NELSON MANDELA UNIVERSITY

FACULTY OF SCIENCE

NEWSLETTER

» SEMESTER TWO - 2025

Faculty of Science News

Dear Students, Academic and Support Staff, and Members of the Faculty Community,

I am energized by the remarkable momentum generated in the faculty's pursuit of excellence and mission of "science for society." The first semester laid a strong foundation, and this newsletter showcases how the Faculty of Science (FoS) is actively working to Change the World.

We witnessed many successes in Semester 1 such as a well-executed first-year orientation programme, graduation of the first cohort of BSc Honours in Agricultural Management, successful conclusion of the FORESTRY21 project, STEAM Education Seminar, Resilience and Smart Cities Workshop, Launch of the SAMOS project, Africanization Workshop, World Down Syndrome Day celebration, and a Mandela Uni-UniVen Vhembe District Schools' Outreach.

"At Mandela Science, we celebrate place, people, and potential—pushing boundaries, inspiring excellence, and embracing the power within every individual."

The FoS focus on high-impact research is solving critical, real-world challenges. Work on Water Security in Gqeberha, demonstrated by our PhD research on Managed Aquifer Recharge (MAR), and palaeo-ecology studies on Climate Adaptation, are vital contributions to regional resilience. Meanwhile, the dedication to Innovation and Entrepreneurship is evident in the success of the Formulation Science programme, bridging academic discovery with the creation of sustainable, market-ready products.

This commitment of all staff members is mirrored by a culture of Inclusion and Excellence. We celebrate the outstanding achievements of our students, including multiple top awards at the South African Institute of Physics (SAIP) conference, the South African Women in Science (SAWISA) Fellowship, and the international recognition of our MSc Physics student for her nuclear materials research. Our collaborative efforts also extend beyond the campus gates, exemplified by the Govan Mbeki Mathematics Development Centre (GMMDC) outreach, and the multi-institutional collaboration around the Nqweba Meteorite discovery, which highlighted the power of citizen science.

Furthermore, FoS is proactively nurturing the next generation of leaders. The seminar for Dr. Mlambo's book, *A Survival Guide for Every Postgraduate Journey*, is a clear indication of our focus on holistic support, addressing mental health, resilience, and effective supervision.

As we look ahead, let us maintain this trajectory of boldness and integrity. I urge you all to continue collaborating across disciplines, fostering innovation, and embedding the ideals of identity and belonging that define Mandela Science. Thank you for being part of this vibrant, impactful community.

Warm Regards,
Professor Christa Grobler
Executive Faculty Dean

A WARM WELCOME TO NEW EXECUTIVE FACULTY DEAN

Nelson Mandela University welcomes Professor Christa Grobler as the new Executive Dean of the Faculty of Science.

Prof Grobler joins us from the Vaal University of Technology (VUT), where she has been Executive Dean of the Faculty of Applied & Computer Sciences, since July 2023, and Acting Deputy Vice-Chancellor: Teaching and Learning, since October 2024. She has been with the institution since 1997.

Prof Grobler holds a DTech in Biomedical Technology from Durban University of Technology (DUT) and an MTech from the Central University of Technology (CUT) , as well as an NHDip and NDip in Biomedical Technology from VUT.

Nationally recognised as a leader in Health Science, Prof Grobler was appointed by the Minister of Health in 2020, to serve on the Professional Board for Medical Technology (Vice-chair) of the Health Professions Council of South Africa (HPCSA) till 2025.

In addition, Prof Grobler has served on the Board of Studies in the Medical Laboratory Technology (MLT) Department at Chandigarh University in January 2025 and as a VUT Council Member since 2023.

She has also been appointed by the Member of Executive Council (MEC): Health to serve as a member of the Provincial Health Research Committee in Gauteng and by the Council of Higher Education (CHE), to serve as an Institutional Audit Panel member.

Her research area includes evaluating cardiovascular risk markers among vulnerable communities to identify nutritional and health risk factors to inform interventions.

She is the author/co-author of 11 peer-reviewed papers, and co-authored two book chapters, as well as presenting at four national and 10 international conferences. She has supervised eight MTech students and one PhD and is currently supervising one PhD and two master's students.

We wish Prof Grobler well in her new role as leader of the Faculty of Science at Mandela University.

Professor Christa Grobler
Executive Dean: Faculty Of Science

Dr Nicole Vorster – Formulation Science & Entrepreneurship

Senior lecturer in Chemistry at Nelson Mandela University, Dr Nicole Vorster, inspires entrepreneurship through her BSc Honours course in Formulation Science, skincare formulation workshops, and her own skincare brand.

"We inspire women to start their own businesses, starting small in the kitchen, with one or two products, sampling them among their friends, and then we support them to further grow their businesses," Nicole said. The BSc Honours in Formulation Science, started in 2008, covers industries including cosmetics and emphasises entrepreneurship. Students must write a business plan for a unique product, which they showcase at a market-style exhibition. Many graduates work for international beauty brands like L'Oreal, while others pursue postgraduate studies. Nicole also runs skincare workshops, with graduate interns assisting while gaining practical skills. A new facility at InnoVenton will allow small-scale manufacturing, bridging the gap between home-based production and larger-scale operations. Her skincare business, Agri-Extracts, launched in 2022, uses olive pomace by-products to create natural products under the brand O-lyf. With patents secured in South Africa and Europe, the products support sustainability and reduce agricultural waste. Nicole's work highlights how teaching, innovation, and entrepreneurship can solve real-world problems while equipping students for diverse careers.

ACADEMICS SUPPORT HIGH SCHOOL INNOVATOR'S AWARD-WINNING VISION FOR WIRELESS COMMUNICATION

Master's student Sandi Bangani and PhD student Lillian Mutia were key players in testing Otto du Plessis High School Grade 11 pupil Christopher May's Fractal Geometry Antenna Project, which netted him a silver medal and a R40 000 bursary from WITS University in September last year. May's project focused on designing a compact, high-performance frequency antenna capable of operating across a broad frequency range, showcasing both creativity and technical skills, said CBC senior researcher and director Dr David Waswa.

The CBC provided the young inventor with access to advanced testing equipment and the expertise of both Bangani and Mutia, who assisted with collecting and analysing the antenna's data to evaluate its performance over three days.

The theoretical results were then validated at the CBC under the supervision of Dr Waswa, who said that May was able to use state-of-the-art equipment for radiation pattern analysis, bandwidth measurement and signal quality testing.

The project underscored the CBC's commitment to nurturing the next generation of innovators and researchers,

PICTURED ABOVE: LILIAN MUTIA, DR DAVID WASWA, CHRISTOPHER MAY, ZAINA MDAKANE & SANDI BANGANI

GOVAN MBEKI MATHEMATICS DEVELOPMENT CENTRE IN PARTNERSHIP WITH ISUZU

Since its launch in 2024, the partnership between Isuzu Motors South Africa (IMSAf) and Nelson Mandela University's Govan Mbeki Mathematics Development Centre (GMMDC) has improved Mathematics and Physical Science results compared to previous years. The programme enhanced the learning and teaching environment at KwaZakhele, Newell, and Sophakama high schools, with results showing a 24% improvement in Mathematics and 16% in Physical Science. "Exceptional individual achievements from learners who effectively used our mobile learning support platforms and resources have also been noted," said GMMDC Project Leader, Natalie Gill.

IMSAf continues to drive its partnership with the GMMDC to advance education in disadvantaged communities in Nelson Mandela Bay. The three-year partnership, relaunched in 2024, committed R1.5 million. Notably, 10 out of 45 learners either achieved a distinction or significantly improved their Maths marks, while more than 50% achieved Bachelor passes in 2024.

From left, Amyoli Maposela (KwaZakhele High School), Prof Werner Olivier (GMMDC: Retired Director), Komane Pitso (Isuzu: Executive Vice President for Commercial Operations), Amkele Mini (Sophakama High School), Celestin Ndhlovu (Isuzu: Executive Vice President for Corporate Services), Lunamandla Ngqolombe (Newell High School) and Oyisa Qovane (Newell High School).

The initiative provides innovative teaching and learning tools, including the GammaTutor mobile teaching device and curriculum aligned MobiTutorZA software, enabling effective teaching without requiring internet connection. IMSAf has made education a key focus of its corporate social responsibility, aiming to drive meaningful community change.

Natalie said, "While the project is still in its infancy, this is a commendable outcome considering the educational challenges faced by these schools." IMSAf's long-term goal is to reduce the skills gap by improving education quality and promoting STEM subjects, especially in schools across Nelson Mandela Bay.

DR MUEDANYI RAMANTSWANA & EWAYNE LE ROUX – GLOBAL AND LOCAL KNOWLEDGE SHARING

George Campus academics Dr Muedanyi Ramantswana (Forestry) and Ewayne Le Roux (Accounting) are advancing knowledge and policy at both international and national levels.

Dr Ramantswana delivered a plenary keynote address at the 2025 IPEF Forest Plantation Congress in São Paulo, Brazil, attended by over 400 participants. His talk, "A Forecast of Re-establishment Technologies in Plantation Forestry", focused on silviculture innovations, including precision inputs, AI-enhanced operator systems, and digitalisation. His work is part of the Modern Silviculture Research Project, in collaboration with Prof Saulo Guerra (UNESP, Brazil), which has produced joint research publications, student exchanges, and presentations since 2018.

Dr Ramantswana

Mr Ewayne Le Roux

Meanwhile, Ewayne Le Roux published an article in Accountancy SA (July 2025) titled "Transparency, Accountability and Trust: The Importance of Sustainability Reporting for Municipal Leaders." His article critically engages with challenges in South African municipalities and advocates for proactive, community-driven innovation. Both academics highlight Mandela University's commitment to research, innovation, and collaboration that impacts society locally and globally..

SA reflects on Science & Society, celebrating the International Year of Quantum Science & Technology

The South African public saw the promise in science, but also raised concerns about issues such as science and technology leading to job losses. These were among the findings of the South African Public Relationship with Science (SAPRS) Survey conducted among 6000 South Africans in 2022, shared as part of the flagship "Public Dialogue on Science and Society" at the recent two-day Symposium on Quantum Science and Technology hosted by Nelson Mandela University.

The symposium, Schrödinger's Cat WANTED: Dead and Alive, celebrated the International Year of Quantum Science and Technology (IYQ2025) and brought together scientists, policymakers, and educators to explore the relationship between science and society. The event also marked a step in establishing a five-year cycle of national science engagement assessments and public dialogue.

SAPRS Principal Researcher Dr Vijay Reddy presented the survey findings, joined by Professor Azwindini Muronga, Deputy Vice-Chancellor for Research, Innovation and Internationalisation. Participants expressed strong interest in science and technology, with 66% showing interest and 70% showing pride in scientific achievements. Over life, work, and opportunities. At the same time, inequalities in access to information were highlighted, often linked to socioeconomic status.

Traditional knowledge systems were valued, particularly in farming and quality of life (63%), though support for traditional healers and remedies was lower (48% and 45%). High trust was placed in scientists and information from universities and research organisations, reflecting strong confidence in systematic, evidence-based knowledge.

Dr Reddy emphasised the need to strengthen public understanding through education programmes in schools and relatable science content on television and radio so that "all the public, not only the school-going youth, have access to it." She further noted that science and technology shape daily life, economic growth, and employment.

In closing, she stressed that communicating scientific knowledge should not rest solely with the DSTI, saying all government departments produce valuable knowledge and share responsibility for communicating it effectively to the public.

Isaac Ramovha from the Department of Science, Technology and Innovation provided background to the survey, reflecting South Africa's long-standing commitment to public science engagement since the 1996 White Paper on Science and Technology. This commitment was strengthened in 2019 with a new White Paper and the introduction of the Science Engagement Monitoring and Evaluation Impact Indicator Framework (SEMEIIF) in 2021, forming the basis for the SAPRS Survey conducted every five years.

As South Africa joins the global recognition of quantum science, the symposium and SAPRS findings remind us that the future of science depends not only on discovery, but on inclusive dialogue, critical engagement, and shared public understanding.

Getting smart with groundwater: new tools to protect Gqeberha's hidden lifeline

New research from Nelson Mandela University offers hope for smarter drought planning in Gqeberha, where cutting-edge hydrogeological models could help protect the city's vital but fragile underground water supply. Between 2015 and 2023, Gqeberha endured its longest drought in recorded history, with dam levels dropping dangerously low and hundreds of boreholes drilled by residents, the municipality and NGOs. But without careful long-term planning, over-extraction can cause as much harm as water scarcity.

This challenge is the focus of research by Mandela University PhD student Bamanye Vandala, assisted by Department of Geosciences head Dr Gaathier Mahed. Published in Sustainable Water Resources Management (July 2025), their article outlines an approach to groundwater management titled Managed aquifer recharge (MAR) site suitability in the Nelson Mandela Bay: the application of multi-criteria decision analysis techniques.

Vandala explains that the motivation came during the height of the drought "when dam levels dropped to a record low of 10%". Discussions with Dr Mahed led to exploring Managed Aquifer Recharge (MAR), a method where excess water is stored underground during wetter periods for use in dry spells. His research assesses the feasibility of MAR in Gqeberha using a spatial model built from geological, hydrogeological and water quality datasets, integrating Multi-Criteria Decision Analysis (MCDA) to identify areas where aquifer recharge would be most effective.

This decision-support tool highlights that groundwater is not limitless, especially in fractured rock aquifers, and is easily impacted by over-extraction, contamination and climate variability. Gqeberha narrowly avoided a full Day Zero scenario thanks to last-minute groundwater augmentation and rainfall, underscoring the need for long-term resilience rather than emergency responses. Vandala notes that the study supports climate adaptation by promoting nature-based solutions and offering alternatives when surface water infrastructure fails.

Bamanye Vandala

The MAR suitability maps developed through this research could guide local and provincial governments in strategic borehole placement, recharge basin siting and alignment with land-use planning. "Municipalities can use this framework as a decision-support tool for MAR planning and drought preparedness," says Vandala. He adds that community involvement is vital for monitoring water use, reporting borehole performance and supporting awareness programmes.

Although fractured aquifers present challenges due to scarce data and complex geology, Vandala hopes the model will be replicated in other drought-prone regions and eventually integrated into national MAR mapping.

EXPLORING THE PAST TO UNDERSTAND THE FUTURE

Women@Mandela: One such example is Marishka Govender, a PhD candidate working in the Palaeoecology Lab at the Department of Botany. Supported by a special grant, Marishka's research connects ancient southern African landscapes with today's big questions about climate, nature, and human creativity.

Her focus is on phytoliths – tiny silica bits that plants produce and that stick around in soils for thousands of years.

These little structures pack a lot of info about what plants grew, what the climate was like, and how ecosystems worked back then. Marishka explains, "Phytoliths are super reliable but often overlooked clues in studying ancient environments. Since they come straight from plants, they help us identify specific plant types from long ago."

Marishka's PhD project looks at how people innovated in dry southern Africa during the late Pleistocene era, focusing on a site called Varsche Rivier 003 in the Succulent Karoo, a unique and understudied dry biodiversity hotspot.

Marishka Govender

Unlike other more famous coastal sites, this one gives a rare glimpse into how early humans adapted to life inland, where two special plant regions meet. They found cool evidence of tech and social advances from over 80,000 years ago, like using ostrich eggshells for flasks and beads.

By studying phytoliths alongside other clues, Marishka can piece together what the climate and vegetation looked like back then and compare it with the way humans behaved.

"Knowing how ecosystems reacted to past climate changes helps us predict what might happen next, and that's key for protecting our environment," she says.

She's also working on creating southern Africa's first modern phytolith reference collection – basically a guidebook that will help scientists better understand fossil plant clues in the future. This will be a big help for anyone studying ancient environments or archaeology in the region.

On top of her research, Marishka teaches second-year education students, showing future science teachers how botany and environmental science work in the real world. "It's rewarding to bring my research into the classroom and watch students get excited about real science," she says.

Marishka knows how important representation is, especially in a field mostly dominated by men. She draws strength from mentors, family, and peers, and credits women scientists who have helped guide her, like her supervisors Dr Lynne Quick and Dr Irene Esteban.

"When young women see others like them thriving in science, it opens up a world of possibilities," she shares.

Her advice for other young women at Nelson Mandela University this Women's Month?

"You've got what it takes, you're needed, and your voice matters. Don't be shy about claiming your space. Ask questions, find mentors, and believe in yourself."

Forestry and Wood Technology Students' Industry tour

On 21 and 22 August 2025, 3rd-year Forestry and Wood Technology students embarked on a two-day tour to gain hands-on experience in plantation management, wood processing and timber operations.

Foresters' tour

On the first day, Forestry students visited Tsitsikamma and the MTO Witelsbos Plantation with Mr Tiaan Pool and Ms Samukelisiwe Msweli. They arrived during a harvesting operation hosted by Mr Barry Pfister and Mr Maxwell, who outlined challenges arising from neighbouring land use and its impact on operations and plant survival. The hosts also explained their delineation process, which influences planting area size, and demonstrated a chipping operation where biomass is processed for bioenergy.

On the second day, students visited PG Bison's Ruigtevlei Plantation with Mr Pool and Dr

Forestry students at MTO Witelbos Plantation

Tatenda Mapeto. They were welcomed by Mr Richard Madden and EVS representative Mr Adrian Daniel. Students observed the plantation's digital lookout system, including cameras used to detect and manage fires during controlled burning. Inside the monitoring room, they learned more about fire detection techniques. Mr Madden shared silvicultural strategies and reflected on the lasting effects

Third Year Forestry Students at Ruigtevlei Plantation

of the 2017 Knysna fires, which disrupted yield regulation and continue to affect recovery.

Woodies' tour

Simultaneously, Wood Technology students accompanied by Mr Richard Muller and Mr Hannes van Zyl began their tour at BUCO in George, observing the sawing, treatment and drying of timber. BUCO's boilers generate steam for drying timber that sometimes arrives wet. They then visited Robustrade in George Industria, learning how timber is converted into furniture, the target market and the role of designers.

Next was The Sawman in Knysna, a specialised saw blade shop where blades are purchased, maintained or replaced. The day ended at Geelhoutvlei Timbers in Karatara, which produces furniture for export and supplies wood samples for further processing.

On the second day, students visited small sawmills dedicated to drying or log sawing before heading to Boskor Sawmill, a large mechanised facility featuring auto-stackers, kilns and specialised industrial and construction timber production. Students observed the full process from log intake to final product.

Across both tours, students gained valuable firsthand insight into forestry and timber operations, engaging with industry professionals and strengthening their preparation for future careers.

Natural Resource Science and Management students Gear-Up for safety workshop with G.Fox workwear

Workplace safety is a critical skill for all students pursuing careers in natural resource management and related fields. To highlight its importance, MUFA hosted a Safety Event on 14 August 2025, collaborating with four campus societies within the Natural Resource Science and Management cluster. The event aimed to equip students with knowledge and practical guidance on safety, especially as they regularly participate in excursions, tours, and experiential training.

The workshop was hosted by MUFA Vice Chairperson, Ms. Bongumusa Jele, and featured Ms. Madelaine Cronje. Sales Representative from G. Fox, who discussed the importance of workplace safety, emphasizing that safety is everyone's responsibility. She also demonstrated appropriate workwear and protective equipment, explaining their role in maintaining a safe work environment, and provided samples for students to examine firsthand .

Students for the safety workwear workshop

G-Fox Sale representative Ms. Conje

As part of an interactive session, students participated in a safety quiz competition, where correct answers could earn them prizes. MUFA Treasurer, Ms. Zama Mahlaba, won the competition and received a pair of safety boots. Additionally, students and staff were offered 30% discounts on Personal Protective Equipment (PPE) from G. Fox and received access to the full product catalogue. This alliance ensures students have affordable and suitable workwear for their practical training and future careers.

Safety workwear displayed

MANDELA & SCIENCE SEMINAR

The Mandela & Science Seminar formed part of the [Re] Directions/ Ukutshintshwa Kwendlela: Knowledge, Praxes and the African-purposed Curriculum programme and took place on 24 April 2025 at the Nelson Mandela University Science Centre Dome. The seminar was opened by Vice-Chancellor Professor Sibongile Muthwa and featured a panel conversation facilitated by Professor Nomalanga Mkhize, historian and Director of the School for Governmental and Social Sciences.

Vice–Chancellor of Nelson Mandela University addressing the audience

Speakers included Professor Azwinndini Muronga, Deputy Vice-Chancellor for Research, Innovation and Internationalisation; Dr Zikhona Tywabi-Ngeva, physical chemist and Chemistry Department lecturer; and Dr Derrick Swartz, advisor on Science, Technology and Innovation to government and to the Ocean Sciences.

The conversation engaged the seminar's provocative concept note, which explored what the name 'Mandela' signifies for the sciences, and whether a Mandela-inflected approach can shape disciplines such as oceanography, physics, engineering and medicine. Madiba's lifelong respect for science was highlighted, from his engagements with leading scientists to his advocacy during the HIV/AIDS pandemic.

Panelists in the Seminar

The discussion also reflected on the need to problematize a positivist view of science by acknowledging the role of narrative, embracing indigenous knowledge systems and anchoring scientific endeavour in values and ethics. Madiba's own epistemic fusion–shaped by both Thembuland traditions and British mission schooling–offered a useful point of reflection.

The seminar further explored four key areas: the separation of science from the humanities and social sciences; the need for science disciplines to be rooted in social justice, values and ethics; the importance of serious engagement with indigenous knowledges; and the unhelpful divide between basic and applied research.

Across these reflections, participants agreed that Mandela's legacy can inspire interventions that break down silos, soften boundaries and encourage fusions of knowledge. Such approaches position the University to cultivate Mandela science graduates and reaffirm that Mandela is not only a figure of justice, but a figure of fusions, borrowings and decentrings–spaces where justice itself can be found.

NATIONAL SCIENCE WEEK ENGAGES LUSIKISIKI LEANERS

The Faculty of Science at Nelson Mandela University, in collaboration with the OR Tambo Coastal District Education Office, recently hosted a two-day National Science Week event in Lusikisiki attended by more than 2178 learners from 52 schools.
The open-day-style programme targeted Grade 8 to 12 learners from schools across the district, aiming to promote the role of science in daily life and encourage careers in science-related fields.

Nkosiphendule Mpotulwana from the OR Tambo Coastal District Education Office highlighted the event's relevance. "As the district with the highest number of Mathematics and Science learners in the province, this will help us improve Grade 12 outcomes", he said.

Learners engaged with exhibition stalls covering Physical Sciences, Life Sciences, and Agricultural Sciences and conducted practical experiments. Mr Mpotulwana added that practical exposure could improve understanding and exam performance.

The programme aligned with the 2025 National Science Week theme, "Science, Technology and Innovation Are for Everyone."

Acting Dean of the Science Faculty Professor Zenixole Tshentu said "Indeed, the country is driving a knowledge-based economy that ensures that everyone takes a role in ensuring that science works for society. This is why we are here in the District of Lusikisiki to advance and expand science through interactive exhibitions, live demonstrations, and career showcases that bring classroom concepts to life.".

The exhibitions included robotics, renewable energy models, mathematical activities, environmental science projects, and chemistry demonstrations. Learners explored stalls, took notes, asked questions, and documented the experiments.

Mhlaluka Momelezi, a Grade 9 learner from Mhlanga Secondary School, said: "I learned how science and technology affect communities and the environment. The math puzzles helped me understand problem-solving. This experience made me more interested in science."

Educators also found value in the event. Ongeziwe Nongoko, a teacher at Jojo Senior Secondary School in Mount Ayliff, said, "We are truly grateful to Nelson Mandela University and its partners for bringing National Science Week to our district. It's one thing to teach science in class, but it's another for learners to see, touch, and experience it for themselves. This kind of exposure shows them the real-world applications of what they



are learning, which makes the subjects more meaningful and exciting."

Beyond the displays, the event also offered opportunities for learners to connect with professionals, including scientists, lecturers, and industry experts, who shared career advice and explained the societal impact of their work. For many learners in rural districts like Lusikisiki, opportunities like these are rare, making the event even more significant.

The success of the two-day programme emphasised the impact of collaboration between universities, schools, and education authorities. It provided learners with access to information, practical experience, and role models in STEM fields.

National Science Week at Lusikisiki College highlighted the accessibility and relevance of science and encouraged learners to consider STEM careers. It broke down barriers to STEM, replacing intimidation with excitement, and turned abstract concepts into hands-on experiences.

The programme ended with a clear message: science is for everyone, and opportunities like this can shape the future of innovation in the Eastern Cape.

FIRE IN THE SKY: THE STORY OF THE NQWEBA METEORITE

A year after a two-ton rock entered Earth's atmosphere and streaked across the Eastern Cape sky, scientists have shared new findings about the Nqweba Meteorite—a discovery that connected local communities with a story reaching to the Main Asteroid Belt between Jupiter and Mars. At a public lecture titled Fire in the Sky and Rocks from Space on 23 September, Professor Roger Gibson from Wits University explained how the meteorite was tracked, recovered, and studied, highlighting the vital role of citizen science in locating the fallen fragments.

The story began on 25 August last year, when residents witnessed a dazzling fireball. Nine-year-old Eli-zé du Toit discovered the first fragment in her grandparents' garden in the Nqweba (Kirkwood) area. Her finding prompted swift action by Dr Carla Dodd from Nelson Mandela University's Department of Geosciences, who contacted colleagues from Rhodes and Wits universities to begin the search. Over several days, teams combed a vast area between Nqweba and Cape St Francis, recovering ten fragments weighing half a kilogram—remnants of a two-ton space rock travelling at 20 kilometres per second.

Wits University's School of Geosciences Professor Roger Gibson with Collections Curator Geocommunicator Robyn Symons standing with the Nqweba Meteorite display.

In September 2025, the International Meteoritical Society recognised the Nqweba Meteorite as part of the rare chondritic Howardite-Eucrite-Diogenite (HED) breccias, believed to have originated from Vesta, one of the largest protoplanets. NASA's Dawn mission confirmed Vesta's geological similarities to Earth, offering insight into how planets formed billions of years ago. The recovered fragments are now being studied using CT scanning, electron microscopy, and chemical testing. Many pieces display a black glassy fusion crust–evidence of their fiery descent.

Professor Gibson described the discovery as a "collective story" involving scientists, local observers, and international partners, including experts from Nelson Mandela University, Wits University, Rhodes University, the Astronomical Society of South Africa (ASSA), and NASA's SETI Institute. Beyond the science, the meteorite has inspired renewed wonder about space and our planet's place in it, showing how discoveries can start in unexpected places–even a backyard. The collaboration also highlighted the importance of protecting South Africa's geological heritage and encouraging young scientists to stay curious.

"The Nqweba meteorite gives us a rare opportunity to look across vast distances of space and back in time to the origins of our world," Gibson said. Researchers continue to analyse the fragments to understand their geological story and cosmic journey. The find is both a scientific milestone and a moment of pride for the Eastern Cape, where a child's curiosity helped unlock a window into the early history of our solar system.

Meteorite Rock

MARKING ARBOR WEEK WITH TREE PLANTING

Arbor Week promotes awareness on the importance of trees, especially the restoration of indigenous species. To celebrate this initiative, MUFA hosted an Arbor Week event on 5th September 2025, and it brought together students and staff members, with guidance and support from the campus Horticulturist Ms. Elana Storm

Ms Elana Storm (green jacket), students and staff members

The main aim of the event was to raise awareness among students about the ecological role of trees in supporting ecosystems. Trees contribute to climate change mitigation, improved air quality, ecosystem health, and resilience against extreme weather, while promoting sustainable environmental practices. The gathering was an effort to encourage active student participation and caring for the environment. For the association, tree planting is more than a day's activity, it is a commitment to a better, greener future and an inspiring legacy left by the final-year students as members.

Ultimately, for the campus community, the event strengthened student and staff engagement amplified the impact of Arbor Month, and promoted sustainability through environmental awareness.

Forestry students

The planting took place in the campus Arboretum, featuring *Apodytes dimidiate* (White pear), an indigenous species known for its adaptability to local conditions, also included Cypress species and *Ginkgo biloba* (Ginkgo), which are naturalized ornamental species.

HICKING EVENT

The Hicking event is a yearly event done to remove of invasive species that compete with indigenous species. This event is carried out by students and facilitated by lecturers and experienced postgraduates. In 2025, Hicking has been carried out twice at the beginning of spring 27th August and 3rd of September 2025, by the 1st year and 3rd year cohort.

Following a safety briefing, students were equipped with bowsaws and herbicide solutions. Guided by Prof. Josua Louw, Mr Tiaan Pool, Mr. Richard Muller, and Dr. Tatenda Mapeto, and postgraduates . The invasive plant species targeted included *Acacia mearnsii* (Black wattle), *Acacia saligna* (Port Jacksons willow), *Melia azedarach* (Syringa), *Pinus pinaster* (Cluster pine), *Hakea laurina (Pincushion hakea), Acacia melanoxylon (Blackwood)*, *Cotoneaster, and Pyracanthas species*.

Students roll-up their sleeves to clear invasives

Safety was a top priority. Students were briefed on team responsibility and looking out for one another. The campus paramedic was on standby, and participants were required to wear long trousers, closed shoes or boots, visibility vests, and, given the hot weather, sun hats and staying hydrated. In efforts to maintain a sustainable campus, events such as this are an important part of our environmental initiatives.

Prof Louw briefing students

BUILDING SUSTAINABLE LIVELIHOODS THROUGH AGRICULTURE AND GAME

The Department of Agricultural Sciences recently hosted an engaging hybrid seminar under the theme "Building Sustainable Livelihoods Through Agriculture and Game."

Held at the North Campus Conference Centre, the event brought together academics, practitioners, students, alumni, and community representatives to explore how agriculture, game ranching, and conservation can work together to strengthen rural livelihoods and promote sustainable land use. Opening the seminar, Dr Peter highlighted the vital role of agriculture in South Africa's economy, describing it as "the backbone of rural development and the cornerstone of food security."

He reminded participants that agriculture not only sustains livelihoods but also drives inclusive growth and community empowerment. The event formed part of the department's commitment to produce graduates who are stewards of the land and champions of livelihoods transformation, equipping them with both scientific and practical skills to advance sustainable development.

Ms Janene Ferreira and Dr Qinisani Qwabe.

Exploring Sustainable Land Stewardship

The programme featured a series of presentations and discussions aligned with Nelson Mandela University's mission to advance social and environmental justice through education and research.

Dr Albert Kagande (Nelson Mandela University) presented "Rethinking Livelihoods: The Case for Integrated Land Stewardship," drawing on community-based models such as Zimbabwe's CAMPFIRE Programme and South Africa's Somkhanda Game Reserve. He illustrated how inclusive land management can enhance both conservation and economic resilience, while noting that governance challenges and unequal access to resources often limit their success.

Mr Kabelo Matsimbi, represented Wildlife Ranching South Africa (WRSA) and an NMU alumnus, followed with "Game Ranching in a Changing Climate: Conservation, Commerce, and Community."

He emphasised the economic and ecological importance of the game ranching sec-

Mr Arthur Rudman, Dr Lindokuhle Dlamini and Ms Janene Ferreira

tor in job creation, tourism, and biodiversity protection, while advocating for balanced policies that enable effective management. A panel discussion featuring Dr Lindokuhle Dlamini (Rhodes University), Mr Arthur Rudman (Pioneer Wildlife), and Dr Mnqobi Ngubane (Nelson Mandela University) further explored how national policy can better align with practical realities on the ground.

The panellists called for inclusive frameworks that integrate indigenous knowledge, community participation, and scientific innovation to support sustainable land use and rural development.

Youth Voices: Reimagining Rural Futures

The afternoon session highlighted the voices of emerging leaders through a student-led panel titled "Future Farmers and Ranchers: Reimagining Rural Futures."

Students Vuyolwethu Tukani, Refilwe Lekhethe, Blessing Mzimba, Kyle Davey, and Karabo Mojele shared their visions for a more inclusive and sustainable agricultural future.

They emphasised the need for innovation, practical learning, and continued mentorship in agricultural and game management education. Their participation demonstrated the department's commitment to cultivating graduates who are forward-thinking, adaptable, and socially conscious.

Key Takeaways and Reflections

Discussions throughout the day reaffirmed that community involvement, equitable access to resources, and institutional support are crucial for achieving sustainable agricultural and conservation outcomes.

Dr Mnqobi Ngubane reminded participants that "indigenous knowledge is not a relic of the past; it is the foundation for a sustainable and just future."

This message resonated strongly, as participants called for blending traditional wisdom with modern science to create resilient land stewardship models.

Speakers also highlighted the growing importance of organic farming and climate-smart wildlife management as viable approaches to improving sustainability at local and regional levels.

Ms Janene Ferreira Sharing the Closing Remarks

Looking Ahead: Strengthening Partnerships

In her closing remarks, Ms Janene Ferreira expressed sincere appreciation to all presenters, guests, and participants.

She reaffirmed the department's commitment to fostering dialogue and collaboration between academia, industry, and communities, noting that the success of the seminar lies in its ability to inspire continued partnership and innovation.

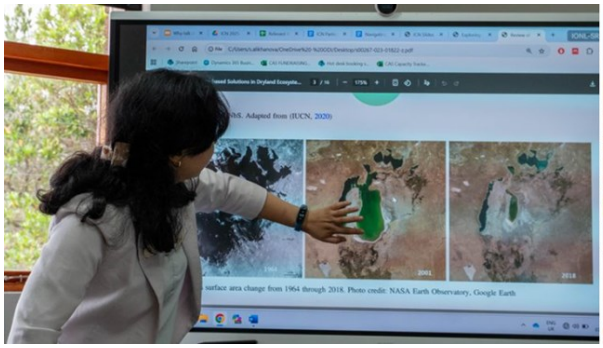
"The success of this seminar goes beyond today's discussions," she said. "It is about building lasting partnerships that empower our students and communities to view the land not only for its economic value, but for its ability to sustain life for generations."

Looking forward, the Department of Agricultural Sciences plans to strengthen community-based engagement initiatives, expand student–industry collaborations, and host more transdisciplinary dialogues bridging agriculture, wildlife, and rural development.

Through these initiatives, Nelson Mandela University continues to position itself as a leader in advancing sustainable livelihoods, environmental stewardship, and transformative education for a changing world.

GLOBAL CONSERVATION WORKSHOP AT GEORGE CAMPUS

Young conservation researchers from 12 countries recently gathered at Mandela University's George Campus for the Interdisciplinary Conservation Network (ICN) 2025 Workshop, in collaboration with the University of Oxford, with Oxford academics joining as mentors and participants.



The hybrid event combined in-person sessions in George with virtual meetings, offering early career researchers a platform to build skills, networks, and collaborations on real-world conservation challenges.

"Having 30 outstanding researchers selected from nearly 200 applicants was inspiring," said Dr Tim Kuiper, Senior Lecturer and one of the organisers. "The partnerships and ideas formed here will have lasting impact."

Participants represented Ghana, Malawi, Nigeria, Cameroon, Zimbabwe, Peru, India, Nepal, Vietnam, Uzbekistan, the UK, and South Africa.

Three themes, one goal: building a more just and inclusive future for conservation

ICN 2025 explored three key themes:

- **Exploring inclusive conservation through intersectionality** – understanding how gender, culture, power and identity shape conservation outcomes and developing equitable, community-centred solutions.
- **Navigating conflicts in area-based conservation** – addressing tensions between conservation and community land rights and developing equitable, community-centred solutions.
- **Just conservation** – promoting equity, diversity, and lower-carbon working and collaboration in conservation careers and challenging barriers limiting access to opportunities.
- Interdisciplinary teams developed joint research outputs, including opinion pieces and journal papers, aimed at influencing global conservation policy.

A local hub with global reach

Hosting ICN 2025 positioned George Campus and the wider Garden Route as key contributors to global conservation research. The workshop reinforced Nelson Mandela University's commitment to inclusive, collaborative, and globally relevant conservation science.

The workshop reinforced Nelson Mandela University's commitment to inclusive, collaborative, and globally relevant conservation science.

GISSA EASTERN CAPE DAY AT RHODES UNIVERSITY: CELEBRATING GEOSPATIAL INNOVATION AND COLLABORATION

Geosciences Department staff and students at GISSA EC GIS Day
From left: Mr Gideon Brunsdon, Mr Sinoxolo Soya, Dr Wilma Britz, and Mr Jeremiah McCabe.

On 4 November 2025, the Geography Department at Rhodes University hosted the GISSA Eastern Cape Day, bringing together students, lecturers, researchers, and industry professionals to showcase innovative applications of GIS, Remote Sensing, and spatial technologies.

Two NMU MSc students stood out with high-quality presentations:

- Jeremiah McCabe presented "A Geospatial Approach to Analysing and Modelling Road Traffic Accidents in the Kouga Municipality," highlighting accident hotspots and factors influencing road safety.

- Sinoxolo Soya presented "A Comparative Analysis of Random Forest and Support Vector Machine-based Regionalisation Techniques for Streamflow Simulation in the Mgwalana River Catchment," exploring machine learning techniques for hydrological modelling in data-scarce regions.

Their work, supervised by Dr Wilma Britz and Mr Sive Mlamla, demonstrated strong technical skills and contributed meaningfully to discussions on GIS and AI-based environmental modelling.

The event also featured presentations from Rhodes University and Fort Hare University students, as well as industry insights from NTG Solutions and Caelum Tech, bridging academic research with practical applications. University staff, including Dr Gillian McGregor, Mr Gideon Brunsdon, and Dr Wilma Britz, shared research and innovative teaching strategies in GIS education.

The 2025 GISSA Eastern Cape Day celebrated geospatial excellence, fostered collaboration between institutions, and strengthened ties between academia and industry. Congratulations to NMU's Jeremiah McCabe and Sinoxolo Soya for their outstanding contributions.

CAMPUS NATURE RESERVE ALIEN HACKATHON

On September 5th, the Botany Department hosted an alien hackathon at the South Campus Nature Reserve, near the start of the Grysbok Trail. The event was organized in collaboration with Horticultural Services (contact: Craig Breedt, Reserve Manager) and focused on manually removing *Acacia cyclops* plants from the area.

The removal of *Acacia cyclops*, an invasive alien species, is critical to preserving native biodiversity and maintaining the ecological balance within the Nature Reserve. This hands-on collaborative conservation effort helps prevent the spread of invasive plants that can outcompete indigenous vegetation and disrupt local ecosystems.

The hackathon was attended by academic and technical staff, as well as postgraduate and undergraduate students from the Botany Department. Additionally, some members of CriSHET, who are engaged in critical sustainability literacies, participated. In addition to the removal of alien vegetation, a key learning outcome for participants was developing the ability to distinguish between different Acacia species which is a useful skill to ensure native plants are preserved while invasive species are effectively targeted.

Through this experience, students and staff deepened their understanding of invasive species management and contributed to the university's sustainability goals, fostering critical environmental literacy within the campus community.

Due to the success of this event, another alien hackathon is planned for October 31st, at the end of the fourth academic term, allowing for further collaboration and conservation efforts.

Students and staff from the Botany department partaking in Alien Hackathon

ART MEETS SCIENCE: NAOMI HART BRINGS THE OCEAN TO LIFE THROUGH FIELDWORK DRAWINGS

Naomi Hart with her artwork

The Ocean Sciences Campus came alive on Friday, 31 October, as staff, students, and researchers gathered for a special art exhibition hosted by the Centre for Coastal and Marine Research (CMR). The exhibition featured the captivating work of visiting artist Naomi Hart, whose fieldwork drawings form part of the Convex Sea Survey project – an international collaboration that merges science, art, and environmental storytelling.

Naomi Hart is a multidisciplinary artist whose practice explores the intersection between art, science, and ecology. Drawing inspiration directly from the field, her pieces are created "in the moment of action," often while environmental processes are unfolding. Through sketches, mixed media, and vibrant textures, she captures the energy of the natural world and the delicate relationship between people and the environment .

In her discussion and interview, Naomi shared that her drawings are not simply observations but responses to lived experiences during scientific fieldwork. Each artwork tells a story – of motion, discovery, and connection ,inviting the viewer to see the ocean not as a distant entity but as a living, breathing system intertwined with human life.

The Convex Sea Survey, under which her work is showcased, is a partnership between Blue Marine Foundation, the University of Exeter, and Convex Group.

This pioneering collaboration of world-leading scientists are working to quantify and understand blue carbon stored in the coastal ocean floor and will deliver new, reliable, open-source data which will educate, inspire and enable informed decisions on ocean use, to harness the power of the sea in the fight against climate change. Naomi's contribution to the project highlights how art can translate complex scientific data into emotional, accessible narratives that resonate with broader audiences..

The exhibition offered attendees a rare opportunity to experience science through an artistic lens. Students, academics, and visitors engaged with Naomi, asking questions about her creative process and the collaboration between scientists and artists in the field. The exhibition remained open throughout the day, allowing visitors to immerse themselves in the intricate details and layered meanings of her drawings.

Naomi's work serves as a powerful reminder that creativity and science are deeply connected – both driven by curiosity, observation, and a desire to understand the world around us.

Through her art, she bridges these disciplines, showing that storytelling through visuals can inspire greater appreciation for the natural environment and the urgent need to protect it.

RESEARCH ON ENDANGERED AFRICAN PENGUINS HIGHLIGHTED AT RECENT MARINE SCIENCE SYMPOSIUM

Two different aspects of research on *Spheniscus demersus*, commonly known as African penguins, were presented at Nelson Mandela University's recent 2025 Institute of Coastal and Marine Research Symposium.

Both penguin studies related to the St Croix and Bird Island groups in Algoa Bay, adjacent to the city of Gqeberha, which are home to half the world's remaining population of African penguins.

Tayla Gifford's (nee Ginsburg's) presentation took a socio-economic perspective. Titled "Shared seas, shared challenges - How do we protect penguins and support people?", her talk was a snapshot of her master's thesis with which she graduated cum laude in 2019.

Victoria Stockdale's presentation was more focused on algorithmic modelling. It was also based on her master's thesis, a 2023 MSc in Marine Biology and Biological Oceanography, which integrated state-space modelling and systematic conservation planning to recommend penguin fishery management zones in the bay.

Gifford explained the background to her research. The numbers of African penguins have declined so drastically over the past century, they are now classified as critically endangered and face extinction. These penguins exist in the same area as the purse-seine fishing industry, which uses large nets to catch small fish, and which provides livelihoods to thousands and supplies sardines to both the local and export market.

"That poses the very important question - how do we manage this shared virtual space to balance both their needs?" said Gifford.

Her study had three main aims: To map penguin-fishery overlap, understand fishers' perceptions; and assess dynamic ocean management for marine social planning.

Her methodology included penguin global positioning system (GPS) tracking data, fishery catch data, estimates of fish biomass from a fish finder attached to a boat, and semi-structured interviews with both fishermen and managers in fish factories.

Gifford pointed out that the marine protected areas in the maps in her presentation were proclaimed in 2019, after her study had been completed. During her research, from 2011 to 2015, fishing exclusion zones were being trailed in the bay. They were referred to as closed or open zones, with a 20km exclusion zone around either St Croix or Bird islands.

The aim of her research, Gifford said, was "to highlight that to protect penguins doesn't mean you have to sacrifice all the income and livelihoods, rather that fishermen should be included as partners within the actual climate process and conservation".

The second speaker on penguins, Stockdale, said her research aimed "to design dynamic fishing exclusion zones that reduce the overlap with purse-seine fishery to maximise penguin foraging success".

She used two methodologies. The first was the statistical hidden Markov model (HMM) to infer the penguins' behavioural states - foraging, commuting, and transitioning - on feeding trips. Her research collated 323 948 GPS records from 462 trips. The other method was systematic conservation planning (SCP), which incorporated this model of feeding behaviour into penguin fishery spatial management recommendations.

"We identified areas where penguins were performing specific behaviours. And this was new. We identified specific sites for closure so that you could avoid uniform exclusion sites, and that was to improve stakeholder engagement. And then from that we developed dynamic closure," she said.

Her study's constraints challenges included the need for more variables, such as incorporating the fish biomass near the colonies, which would identify specific areas.

Her research also highlighted the need to use real-time data, rather than data collected after the breeding season had ended. The complexity and cost of doing this, said Stockdale, "represents a significant logistical challenge, but it is crucial".

Her thesis suggested using video and telemetry data – collected and transmitted from remote sources - to validate the penguins' inferred behavioural state against the true observed behaviour at that time, and using that date to delineate real-time, dynamic closures.

"If you can increase the amount of energy expended on foraging success to improve breeding, then marrying that biological insight with socio-economic data, we can show the fishing industry that outside closures are smart, temporary and minimally disruptive," Stockdale said at the symposium, which was held on Nelson Mandela University's Ocean Sciences campus from 12 to 14 November 2025.

PROF MANDY LOMBARD KICKSTARTS MARINE SCIENCE SYMPOSIUM BY LOOKING BACK ON HER DECADE AS SARCHI CHAIR

"The Institute for Coastal Marine Research (CMR) exemplifies what Nelson Mandela University means when we speak of being a university in service of society," said Professor Azwinndini Muronga, Deputy Vice-Chancellor:

Research, Innovation and Internationalisation, at the opening of the CMR's three-day Annual Research Symposium 2025 on the Ocean Sciences Campus. He said the theme, *Science to impact*, resonated with Mandela University's Vision 2030 to pursue impactful research that addresses grand societal challenges and promotes sustainable futures.

The opening also bid farewell to Professor Mandy Lombard for her decade as the SARChI Chair in Marine Spatial Planning. One of five SARChI chairs at CMR, Prof Lombard will continue working with the institute, and if renewed in 2026, the Chair will continue under the name SARChI Chair of Oceans Ecology and Sustainability. CMR Director Dr Denise Schael highlighted Prof Lombard's "lasting legacy not only within CMR, but across the broader field of ocean sciences."

Prof Lombard shared her journey, noting that she initially had to Google "marine spatial planning" when first approached about the Chair. Over the years, her work focused on understanding spatial and seasonal marine biodiversity, evaluating ecosystem services, improving datasets and tools for resource management, modelling environmental drivers of change, and using these outputs in a marine spatial framework to guide policy.

Drawing on the Sufi parable of the blind encounter with an elephant, she credited Bernadette Snow and Dr Jai Kumar Clifford-Holmes for teaching her to see the whole picture through social-ecological systems and systems dynamic modelling. She emphasised the importance of interdisciplinary collaboration involving economists, legal experts, social scientists, biophysical scientists, and modellers.

During her tenure, research funding totalled R615m, including contributions from South Africa, Germany and the UK. She noted the heavy administrative burden despite SARChI chairs being limited to 5% administration, saying, "you don't fund the Chair, you fund the Chair and a person that does all this other stuff." Outputs included 57 papers, two book chapters, and presentations at 84 national and 66 international conferences.

Professor Azwinndini Muronga

Professor Mandy Lombard

Highlights included the Ocean Stewards programme for young people who had never been to sea, and advances in systems thinking and scenario planning. Lowlights included the 2018 Marine Spatial Planning Act not aligning with the team's readiness to support it. Prof Lombard ended by saying that the Chair's novel work was only possible because of the CMR's support for transdisciplinary research.

REASONS TO BE PROUD

Master's student in Zoology, Minyonne Verster, received the best postgraduate oral presentation award for her research on the functional importance of seagrass ecosystems at the Southern African Marine Science Symposium (SAMSS).

Minyonne's research focuses on the endangered seagrass Zostera capensis (Eelgrass) and its associated macroinvertebrate communities in the Knysna, Swartvlei, and Keurbooms estuaries.

At SAMSS, she presented findings from a project component that examined ecological drivers relevant to conservation and management.

The goal is to protect the vital ecosystem services seagrass provides, including biodiversity support, carbon storage, and estuarine health.

Seagrass habitats are declining rapidly along the coastline, making this research urgent.

Their loss influences not just estuarine ecosystems but people too, as these systems purify water, store carbon, and provide critical nursery areas for marine life, Minyonne says.

Her passion for marine ecology was shaped by her honours experience in the mangroves with Dr Gavin Rishworth and Professor Janine Adams, whose enthusiasm for blue carbon ecosystems sparked her interest in seagrass. She was excited to pursue her MSc in this field.

"Representing the University and the Shallow Water Ecosystem team at SAMSS was a privilege," Minyonne says. "Being surrounded by inspiring research and leading marine scientists made it an unforgettable experience."

"The award was a personal reminder that feeling anxious is normal but should not overshadow one's potential. Professionally, it marked growth in a crucial skill: communicating science effectively to diverse audiences, key to both research and conservation impact," Minyonne says.

SAMSS renewed her motivation to complete her MSc and ensure her findings reach both management teams and scientific journals.

Minyonne's conservation content creation began through turtle rehabilitation work, where she learned to turn complex science into engaging, accessible stories, a skill that now enriches her academic communication.

"It also taught me that caring deeply is a strength, and to balance research with activities that bring joy and purpose," she says.

"Marine science offers many paths. Try new things, even if they just help you figure out your next step. Most importantly, follow your passion. It's what will carry you through challenges and give your work purpose," Minyonne says.

Dr Gavin Rishworth's students that he supervises or cosupervises at the conference, from left, Aphiwe Sandi (MSc student, Zoology), Claudia Schnelle (PhD student, UJ), Margeaux Liberty (MSc student, Botany), Dr Rishworth, Minyonne Verster (MSc student, Zoology), Saudiqa Benjamin (MSc graduate, Zoology) and Thembani Mkhize (PhD student, Oceanography).

Her study leader Dr Gavin Rishworth said: "We are incredibly proud of Minyonne – this

is a strong achievement at the premier regional marine conference in South Africa, attended by some 500 delegates.

Minyonne's creative presentation demonstrated her skills as a storyteller but also the rigour of her science. She showed how her work serves society as an informative management and conservation contribution.

This recognition affirms her path as an emerging leader in science. We are very pleased that she will remain a part of the University's team next year when she begins her PhD studies."

Dr Gavin Rishworth's students, from left, Aphiwe Sandi), Claudia Schnelle), Margeaux Liberty, Dr Gavin Rishworth, Minyonne Verster, Saudiqa Benjamin and Thembani Mkhize.

Nature Conservation Master's student awarded SA Women In Science fellowship

Nelson Mandela University's Ruby Davies is one of seven master's degree students countrywide, who received the South African Women in Science Awards DSTI–Dr Ivy Matsepe-Casaburri Fellowship for their academic excellence and research potential.

Ruby is studying for her MSc in Nature Conservation at George Campus, with an international research component at the Swedish University of Agricultural Sciences.

Her research supports South Africa's sustainability and global climate resilience goals, by contributing to evidence-based conservation.

The Fellowship celebrates exceptional women scientists advancing STEM in South Africa and beyond and were awarded recently at the 2025 South African Women in Science Awards (SAWiSA).

Both doctoral and master's students were recognised to support women researchers at critical stages in their academic journeys.

Under the theme "Unpacking STEM Careers: Her Voice in Science", the prestigious awards celebrated 30 exceptional women scientists and researchers, whose groundbreaking work is shaping the future of science, technology, engineering and mathematics (STEM) in South Africa and beyond. Dr Anina Coetzee, Ruby's supervisor nominated her.

"My research investigates how nectar robbing affects pollinator behaviour, pollen limitation, and the reproductive success of Erica discolor (two-colour heath) in the fynbos biome of the Cape Floristic Region. I also examine how plant community composition shapes these interactions. This work deepens our understanding of pollination ecology in a threatened biodiversity hotspot", she says.

Ruby has so far graduated all her qualifications Cum Laude, namely an Honours in Natural Resource Management, and Advanced Diploma

in Nature Conservation, both at Mandela University, after her National Diploma in Nature Conservation at Cape Peninsula University of Technology.

"I am deeply honoured to have received this award, and I hope it will inspire young women to pursue careers in conservation and contribute to safeguarding the beautiful biodiversity and natural heritage our country holds," Ruby says.

Four awards for Mandela University MSc student in Physics

Deané Basson, Madeleine and Lily Mrwetyana at MSSA; Madeleine Badenhorst won the Most Promising Microscopist award, as well as the Best Student Oral Presentation, at the Microscopy Society of Southern Africa (MSSA) conference in 2024.

Madeleine Badenhorst has earned four awards since December 2024, with her research contributing to global efforts to find clean, reliable energy and alternatives to coal, including nuclear power. She has just returned from the Micro Science Microscopy Congress (MMC) 2025 in Manchester, where she won the Best Student Flash Talk Award. Earlier recognition – including the Most Promising Microscopist Award at the Microscopy Society of Southern Africa (MSSA) conference in 2024 and the Best Student Oral Presentation – helped support her attendance in the United Kingdom.

In June, she also received the Best Student Poster Award at the 22nd International Conference in Radiation Effects on Insulators (REI21) in Madrid, Spain. Her research investigates how radiation affects materials inside nuclear reactors and how this damage heals when materials are heated. "My research helps us to understand how the radiation-induced damage heals… to ensure safety, as well as improving the performance of radiation-tolerant materials," she explained.

Madeleine conducts her work at the University's Centre for High Resolution Transmission Electron Microscopy (CHRTEM), home to four state-of-the-art electron microscopes, including the only one of its kind in Africa. Some analyses were also performed at the Joint Institute for Nuclear Research (JINR) in Dubna, Russia, a CHRTEM research partner.

Attending her first conference – the MSSA meeting – was a memorable milestone. "Delivering my first oral presentation was both exciting and nerve-wracking, but the encouragement and support from CHRTEM researchers and supervisors made it unforgettable," she said. At the REI21 conference, guidance from her supervisor Dr Jacques O'Connell and CHRTEM colleagues helped her navigate her first international event.

“Winning the Best Student Poster Award really meant a lot… it was an unexpected but wonderful surprise.”

At MMC2025 in Manchester, she again excelled. “I felt overwhelmed by the scale, but the welcoming atmosphere and supportive community quickly put me at ease,” she shared. Receiving the Best Student Flash Talk Award was a highlight, supported by JEOL/Angstrom Scientific and Prof Mike Lee.

Reflecting on her journey, Madeleine said studying at CHRTEM is “about growing as a scientist and as part of a community that believes in the beauty and power of discovery.” She expressed deep gratitude to the centre’s staff and students.

Winning the Best Student Poster at REI21 in Spain and Madeleine together with her supervisor Dr Jacques O’Connell, in Toledo, during their excursion.

Necessary skills for a future forester" – Employment Workshop

MUFA supports students academically, socially, and through recreational initiatives. In line with its commitments, MUFA hosted an Employment Workshop for students on the 17th of September 2025, themed "*Necessary Skills for a Future Forester*". The workshop addressed unemployment challenges in the Forestry industry and encouraged essential skills, including environmental awareness; technical proficiency; field skills; analytical thinking; communication; project management; adaptability; and lifelong learning.

The workshop focused on the recruitment process, professional conduct in the workplace, and strategies to attract employment opportunities. MUFA Chairperson Siphiwe Dlamini hosted the event.

MUFA chairperson, Siphiwe Dlamini guiding attendees through the program.

Insights from industry experts

Reputable industry professionals participated in the workshop as guest speakers. Mrs. Elsie Muller from Fancourt Luxury Hotel and Golf Course with extensive experience in recruitment, spoke about writing a winning curriculum vitae and navigating the interview process. She provided students with practical advice on standing out as candidates. Following, Mr. Thinus Miennie, the Learning and Development Manager at Sappi explained how insights into interviewers' perceptions can help candidates present themselves confidently and professionally during interviews. He further emphasised the importance of innovation, problem-solving, and networking as key skills for future foresters.

The workshop concluded with a vote of thanks by lecturer Dr. Muedanyi Ramantswana accentuating the importance of Nelson Mandela University Forestry students distinguishing themselves positively from graduates of other institutions.

Mr. Thinus Miennie as speaker for the workshop

TOP HONOURS FOR MANDELA UNIVERSITY PHYSICS STUDENTS

Mandela University Physics representatives from left, Elizabeth Hagemann, Lilian Mutia, Matthew Sivewright, Assane Talla, Andi Isni Pujirana, Zola Urgessa, Magdeline Saebi, Arnold Mutubuki and Sandi Bangani

Four Nelson Mandela University's Physics students scooped awards at this year's 69th South African Institute of Physics (SAIP) conference, recently hosted at the University of the Witwatersrand.

Andi Isni Pujirana was awarded the Frank Nabarro Award for Best PhD Oral Presentation, Condensed Matter, and Arnold Mutubuki, the Best PhD Poster Presentation, Condensed Matter.

The Best MSc Oral Presentation, Applied Science, went to Matthew Sivewright, and the Best MSc Oral Presentation, Physics Education, to Elizabeth Hagemann.

Two first prizes for Mandela University Chemistry students

Master's students in Chemistry Liesl Els and Sindile Mnyamana recently won the first prize in the SACI (South African Chemical Institute) Regional Seminar in both the senior and junior categories.

Liesl Els, Dr Neliswa Mama, Senior Lecturer at Mandela University, and the SACI Eastern Cape representative and Sindile Mnyamana.

Liesl's presentation in the senior category focused on creating sensors that rural communities can use to test their water sources for harmful chemicals.
The SACI regional seminars included Mandela University, Rhodes, Fort Hare and Walter Sisulu, with a senior (second-year MSc and PhD) and junior student (honours and first-year MSc) presenting their project at Rhodes University.
A total of eight students participated, with four in the senior and the junior category each.

Biochemistry and Microbiology Students Excel at InterVarsity brew 2025

Biochemistry and Microbiology Second Years Students

Nelson Mandela University's Biochemistry and Microbiology students made a remarkable impact at InterVarsity brew 2025, co-hosted by the Central University of Technology (CUT) and the Beer Association of South Africa (BASA).

This year, we entered five beer categories, made possible with the support of 42 second-year students from the Biochemistry and Microbiology Class of 2024. At the event, four students – Mbasa Bam, Noluthando Sibambo, Ayanda Langa, and Gavin Barry – represented the group, guided by their dedicated mentors, Dr Sharon Pelo and Mr Siyanda Mazibuko.

Their brewing, Kadhava IPA, earned 3rd place in the IPA category, impressing attendees with its flavour and quality. The beer's slogan, *"Take it easy, have a seabrewze"*, captured the attention of visitors and left a lasting impression.

This achievement highlights the talent, creativity, and teamwork of the students, demonstrating their practical skills and readiness for future careers in the brewing industry.

from left: Mbasa Bam, Noluthando Sibambo, Dr Sharon Pelo, Ayanda Langa and Gavin Barry.

Science Shines at Nelson Mandela University's and Vice-Chancellor's Excellence 2025 awards.

The Faculty of Science made a powerful impression at Nelson Mandela University's 2025 Vice-Chancellor's Excellence Awards at The Tramways Building in Gqeberha. The annual ceremony recognises staff and students who embody Mandela University's Vision 2030 values of excellence, service, and transformation. This year, Science stood out for its achievements in research, teaching, and student success.

Green Chemistry and Innovative Solutions
Prof Benita Barton (Chemistry) led research excellence, receiving both Faculty Researcher of the Year and a Research Excellence Award for her work on cleaner chemical separation methods that reduce waste and dependence on fossil fuels.

Dr Zikhona Tywabi-Ngeva (Chemistry) won the Emerging Innovation Excellence Award for creating an eco-friendly, biodegradable agricultural sheet from pineapple leaf waste, supporting farmers while reducing plastic pollution.

Dr Shawn Gouws (Chemical Process Technology) received the Engagement Excellence Award for advancing green hydrogen manufacturing and upskilling industry operators through university-industry-government collaboration.

Coastal Health and Deep-Time Evolution
Dr Gavin Rishworth (Zoology) was named Faculty Emerging Researcher of the Year. His work investigates animal interactions with sediments and biomats to assess coastal health, spanning modern ecosystems and the deep-time evolution of animals alongside early microbial environments.

Student Excellence
Four Science students were celebrated for translating academic excellence into meaningful impact:

- Locadia Dzingwena (Nature Conservation) received both the master's by Dissertation Award and the Vice-Chancellor's Postgraduate Award for her research on chacma baboon behaviour and non-lethal human-baboon conflict mitigation.

- Hayley Britz (BSc Physics) earned the First-Degree Award with a 91% average, aspiring to a research career in the Centre for High Resolution Transmission Electron Microscopy.

- Belinda Taljaard (Computer Science) won the Honours Award in Science, Engineering and Technology for developing interactive games to teach children programming.

- Julian Johnson-Barker (Nature Conservation) received the First Diploma Award for his work on preserving fynbos corridors that support biodiversity and cultural heritage.

Teaching That Empowers
Three Teaching Excellence awards highlighted humanising pedagogy:

- Mr Gideon Brunsdon (Geosciences) was named Faculty Excellent Teacher of the Year, fostering a caring, multilingual learning environment.

- Dr Sasha-Lee Dorfling (Chemistry) received Faculty Emerging Excellent Teacher of the Year for making chemistry coherent, connected, and engaging through visual demonstrations.

- Dr Rekha Neglur (Chemistry Laboratory Technician) earned a Professional, Administrative and Support Staff Award for her dedication to student support and research.

Engagement and Ubuntu in Action
The Engagement Excellence Team Award (STEM) went to Dr Richard Betz and his team (Dr Zikhona Tywabi-Ngeva, Dr Kina Muller, Ms Anita Noah) for the First-Year Chemistry Experience Project, promoting inclusion, peer mentoring, and a smooth transition from high school to university.

Leading Through Excellence
These achievements demonstrate the Faculty of Science's leadership in research, teaching, innovation, and engagement. Through their dedication, Science staff and students continue to shape futures, transform lives, and build a better world through science.

Ayabulela Binase Shines in National EDHE Absa Challenge

Ayabulela Binase presenting her innovative idea to panellist at the Absa Innovation Challenge.

A proud moment for the Botany department. Ayabulela Binase, a second-year master's student, has been named among the Top 20 finalists in the prestigious Entrepreneurship Development in Higher Education (EDHE) Absa Innovation Challenge 2025.
She has designed a NanoLAMP Diagnostic Field Kit.

The kit is designed for early detection of viral pathogens that affect common bean crops in South Africa. In her master's research study, she aims to identified viral pathogens in common bean cultivars in South Africa using molecular techniques across six plots in the Free State and Mpumalanga provinces.

This led to the development of a creative idea for an affordable NanoLAMP kit, similar to a home pregnancy test, which will empower farmers to detect infections early and support sustainable agriculture.
The EDHE Absa Innovation Challenge serves as a national platform for studentpreneurs to showcase solutions that contribute to sustainable development, economic growth, and social impact. By reaching this stage, Mandela University's finalists have demonstrated not only innovation but also the readiness to compete and lead at a national scale.

Triple awards for Physics Honours student Hayley Britz

BSc Honours in Physics student at Nelson Mandela University Hayley Britz received three top awards in October, including a national award at the *Suid-Afrikaanse Akademie vir Wetenskap en Kuns* (SA Academy of Science and Art) student science symposium.
Hayley, only one of three honours students, was awarded the best presentation for a second language student at the science symposium held in Stellenbosch.

Her 15-minute presentation, all in Afrikaans, was on a type of mathematical model, that underpins the design of solar cells, architectural glazing, anti-reflective coatings, and thermal-control

Hayley together with Petrus Prinsloo and Rika van Dyk, both Mandela University Chemistry students, who presented five-minute flash presentations; Hayley Britz received the best presentation for a second language student award.

"In a nutshell, the goal of my research was to derive a mathematical model to calculate the percentage light intensity transmitted, reflected, and absorbed by a transparent multilayer stack (for example, a stack of multiple thin layers of semiconducting material in the infrared part of the electromagnetic spectrum), and then programmatically implement it, as well as an existing model and compare the theoretical results and computational performance and limitations," Hayley said.

"It was a memorable and enriching experience, and my first time attending and presenting at such an event, as well as my first time delivering a presentation in Afrikaans, which is not my home language".

"Speaking to such an academically diverse audience of scientists, was quite nerve-wracking, but I met many brilliant and friendly people, who are deeply knowledgeable and passionate about their research and excellent communicators. I felt very impressed and inspired (and even a little intimidated) by the high quality of work shared. The symposium was also a valuable language learning experience; I discovered, for example, that the Afrikaans word: "monster", in a research context, means "sample". Hayley thanked Professor Andre Venter and the Physics Department, for their support as young researcher.

In addition, Hayley received the Vice-Chancellor's Award for the Best First Degree student at Mandela University, as well as the Best First Degree student in the Faculty of Science, at the University's recent Academic Achievers Awards ceremony.

Mandela University Chemistry's Dr Adeniyi Ogunlaja selected for prestigious Fulbright Research Scholar

Dr Adeniyi Ogunlaja, a highly accomplished researcher and senior lecturer in the Department of Chemistry at Mandela University, is heading to the United States in January 2026 as a Fulbright Research Scholar at Wake Forest University in North Carolina.
"It's a dream of mine to be selected for such a prestigious opportunity," says Dr Ogunlaja who received an email in August from Fulbright to let him know that he had been selected.

Thousands of researchers globally apply for this scholarship, and the success rate is around 20%. Nelson Mandela University is extremely proud of him.

"The major advantage of the scholarship is it fosters global knowledge exchange. I will be exposed to- and contribute high-level research in my field and bring it back to Mandela University and South Africa," says Dr Ogunlaja who will collaborate with researchers in his field of speciality in the Department of Chemistry at Wake Forest University.
Candidates are selected based on ground-breaking research. In Dr Ogunlaja's case his research is focused on technological innovation required for the critical transition to sustainable or green energy.

Dr Adeniyi Ogunlaja

"My research is focused on the photocatalytic conversion of carbon dioxide (CO_2) and nitrogen (N_2) into green fuels, such as methanol and ammonia, contributing to the development of a global green hydrogen economy.

"CO_2 is the greenhouse gas that is a primary cause of climate change. So, my research is about solving that problem by pulling it out of the atmosphere. Using only sunlight and water, we convert this CO_2 into methanol, which is a green fuel. In the same process, we turn nitrogen into ammonia. The exciting part is that these resulting fuels and chemicals can then be used to decarbonise tough industries like maritime shipping."

In addition, Dr Ogunlaja explains, "producing this kind of fuel usually consumes a huge amount of energy. However, our research uses sunlight, water, and novel catalysts to do the heavy lifting, which slashes the energy needed and represents a major step forward."

His long-term goal is "to become a leader who bridges a critical gap: creating chemical solutions that industries can use to become more sustainable, while also ensuring I train the next generation of researchers who will come after me."

He has supervised and co-supervised numerous MSc and PhD students to completion and has hosted several postdoctoral fellows. "It's essential for knowledge to be transferred to the next generation and to keep society growing sustainably through skills transfer," he adds.

Dr Ogunlaja did his doctorate in chemistry at Rhodes University and has been at Nelson Mandela University for ten years. He has completed year one of the esteemed South African Future Professors Programme (FPP), a two-year programme focused on developing the future professoriate.

He is an active member of the South African Chemical Institute, the Royal Society of Chemistry, and the American Chemical Society. His research excellence is nationally recognised through his National Research Foundation (NRF) C2 rating. He is the recipient of several accolades, including the 2014 SASOL-South African Chemical Institute (SACI) Postgraduate Medal, the 2019 Nelson Mandela University Emerging Researcher of the Year award, and in 2024 Nelson Mandela University Research Excellence Award.

Ahead of his departure to the US, Dr Ogunlaja attended the pre-departure orientation for the Fulbright Research Scholarship with the US Ambassador in Pretoria," he concludes.

Alumni Spotlight: Book Launch Seminar: A Survival Guide for Every Postgraduate Journey

Mr Aviwe Gqwaka, Dr Siphumlile Mangisa, Dr Farai Mlambo, Dr Chantelle Clohessy, Dr Johan Hugo, Prof Gary Sharp and Ms Lesego Sepato

The Faculty of Science, Department of Statistics, recently hosted a seminar talk on 01 October 2025 presented by Dr. Farai Mlambo to mark the launch of his book, *A Survival Guide for Every Postgraduate Journey: 30 Things You Need to Have Peace with Before You Get Frustrated as a master's or Ph.D. Student*.

The book is a candid and empathetic companion for postgraduate students, offering a refreshing departure from conventional methodology-focused texts. Instead, it addresses the often-overlooked emotional realities of research procrastination, imposter syndrome, perfectionism, the weight of feedback, and the need to celebrate small wins.

Key Themes from the Talk

During the seminar, Dr. Mlambo reflected on the realities of postgraduate study, beginning with the stark contrasts between undergraduate and postgraduate journeys. While undergraduate studies provide external validation and recognition, postgraduate research is more solitary, requiring students to develop resilience in the absence of constant feedback.

A central theme was the role of supervisors. Dr. Mlambo emphasized that supervisors are not there to "drive the car" but to serve as passengers, guiding and advising while students take ownership of their research. He also pointed out that supervision styles differ, and institutions should play a stronger role in providing resources and supportive policies.

Another highlight was the discussion on handling feedback. Drawing from his own experiences, Dr. Mlambo described the emotional challenges of receiving critical comments from journals and supervisors. He reminded students that feedback should not be taken personally, and that his book provides tools for reframing and processing criticism constructively.

On writing and productivity, Dr. Mlambo warned against the trap of endless reading without writing. He urged students to break down their research into smaller, manageable tasks, using the concept of fractals to illustrate how large projects can be tackled step by step.

The seminar also explored imposter syndrome, with Dr. Mlambo noting that feelings of self-doubt are common among postgraduate students. He encouraged attendees to celebrate small wins, lean on peer support, and avoid being overly self-critical.

Dr Mlambo With Dr Clohessy

Peer support emerged as another powerful theme. Dr. Mlambo spoke about the value of accountability groups, "shut up and write" sessions, and international peer networks that provide mentorship and encouragement when supervisors are not available.
In addition, he touched on the challenges of AI and interdisciplinary studies, reminding students that tools are only as effective as the user, and that postgraduate research requires personal contribution, not delegation.
Finally, Dr. Mlambo closed with reflections on the importance of mental health. He urged students not to sacrifice their well-being in pursuit of academic success and highlighted that postgraduate research is a long-term journey that requires patience, persistence, and balance.

Praise for the Book

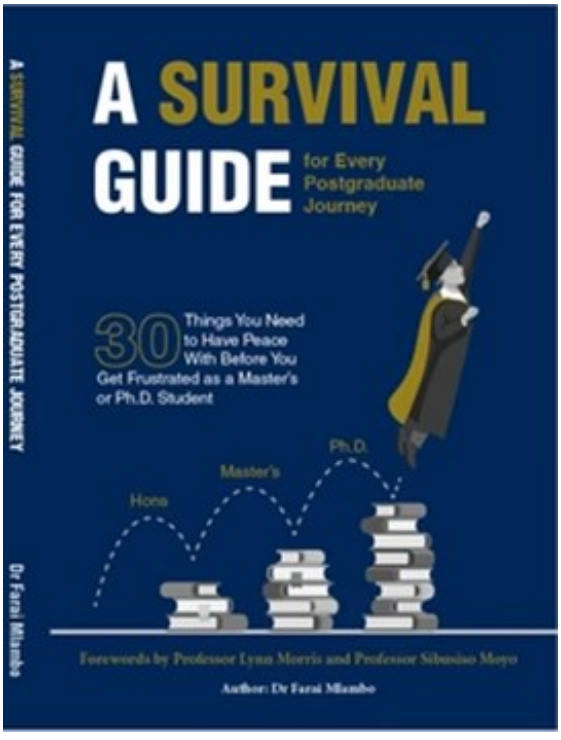
The book has already received enthusiastic endorsements from academic leaders.
"This book fills a critical gap by preparing the reader's mindset for the postgraduate journey," said Professor Paida Mhangara, Head of the School of Geography, Archaeology and Environmental Studies at the University of the Witwatersrand.
Professor Zenixole Tshentu, Deputy Dean of the Faculty of Science at Nelson Mandela University, described it as *"clear in its message, with sobering realities that are hard to ignore."*
Dr. Palesa Natasha Mothapo, Director of Research Support and Management at Nelson Mandela University and founder of the Pan-African Postdoc Network, called it *"a timely and essential guide that highlights the shared responsibility of students, supervisors, institutions, and peers in navigating the postgraduate journey."*

About Dr. Mlambo

Dr. Farai Mlambo, Ph.D. (Mathematical Statistics), completed his undergraduate and doctoral studies at Nelson Mandela University. He is currently a Senior Lecturer in Digital Business (Data Analytics and Artificial Intelligence) at Wits Business School and a Research Fellow at the Machine Intelligence and Neural Discovery (MIND) Institute. His teaching and research span data science, artificial intelligence, Bayesian machine learning, and statistics education. He has supervised numerous postgraduate students across Africa and co-founded several interdisciplinary academic support networks.
With *A Survival Guide for Every Postgraduate Journey*, Dr. Mlambo has provided the supportive, practical resource that many wish they had when starting their own research paths.

How to Purchase the Book

The book is available at the Wits IH Pentz Campus Bookstore (R280 per copy) or for free delivery in South Africa for orders over R1000. You can also order online through The Book Hub Africa (R280 including free delivery in South Africa). Alternatively, you may contact Dr. Mlambo directly via email at farai.mlambo@wits.ac.za or phone at +27 73 170 7996



Celebrating PhD Graduates at Summer Graduation 2025

DR BOTHA GERT– NATURE CONSERVATION

"My PhD research investigated how fencing, infrastructure, and environmental features shape terrestrial mammal communities within South Africa's protected areas (PAs). Motivated by growing concern over biodiversity loss and the increasing reliance on fenced reserves, the study examined spatial patterns in herbivores and carnivores, shifts in predator–prey dynamics near fences, roads, and water points, and broader ecological patterns across protected areas of different sizes. Across multiple PAs, I found that fences affect mammal habitat use, while artificial water points and road networks modify species distributions and community structure.

Functional diversity was strongly driven by rainfall, and PA characteristics. Overall, the study provides new, system-level insights into how management interventions and landscape configuration influence mammal communities, offering guidance for more context-specific, ecologically grounded conservation strategies in fenced landscapes.

My PhD journey was filled with challenges, growth and a surprising amount of self discovery. Like many students, I dealt with time pressures, data setbacks and obstacles that seemed to appear out of nowhere, all made a little more interesting by the pandemic. These moments were tough, but they helped build resilience and a kind of mental strength I didn't know I had.
Along the way I developed a wide range of scientific and technical skills that I'll use for the rest of my career. Some of my favourite memories come from the everyday moments that kept us going. The lunch break debates, the coffee break troubleshooting, and the shared feeling among fellow PhD students that even if we didn't have all the answers, we'd get there eventually.

This journey has shaped me into a more independent and confident researcher who is committed to producing meaningful, applied conservation science. And it taught me that behind every thesis is a small community keeping each other sane."

– Dr Gerth Botha

DR SINGO DAKALO–PHYSIOLOGY

"My academic path began at Kelokitso Comprehensive School in Zone 9, Meadowlands, where I matriculated with a strong curiosity about science and how the world functions. That curiosity guided me towards a BSc in Biochemistry and Biology, followed by a BSc Honours in Biochemistry at the University of Venda. During my Honours year, I conducted research on synthesizing nanomaterials for malaria treatment—an experience that revealed the transformative power of science in addressing real-world challenges.
Recognising my passion and potential, my supervisor encouraged me to continue exploring the field of nanotechnology. With that support, I enrolled in the MSc Nanoscience Programme at Nelson Mandela University. My Master's research focused on developing a drug-delivery system aimed at addressing obesity, a growing global and local health concern.
Motivated by a desire to deepen my contribution to biomedical science, I went on to pursue a PhD in Physiology (Biomedical Sciences and Nanotechnology). My doctoral research investigated the use of natural extracts to synthesise nanomaterials for obesity treatment, with a specific focus on inflammation. This work expanded my scientific capabilities and strengthened my commitment to advancing innovative, accessible healthcare solutions.
Earning this PhD is more than a personal achievement; it represents perseverance, faith, and the unwavering support of those around me. My journey has taught me that while the road may be difficult, dedication and resilience make all things possible. I hope my story inspires others—especially young people from townships like Meadowlands—to boldly pursue their dreams. If I could do it, they can too".
– Dr Singo Dakalo

DR KEYS DANIELLE –ZOOLOGY

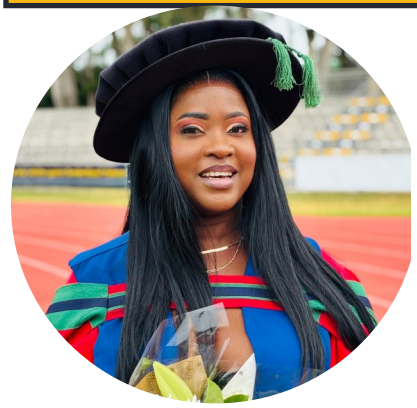
"My PhD thesis examined how environmental variability influences the survival, breeding success, and chick growth of Wandering Albatrosses (*Diomedea exulans*) breeding on sub-Antarctic Marion Island. Using long-term demographic (1984–2021) and biologging (1998–2021) datasets, I investigated how climatic and oceanographic conditions, breeding history, and foraging behaviour shape population trends. The results show that regional oceanographic factors drive sex-specific survival patterns, while local environmental pressures, including reduced rainfall, contribute to breeding failures. Parental coordination and foraging trip duration were found to be major drivers of chick growth. Although populations in parts of the Atlantic Ocean are declining, those in the Southern Indian Ocean, including Marion Island, show signs of increase, offering cautious optimism for this Vulnerable species. Overall, the study underscores both the resilience and vulnerability of this species amid accelerating environmental change.

My PhD journey came with more than a few unexpected twists. What began as a project with no fieldwork and a supposedly "clean" long-term dataset quickly turned into one of the most memorable adventures of my life. I returned to Marion Island on a small yacht during Covid as an experienced field assistant, and those nine months became some of the most meaningful of my career. Being surrounded by extraordinary wildlife reminded me daily why I fell in love with marine ecology.

Returning to South Africa, I spent the next year cleaning the long-term dataset—slow, draining, and certainly not "clean". During this time, I faced personal challenges and often placed unnecessary pressure on myself. I remain deeply grateful to the people who supported me, encouraged balance, and helped me navigate the tougher moments. I was also fortunate to travel to France for a collaborative research visit and to Pucón, Chile, for an international conference. These opportunities expanded my perspective in ways I could never have anticipated. Learning from scientists who think differently was invaluable, and I strongly recommend surrounding yourself with people who challenge and broaden your thinking".

– Dr Keys Danielle

DR ZOSELA ITUMELENG– PHYSIOLOGY



My PhD research focused on developing safer, plant-based nanotherapeutics for colon cancer, a disease that remains a major global health concern. Current treatments, particularly chemotherapy, are limited by severe side effects and reduced effectiveness, highlighting the need for alternative therapeutic strategies. Motivated by this challenge, the study explored the green synthesis of gold nanoparticles (AuNPs) using two medicinal plants, *Bridelia ferruginea* and *Cannabis sativa*, and investigated their potential as anticancer agents.

The findings showed that both *Bridelia ferruginea*-derived AuNPs (BF-AuNPs) and *Cannabis sativa*-derived AuNPs (CN-AuNPs) exhibited stronger cytotoxic activity against colon cancer cell lines than the standard drug 5-fluorouracil. Mechanistic analysis revealed that BF-AuNPs regulated tumour growth and inflammation, while CN-AuNPs activated intrinsic apoptosis pathways, effectively inducing cancer cell death. Overall, the study highlights the significant potential of medicinal plants and plant-based AuNPs as novel, eco-friendly, and effective nanotherapeutics for colon cancer treatment—offering a promising step toward safer and more targeted therapies.

My PhD journey has been one of profound academic growth, personal transformation, and resilience. Alongside advancing my research in green nanotechnology for cancer treatment, I had the privilege of mentoring several cohorts of Nanoscience master's students between 2021 and 2025. Supporting their proposal development, laboratory work, and thesis writing strengthened my leadership skills and reaffirmed the importance of investing in the next generation of scientists. I presented my work at both international and local conferences, including events in Singapore, Switzerland, Rome, and across South Africa. These opportunities were affirming and inspiring, allowing me to share eco-friendly nanomedicine innovations while learning from global experts.

The journey was not without challenges. Balancing the demands of doctoral research with parenthood and part-time work required discipline, endurance, and self-compassion. The loss of my co-supervisor was a deeply painful and defining moment, reminding me of the human connections that underpin scientific progress. Despite these obstacles, I remained committed to excellence, earning recognitions such as the SACNASP Science Communicator Award (2023), the Novartis Next Generation Scientist Fellowship in Switzerland (2022 & 2023), and the NRF PhD Scholarship (2021–2024).

I have also contributed to the academic community as an NRF funding reviewer, a moderator at international conferences, and a postgraduate representative—roles that broadened my perspective on research leadership. My peer-reviewed outputs include a journal article on gold nanoparticles for neuroprotection and a book chapter on nanomaterials for breast cancer therapy.

– Dr Zosela Itumeleng

KRISH CHETTY

This study develops a knowledge exchange framework enabling South African publicly - funded incubators to engage with Chinese counterparts, addressing ecosystem fragmentation to enhance entrepreneurship support. Employing the Constructivist Grounded Theory, the research conducted 34 semi - structured interviews ecosystems, and Chinese partners, complemented by 27 entrepreneur surveys. Findings reveal dissatisfaction with South Africa's incubation ecosystem, including funding constraints and other development challenges. Despite and other development challenges. Despite power asymmetries and intellectual property concerns, participants demonstrated optimism toward Chinese collaboration. The study culminates in a phased, iterative framework incorporating capability development and partnership building, supported by comprehensive monitoring and evaluation mechanisms.
- Dr Krish Chetty

DEBBIE CLAASSEN

Erosional gullies pose significant threats to the socio - economic development of rural communities in the Eastern Cape Province of South Africa. The study undertook a survey with novel methodological approaches to examine the spartial, temporal formation and evolution of gullies in the Mthatha area. The aim is to guide stakeholders towards prioritizing sustainable implementation of mitigation strategies to safeguard valuable arable land and infrastructure for rural communities that are disproportionately impacted.
- Dr Debbie Classen

WILLIAM EDWARD GOOSEN

Erosional gullies pose significant threats to the socio - economic development of rural communities in the Eastern Cape Province of South Africa. The study undertook a survey with novel methodological approaches to examine the spartial, temporal formation and evolution of gullies in the Mthatha area. The aim is to guide stakeholders towards prioritizing sustainable implementation of mitigation strategies to safeguard valuable arable land and infrastructure for rural communities that are disproportionately impacted.
- Dr William Edward Goosen

LISA HANCKE

This research investigates the oceanographic processes driving the formation of the Cold Ridge, a major seasonal mid—shelf upwelling feature on the Agulhas Bank off the south coast of South Africa. This plays a key role in marine plankton abundance Using ships, current meters, temperature sensors and satellites, the study demonstrated how shelf currents, wind - driven coastal upwelling, Agulhas Current meanders, and offshore mesoscale eddies interact to form and shape this cold water, nutrient - rich, plume. The findings not only improve our understanding of ocean– shelf interactions but also have significant implications for South Africa's fisheries, particularly the commercial chokka squid industry which supports the livelihoods of some 36000 people in the Eastern Cape.

- Dr Lisa Hancke

SIPHUMELELE MAJODINA

Deep hydrodesulfurization (HDS) of fuel oils remains critical due to stringent environmental regulations limiting sufur content 10—15 ppm. This work explores nanostructed catalysts for HDS of refractory dibenzothiophene (DBT). Advanced characterisation (XRD, BET, XPS, TEM) and catalytic testing reveal how Fe Mo loading, TiO2 - AI2O3 support properties, and reaction conditions synergistically enhance HDS efficiency. Optimised Fe - Mo/ TiO2 –Ai2O3 systems achieve high DBT conversion and biphenyl selectivity, driven by improved active phase dispersion, acidity, and sulfidation. Kinetic studies guide the design of efficient HDS catalysts, advancing cleaner fuel technologies. Findings are disseminated via a high - impact journal publication and a conference presentation. The candidate is now employed as a researcher at Sasol.

- Dr Siphumelele Majodina

KATHERINE SUSAN WINKLER

>2200 Short - wave infrared satellite data images covering Africa and eastern South America were processed. The spectral response from three specific wavelength bands mapped bulk mineralogical responses from the earth's surface that showed large scale geological fold and thrust structures not visible on the ground. The Damara Belt in Namibia was used as a test area to confirm findings from the satellite images. Interpretation of the Pan - African Brasiliano overprint was then extended to the Lufilian Arc and Zambezi Belt in central Africa, and the Dom Feliciano Belt in South America. This satellite image coverage provides an additional layer of information to expand on the geodynamics of southwestern Gondwana.

- Dr Katherine Susan Winkler