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Editorial

The word *Spring* is loaded with promises of joy, hope, life and inspiration. Although the COVID-19 pandemic remains with us, spring managed to dull its effects on our lives, and shift our focus from fear, frustration and uncertainty to new *Life* that is so spectacularly evident in our immediate natural surroundings. This Spring edition is therefore loaded with photos, stories and news inspired by nature itself!

Spring makes gardeners of anyone – from large flowerbeds to a balcony, or even a windowsill. Nurseries are buzzing at the moment. When in doubt about what to plant in your garden, who better to ask than our own experts. In this issue, the NWU Botanical Garden shares how it serves the community of Potchefstroom, including private gardeners, landscapers, nurseries and developers, by sharing knowledge on suitable plants to grow in the tough local climate.

Spring seems to have inspired our colleagues to write..... We have been overwhelmed by fascinating research stories. Thanks to the spring sprinkle, it seems, all eight UESM sub-programmes are represented in News Flash articles from the *Features* section. Some of these contributions were made by newly appointed extra-ordinary staff and postdoctoral fellows of the UESM, whom you will also meet in this edition.

Spring brings fresh floral breezes. In this issue we introduce to you the blossoming person inside and outside the Director's office of the School of Biological Sciences – read more about inspirations from microbiota to Coco Chanel, protea flowers, pastry courses and the value of communicating and practicing gratitude.

In the *Regulars*, ENVIRA once again shares in the pride of UESM research achievements via the Accolades and Calliper sections. Lock-down and COVID-19 regulations also did not seem to hamper activities of Ad Vivendum, and neither for the National Aquatic Bioassay Facility.



Scadoxus puniceus

After spring comes summer.... Summer carries the promise of relaxing sun-filled holidays, although it does not come easy due to year-end demands and deadlines. For this reason, we have decided to give researchers a break from writing. For the Summer Edition, we plan a beautiful display of photos through the lenses of our colleagues and students.

Read more about the

Photo Competition

Grab your camera and get your entries ready!



*Spring – ‘she smelled of sun and daisies
with a hint of river water’*

– Katie Daisy (Mixed-media artist who captures the essence of living with nature)

Until Summer 2020!

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





Director: School of Biological Sciences

Prof Sarina Claassens

Interview by
Clarissa Minnaar

Flash Q's

| | |
|-------------------------------|--|
| Sunrise or sunset | Both |
| City or countryside | Countryside |
| Comedy or drama | Comedy (but not slap-stick) |
| Sparkling or still | Sparkling |
| Favourite tourist destination | The Garden Route (SA), The Netherlands (Abroad) |
| Favourite smell | Fresh laundry |
| Favourite sound | The ocean |
| Favourite flower | Protea |
| Favourite wild animal | Giraffe |
| Favourite microbe | Tardigrades / Water bears |
| Favourite childhood story | Heidi |

General

What is your favourite family tradition? Family gatherings accompanied by good meals on special days like birthdays or Christmas.

What are your favourite hobbies? I really love reading (mostly fiction) and will do so whenever I have time. I also enjoy baking and doing DIY projects in and around the house.

If you could have dinner with a historical legend, who would it be and why? Coco Chanel – the famous French fashion designer. She was such a style icon and has a very interesting life story. She was born and grew up in great poverty and never went to school, yet she was named one of the 100 most influential people of the 20th century. A lot has been written about her life and the facts are not always clear. I would have liked to sit down with her to hear her own version of the story.

What skill would you still like to master one day? Since I love baking and making desserts, I would like to do an advanced pastry course.

By which motto do you live? “A grateful heart is a magnet for miracles”. I believe one should actively practice gratitude every day. It changes your life.

If you could go back in time, what advice would you give your younger self? Don't be so hard on yourself.

What product would you seriously stockpile if you found out they weren't going to sell it anymore? My favourite Chanel perfume.

What are you most looking forward to in the next 10 years? I think I may finally be at the place in my life where I manage to balance work more effectively with other activities. I look forward to having more of that balance and to spend more time with family and on things that matter to me.

What chore do you absolutely hate doing? Vacuuming.

If you could learn any language fluently, what would it be? I would like to be able to communicate better in my own country – so definitely Setswana for the area we live in and maybe also Zulu.

Career/NWU related

Where did you get your schooling? Klerksdorp Hoërskool.

Which undergrad courses did you find most interesting? Aside from microbiology, I really liked human physiology. It was very hard to pick between those two for pursuing an honours degree.

What are your favourite topics to teach and why? Microbial ecology and “life lessons”. My students could attest to the fact that I like to share some life wisdoms or have a motivational chat a few times during a semester. I like teaching microbial ecology because that is where everything comes together – all the basics about microbiology are applied when you study ecology and of course it links too many other subjects as well.

Have you ever had any other career in mind? Yes! A travel photographer or interior decorator. I like doing creative things.

What kind of work situation makes you feel satisfied? One where I can motivate people to work in a team and make a success of a challenging situation or project.

Interview
continued

Director: School of Biological Sciences

Prof Sarina Claassens

School management online

What did you miss the most from having normal on-campus office hours? The feeling of being connected with people. To me, asking someone how they are doing via email, is not the same as seeing them in the office corridor in person and asking them how they are. Sometimes asking is not even necessary, you can actually see that someone is not having a good day. I missed those interactions.

As School Director during these uncertain times, what was your greatest challenge (lockdown/remote learning/pandemic)? To give guidance and maintain an atmosphere of calm and organisation, while you yourself have no answers and while things were changing rapidly and very frequently. It was difficult to adapt to working on a day-to-day basis and not being able to plan ahead much.

Can you list any positive things that emerged from the lockdown of students and staff? Definitely! I think we appreciate many things that we used to take for granted – especially at work. Simple things like having a quick coffee with your

colleagues or students or just to be able to go to work, have a routine and have people notice when you don't show up. The fast-forward effect that we had with technology and adapting to remote teaching and working is another positive outcome. I think under normal circumstances, things that we have accomplished in the past few months would have taken years to realise.

How do you balance family and working from home? By setting "no-work hours" for myself and spending these times with loved ones. As far as possible, I stop working in the early evening and try not to work at all over weekends (this includes not checking my e-mail).

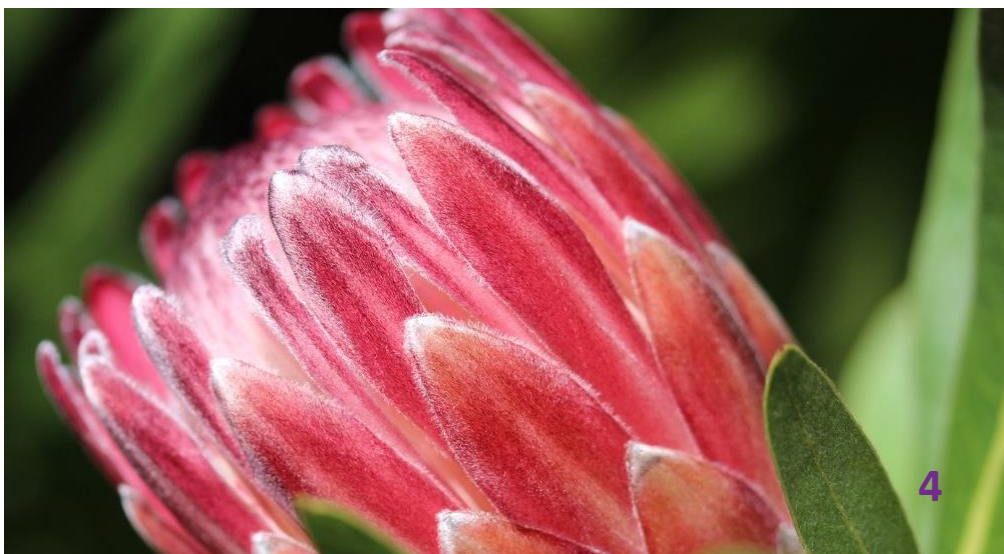
Now that we have gained some experience in this out-of-the-ordinary situation, what would your advice be to lecturers and students? Communication is very important in general, but in situations like this it is critical. We should do our best to maintain open communication channels and also make an effort to communicate effectively.

Career/NWU related continued

What do you enjoy most about being the director of the School of Biological Sciences? I like the challenge. It is very different from just doing the usual academic work of teaching and research. I enjoy working in other spheres of the university and gaining a different perspective on the day-to-day functioning of the NWU.

What would you like to accomplish during your term as director? To build better connections between the people and activities in each subject group, between different subject groups and across campuses. If we want to adapt to the ever-changing environment of education and keep offering something that is "worth-it" for students and staff of the future, we have to learn from one another and work together. I also want to encourage and facilitate an increased involvement in community engagement – not for the sake of ticking a required box, but in a way that flows naturally from the academic activities we are already involved in and that really adds value.

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Accolades

Congratulations

The following awards and accolades from the national and international scientific community demonstrate the high quality and significant impact of research within the UESM.

Prof Klaus Kellner

Klaus is appointed as a member of the Conservation Advisory Board to assist the Department of Agricultural, Land Reform and Rural Development (DALRRD) in facilitating the protection and sustainable management of Natural Agricultural Resources in accordance with section 17 of the Conservation of Agricultural Resources Act, 1983 (act 43 of 1983) (CARA). The board was appointed by the Minister of DALRRD, who is the custodian of the Natural Agricultural Resources in SA and includes SA Agricultural Farmers Union and Traditional Authorities. The appointment is for 5 years.

Furthermore, Klaus has also been selected to serve on the executive committee for the Society for Ecological Restoration (SER) Chapter in Africa. At the 2020 SER world conference held in Cape Town, an executive committee was appointed to develop the African Chapter for SER. The African Chapter will be the most recent one for the Society. In the past, Africa was part of the Australian & Asian Chapter. People from several countries in Africa (Kenya, Zambia, etc), including the CSIR in SA serve on this executive committee.

Water Research Group (WRG)

A huge testimony to the standing of the UESM and NWU in water related research is that in a recently published report that provides a comprehensive assessment of the state of the South African research enterprise, commissioned by the South African National Research Foundation (NRF), one of the research groups of the UESM, the Water Research Group (WRG) was listed first under the Institutional Landscape of Water Research for water research institutes at universities, leading the pack consisting of other highly respected centres and institutes from amongst others University of Stellenbosch, University of Pretoria and University of Cape Town ([extract from the report](#)).

Prof Das Steyn

Prof JJ (Das) Steyn, an extra-ordinary professor of the UESM, received the prestigious Stals prize for Urban and Regional Planning from the South African Academy for Sciences and Art ('Die Suid-Afrikaanse Akademie vir Wetenskap en Kuns') at the virtual Southern Award Ceremony on 10 September 2020.





Accolades
continued



Climate Change, Air Quality and Impacts

This Climate Change, Air Quality and Impacts sub-programme has been listed as one of the leading focus areas in Atmospheric Science on the African continent in the latest Shanghai 2020 rankings (<http://www.shanghairanking.com/Shanghairanking-Subject-Rankings/atmospheric-science.html>). The sub-programme spans all three campuses (Potchefstroom, Mafikeng and Vaal), with 11 full time members of staff from three different schools ([view list of staff members](#)).

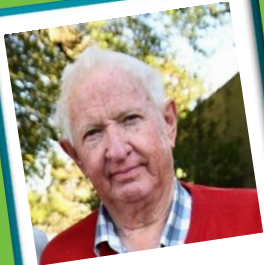
The success of the sub-programme is largely attributed to its diversity, as well as strategic partnerships with top international institutes. The Welgegund Atmospheric Laboratory (<http://www.welgegund.org>) sprung from a partnership with the University of Helsinki and the Finnish Meteorological Institute. Additionally, the sub-programme has strong ties with other leading institutes, including the University of Colorado and the National Center for Atmospheric Sciences (NCAR).



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Newly Appointed Extraordinary Staff 2020

Interactive 



**Prof Alan
Channing**



Dr Andre Brand



**Prof Connal
Eardley**



**Prof Corrie
Wolmarans**



**Prof Eddie
Ueckermann**



Dr Frank Winde



**Prof Huib van
Hamburg**



**Prof Linda
Godfrey**



**Dr Louis
Lategan**



**Prof Luc
Brendonck**



**Dr Marié du
Toit**



**Dr Marinda
Koekemoer**



**Prof Mary
Gulumian**



**Prof Nishanta
Rajakaruna**



**Prof Rebecca
Garland**



**Prof Stephen
Bullard**



**Prof Suzan
Oelofse**



**Prof Trent
Garner**

Newly Appointed Postdoctoral Fellows 2020

Interactive 



**Dr Abdullahi
Adekilekun Jimoh**



Dr Arnim Marquart



Dr Brigitte Language



Dr Deidre van Wyk



Dr Hannes Erasmus



Dr João Marcelo Silva



Dr Oladayo A. Idris



**Dr Prosper Ashibudike
Opute**



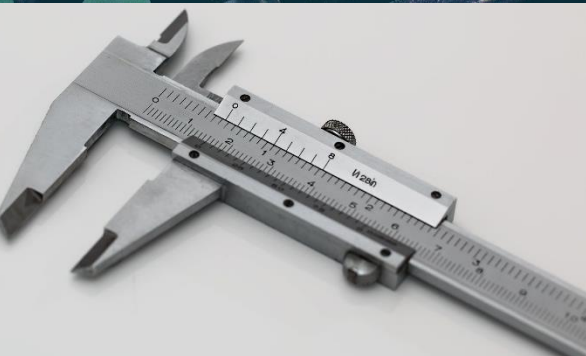
Dr Sizwile Khoza



Dr Yaroslav Syrota



Dr Zaakirah Jeeva



Why 'The Calliper'?

A calliper is a measuring instrument to measure the diameter of something. In this *Regulars* item, we measure and reflect on scientific outputs in the UESM.

How the top 10 most cited researchers were determined:

This list is based on career citations of researchers as reflected by SCOPUS on 25 September 2020. To qualify for inclusion, the researcher had to be in the employ of the NWU and affiliated to the UESM. Highly cited extra-ordinary appointments of the UESM were not considered. This list is therefore a reflection on the career citation of UESM-affiliated permanent staff, some of which might include previous research conducted at institutions other than the NWU. This list will be updated once a year. In the next edition we will include a list of the top ten most cited UESM researchers for 2020 based on citations in SCOPUS.

SCOPUS: Top 10 most cited researchers in the UESM

September 2020

Prof Louis du Preez

| Sub-programme | Citations | Articles | H-factor |
|---------------------------------------|-----------|----------|----------|
| Biodiversity and Conservation Ecology | 2763 | 120 | 24 |

Prof Henk Bouwman

| Sub-programme | Citations | Articles | H-factor |
|--------------------------|-----------|----------|----------|
| Aquatic Ecosystem Health | 2507 | 115 | 26 |

Prof Stuart Piketh

| Sub-programme | Citations | Articles | H-factor |
|---|-----------|----------|----------|
| Climate Change, Air Quality and Impacts | 2002 | 111 | 24 |

Prof Johnnie van den Berg

| Sub-programme | Citations | Articles | H-factor |
|----------------------------|-----------|----------|----------|
| Integrated Pest Management | 1906 | 175 | 20 |

Prof Nico Smit

| Sub-programme | Citations | Articles | H-factor |
|--------------------------|-----------|----------|----------|
| Aquatic Ecosystem Health | 1797 | 166 | 21 |

Prof Ché Weldon

| Sub-programme | Citations | Articles | H-factor |
|---------------------------------------|-----------|----------|----------|
| Biodiversity and Conservation Ecology | 1757 | 36 | 16 |

Prof Sarel Cilliers

| Sub-programme | Citations | Articles | H-factor |
|--|-----------|----------|----------|
| Ecological Interactions and Ecosystem Resilience | 1604 | 59 | 19 |

Prof Victor Wepener

| Sub-programme | Citations | Articles | H-factor |
|--------------------------|-----------|----------|----------|
| Aquatic Ecosystem Health | 1561 | 136 | 22 |

Prof Stefan Siebert

| Sub-programme | Citations | Articles | H-factor |
|--|-----------|----------|----------|
| Ecological Interactions and Ecosystem Resilience | 1311 | 80 | 16 |

Prof Oriel Thekiso

| Sub-programme | Citations | Articles | H-factor |
|----------------------------|-----------|----------|----------|
| Integrated Pest Management | 1212 | 61 | 19 |



Research Ethics in Environmental Sciences and Management

Ethics

Roelof Burger

It is now one year since the Senate has decreed that all studies, including MSc and PhD students, should have an ethics number and two years since the decision that all studies need an ethics review. As many have experienced, students are not being allowed to submit their studies without such an ethics number. The Faculty of Natural and Agricultural Research Ethics Committee (FNASREC) was formed to review low and no risk studies in the Faculty. While many research groups had their own processes before 2018, all research in the NWU now has to undergo a second ethics review, independent of the scientific reviews that continue to be the responsibility of the sub-programmes. The Senate provided a grace period for FNASREC to review studies that started before 2018, but that ran out in September 2020. We must now be aware that no research can start without an ethics number. Another important consideration is that the responsibility for ethics approval lies with the supervisor and not the student. Staff should, therefore be careful to monitor all studies under their supervision. FNASREC has tried to construct an archive of students in the faculty. We estimate a total of 390 active MSc and PhD students in the Unit for Environmental Sciences and Management. Of these, we can confirm 305 ethics numbers, with 266 of these provided by FNASREC. During 2020, we reviewed 252 studies from the unit. An important insight is that 85 students still need ethics clearance, of which 17 have been registered for more than a year. Supervisors should confirm that all their students have ethics numbers at this point and should be aware that they risk disciplinary action from the Senate if their ethics approvals are not in place. Applications to FNASREC can be submitted to <https://tinyurl.com/fnasrec>. Ethics approval is only valid for a year, after which an annual review will be conducted and the certificate renewed.

What you need to know about ethics in the Unit for Environmental Sciences and Management

1. All research needs to be reviewed by one of the ethics committees at the NWU, including masters and doctoral students.
2. No research is allowed to start without an ethics number.
3. No student is allowed to submit his/her dissertation without an ethics number from one of the NWU ethics committees.
4. The ethical responsibility of student studies lies with the supervisor, not the student.
5. For low and no risk studies, the process is fairly quick and painless. Start by submitting an application to <https://tinyurl.com/fnasrec>

National Aquatic Bioassay Facility (NABF)

Tarryn Botha



The breeding room has four Techniplast Zebrafish multi-linking housing systems equipped with a Tritone Automatic Feeding System.



All ZebTec tanks, with a Self Cleaning Drum Filter, are removable and can be isolated from the flow through system by opening/closing a valve.



Avela Mbangatha, an MSc student, recording videos of a *Daphnia magna* heart in order to determine changes in heart rate.

The Water Research Group (WRG) is host to the largest Zebrafish facility in Africa and second largest in the southern hemisphere. In 2017 Prof Victor Wepener received a grant from the National Research Foundation's National Nanotechnology Equipment Programme to develop the National Aquatic Bioassay Facility (NABF) in Building G23 on the Potchefstroom Campus. The NABF is a multi-user facility that aims to be a hub of equipment available to answer any mechanistic research question relating to aquatic ecosystems.

Spanning 515 m² the facility is equipped with state of the art equipment from Techniplast, Italy. These include four Zebrafish multi-linking housing systems, one ZebTEC quarantine standalone system, four toxicity rack systems, a behaviour room (Noldus®), swimming chambers with respirometer equipment (Loligo Systems), two amphibian housing systems and a marine ZebTec System. Each unit is housed in individual temperature controlled rooms. The ZebTec marine system, which is a first in the world, consists of a variety of large and small systems with an artificial saltwater mixing station to produce saltwater on tap.

Currently the NABF houses live feed units containing rotifers, artemia and algae cultures. There are a large variety of test organism cultures including *Caenorhabditis elegans* (nematodes), *Daphnia magna* (aquatic crustaceans), *Danio rerio* (Zebrafish), *Nothobranchius furzeri* (Killifish), *Diplodus capensis* (Cape white seabream), *Rhabdosargus holubi* (The Cape stumpnose) and *Xenopus* spp. (Müller's platanna and African clawed frog).

Bioassays can be conducted in each of the temperature and light controlled rooms using standard or specialized laboratory equipment. By integrating software programs such as Noldus® and Loligo® Systems technology within the facility, physiology (oxygen consumption and swimming performance) and behaviour can be quantitatively studied from the embryo (DanioScope™), larval (DanioVision™) and adult developmental stages.

The NABF has hosted researchers from all over the world and South Africa together in the form of collaborations and training initiatives. The main projects have focused on the ecotoxicology of metals (platinum), pesticides (DDT, pyrethroids and neonicotinoids),

Facilities



Giovanni Frangelli (left), Dr Tarryn-Lee Botha NWU and Marco Brocca (right) from Tecniplast pictured at the installation of the NABF in 2017.



Armagh Cook, an MSc student, assisting with community outreach by showing scholars part of the Zoology collection.



Lehlohonolo Mofokeng, a PhD student, explaining the importance of understanding parasitology in fish to scholars.

nanomaterials and other emerging pollutants. Environmental parasitology is a new field that is being implemented where fish are co-exposed to pollutants and parasites to determine their biomarker response to these stressors.

Some of these collaborations have resulted in joint publications between the WRG and Pharmaceutical Sciences (NWU), the Max Planck Institute (Germany), behaviour studies with the South African Institute for Aquatic Biodiversity, antiretroviral nanodrugs with Chemistry (MC-NWU), effects of lead on gene regulation and behaviour of fish embryos and larvae with Hokkaido University Japan, and several projects on platinum effects on aquatic macroinvertebrates and fish together with the University of Duisburg-Essen (as part of an NRF funded German bilateral project). The accredited short course on Ectotherm vertebrate handling and ethics, which services the rest of South Africa, is presented bi-annually in the NABF. The Zebrafish Interest Group of South Africa (ZIG-SA) also hosted their inaugural meeting within the NABF in 2017. The NABF is actively involved in community engagement by inviting Primary and Secondary Schools to paint an aquatic themed mural on the outer facility walls and show scholars different species of fish found within South Africa.

Please contact Prof Victor Wepener/Prof Nico Smit for queries relating to research within the facility and Dr Tarryn L Botha for interest in ZIG-SA.



The iSPAWN Breeding system used to breed Zebrafish by separating male and female fish overnight and collecting the fertilized embryos once mixing occurs the next morning.

Photo credits:

Tarryn L Botha, Elma Blom (Labotec), Geraldine Oosthuizen

Community projects

A beautiful spring is dependent on frosty gardens having hardy plants

Chris van Niekerk

Throughout the world the role of botanical gardens and their functions in society are changing. Gardens are challenged to address social and environmental issues outside of their own primary focus areas. The botanical garden on the Potchefstroom campus of the North-West University (NWU) is no exception. The main purpose of the NWU Botanical Garden is to supply practical material for academic training and research, but in recent years it has readily expanded its mandate to also include the needs of surrounding communities.

The garden is part of the Faculty of Natural and Agricultural Sciences, and managed by the School of Biological Sciences. The garden consists of a wide variety of indigenous plants that are labelled with their botanical names, as well as educational information on the traditional uses of the species.

The facility is not only accessible and beneficial to NWU staff and students, but also serves the general public. One way the garden is aiming to become more socially relevant, is to improve the local community's knowledge and appreciation of indigenous plants. This past winter was bitterly cold which has resulted in the die-off of many garden plants, because uninformed gardeners cultivate plants which are not suitable for the severe environmental conditions in Potchefstroom.

Potchefstroom is known for its frost and different areas in town can experience frost varying from light to severe during the same morning. Frost will occur on cold, calm cloudless nights when the air temperature drops below 0° C. Frost damage occurs when moisture in the plant cells expand and freezes, rupturing the cell walls. The damaged plant tissue is visible as a dark pulp, referred to as "black frost".



Community projects

The impact of frost can be managed in the following ways:

- **Location.** Select plants that are tolerant of your specific location. Observe what is growing in the area around you and use that as a guideline.
- **Garden micro climate.** The risk of frost can be reduced by creating "micro climate" with hardy evergreen shrub species. These shrubs will act as wind breaks and protect lower growing species from severe frost.
- **Protection techniques.** Plants can be covered with frost guard, hessian and veld grass (plastic materials are not suitable due to a lack of ventilation and heat build-up during the day.)
- **Watering.** Restrict watering your garden in winter to warmer days and only in the morning. As a general rule plants should be kept drier in winter.
- **Ecotypes of species.** Plants growing in colder areas have acquired more resistance to cold weather than the same species from a warmer area. Try to get plant material from growers or nurseries from colder parts of the country.

The botanical gardens provide visitors with examples of a range of trees, shrubs, geophytes, ground covers and climbers that are frost hardy and will survive in Potchefstroom. As we received numerous requests for frost hardy plants after this very cold winter we have compiled a [list of suitable species](#) for gardens in Potchefstroom. The list is available to nurseries, gardeners, landscape architects/contractors and NGO's.

The NWU Botanical Garden is an important aesthetic and scientific establishment in Potchefstroom, and strives to contribute to the well-being of our society and environment.

Photo credits:
Clarissa Minnaar, Pixabay





Student Association

Ad Vivendum

Sloane Munro

With the second semester in full swing, Ad Vivendum has had a busy return to ensure that students are motivated, equipped and ready for the final stretch of the 2020 academic year. Since our last communication Ad Vivendum has held multiple events and has many more coming up. Students in the faculty got the opportunity to attend 'Zoom' and 'Google Meet' meetings regarding Honours for post-graduate studies. This was very insightful and provided the much-needed information students needed to further their studies. We have also been busy with online 'aksies' with fellow academic student associations, as well as participating in AKSA/Current Affairs' Diversity Week programme where online meetings and social media platforms have discussed topics such as gender, race, culture and much more. Ad Vivendum also has numerous academic talks coming up through 'Zoom' where a variety of topics will be covered, such as goal setting and time management, stress management and what is expected of students during remote and online learning, and much more. More information regarding these can be found on our social media pages as well as communicated regularly through class representatives and the ASA.

Elections for the new ASA for 2020/2021 are also around the corner so be on the lookout for an *Ad Vivendum* Election tab on your efundi site.

We trust that students are motivated and excited to complete this semester with hard work, focus and a determined spirit. Ad Vivendum as well as its representatives will be there all the way to aid in any way possible should students come across any problems along the way.




For more information
follow us on Instagram

https://www.instagram.com/ad_vivendumnwu/



The Interesting Fact Box



Marine benthic diatom
genus named after
postdoctoral
fellow




"Mad hatterpillar"




"Boomerang"
earthquake detected




Urban farming should
flourish post-
pandemic




NEW TOOL:
Quick and easy way to
map your farm




Female bats brave
risky conditions



Melting ice sheets track
worst case scenario



Honeybee venom
kills some breast
cancer cells



Painting one blade
reduces bird
fatalities

Capers on coral reef islands: Part 1

Crashing a boat onto a coral reef: What happens after?

Henk Bouwman & Veronica van der Schyff

Coral reefs face many well-known threats but the impacts of shipwrecks are less well understood. During our 2014 expedition to St. Brandon's Atoll in the Indian Ocean, we came across a wreck of a fishing vessel that stranded in 2012. Storms and currents smashed it into three pieces, strewn it over the lagoon, 5 km away from the impact site. A large green algal patch formed down-current while the sites around the three pieces were dead and blackened. Presented by a 'triplicate' shipwreck and blessed with the presence of students and a guide with knowledge of coral and reef fish, we undertook an impromptu survey of fish and sea cucumbers, and collected coral and algae samples. We had to be careful of the very poisonous scorpion fish that like wreck sites.



The stern and bow sections of the wreck, with Karin Minnaar counting fish. Strong currents made swimming difficult.

Hydrodynamic drag of 10 m long bundles of filamentous algae smothered the coral heads, broke many of them, destroying large swathes of the affected lagoon.

The dead coral contained high concentrations of chromium, zinc, arsenic, copper, cadmium, and lead, derived from the hull paint and wreckage, with additional impacts from fuel and cargo.



Coral heads with large and long strings of algae attached.

We found few sea cucumbers (0.025 m²) and many large fish (4.9 m²) around the wreck pieces, with few small fish (0.82 m²) and sea cucumbers (1.5 m²) in the algae affected area. The densities in the reference area were 1.9 m² and 0.095 m² for fish and sea cucumbers, respectively. We recorded 33 fish and two sea cucumber species. We also saw two sharks and 11 endangered hawksbill turtles in the algae field but not elsewhere.

Ecological phase shifting in coral reefs due to disturbance is well known. However, we were the first to record and measure the impacts of a shipwreck on coral fish and sea cucumbers, and measure coral pollution. We were able to contribute towards a framework to measure impact and recovery.

The opportunity also provided us with a very rare 'triplicate' impact. Ship owners are loathe to smash a portion of their fleet onto reefs, let alone convincing their crews to do so. We also anticipate a lack of enthusiasm from conservation authorities, and the ethics involved might be a bit tricky. The 'replicates' were therefore welcome.



The engine compartment of the wreck. A lot of fuel leaked. Large pieces of polyurethane foam can be seen, that has been injected as insulation for the chiller compartments and for flotation between hulls. The foam will break down into microplastics.

A day's work under very pleasant circumstances (basking under a tropical sun in a small boat on a coral reef while the students were working) resulted a nice [article](#) with Veronica van der Schyff as first author. Also look at the [videos](#) linked to the article (see [article](#) supplementary material).



Large fish (Dory Snappers, *Lutjanus fulvivflamma*) near one of the wreck pieces. Dead and blackened coral can be seen, as well as coral rubble due to the constant grinding of the wreck.



Prof Bouwman holding a set of algae collected from a single coral head.

A month after we left, a yacht participating in the Volvo Ocean yacht race smashed into the same reef at almost the same spot where we worked. Watch dramatic footage here: ["Race Yacht Crash Caught on Camera"](#) and ["Team Vestas Wind on the reef at Cargos Carajos Shoals"](#).

We need to go back to see what happened since. Sponsorships welcome.

Expedition members were: Marinus du Preez, Karin Blom, Veronica van der Schyff, Julian Merven, Jovani Raffin, and Henk Bouwman, together with the crew of Patrol One. We had support from various Mauritian institutions, and Robert Choong Kwet Yve from the University of Mauritius.

Photo credits:

Henk Bouwman, Veronica van der Schyff, Karen Minnaar

The battle of chemical pollution associated with feeding the world

Suranie Horn & Rialet Pieters



Herbicides with different mechanisms of action are used to control weeds.

In 2012, French authors published on the tumour forming abilities of Roundup® (herbicide) and genetically modified (GM) maize in rats - which was retracted and republished (Séralini *et al.*, 2014). This incident is referred to as the Séralini-affair and the controversy surrounding the retraction red-flagged Roundup® for having harmful effects on animals and potentially humans too, despite the manufacturers claim. It is supposedly safe to use because it only targets plants (and bacteria). Roundup® is the most applied herbicide and used to reduce crop losses, feeding the growing global population. Research had been conducted worldwide to unravel whether this miracle chemical—both the formulation and its active ingredient, glyphosate—pose health risks. Other measures adopted to improve crop production include: GM crops (Bt maize) to kill insect pests by releasing Cry proteins; creating crops resistant to glyphosate's effects (Roundup® Ready crops), leading to even more glyphosate-based herbicides (GBHs) being sprayed; a variety of pesticides such as seed coating neonicotinoids and herbicides with different mechanisms of action. These compounds end up in the environment and occur in mixtures together with a multitude of other synthetic chemicals (Chang *et al.*, 2011). Complex mixtures are difficult to assess, as the

constituents may react differently in one another's presence, making assessing their risks a challenging one.

Due to the lack of information about these compounds in the South African environment, a field trial was run, in which different maize cultivars were sprayed with different combinations of the two herbicides to create a mixture. At the end of the field trial, soil was extracted with rainwater to target specifically the water-soluble (bio-available) fraction. The unknown effects of these agricultural mixtures were determined by using effects based *in vitro* reporter-gene assays. The results showed that the environmental extracts that received both a pre- and post-emergent Roundup® application activated both



Beginning of the field trial with coloured markers to indicate the different maize varieties planted and herbicide combinations sprayed.

the androgen (AR) and glucocorticoid receptors (GR) in the cells of the bio-assay. These responses exceeded the international drinking water trigger values specifically derived for such bio-assays for both the AR and the GR. Untimely and/or inappropriate binding to a hormonal receptor may interfere with their regulatory role, especially when it happens during a sensitive developmental foetal stage (Gauger *et al.*, 2004).

This study also revealed that at the end of the maize growing season, the Cry1Ab from GM maize, glyphosate, and 2,4-D were still detectable in the soil.

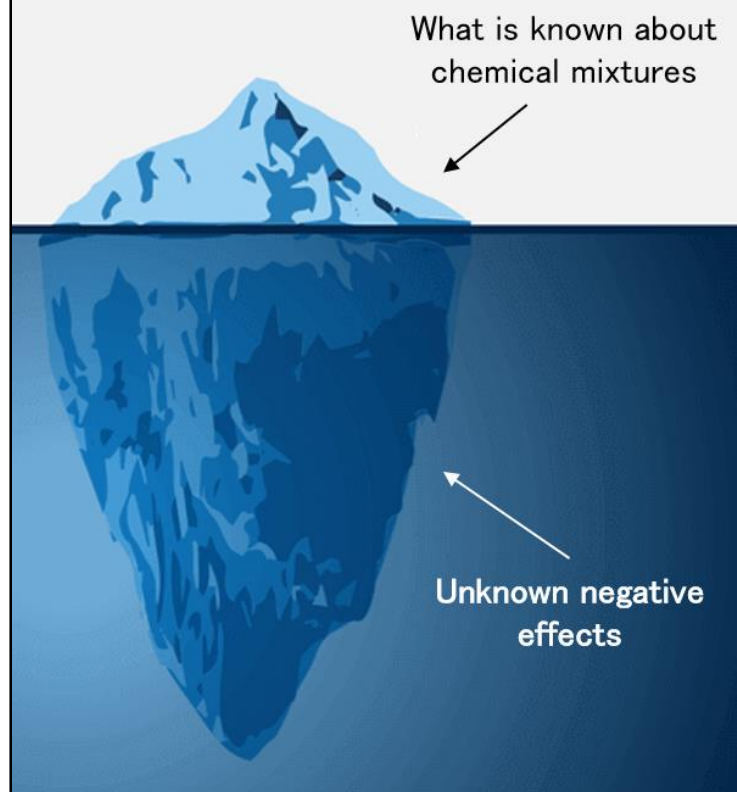
These chemicals are highly water-soluble and with run-off from irrigation or rainfall, move to water sources. Humans, dependent on river or other-than-piped water sources, might be exposed to these compounds through consumption and washing.



Dr Suranie Horn sampling river water for herbicides analysis.

There are more to unravel regarding exactly which chemicals in the environmental mixtures were responsible for the binding to the hormonal receptors, but these results act as a serious warning, prompting further investigation. Agricultural chemicals are present in the environment for prolonged periods and some exceed the drinking water guidelines. We, as toxicologists, are tasked to assess the risks associated with exposure to synthetic chemicals and help decide if the use of these outweigh their benefits. It is impossible to eliminate pesticides from agricultural activities in the short term, but they should be used with care and caution. We are currently conducting a study, funded by the Water Research Commission, in which we are the first research team to determine the concentrations of glyphosate and its main metabolite, AMPA, in South African water resources. Part of the outcomes will be to establish the analytical capacity at the NWU (USEM) to test for these compounds—enabling future monitoring studies.

THE ICEBERG EFFECT



Environmental chemical mixtures may have far greater effects than anticipated.

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Photo credits:
Suranie Horn, Vickey-Luanne Harris

Two is company - the discovery of a new symbiotic relationship between a fungus and an alga

Stefan Siebert,
Nishanta Rajakaruna & Alan Fryday

Together with four co-workers from the USA, we have recently discovered a new genus of lichen that has been published in the [South African Journal of Botany](#). What makes this even more noteworthy, is that the last time a new lichen genus was described from South Africa was nearly three decades ago! Below is a rundown of the background and significance of the find.

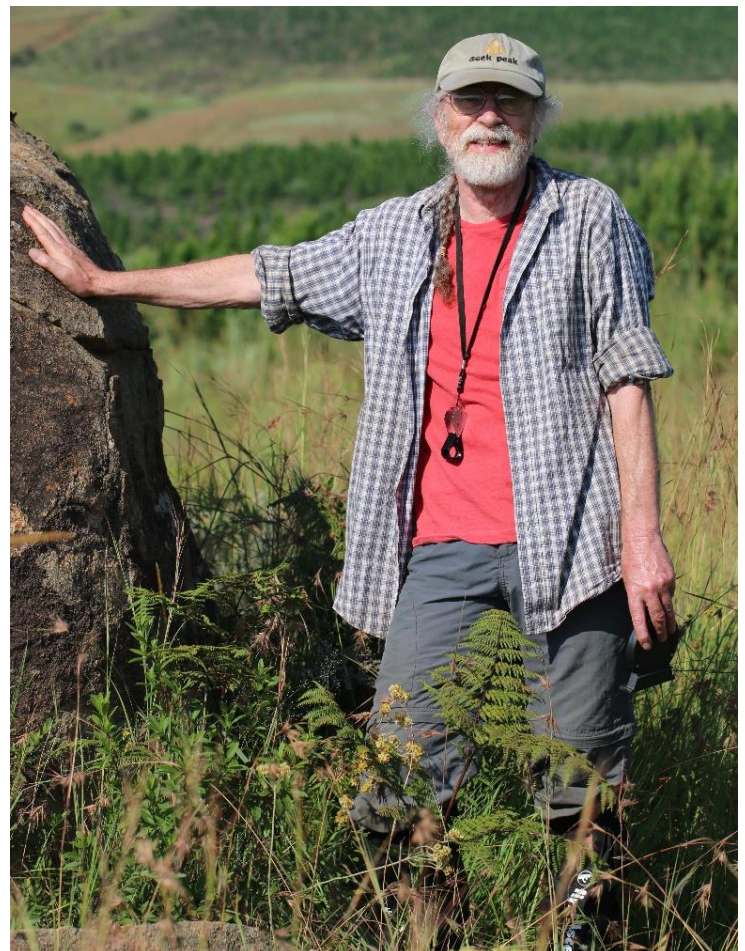
In their simplest form, lichens represent a symbiotic relationship between a fungus and an alga but recent research has shown that several other micro-organisms are also present and they are better considered as microbiomes. South Africa's lichens are not well studied, but two new species have recently been added to the country's [list of 1766 species](#) – a number which is widely regarded by international lichenologists to be a far cry from South Africa's true diversity of probably 3000 species. This estimate is based on the size of the country and the very diverse plant life. Unfortunately, this remains a situation that will not be addressed readily, as South Africa has no resident lichen taxonomist to pursue

this exciting field. Discoveries of new lichen species are therefore largely dependent on visits by international experts.

The two new species were discovered during a National Geographic Society Expedition to study the lichens of serpentinites in Mpumalanga. Serpentinites are greenish, metamorphic rocks found along the renowned Barberton Greenstone Belt (Makhonjwa Mountains), which is home to some of the [oldest exposed rocks on earth](#). The serpentinites are interesting in that they hold



A fruticose lichen on sandstone rocks on the Graskop plateau, Mpumalanga.



International lichen expert from Michigan State University, Dr Alan Fryday, collecting lichens from serpentinites near Barberton.

extremely high concentrations of heavy metals, such as nickel. This creates a toxic environment for most plant life and species associated with these rocks are highly specialized to survive.

In South Africa a lot of work has been done on the plants of these serpentinite areas in the Barberton region, which has resulted in the discovery of many new flowering plant species. Therefore, the NGS expedition set out specifically to target lichens, a poorly studied group, and to understand their association with these rocks. During this pioneering survey a new species of lichen was discovered and named *Scoliciosporum fabisporum* after its distinct bean-shaped [ascospores](#). This was an interesting find, as this was the first discovery of a new lichen species from serpentinite and could be the first of many unknowns from these harsh environments.

The expedition also stopped off at [Buffelskloof Nature Reserve](#) south of Mashishing in Mpumalanga. Here the biggest discovery of the entire expedition was made. Not only was a new species of lichenized fungi discovered at the base of the Calodendron Falls, but it also proved to be a new genus! This species is so distinct in its genetic make-up that it groups separately from other known lichen genera. So *Burrowsia cataractae* is really an exceptional find for South Africa. The genus was named in honour of John and Sandie Burrows, two very prominent and passionate stalwarts for plant conservation in South Africa. The species name refers to its habitat at the base of a waterfall where it was discovered.

During our survey we collected many other lichens that we could not name and further new species, or even genera, are expected.



A foliose lichen on a forest tree in the Blyde River Canyon, Mpumalanga.



Burrowsia cataractae, the new endemic genus from the Calodendron Falls in Buffelskloof Nature Reserve. Its morphology is crustose.

Photo credits: Stefan Siebert, Alan Fryday

Characterising air pollution in the North-West province mining regions

Henno Havenga, Roelof Burger & Stuart Piketh

Air pollution is often thought of as a pressing industrial problem by major players such as oil refineries and power stations. However, air pollution takes on various other forms - many of which have not yet been fully quantified. The sub-programme Climate Change, Air Quality and Impacts aims to do applied research on problems that impact on society. A number of projects measure air pollution in low-income settlements where pollution arises from multiple sources, including household energy use, traffic, waste burning and dust from non-vegetated surfaces. Addressing the problem of air pollution, along with institutions such as the NOVA

institute, is multifaceted. The Climatology Research Group (CRG) investigates the problem holistically - from the role fire plays in households, the different fuel used for combustion across various settlements in South-Africa, to the development of cost effective stoves, and well insulated houses.

Recent source apportionment studies by the CRG have allowed us to gain insights into the specific contribution of various sources to the ambient air pollution profile. In the past, sources of pollution were not clear cut, but now we are able to distinguish characteristic pollutants, which in turn help to establish targeted interventions.

The most recent project funded by Anglo American allows the NWU to monitor air quality across the mining hubs of the North-West province; including the areas around Rustenburg and Northam where platinum mines are a prominent feature. Two long-term climate/pollution monitoring stations in the respective regions along with



Figure 1: Measuring air pollution in Mfidikwe, North West during the Highveld Winter using a modular network of distributed dust monitors.

a distributed network of eight modular dust monitors (as pictured in Figure 1) were installed in different environments, from densely populated settlements to more remote villages in the area. An apportionment project is also conducted at each of the sites allowing us to better understand source contributions to the total pollution profile.

Unsurprisingly, preliminary results reveal that even rural sites often exceed the South-African Air Quality Standards (SAAQS) daily limit of PM_{2.5}, as seen in Figure 2. Since there might be various sources of pollutants and the potential impact of local and synoptic weather on dispersion is still unknown, there remains uncertainty in the early stages of this project. Diurnal and seasonal variation are also examined in order to understand the unique relationship between weather, pollution and society.

By using a suite of instruments, this study is laying the groundwork for targeted intervention in order to address the problem of air pollution that disproportionately affects residents of low income settlements. This study makes several contributions to the current body of knowledge by characterising sources of pollutants specific to the region, and quantifying the daily exceedance of SAAQS limits. This will prove useful in expanding our understanding of how the communities and pollution intersect.

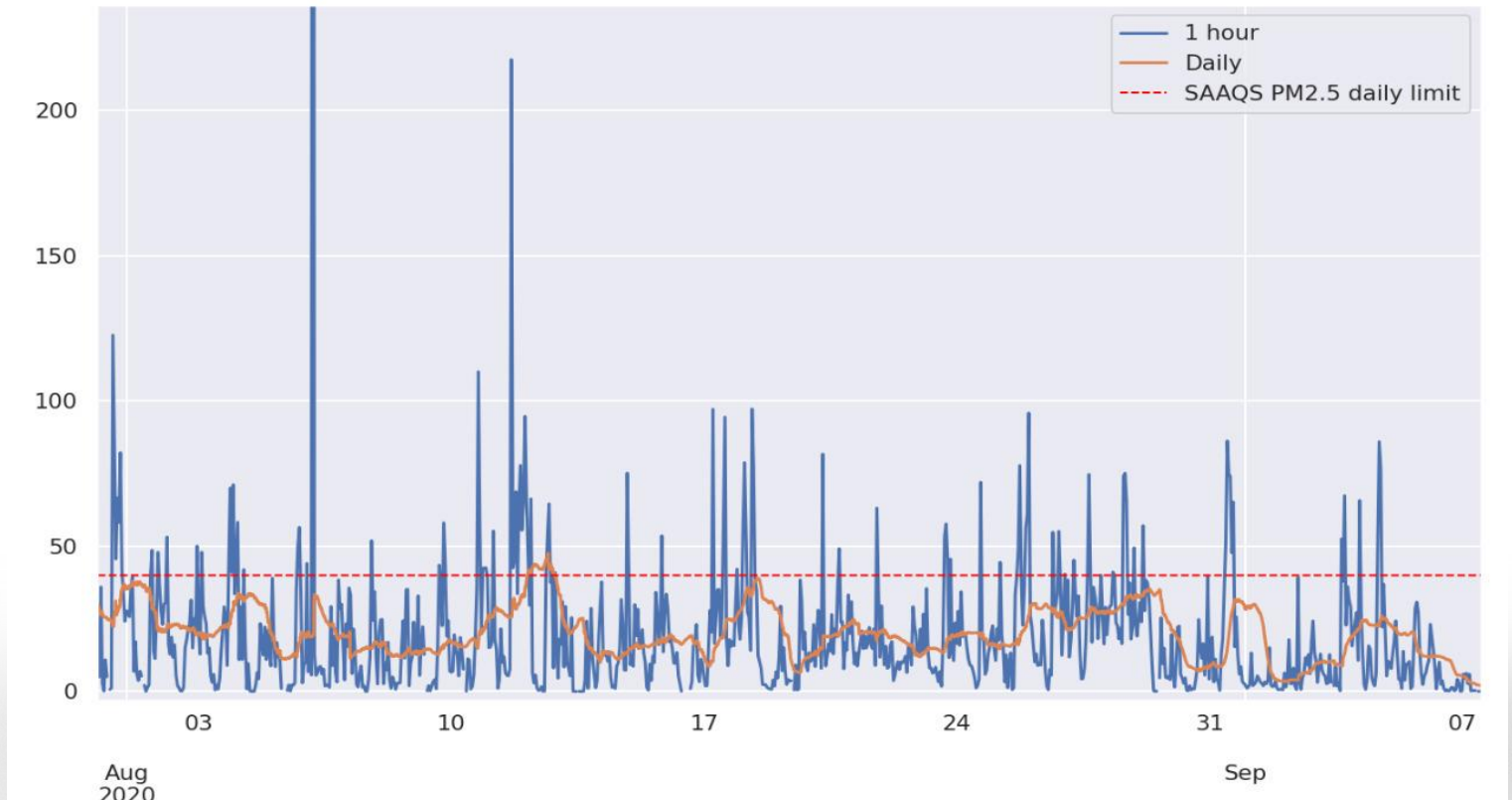


Figure 2: Early results from the current field campaign indicate that even rural sites in the North-West province exceed the SAAQS PM2.5 daily limit.

Photo credits:
Gerhardt Botha

It's simple stupid: A systems perspective on government's approach to Covid-19 lockdown

Christo Coetzee



Since late December 2019 the world has been in the grip of the Covid-19 pandemic. Since this time there has been exponential increase in infections globally and the virus has overwhelmed many healthcare systems across the globe, causing shortages in ICU facilities, personal protective equipment (PPE), sanitation equipment, and ventilators (Peng *et al.*, 2020). These medical shortages combined with symptoms of the virus impacted many developed and developing countries with substantial loss of life reported. The significant increases in infection and mortality rates prompted governments to take preventative actions to ensure the safety of their citizens. The government of South Africa was one such state and

the move (City Press, 2020). However, with the passing of time, the formulation of more and more regulations, and increasing litigation against some of the regulations the support for lockdown waned significantly. The drop in popular support was so dramatic that by May, when City Press repeated their polling support for lockdown declined to only 38%. Observing, the trend in the decline in popular support for lockdown and increased litigation, researchers at the *African Centre for Disasters Studies* started to conduct research into alternative approaches government could have followed in its implementation of nationwide lockdown. Following on some of the

Centres previous work, the problem of lockdown was examined through the lens of adaptive systems theory. Despite its name, complex adaptive system theory does not argue that complex systems and the problems that emerge within, such as a global pandemic (COVID-19), necessarily require equally complex solutions. To the contrary, it is argued that complex systems such as the environment, economy and govern-

ment often function more effectively if there is only a number of simple rules in place that allows for orderly and self-organising behaviour to emerge (Rowe and Hogarth, 2005).

Thus, the research conducted argues that the initial simple rules of mask wearing, social distancing and a ban on mass gatherings (more than 100 people), could have allowed for optimal self-organising behaviours to emerge that could have caused less damage to the

| | | |
|---|-----------|--------|
|  South Africa | | |
| Total cases | Recovered | Deaths |
| 662K | 591K | 15 992 |
| +725 | | +39 |
|  Worldwide | | |
| Total cases | Recovered | Deaths |
| 31,4M | 21,5M | 966K |

Covid-19 statistics: Global and South Africa (22 September 2020) (WHO, 2020).

on the 15th of March 2020, President Cyril Ramaphosa declared a national state of disaster in terms of the National Disaster Management Act (57 of 2002) as a response to the impending increase in Covid-19 cases in the country. Since March, South Africa has been under lockdown, for a total of 166 days (at time of writing), one of the longest enforced lockdowns in the world. Initially, government's response to the disease was praised by South African citizens, with 77% of South Africans participating in online polling in March strongly supporting

economy and social fabric of the country, whilst also limiting infections. Arguably, the South African Government would have been better served in taking a more hands-off approach in managing aspects of society than the micro-managing of people's movement and behaviours that has contributed to a decline in support and some resistance to governments lockdown.



The effect of not letting a system self-organize: Exercise at Bloubergstrand, Cape Town, when exercise was once again allowed during lockdown level 4.

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Photo credits: Jeremy Nell



Restoring land degradation caused by bush encroachment benefit rural communities

Klaus Kellner, Reletile Mangani & Tshegofatso Sebitloane

Bush encroachment and/or thickening of woody species have resulted in the degradation of many semi-arid savannas all over the world. South Africa is not immune to this problem and for that reason, several bush clearing and restoration projects have been initiated in different parts of the country (Lesoli *et al.*, 2013). As much as every attempt is being made to arrive at cost-effective restoration methods to resolve the “bush encroachment” problem in rural areas in particular, more attention is seemingly paid to the biophysical benefits derived from those activities than the socio-economic advancement of the community.

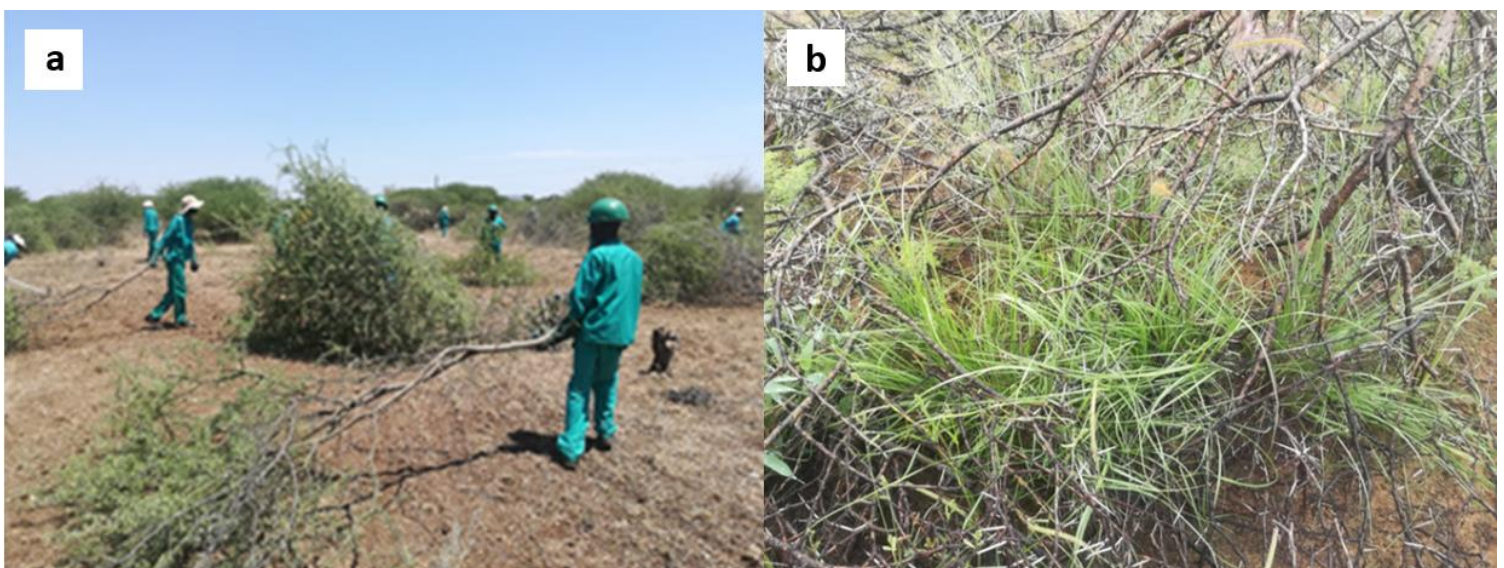
In an attempt to breach this gap, scientists at the North-West University (NWU) are collaborating with the Department of Environment, Forestry and Fisheries (DEFF) to develop a decision support system (DSS), commonly referred to as “Bush Expert”, to help restore areas affected by bush encroachment (densification of woody species) following on manual clearing and chemical treatment.

Manual clearing and chemical treatment is the method currently prescribed by the DEFF’s Working for Water (WfW) initiative since it is a cost-effective restoration method that can be handled quite effectively by members of those rural communities affected by bush encroachment.

As part of its contribution towards developing sustainable restoration methods, NWU scientists propose the addition of “brush packing” to the manual clearing and chemical regime. Brush packing involves using cleared material (e.g. branches and other organic material) to cover soil patches that have been left bare and denuded after clearing. (See Figure 1a.).

Studies conducted in both the North West and Limpopo Provinces have revealed that this addition did not only result in an increase in biomass but also an improvement in the condition of certain soils (See Figure 1b).

Furthermore, it was found that this addition contributed significantly to the socio-economic well-being of the



Brush-packing restoration with the aid of local labour (a) and the resultant increase in grass biomass (b).

people in surrounding areas and improved the quality of the services they derived from ecosystems.

Given the vast untapped local knowledge source regarding livestock management, bush control, land preservation and natural resource conservation that was uncovered in the process, involving locals to create awareness of how controlling bush encroachment and curbing land degradation can help to improve communities' socio-economical and socio-ecological well-being should not be discounted.

For this reason, this study aimed to demonstrate that evaluating participants' responses and perceptions can contribute significantly towards gaining an understanding of how bush encroachment and the control thereof impact rural communities.

Even though some challenges were encountered in the process, the positive socio-economic benefits derived from the implementation of these projects (e.g. skills development, job creation, improved well-being, general awareness and cohesion between all affected parties) far outweighed the negatives.

In conclusion, all who participated in this study are in agreement that collaboration between scientists and community members in rural areas are the key to the success of any programme aimed at addressing and improving the delivery of ecosystem services (Archer and Predick, 2014).

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Photo credits:
DEA and NWU Policy Brief

The future of conservation - New Masters Programme in Conservation Leadership

Francois Retief,
Reece Alberts, Dirk Cilliers & Claudine Roos

The North West University has a long and proud history of delivering taught masters programmes in environmental management dating back to the early 1990s. The programmes have been ever evolving and expanding, and in 2016 and 2017 two areas of specialisation in 'Ecological Water Requirements' and 'Waste Management' were added. An analysis in Scopus during 2019 revealed that the environmental assessment research within the Sub-programme: Environmental Management now ranks under the top 10 universities internationally and five of the top 10 researchers in the field being full time NWU staff or extraordinary appointments. With the incorporation of the Centre for Environmental Management within the Research Unit for Environmental Science and Management in 2020 the opportunity exists to further expand the current taught masters' specialisations into critical areas of international and national relevance. In this regard, we are excited to announce the inclusion in the 2021 NWU yearbook a new area of specialisation in 'Conservation Leadership'.

The content of the programme was developed over the past two years in response to the need for improved leadership skills in conservation management. It is recognised that with the increasing pressure on conservation in general and conservation areas in particular, urgent attention must be given to training and research in conservation leadership. This will be the first masters' programme of its kind in South Africa and follows in the footsteps of the University of Cambridge and Colorado State University who pioneered similar programmes internationally a decade ago. The content of the programme is uniquely conceptualised around six main themes, namely: 1) 'Conservation Psychology'; 2) 'Conservation Ethics'; 3) 'Conservation Framings'; 4) 'Conservation Leadership'; 5) 'Conservation Governance' and 6) 'Futures Thinking'.



The incorporation of psychology, ethics and futures thinking distinguishes the NWU programme internationally. We consider the ability to understand individual ethical framings (Themes 1, 2 and 3) and the ability to apply different futures thinking skills and methods (Theme 6) as critical for conservation leaders. The programme content has been workshopped with stakeholders (such as SANParks, private conservation sector, academics, etc.) and presented at various conservation conferences over the past two years. A visit to the University of Cambridge has also been arranged for April 2020, but has had to be postponed until the ban on international travel has been lifted. Our expectation is that this programme has the potential to further strengthen the existing masters' programmes and address this critical yet severely lacking area of expertise.

Coinciding with the launch of the "Conservation Leadership" masters programme, was the founding of the Professional and Academic Network for Global Leadership in Nature, or "PANGLIN". This network functions within the sub-programme and brings together a field of multidisciplinary experts from both the private, public and academic sectors, focusing on enhancing networks in the leadership dimension in so far as it relates to conservation and environmental matters. The network aims to deliver high quality research outputs together with cutting edge applied research solutions.

The charismatic preying mantid: More to mantids than meets the eye

Bianca Greyvenstein & Johnnie van den Berg

Various superstitions are associated with preying mantids, originating in Egypt, Japan and southern Africa. For example, in ancient Egypt, mantids were associated with the opening of the Mouth ceremony, a ritual that was believed to allow the dead to eat and drink in the afterlife. In the “Book of the dead” (Egyptian funeral text used from 1550 BC to 50 BC), which was used to help the dead through “Duat” or the underworld, mantids were tasked with fetching people and leading them to where they had to go in the afterlife. During an archaeological excavation in 2007 at Deir el-Medina in Egypt, the body of a mantis was discovered wrapped in linen and buried in a clay coffin, essentially making it a mantis mummy. A wall drawing of a mantid was also discovered in the tomb of an Egyptian pharaoh, Seti I, who reigned during the 19th Dynasty of Egypt (1279–1290 BC). Most of the myths surrounding these insects are based on their characteristic pose which seems has been viewed as a position of prayer. These myths have led to the use of these insects in popular culture from coin designs, karate styles, movies and even as logos for computer antivirus programs. Recently, these myths and superstitions have also been investigated to possibly aid in insect conservation efforts. However, there are more to these insects than mere myths...

Globally there are about 2 400 species of which South Africa plays host to about 190 different species. Some of the species found in South Africa are native to only this region of the world, for example the Cryptic mantis (*Sibylla pretiosa*). Many mantids species have various expansions/formations on their bodies such as processes on their heads to aid in crypsis that is used to blend into their surroundings. An example of this is found in the Ghost mantis (*Phyllocrania paradoxa*).

Preying mantids are predators and have different hunting strategies, some are ‘sit-and-wait’ predators, while other mantis species are active or ambush predators. Most mantids are generalist feeders, thus they would feed on any other insect or even humming birds and lizards. In some species of mantids, newly hatched nymphs are also cannibalistic. Mantids can eat between 15 and 20 crickets a week (approximately 800 other insects per year), while some species have been recorded to eat up to 15 crickets a day!

Adult mantids, depending on species, range between 5 cm to 15 cm in length. Newly hatched mantids look exactly like adults mantids and moult every 2-3 weeks until they become adults. Depending on the species, copulation can take between 4-6 hours and individuals

can live up to 11 months. In a single ootheca (egg case), there can be approximately 30 to 150 eggs that are viable to hatch. The number of eggs per egg case, the shape and colour of the egg case is species-dependent.

Mantids are found in a variety of habitats including crop fields where they act as



Cryptic mantis (LEFT) and Ghost mantis (RIGHT).

biological pest control agents. Recent research conducted by postgraduate students in the Integrated Pest Management (IPM) sub-programme revealed that mantids occur throughout the whole agro-ecosystem i.e. maize fields, field margin (directly adjacent to maize field) and "natural grasslands" around maize fields. Mantids do however prefer field margins, where plant density is also higher. Many aspects of their ecology within natural and croplands are still unknown and are the focus of future investigations.

Photo credits:

Bianca Greyvenstein, Paul Janse van Rensburg,

Further reading

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Some examples of South African mantid species and their egg cases: False flower mantis (*Harpagomantis tricolor*) (TOP), Grassland mantis species (*Galepsus lenticularis*) (MIDDLE) and the African Twig mantis (*Popa spurca*) (BOTTOM).

Urban Planning joining forces with GIBS Business School

Jauneé Cilliers

Urban Planning staff has recently joined forces with the GIBS Business School (Gordon Institute of Business Science) in quest of reflecting on Place Leadership! The University of Pretoria's Gordon Institute of Business Science (GIBS) is a leading business school in the heart of Illovo, Johannesburg, close to the Sandton business hub, which is well known for their top level academic programmes as well as a wide range of executive courses. GIBS has again been ranked as the top South African and African Business School for executive education by the UK's Financial Times in their Executive Education 2020 Ranking. This multi-disciplinary collaboration between Urban Planning (NWU) and Business Management (GIBS) constituted a platform to rethink space and place, along with the role and responsibilities of local Place Leaders. Since place constitutes similar problems differently, the role of local Place Leaders is becoming more prominent. The current "decade of action" necessitates that Place

Leaders step up to represent our places and spaces more broadly in a shared development effort. In this sense the concept of Place Leadership will also become more crucial within the academic discourse, and hence why the collaboration between Urban Planning and GIBS holds promising future prospects for both teaching-learning and research endeavours. The first collaborative event entailed guest lectures from Urban Planning Staff as part of the MBA Elective module "Contextual Leadership Intelligence". In this module, Place Leadership was considered in

terms of its cooperative and collaborative nature, along with the challenge to deal with a variety of stakeholders and vested interests in places, a phenomenon that Urban Planners deal with on a daily basis, but that also holds value for Business Managers and Place Leaders. Place leadership has a strong connection to responsible leadership and by extension to stakeholder theory which is all encompassing in addressing business ethics, morals and values when managing stakeholders. Place Leadership is focused on human relationships and the social processes to create liveable and sustainable places. The collaboration between Urban Planning and GIBS staff members is now extended to the global ISOCARP (International Society of City and Regional Planners) Cyber Agora platform that took place on 17 Sep 2020. In this global Cyber Agora session, Place Leadership was further explored, along with the key elements of Place Leadership (communication, trust, perseverance, flexibility, and the ability to connect



Collaborative event between Urban Planning and GIBS colleagues – Reflecting on Place Leadership!

different worlds and logics). GIBS Profs Caren Scheepers and Marianne Matthee were invited as the Keynote speakers to the event, with Cyver Curator, Prof Juanee Cilliers.

For future events by Cyber Agora ISOCARP, you can contact Prof Juanee for more information (juanee.cilliers@nwu.ac.za) or follow the link to the ISOCARP website:

<https://isocarp.org/about-cyber-agora/isocarp-cyber-agora-3-place-leadership/>

The subject group for Sustainable Development, Planning and Implementation look forward to the research projects and future collaboration with GIBS.



#3 ISOCARP Cyber Agora Debate
Place Leadership

13:00 UTC | 17 September, 2020

Keynote speaker:
Caren Scheepers
GIBS Business School

Keynote speaker:
Marianne Matthee
GIBS Business School

PLACE LEADERSHIP
PROF JUANE CILLIERS

PHOTOGRAPHY COMPETITION

We are excited to announce that the Features section of the Summer Edition of ENVIRA will consist of a

Photo Gallery.

We invite all staff members, postdoctoral fellows and postgraduate students to participate in this photography competition.

This is an opportunity to show off those *breath-taking* photos that you have collected over the years.

Entries are accepted in any of the following prize-winning categories:

1. Landscape
2. Macro-organism/species
3. Microscopy
4. Funny features and creatures

Multiple entries are accepted, with a maximum of five per participant.

Photos taken by staff members and postdoctoral fellows will be judged separately from those entered by postgraduate students.

Winners will be announced in the *Summer* edition, 2020. Winners for each category will be invited to write an exclusive piece on the winning photograph for the *Autumn* edition, 2021.

See: [Competition rules and guidelines](#)

Photo submission deadline:
24h00, 10 November 2020

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We would like to thank the following people who have made invaluable contributions towards the *Spring* edition of ENVIRA:

- Prof Sarina Claassens for her willingness to make time in her busy schedule for the School Director's Interview.
- All the authors who willingly shared their stories with readers of the Spring edition.

We appreciate all contributions.

Our *Summer* edition will be packed with your photo contributions and we are excited to share more of these valuable research articles in the upcoming *Autumn* edition, 2021.

Frances and Clarissa

Photo credits:

Clarissa Minnaar, Tarryn L Botha, Elma Blom (Labotec), Geraldine Oosthuizen, Henk Bouwman, Veronica van der Schyff, Karen Minnaar, Suranie Horn, Vickey-Luanne Harris, Bianca Greyvenstein, Paul Janse van Rensburg, Stefan Siebert, Alan Fryday, Jeremy Nell, Gerhardt Botha
Additional photos were obtained 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>