Marcelo Silva  
Huawei P40 Light



3<sup>rd</sup> Place

**Dominant Dung** by Ms Elaine Slooten  
Huawei P Smart

Click [here](#) to view all photographs and videos submitted for this year's ENVIRA Photography Competition





# Acknowledgements

We wish to thank the following people who have made invaluable contributions towards the *Summer* edition of ENVIRA 2022:

- Prof Carlos Bezuidenhout for his Director's message.
- All authors who willingly shared their accolades, reflections and other interesting news articles with readers of this edition.
- All who entered the ENVIRA Photography Competition and submitted their outstanding photography and video contributions.
- All judges of photo entries.

All your contributions are greatly appreciated.

Finally, we'd also like to thank the readers of the ENVIRA. We treasure your time and feedback immensely.

We look forward to sharing new and exciting research articles in the upcoming *Autumn* edition, 2023.

May you have a fantastic and well-deserved holiday, wonderful Christmas, and a happy New Year.

Clarissa and Frances

Photo credits:

The images presented in this edition of ENVIRA were obtained from the authors of each respective article. Additional photos were acquired from websites providing freely available stock photos: <https://unsplash.com>; <https://pixabay.com>; <https://www.pexels.com>; <https://www.freeimages.com>; <https://www.canva.com>.

Photography Competition Participants: Adri Joubert, Anja Erasmus, Anja Vermaak, Annika Kruger, Anru Kock, Bongiwé Mhlongo, Brigitte Language, Chelsea Withfield, Corene van der Merwe, Danielle Fourie, Elaine Slooten, Elsche Cronje, Henk Bouwman, Jacques Faul, Jadia Hoffman, João Marcelo Silva, Kelebogile Motlhamme, Lizaan de Necker, Mark Swart, Marlize Muller, Michelle Hamman, Nico Smit, Nishanta Rajakaruna, Nomali Ngobese, Ruan Gerber, Sarina Claassens, Sheldon Strydom, Stefan Siebert, Theunis Meyer, Tiaan Botha, Tshepo Motlakeng, Vickey-Luanne Harris, Willie Landman, Wynand Muller, Yani Steyn