

NELSON MANDELA
UNIVERSITY

INSTITUTE FOR COASTAL
AND MARINE RESEARCH
(CMR)

QUARTER 3
NEWSLETTER

2023

CMR
COASTAL & MARINE
RESEARCH

NOTE FROM THE DIRECTOR

With deepest appreciation for the great contributions from our members, researchers, partners, and stakeholders, I would like to take this opportunity to highlight some of the key achievements and progress made within CMR and the broader Nelson Mandela University community during this quarter.

Our oceans and in particular their coastal areas, estuaries, and wetlands remain an essential component of the Earth's ecosystem hosting a number of species that provide a wide range of ecosystem services. As we continue to identify, generate, and use critical coastal and marine knowledge to manage to promote sustainably, let us not forget the importance of collaborating and sharing the knowledge and information needed.

Reflecting on the quarter, it is key to note the strides made by our members and partners and also celebrate achievements and milestones achieved. The Institute also celebrated MPA Day on 1 August 2023 by hosting a session titled: Developing a Shark and Ray Conservation Plan for South Africa. Our seminar for this quarter highlighted the importance of building knowledge and understanding of frameworks key to Global Biodiversity by unpacking Opportunities for Estuary Protection and Restoration.

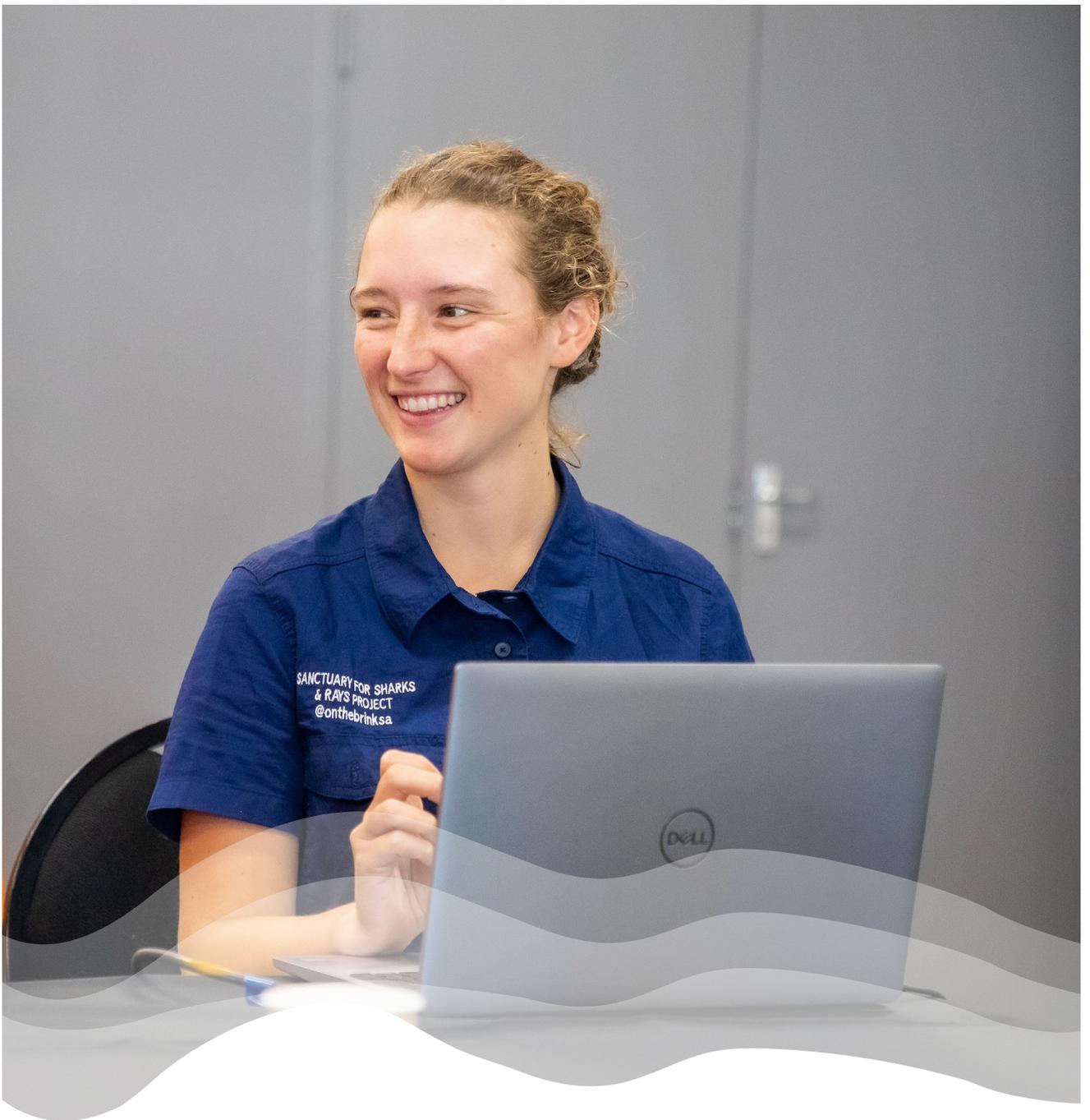
I am proud and honored to share this newsletter with you and look forward to sharing much more impactful and exciting work to come.

Dr Nomtha Hadi
CMR Acting Director

CMR QUARTER 3 SEMINAR



The Quarter 3 seminar was presented by Professor Lara van Niekerk on the topic ***2030 Global Biodiversity Framework: Opportunities for Estuary Protection and Restoration***. Prof van Niekerk presented the 2030 Global Biodiversity Framework focussing on the estuarine targets. She discussed the challenges and solutions related to these proposed targets, as well as the immediate next steps. This took place at the Ocean Sciences Campus on 15 August (81 attendees). The recording of the talk and presentation are posted on the CMR website: <https://cmr.mandela.ac.za/News-and-Events/Quarterly-Seminars>



MPA DAY SEMINAR

The MPA Day seminar was presented by Ms Nina Faure Beaulieu on the topic *Developing a Shark and Ray Conservation Plan for South Africa*. Ms Faure Beaulieu presented on the findings from her recently published article "A systematic conservation plan identifying critical areas for improved chondrichthyan protection in South Africa". This took place on Zoom on 1 August (41 attendees). The recording of the talk and presentation are posted on the CMR website: <https://cmr.mandela.ac.za/News-and-Events/Additional-Seminars>

MARINE MEGAFUNA IN THE WIO AND OCEAN FRONTS WORKSHOP

The Marine Megafauna in the Western Indian Ocean (WIO) and Ocean fronts workshop took place at the Ocean Sciences Campus from 25 to 27. The purpose of the workshop was to explore ocean fronts in the WIO as drivers of observed biological phenomena like faunal feeding and distribution patterns, eDNA/DNA and plankton accumulations and associated megafauna congregations (seabirds, whales, whale sharks and sea turtles). As well as to create a network of collaborators from a range of experts including oceanographers, ecologists and geneticists working in the region. There was a total of ~26 participants which included researchers from the University of Washington, Nelson Mandela University, Conservation International, Bayworld, Météo-France, Marine Megafauna Foundation, University of Reunion, Institut de Recherche pour le Développement (IRD), SAEON, Weather SA, University of Pretoria, Sea Search Research & Conservation, Innovium marine, University of Toliara, University of Cape Town and SANBI.



ESTUARY MANAGEMENT SHORT LEARNING PROGRAMME

The programme took place on Ocean Sciences Campus from 14 to 18 August. The five days involved intense lecturing as well as an afternoon field trip to the Swartkops Estuary. There was a total of ~50 participants which included government officials (DFFE; DEDEAT; NMBM; BCMM; Kouga LM; DWS), national park rangers (SANParks), Nelson Mandela University postgraduate students and various other science institute representatives (Knysna Basin Project; SAIAB; CapeNature; Kromme Enviro Trust; Swartkops Conservancy). Participants received input on estuary management including understanding the structure and function of estuaries, key legislation, threats on estuaries, water quality management, climate change considerations, management priorities and the progress and success of Estuary Management Plan (EMP) implementation. Presenters were from the following organisations: Western Cape Government, SANParks, SAIAB, SAEON, CSIR, Nelson Mandela University, DFFE, DEDEAT and CapeNature.



INTERNATIONAL VISITS

Oldenburg University

The Vice Chancellor, Prof Sibongile Muthwa, led a team from Nelson Mandela University including the DVC:RII Dr Thandi Mgwebi to the University of Oldenburg, Germany from 26 to 30 June. This occasion celebrated and marked 25 years of collaboration between the universities. CMR staff member, Dr Gavin Rishworth, was invited to join this delegation and represent the CMR to strengthen and build upon existing links with the Helmholtz Institute for Functional Marine Biodiversity (HIFMB). The HIFMB 4th Symposium coincided with this visit and while in Oldenburg, Dr Rishworth met with several HIFMB-linked researchers including HIFMB Director Professor Helmut Hillebrand. Also, part of the delegation linked to the CMR were Professor Jean Greyling and Dr Danai Tembo.



Chinese Delegates

The Chinese delegation of 10 officials, led by Chinese Minister of Science and Technology, Mr Wang Zhigang, visited the Ocean Sciences Campus on 5 August. Dr Thandi Mgwebi welcomed the delegation and Professor Andre Keet, Deputy Vice-Chancellor: Engagement and Transformation led the programme. Dr Nomtha Hadi, Professor Patrick Vrancken, Professor Nikki James and Professor Tommy Bornman all gave presentations at the meeting.



PLASTIC POLLUTION RISK EXPOSED IN WORLD-FIRST GLOBAL SEABIRD STUDY

Nelson Mandela University has formed partnerships with more than 20 countries to conduct the most extensive assessment to date on the effects of marine plastic exposure on oceanic birds and biodiversity worldwide. This collaboration is crucial due to the heightened vulnerability of many seabird species to the rising levels of marine plastic pollution, considering their extensive foraging and migration patterns. Professor Pierre Pistorius, the head of the Marine Apex Predator Research Unit (MAPRU), and his team played a pivotal role in contributing information regarding the behaviour and distribution of seabirds in the Southern Ocean, collaborating with BirdLife International's lead investigator, Dr Bethany Clark, and other partners.

The study, titled '*Global assessment of marine plastic exposure risk for oceanic birds* (<https://doi.org/10.1038/s41467-023-38900-z>),' examined the interaction between petrels and ocean plastics, quantifying the risk of plastic exposure for 77 seabird species on a global scale. The research incorporated individual tracking data from over 7,000 birds at nearly 1,800,000 tracking locations. The study also assessed exposure risks across various populations, seasons, and jurisdictions, including international waters beyond coastal nations' exclusive economic zones (EEZs). It identified greater exposure risks for threatened species such as the Balearic shearwater, Newell's shearwater, and Hawaiian petrels, which are already at higher risk of extinction due to other threats like invasive species, fisheries, and climate change.



MEMBER ACHIEVEMENTS

CMR post-doctoral student, Dr Alejandra Vargas was accepted into the EXC2 exchange programme. This is a bilateral exchange program between Oldenburg University (Germany) and Nelson Mandela University. Dr Vargas is currently based in Bremerhaven for 3-months working under the supervision of Dr. Ilse van Opzeeland at the Alfred Wegener Institute (AWI). The primary objective of her exchange is to receive bioacoustics training to more accurately determine marine mammal biodiversity along the Garden Route.

CMR doctoral student, Ms Carla Dodd was one of seven awardees in the category of: **"NRF Research Excellence Award for Next Generation Researchers in recognition of outstanding academic performance by a final-year doctoral candidate"**. Her research focus is a multi-tracer study linking catchment processes to coastal groundwater discharge - especially related to groundwater-dependent ecosystems, namely supratidal spring-fed living microbialite ecosystems (SSLiME). Additionally, she was also accepted into the 3-month exchange programme at Oldenburg University. During her visit, she was hosted by Prof. Gudrun Massmann, the head of the Working Group in Hydrogeology and Landscape Hydrology and co-supervisor of Ms Dodd's PhD. While the research stay was structured as a thesis writing visit, other research activities included lab visits, training and analysis, participating in the annual German PhD Hydrogeology meeting, and presenting preliminary project results at seminars. During this time, Ms Dodd also attended the twenty-first congress of the International Union for Quaternary Research (INQUA) in Roma, Italy.



MEMBER ACHIEVEMENTS

CMR Deputy Director, Professor Janine Adams was awarded the winner of the **Department of Science and Innovation - South African Woman in Science Award (2023)** as a distinguished women researcher in the **Natural and Engineering Sciences** category. This award was presented by Minister Blade Nzimande, Minister of Higher Education, Science and Innovation for an outstanding contribution to building South Africa's scientific and research knowledge base. With an NRF B2 rating, Prof Adams has published over 220 journal articles, including papers in leading international journals such as Science and Nature. She is a frequent keynote speaker for international audiences and collaborates with over 100 national and international scientists. She is an active participant in global research networks such as the West Indian Ocean mangrove and seagrass networks. Prof Adams has ongoing collaborative research projects with international universities such as the University of Wollongong, Eduardo Mondlane University, University of Oldenburg and University of Dar Es Salaam. She successfully mentored 10 postdoctoral fellows, supervised 24 PhD, 44 master's and 60 honours students, and currently supervises 10 PhD and four master's students. Prof Adams serves as a role model to female postgraduate students and strives for gender equality and empowerment by providing quality, relevant training to ensure that graduates are sought after in the workplace.

We congratulate all our members on these amazing achievements!



MEMBER OUTPUTS

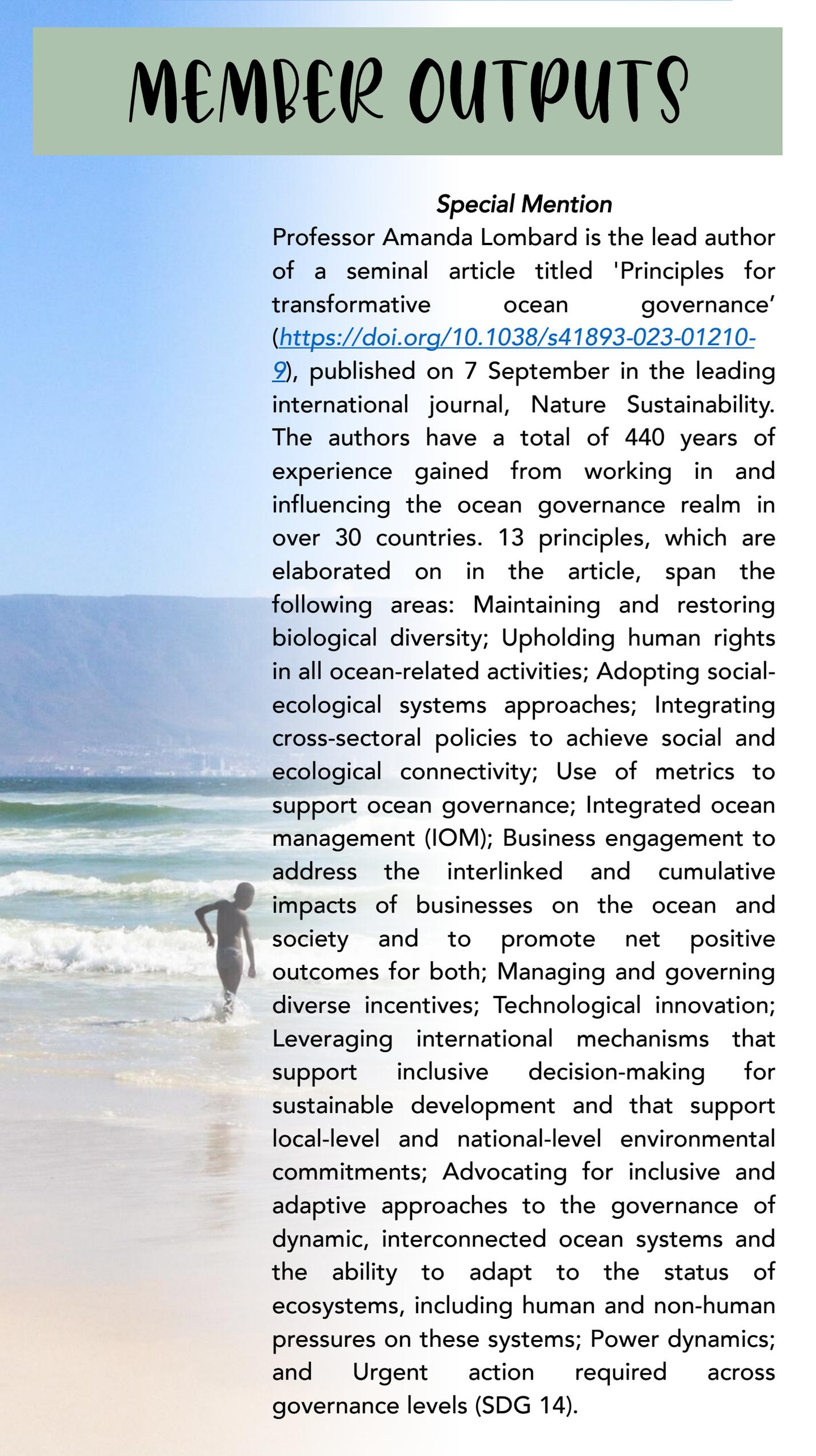
1. Amone-Mabuto, M., Mubai, M., Bandeira, S., Shalli, M.S., Adams, J.B., Lugendo, B.R. and Hollander, J. 2023. Coastal community's perceptions on the role of seagrass ecosystems for coastal protection and implications for management. **Ocean & Coastal Management**, 244, p.106811.
2. Pétilion, J., McKinley, E., Alexander, M., Adams, J.B., Angelini, C., Balke, T., Griffin, J.N., Bouma, T., Hacker, S., He, Q. and Hensel, M.J. 2023. Top ten priorities for global saltmarsh restoration, conservation and ecosystem service research. **Science of the Total Environment**, p.165544.
3. Adams, J.B., Taljaard, S. and Van Niekerk, L.. 2023. Water releases from dams improve ecological health and societal benefits in downstream estuaries. **Estuaries and Coasts**, pp.1-15.
4. Rogers, KL., Adams J.B., Cormier N., Kelleway J. and Saintilan N. 2023. Climate change effects on intertidal and subtidal environments: impacts, projections and management. **Climate Change and Estuaries**. Editors: MJ Kennish, HW Paerl, JR Crosswell. **CRC Press**, Florida USA.
5. Struwig, M., Van den Berg, A. and Hadi, N. 2023. Challenges in the ocean economy of South Africa. **Development Southern Africa**, DOI:10.1080/0376835X.2023.2232396
6. Bowlby, H.D., Dicken, M.L., Towner, A.V., Waries, S., Rogers, T. and Kock, A. 2023. Decline or shifting distribution? A first regional trend assessment for white sharks (*Carcharodon carcharias*) in South Africa. **Ecological Indicators**, 154, p.110720.



MEMBER OUTPUTS

Special Mention

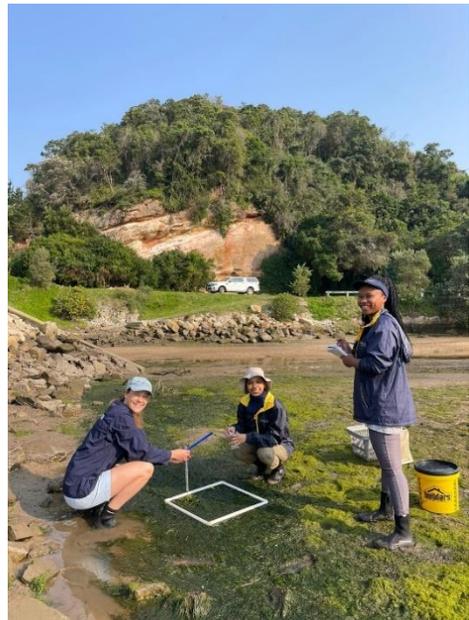
Professor Amanda Lombard is the lead author of a seminal article titled 'Principles for transformative ocean governance' (<https://doi.org/10.1038/s41893-023-01210-9>), published on 7 September in the leading international journal, Nature Sustainability. The authors have a total of 440 years of experience gained from working in and influencing the ocean governance realm in over 30 countries. 13 principles, which are elaborated on in the article, span the following areas: Maintaining and restoring biological diversity; Upholding human rights in all ocean-related activities; Adopting social-ecological systems approaches; Integrating cross-sectoral policies to achieve social and ecological connectivity; Use of metrics to support ocean governance; Integrated ocean management (IOM); Business engagement to address the interlinked and cumulative impacts of businesses on the ocean and society and to promote net positive outcomes for both; Managing and governing diverse incentives; Technological innovation; Leveraging international mechanisms that support inclusive decision-making for sustainable development and that support local-level and national-level environmental commitments; Advocating for inclusive and adaptive approaches to the governance of dynamic, interconnected ocean systems and the ability to adapt to the status of ecosystems, including human and non-human pressures on these systems; Power dynamics; and Urgent action required across governance levels (SDG 14).



SHALLOW WATER ECOSYSTEMS RESEARCH TEAM

Knysna SOMWAT Project

In August, the research team sampled in the Knysna Estuary as part of the SOMWAT project: *'Nature Based Solutions for Mitigation of Watershed Pollution: Cross-Habitat Facilitation by Coastal Seagrass Meadows'*. Point source sites were sampled together with water column sampling. The water column sampling was facilitated by the South African Environmental Observation Network (SAEON).



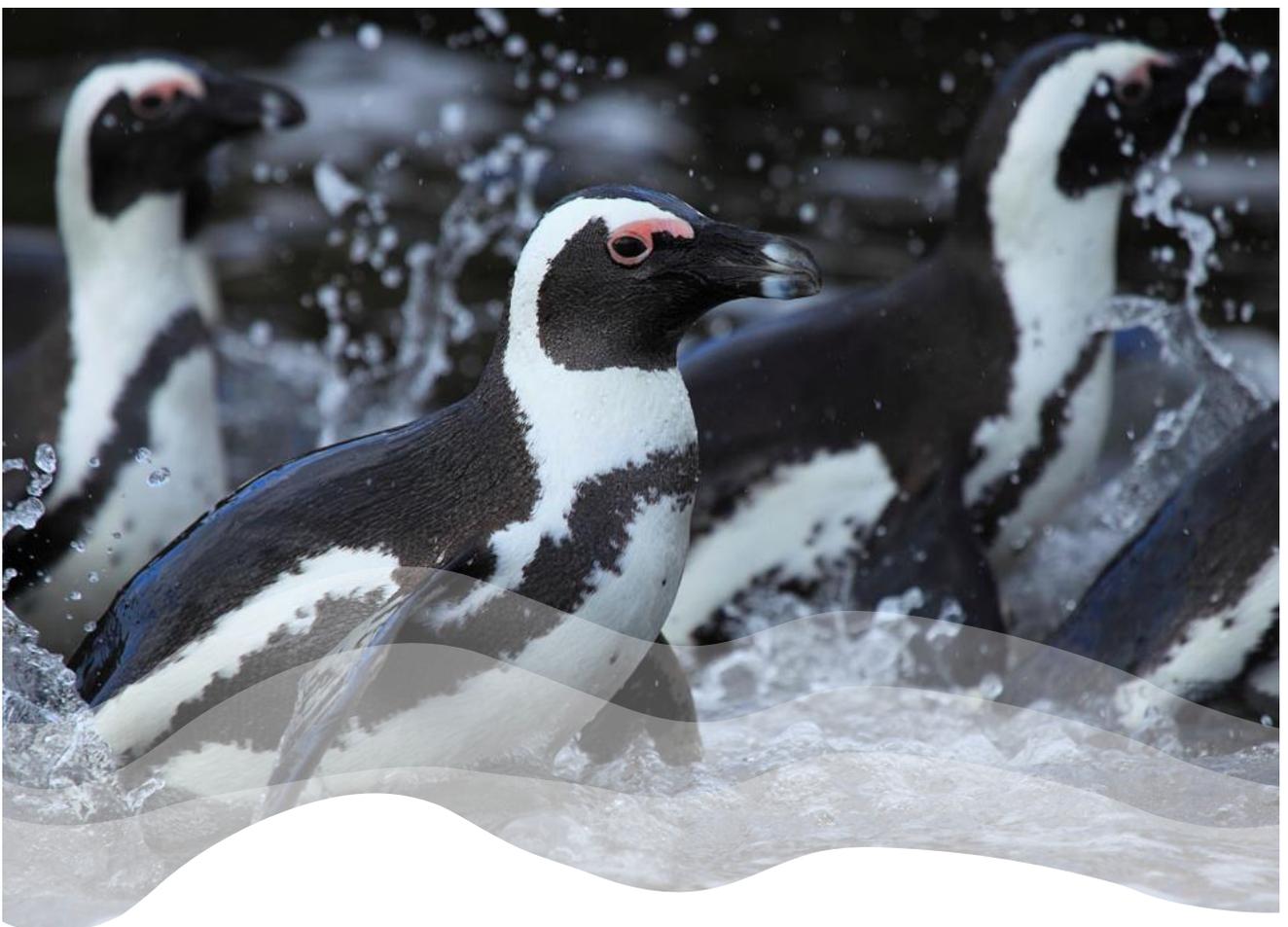
Wavecrest

In August, members of the research team travelled to Nahoon and Nxaxo estuaries to complete the annual RSET measurements. This trip also formed part of CMR students, Anesu Machite and Leigh-Ann Smit's, first PhD sampling trip studying mangrove population dynamics, bioturbation and sedimentation.



GOOD NEWS FOR AFRICAN PENGUINS

Environment Minister Barbara Creecy announced in August 2023 the ban of small pelagic fishing around all the main African Penguin colonies for the next 10 years. This has come a long way, as it is the result of a long-term scientific experiment assessing the benefits of fishing exclusion to penguins initiated in 2008. The science showed positive, albeit limited benefits to closure for penguins, and this was reviewed (and approved) by an international panel of scientific experts appointed by the Minister in January of this year. They confirmed the importance of fishing exclusions to try slow down the continuous decline of penguins in South Africa. This intervention is not the panacea but was the last one not in place of a battery of conservation actions conducted by various management institutions under the Biodiversity Management Plan gazetted in 2013. Limiting food competition with fisheries around their breeding habitat would certainly help penguins survive in the wild but would also benefit other predator species depending on these fish and sharing the penguins habitat.



CMR & OCEAN SCIENCES PUBLICATIONS

Scan the below QR codes to view the CMR expertise booklet, CMR glossy report and the Ocean Sciences brochure.

CMR Expertise Booklet



CMR Glossy Report



Ocean Sciences Brochure



CMR SOCIAL MEDIA

Social Media Statistics

Website (<https://cmr.mandela.ac.za/>)

Page views/visitors (2023) – 49448

Facebook

- Followers – 473
- Likes – 439
- Reach (2023) – 1948
- Visits (2023) – 521



Institute for Coastal
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Instagram

- Followers – 316
- Reach (2023) – 285



@CMR_MandelaUni

Twitter

- Followers – 225
- Tweet Impressions (2023) – 3231



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LinkedIn

*Profile will be shared soon.

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