4 October 2019

Natural Science Collections Facility
SOUTH AFRICA

NSCF NEWS

Communication from the Natural Science Collections Facility Hub Team

In this issue:

Q&A with Ms Nompumelelo Prudence Mtshweni

Nompumelelo was awarded the 2019 South African Women in Science Award (SAWiSA) in the Albertina Sisulu Masters student category. The awards ceremony took place in Port Elizabeth on 15 August 2019, hosted by the Department of Science and Innovation (DSI), led by Dr Blade Nzimande. Nompumelelo is a Masters of Biotechnology student at Tshwane University of Technology and is conducting her research at the Agricultural Research Council (ARC), where she was recently appointed as a Research Technician in the Biological Nitrogen Fixation Unit.

Nompumelelo with fellow awardees

Q: You were recently awarded the SAWiSA Award hosted by the DSI. What does the award mean to you?
A: It is really an honor to receive the award, and that my academic performance and research ability is being recognised. More opportunities have opened up as a result, and I believe even more are on their way. I am humbled.

Q: Is this your first award? If not, what other awards have you earned?
A: No, this is my third award. I received the BioFundi Awards from the Gauteng Department of Agriculture and Rural Development (GDARD) for my National Diploma in 2015 and for B-Tech in 2017 respectively.

Q: What is your research focus and why?
A: I am focusing on post-harvest diseases, looking specifically at the disease Anthracnose caused by fungi *Colletotrichum* species on papaya fruits and other subtropical fruits in South Africa. *Colletotrichum* is the fungi that causes pre and post-harvest diseases of various crops worldwide. This fungus causes major crop losses of the fruits in the markets which affects the total sell out of the fruits because the fruits get rotten before they get sold, and the farmers and retailers especially the small scale farmers are losing from this disease.

Q: How does your research impact the community/country/society?
A: We want to identify the species and test them to see if they are able to cross inoculate other subtropical fruits, so that farmers can be advised on which strains are causing their losses. This will enable us to advise on preventative measures to prevent their crop losses. That will help the farmers to increase the shelf life of their crops which will ultimately increase their income generated from the crops. This research will help to grow our economy and in turn alleviate poverty.

Q: What's it like to be a young, black, female researcher?
A: I think it's the best. We have various opportunities and get recognition from government for our hard work.

Q: What did you study, where and why?
A: I studied for a National Diploma in Biotechnology at Tshwane University of Technology, then furthered my studies by doing B-Tech also in Biotechnology, and currently, I am doing a Master's degree also in Biotechnology at the same institution.

Q: Does your job connect with your field of study?
A: Yes, recently I have been appointed as a Research Technician in the Biological Nitrogen Fixation Unit. My Master's studies were about plant pathogens specifically fungi but now I'm working with beneficial bacteria that help plants to grow well. So, my previous experience and what I am currently doing will assist in what I will be doing for my PhD studies.

Q: Describe your journey up to this point? Did you have everything planned out?
A: I always wanted to be a researcher. When I was in high school my Life Sciences teacher was so passionate about Biotechnology that he was able to link every chapter we did with Biotechnology, and I fell in love with it. When I completed the theory part of my Diploma, I received an opportunity to do my experiential learning at the Agricultural Research Council and fell in love with the agricultural aspect of Biotechnology.

Q: What has surprised you most about working in your field?
A: That microorganisms like fungi and bacteria are not as bad as they are portrayed in the media, some of them look very nice and have amazing characteristics.

Q: What do you find most challenging about your work?
A: Working on things that you can't see with your naked eyes but you can see what they do or produce.

Q: If you could change one thing about the museum/natural history community, what would it be?
A: I would make them more accessible and market them so that more people can know about them.

Q: Tell me about some of the people you've met in your career and how they impacted on your work?
A:

- Dr Mathoto Lydia Thaoge, the Head of Department of Biotechnology and Food Technology. She is my co-supervisor. She has impacted on my career greatly. She shares her knowledge and has made my masters years interesting. She gives me advice that not only can be used in my studies, but that I use in life. She also shares opportunities that come around.
- Dr María de Jesús Yáñez Morales, Senior Research Professor of the Postgraduate Course in Phytopathology-Phytosanity from Mexico, she was my ambassador during International congress of plant pathology (ICPP 2018) in Boston, USA. She advised me to optimise my scientific and logistics so I may stay within the global program of the congress (on the APS page), in addition, to facilitate my communication with other scientific researchers, and coordination of program activities. We meet every day to discuss the updates of Phytopathology Science.

Q: What would you say are some of your strongest beliefs about your work?
A: Nothing is impossible, take a challenge as a stepping stone for a greater and better you.

Q: What's your personal philosophy on what should be done about natural science collections in South Africa?
A: Natural science collections are an important asset that our country has, it forms a baseline for future research and will help in providing solution for the future generation.

Q: What would you tell someone (a young person) who is thinking about working with natural science collections?
A: Working with the collections is almost becoming a scare skill. There is a lot to explore, even the use of advanced technology in the collections, so there are careers in collections.

Q: What do you think will change about natural science collections over the next five years?
A: The application of the fourth Industrial revolution for better management and the use of the collections.

Q: If you weren't a researcher, what would you be doing instead, or what would your life be like?
A: I would be a chef; I would be a great chef with a big restaurant that teaches people how to cook.

Q: What do you do when you aren't working?
A: I cook, have some catch-up moments with my friends either indoors or outdoors. I also work with young people in my community (by organising youth camps) to motivate and help them restore their hope and identify their dreams.

Q: When have you been most satisfied in your career?
A: I have been satisfied from the very moment step my foot at the university I know that it was really an era that would change my life and family for the better. My mom has taught me not to despise the small beginnings, for the Lord rejoices to see the work begin. I have learned to appreciate and celebrate every step I take in life even the challenges because the Lord causes all things to work together for my good.

Q: Tell me about where you grew up and what your family life was like.
A: I grew up in Limpopo in an area called Sehlakwane. When I was 9 years old we moved to Pretoria to live with our parents in Mamelodi. Within two years of enjoying to stay fulltime with our parents, my father passed away. My mother, Letty Bezile Mtsweni was blessed to have 3 daughters and she was working as a domestic worker. I grew up in an informal settlement, in a one-roomed shack. I grew up in a family that was full of love, we learned to appreciate each other and to share. With the little salary my mother used to get, she was able to support us. We learned not to be dependent on relatives and neighbours, but to do things on our own, even things like fixing a leaking roof, fixing plugs that were not working, fixing our fence, the list is endless.

Q: How did your parents or community influence you?
A: I have been blessed with a mother who has been the superwoman. She was able to raise three kids alone after my father passed away. She was able to support us with little salary and she was able to invest in our education; we never lacked school material and anything related to our education. When I went to varsity, she would show interest in what I do, even though she didn't understand the content, she would ask about my studies. She would even go as far as wanting to know when I am writing exams and when my assignments were due. She taught me to always aim much higher than what I think I can achieve and work hard to reach my target. She taught me to identify my potential and to be the best in what I do, to always make a mark/impact.

Q: Where did you go to school?
A: I started my primary education at Embokodweni Primary School in Sehlakwane (Limpopo), then moved to Mamelodi and attended at Emthunzini Primary School in Mamelodi West. Thereafter, I went to Ribane Laka High school.

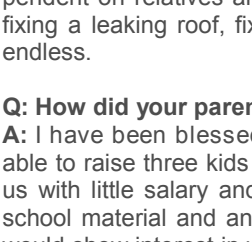
Q: Who have been your strongest influences in life?
A:

- Dr Elna van der Linde, my supervisor. I bless the Lord for the day I met her. She has influenced my life in a great way; she believes in me, and the potential I have as an individual. She is the one who made me to love research and my work. She has been more than a supervisor, she is my second mom. She has taught me a quality which is very important in life: to never give up, and to keep knocking until the door is open.
- Mr Joshua Mashiane who is my mentor and spiritual father. He has been the one to give me advice and guidance in life.

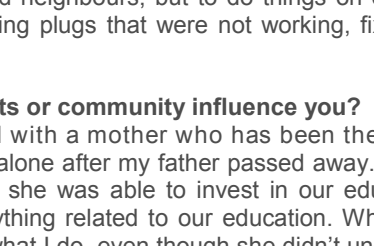
Q: What led you to your career?
A: I love food. I wanted to continue to have good food. I wanted to make sure I do research on pathogens that causes plant diseases which decreases the total sell out of fruits and vegetables. Especially those small informal market that usually I pass along the road when I visit my other family in Limpopo. I always wanted to do something that will really help our country to alleviate poverty.

Q: What are you most proud of accomplishing?
A: I am proud to see people I associate with/help/give advice, actually being able to identify their purpose or get where they want to be and start doing something positive with their lives. I see that as the greatest complement. In simple terms when I serve someone, it really fulfills my heart**.**

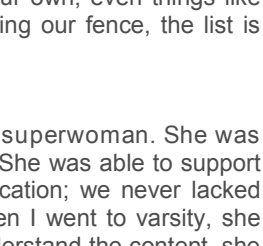
Q: What would you do differently if you had a chance?
A: I am content with what I have done for myself, my family, my friends and my community. I believe that everything I managed to do, I did it because God gave me the ability. I wouldn't have done it on my own. I am humbled.



Nompumelelo with Minister Blade Nzumande and Dr Mathoto Thaoge



Nompumelelo with Deputy Minister Buti Manamela and Dr Mathoto Thaoge



Nompumelelo with colleagues

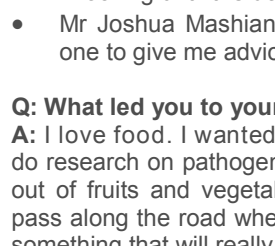
The NSCF community takes great pride in congratulating Ms Nompumelelo Prudence Mtshweni on this prestigious award. We are wishing you more, and hope you will continue to inspire the younger generation into research that relates to natural science collections.

Well done Nompumelelo!

Working Group Meeting: Staffing and Capacity Development

18-19 September 2019, Pretoria

The second Staffing and Capacity Development Working Group meeting was held in Pretoria on 18 and 19 September. The working group finalised the NSCF Job Description guidelines for institutions (which will be circulated in due course); and will be developing a national guideline for collection staff performance standards and assessment processes going forward.



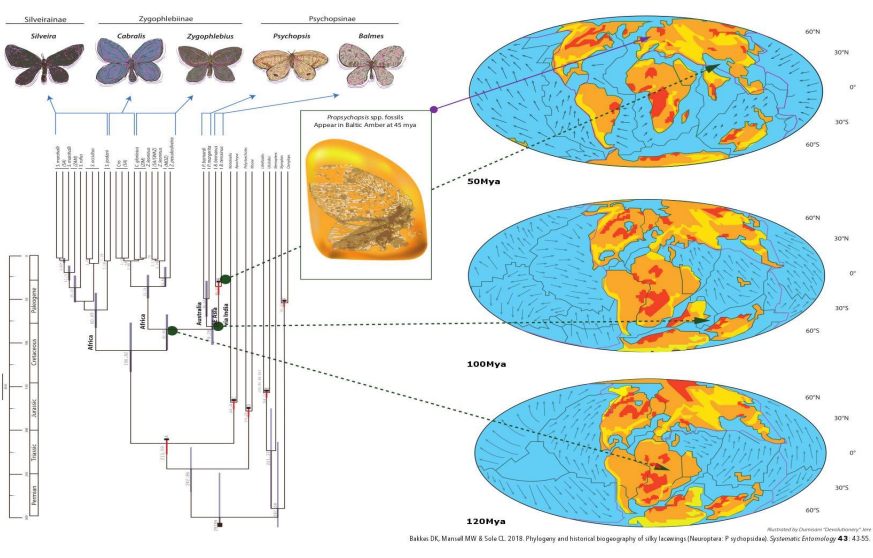
Members of the working group in attentive-listening mode

Other issues on the agenda included the development of career ladder/promotion guidelines for researchers and technicians, capacity constraints and mentoring for young staff. The working group will also be focusing on the development of an ethics training course, GRAP 103 workshop and collections management short courses. Specify training for levels 1 and 2 is underway with 74 people trained so far, and level 3 training is planned to commence in 2020.

The full minutes of the meeting are available for download on the NSCF Google Drive at: https://drive.google.com/drive/u/2/folders/1aArx6-iUXyW6C_16MVO8jCNSqEVZ-Y0N

The story of the Silky Lace Wings (winged insects)

A study by Deon Bakkes

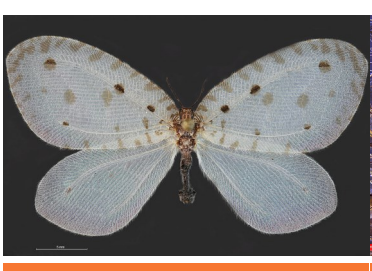


The phylogeny of Silky Lace Wings

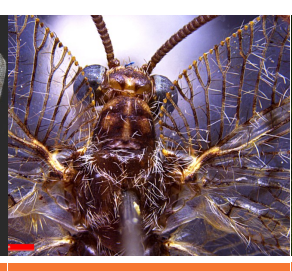
A study by Deon Bakkes on Silky Lace Wings (Order Neuroptera: Family Psychopsidae) was aimed to estimate evolutionary relationships between species and genera sharing common ancestors among surviving remnants of the ancient group of insects known as Silky Lace Wings with reference to their historical biogeography. There are 26 surviving species in five genera worldwide with ten occurring in the Afrotropical region. Surviving species are distributed in three parts: Afrotropical, Australian and Southeast Asian regions. Afrotropical fauna have three genera: Cabralis Navás, Silveira Navás and Zygophlebius Navás. The Australian fauna has Psychopsis Newman and Southeast Asia fauna has Balmes Navás. Two Australian species are known to live under the bark of myrtaceous trees, preying on Microlepidoptera.

This work showed that these insects originated in the Australian part of Gondwanaland, and were subsequently distributed across the globe by the actions of continental drift. Three main events drove their evolution and dispersal across the globe. The first was Africa splitting off from Australia-India, leaving those populations to evolve separately (120 Million years ago). The second was when Australia split off from India (100Mya). The third was when India moved across the equator and carried the Balmes genus to Asia (50Mya). This is corroborated by a fossil in Prinabonian Baltic amber that closely resembles Balmes which appears in Europe around the time India collided with Asia (45Mya).

This study was based on freshly collected DNA samples as well as historical museum samples for the morphological component of the work. As such, this study indicates the value of museum specimens for science, and this forms a part of the mission of the NSCF initiative to secure and mobilize specimens and data in South Africa's natural history collections.



Cabralis gloriosus



Silveira rufus

Zygophlebius leoninus

Research Data Management and Sharing Course

Gain data management planning, research data archiving, metadata and data management skills

Working in the collections industry, you constantly have to work with data, wouldn't you agree? Then, this course is for you. This course was developed by the Curating Research Assets and Data Using Lifecycle Education (CRADLE) Project in collaboration with EDINA at the University of Edinburgh, United Kingdom.

This course promises: you will understand the diversity of data and their management needs across the research data lifecycle, be able to identify the components of good data management plans, and be familiar with best practices for working with data including the organisation, documentation, and storage and security of data. You will also understand the impetus and importance of archiving and sharing data as well as how to assess the trustworthiness of repositories.

Find more here.

KZN Museum Department of Natural Sciences presented at the 10th International Symposium on Syrphidae

By Dr John Midgley

Dr Midgley presenting the checklist of South African hoverflies

Dr John Midgley recently represented the KZN Museum Department of Natural Sciences at the 10th International Symposium on Syrphidae (ISS10) in Lesvos, Greece. A symposium on a single family of insect might seem quite specialised, but hoverflies (Syrphidae to entomologists) are incredibly interesting. Members of this family fill many ecological roles. Most adults are flower visitors, making them important pollinators; some larvae feed on aphids, making them important in pest control; while others are important decomposers, feeding on a variety of decaying material.

Dr Midgley presented a checklist of the South African hoverflies, an important step in understanding and conserving South Africa's natural environment. By looking through natural history collections in South Africa, the research presented added more than 80 species to the South African list, an increase of more than 55%!

ISS10 group photo

Albany museum School Greening Project during Arbor month

By Dr Phumlani Viwe Cimi

Dr Pumlani Viwe Cimi, Herbarium Curator at Albany Museum has taken a decision to plant indigenous trees at schools starting with Makhanda (Grahamstown) East during Arbor month (September). He have chosen **indigenous trees** because they provide multiple benefits, and he shared information about trees before planting them.

These trees contribute greatly to healthy soil and water in urban and rural areas. The benefits include using less fertilizers, less pesticides, using less water, keeping the air cleaner and providing shelter and support pollinators, promoting biodiversity and stewardship of our natural heritage.

The chosen indigenous trees were Erythrina caffra (coast coral tree), Syzygium cordatum (water berry), Ekebergia capensis (cape ash), and Harpephyllum caffrum (wild plum).

Grahamstown SDA Primary School planting Erythrina caffra - umsintsi

Erythrina caffra: The African women of South Africa make the highly decorative seeds of Erythrina caffra into necklaces. Children also love collecting them where they are known as lucky beans. All coral trees produce a poison with a curare-like and paralysing action, which is used medicinally to relax the muscles in treating nervous diseases.

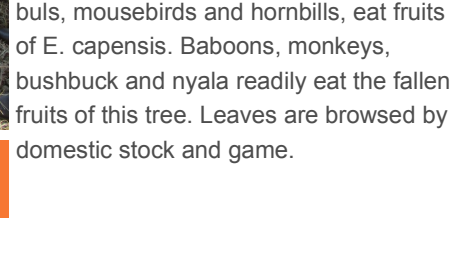
Fikizolo Primary School learners planting Syzygium cordatum

Syzygium cordatum: The foliage of this tree is eaten by Kudu and birds such as the Crowned Hornbill feed off the large hairy caterpillars that sometimes infest the tree. The fleshy fruit is edible and is eaten by people and monkeys. The berries are also used to make an alcoholic drink. The powdered bark is used as a fish poison. The tree is known as a remedy for stomach ache and diarrhoea. It is also used to treat respiratory ailments and tuberculosis.

Ekebergia capensis: The light and soft wood of Ekebergia capensis is easy to work with, and with its straw colour, it makes attractive furniture. The bark is used as an emetic, and for treating dysentery. It is also used for tanning. Decoctions from roots are used to treat headaches, heartburn and for chronic coughs. Leaves are used as a remedy for intestinal worms. Unspecified parts of the tree are used magically to protect the chief from witchcraft. Birds such as Knysna and Purple-crested louries, barbets, bulbuls, mousebirds and hornbills, eat fruits of E. capensis. Baboons, monkeys, bushbuck and nyala readily eat the fallen fruits of this tree. Leaves are browsed by domestic stock and game.

Tantyi Primary School learners planting Ekebergia capensis

Harpephyllum caffrum: The fruit of H. caffrum is commonly used for making jams and jellies. With their sour taste, they are also good to make rosé wine. The bark is a popular traditional medicine. It is used to treat acne and eczema, and is usually applied in the form of facial saunas and skin washes. It is used by people with 'bad blood' that results in pimples on the face. Powdered burnt bark is used to treat sprains and bone fractures. Bark is also used for dyeing, and it gives a mauve or pink colour. In some parts of Eastern Cape, root decoctions are traditionally taken for paralysis thought to have been contracted from walking over an area that has been poisoned or polluted through sorcery. The wood of the H. caffrum is pale reddish and fairly heavy. It polishes well but is not very durable. It has been used as a general purpose timber, for furniture and beams. It is also used for carving curios.



Tantyi Primary School learners planting

Dr Cimi provides detailed information on the indigenous trees he planted with learners, as well as methods of planting trees.

Read the full paper here.

NSCF Quarter 2 Institutional Outputs

Fourteen institutions submitted online reports for the second quarter of 2019/20 (Jul – Sep). An impressive 124 papers were published based on the collections, and 175 news species were described for the first half of the 2019/20 financial year (Apr – Sep). 94,356 new specimens were accessioned and 16,225 orphan collection specimens were incorporated into collections during the same period.

Thank you to everyone for sticking to the deadline and enabling us to report these figures to the Department of Science and Innovation in the bi-annual NSCF Report.

Indicator	Q1	Q2	Year Total
Orphan collections: no. of specimens incorporated	11236	4989	16225
New specimens accessioned	54831	39525	94356
Number of DNA samples added	65	29	94
Number of tissue samples added	128	565	693
Number of DNA samples supplied for research purposes	542	470	1012
Data provided to external users: no. of requests	99	110	209
Data provided to external users: no. of records	33233	773201	806434
Number of specimens imaged	19272	15516	34788
Number of specimens sent out on loan for research	5615	6691	12306
Number of visitors using collection (national)	408	441	849
Number of visitors using collection (international)	53	109	162
Number of new species described	72	103	175
Number of papers published based on collection	70	54	124
Number of specimens identified: external stakeholders	3559	3426	6985
Number of outreach activities held	72	86	158
Number of learners/attendees exposed to the activity	18997	12985	31982

Job adverts

CURATOR: KAROO DESERT NATIONAL BOTANICAL GARDEN, SANBI

Closes: Friday, 18 October 2019
Location: Worcester
Job type: Permanent
Salary package: R707 557.00 to R990 581.00 per annum

For more details: https://www.sanbi.org/job/curator-karoo-desert-national-botanical-garden/

CURATOR: PRETORIA NATIONAL BOTANICAL GARDEN, SANBI

Closes: Wednesday, 9 October 2019
Location: Pretoria
Job type: Permanent
Salary package: R707 557.00 to R990 581.00 per annum

For more details: https://www.sanbi.org/job/curator-pretoria-national-botanical-garden-2/

CURATOR: FREE STATE NATIONAL BOTANICAL GARDEN, SANBI

Closes: Wednesday, 9 October 2019
Location: Bloemfontein
Job type: Permanent
Salary package: R707 557.00 to R990 581.00 per annum

For more details: https://www.sanbi.org/job/curator-free-state-national-botanical-garden/

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Like/follow, share/retweet and comment

"We don't have a choice on whether we do social media, the question is how well we do it."
– Erik Qualman

@NSCFSA—aimed at the public audience

'Natural Science Collections Facility' Facebook group—aimed at communicating to institutions, and not the public.

@NSCF_SA—aimed at the public audience

@nscf_sa—aimed at the public audience

Let's connect!

Follow each link and **like/follow** the NSCF pages on social media, we will like/follow you back.

Send us your news...

to feature in the NSCF newsletter!

- What exciting activities took place at your institution?
- Anything happening with the collections?
- Any new species?
- Any collections-related research?
- Any job opportunities?
- Any new staff members?
- Any moving of collections?
- Any data related work happening?
- Any visiting scientist you are hosting?
- Any staff members traveling/attending a conference/attending a training?
- Did you recently receive items from the NSCF grant?
- Was your institution featured in the media?

… Guess what? That needs to be on this newsletter!

Send your news to:
Fulufhelo Gelebe, f.gelebe@sanbi.org.za

The NSCF is a virtual Facility, comprised of a network of institutions that hold natural science collections that are accessible to external researchers. The NSCF was established as part of the Department of Science and Technology's Research Infrastructure Roadmap and co-ordinated by the South African National Biodiversity Institute (SANBI).

Natural Science Collections Facility (NSCF)
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Pretoria National Botanical Gardens

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