

NELSON MANDELA
UNIVERSITY

2023

INSTITUTE OF COASTAL
AND MARINE
RESEARCH (CMR)

ANNUAL REPORT

CMR
COASTAL & MARINE
RESEARCH

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CMR HISTORICAL BACKGROUND

The tradition of coastal and marine research at the Nelson Mandela University dates back to the University of Port Elizabeth (UPE) in the early 1970s. This grew from a few postgraduate students to staff from several disciplines by the early 1980s. The Institute for Coastal and Marine Research (CMR) was first initiated as the Institute for Coastal Research (ICR) at the University in 1983. Collaborative interdisciplinary research on the ocean and coastal environments has therefore been done for nearly four decades at the Nelson Mandela University. Starting as a forum to promote collaboration among three academic departments (Botany; Earth Sciences; Zoology), the ICR expanded its suite of activities in the 1980s to draw in the Department of Oceanography, and to take on environmental consulting work. The initial funder was the Department of Environmental Affairs (DEA), followed by a variety of sources. The most notable was a major grant from the South African Breweries (SAB), which underwrote the ICR's activities into the 1990s.

The Institute underwent a series of transformations until 2007, including a number of name changes: SAB Institute for Coastal Resource Management (ICR) in 1997, and then to the SAB Institute for Environmental and Coastal Management (IECM) in 2002. The main focus was commercial contracts for environmental consulting. The Institute then operated as a Unit under the Faculty of Science until the University's strategic decision in 2013 to develop a strong marine and maritime institutional theme. The Maritime and Marine Sciences Strategy was written for 2016-2020, and this resulted in the establishment of the CMR in the form that it is today, as approved by Senate and Council in 2014. This emerged from the recognition that marine and coastal ecosystems are threatened, and the University must play a role in addressing these environmental challenges.

In 2016, the CMR was elevated to a university-wide institute, reporting directly to the Deputy Vice-Chancellor: Research, Innovation & Internationalisation (DVC: RII). This gave the CMR the ability to become a facilitator for the development of transdisciplinary ocean and coastal sciences research. The appointment of a part-time Director in 2016 contributed to starting Institute activities, including reaching out to other university faculties, units, entities and institutes in addition to the Faculty of Science. The CMR now spans across all seven Nelson Mandela University Faculties and its membership includes external stakeholders and international collaborators. The CMR's position at the Ocean Sciences Campus enables it to play a vital role in supporting the University's drive for excellence in ocean and coastal research.

CMR PILLARS

Vision

The CMR aims to be a leading ocean and coastal sciences institute that conducts cutting-edge research, builds capacity, and advancing the understanding of the coastal and marine environment. It also aims to serve the needs of South Africa, the continent and beyond, in a sustainable manner.

Mission

The CMR strives for excellence in transdisciplinary research and training related to coastal and marine environments. This will advance scientific knowledge and the Nelson Mandela University's Institutional Themes. It will also provide a scientific basis for management strategies that optimise the maintenance of biodiversity and sustainable use of resources, as well as contributing to the education of the community at large in matters pertaining to the coast and ocean.

Values

The CMR's activities will promote the Nelson Mandela University's values, with emphasis on the following three:

- Respect for Diversity by including staff and students from disadvantaged backgrounds in Institute activities.
- Excellence in all aspects of research, training, and outreach.
- Environmental Stewardship and adherence to the principle of sustainability.



CMR OBJECTIVES & STRATEGIES

Objectives

- Provide a forum to enhance collaboration among academics, researchers, and professionals, and build transdisciplinary teams of critical mass to address complex issues.
- Create a strong brand and market this collective expertise to develop partnerships and secure funding in key areas.
- Build capacity in knowledge and skill through research-based postgraduate training and short courses.
- Provide infrastructure support for research, especially related to diving, boating, and specialised marine equipment.
- Host regional and international meetings, as well as other activities of broad interest to showcase expertise and achievements.
- Be the first point of contact for marine issues at Nelson Mandela University and communicate, on behalf of the membership, with the University's top management and with the external community.

Strategies

- Enhance the breadth of CMR collaboration and the range of coastal and marine expertise across the University and externally.
- Increase funding for research, scholarships and resources to promote research and training.
- Strengthen branding and marketing to maintain a high national and international profile.
- Build, grow and develop expertise and fill gaps in critical areas to build capacity and broaden expertise.
- Develop, maintain and expand infrastructure at the Ocean Sciences Campus and across campuses to strengthen marine research and capacity.



CMR GOALS & TARGETS

Identify a full-time Director for the CMR:

- The acting director and the deputy directors' positions remained part-time and voluntary.
- MANCO approved the appointment of a director for a five-year period in 2022.
- Appropriate candidates for the director position were identified. The selected candidate will start in 2024.

Meet with the Advisory Board twice a year, and with the Management Committee four times a year:

- The Management Committee met four times and the Advisory Board met two times during 2023.
- Advisory Board and Management Committee members were kept informed on CMR activities, initiatives and output through quarterly newsletters and regular email updates.
- Membership for both panels was updated as necessary.

Launch the CMR as a University-wide entity outside the Faculty of Science:

- This was achieved in 2016 and the CMR has now established itself as the leading and only University-wide entity in the ocean and coastal environment on the Ocean Sciences Campus.
- The CMR continued to report to the DVC: Research, Innovation, and Internationalisation in 2023.
- The CMR's transdisciplinary membership continued to grow.
- Areas for increased collaboration with specific faculties have been identified.



CMR GOALS & TARGETS

Run research diver training courses through the Research Diving Unit:

- The Research Diving Unit remained closed during 2023.
- No diver training courses were offered during 2023.

Host several programmes to showcase ocean and coastal research:

- The CMR hosted various events and arranged activities to showcase ocean and coastal sciences research.
- Details of these events are captured under section 4.3 Research Performance.

Make use of opportunities under Operation Phakisa:

- This is a continuous process involving several collaborations with research partners, particularly those based at the Ocean Sciences Campus and those connected to external research expertise.
- Professor Patrick Vrancken is the Chairperson of the Skills Working Group for Ocean Governance and the Marine Protected Services.
- Professor Vrancken and Professor Amanda Lombard were both involved in the development of marine spatial bills.
- FishFORCE serves as a member of the Operation Phakisa Initiative 5: Compliance and Enforcement, providing training on the implementation and enforcement of the Port State Measures Agreement (PSMA) to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing.



CMR ACTIVITIES

The Nelson Mandela University is an engaged and people-centred institution that serves the needs of its diverse communities by contributing to sustainable development through excellent academic programmes, research, and service delivery. The University's vision is to be values-driven, optimising the potential of our communities for sustainable development in Africa. The CMR aims to perform in such a way that its activities form an integral part of assisting the University in achieving its goals. A wide range of activities fall under the scope of the Institute. These can be broadly classified as Research, Training, and Consulting, and they may overlap.

Research

Research, particularly transdisciplinary research in the ocean and coastal environment, is the CMR's primary activity. This forms the core of which other activities are based. Members address fundamental and applied problems through research. The CMR and its members aim to communicate research on a variety of platforms and through various forms of academic and public engagement.

Training

CMR members provide service-based training through Master's and Doctoral programmes and by hosting Post-Doctoral Research Fellows, registered in participating academic University departments. Programmes with a transdisciplinary nature are encouraged.

Consulting

The CMR embraces a wide and unique spectrum of expertise relevant to coastal and marine issues through its members, who are drawn from varied disciplines. This CMR pool of expertise is the broadest in the region and is used to provide a community service in the form of commercial consultancies on issues in the coastal zone and marine environment.



CMR GOVERNANCE STRUCTURES

The CMR is led by a Director and two Deputy Directors. Its governance is managed through its Advisory Board and its Management Committee. The Director, assisted by the Deputy Directors, provides overall vision and leadership for the CMR and assumes responsibility for all its activities. The Director is supported by the Management Committee, which represents a broader membership and guides the operation of the CMR. The Director reports to the Deputy Vice-Chancellor: Research, Innovation, and Internationalisation (DVC: RII) on behalf of the Management Committee. The DVC: RII chairs the CMR Advisory Board, which includes external stakeholders. The Advisory Board advises on the overall vision, direction, and strategy for the CMR.

After Professor Bernadette Snow's resignation from Nelson Mandela University and her stepping down as Director of the CMR on 31 January 2021, Professor Lorien Pichegru was appointed as CMR Acting Director for an initial six-month period, from 1 February to 31 July 2021. This appointment was extended several times until June 2023. Subsequently, Professor Lorien Pichegru stepped down as Acting Director and was replaced by Dr Nomtha Hadi, who served from 1 July to 31 December 2023. Professor Pierre Pistorius resigned from his position as CMR Deputy Director and was replaced by Professor Patrick Vrancken, while Professor Janine Adams remained in her role as the other CMR Deputy Director. MANCO approved the appointment for a Director of the CMR for a five-year period, starting in 2022. However, appropriate candidates were only identified and short listed after four rounds of advertising. The interviews were held before the end of 2023, and the selected candidate will begin in 2024. Two Units operate under the CMR: the Marine Apex Predator Research Unit (MAPRU) and the Research Diving Unit (RDU). Professor Pierre Pistorius continued as the Manager of MAPRU, and Professor Tommy Bornman remained the Manager of the RDU. The CMR administrative staff remained unchanged in 2023.

Five Research Chairs (SARChI) fell under the CMR during 2023: Law of the Sea and Development in Africa, Marine Spatial Planning, Ocean Science & Marine Food Security, Ocean Cultures and Heritage, and Shallow Water Ecosystems. Additionally, the CMR collaborates with a sixth Research Chair, Identities and Social Cohesion in Africa, when opportunities in ocean and coastal sciences arise.

CMR GOVERNANCE STRUCTURES

Changes in CMR Advisory Board and Management Committee membership for 2023 include:

Advisory Board

Professor Vrancken replaced Professor Pistorius as CMR Deputy Director, Professor Marshall Sheldon, the newly elected Dean of the Faculty of Engineering, the Built Environment and Technology, replaced Professor Dalenca Pottas, Dr Nomtha Hadi replaced Professor Lorien Pichegru as CMR Acting Director, Dr Gerhard Cilliers replaced Dr Andrew Cockcroft as the representative for the DFFE, Mr Brishan Kalyan replaced Ms Asisipo Mhlonyane as the representative for Master's & Doctoral candidates, Ms Telly Chauke replaced Ms Firhana Sam as the representative for Coega, and Dr Palesa Mothapo replaced Dr Kwezi Mzilikazi as the new Director of Research Support & Management.

Management Committee

On the Management Committee, changes included the retirement of Dr Derek Du Preez, who will no longer represent the School of Environmental Sciences, Mr Brishan Kalyan, who replaced Ms Asisipo Mhlonyane as the representative for Master's & Doctoral candidates, and Dr Nomtha Hadi, who replaced Professor Lorien Pichegru as CMR Acting Director. Professor Pichegru will remain on the committee as the Marine Waste Research representative. Additionally, two new members were added to the committee: Prof Nikki James, who joined as the SAIAB representative, and Prof Heloise Sathorar, who joined as the Faculty of Education representative.

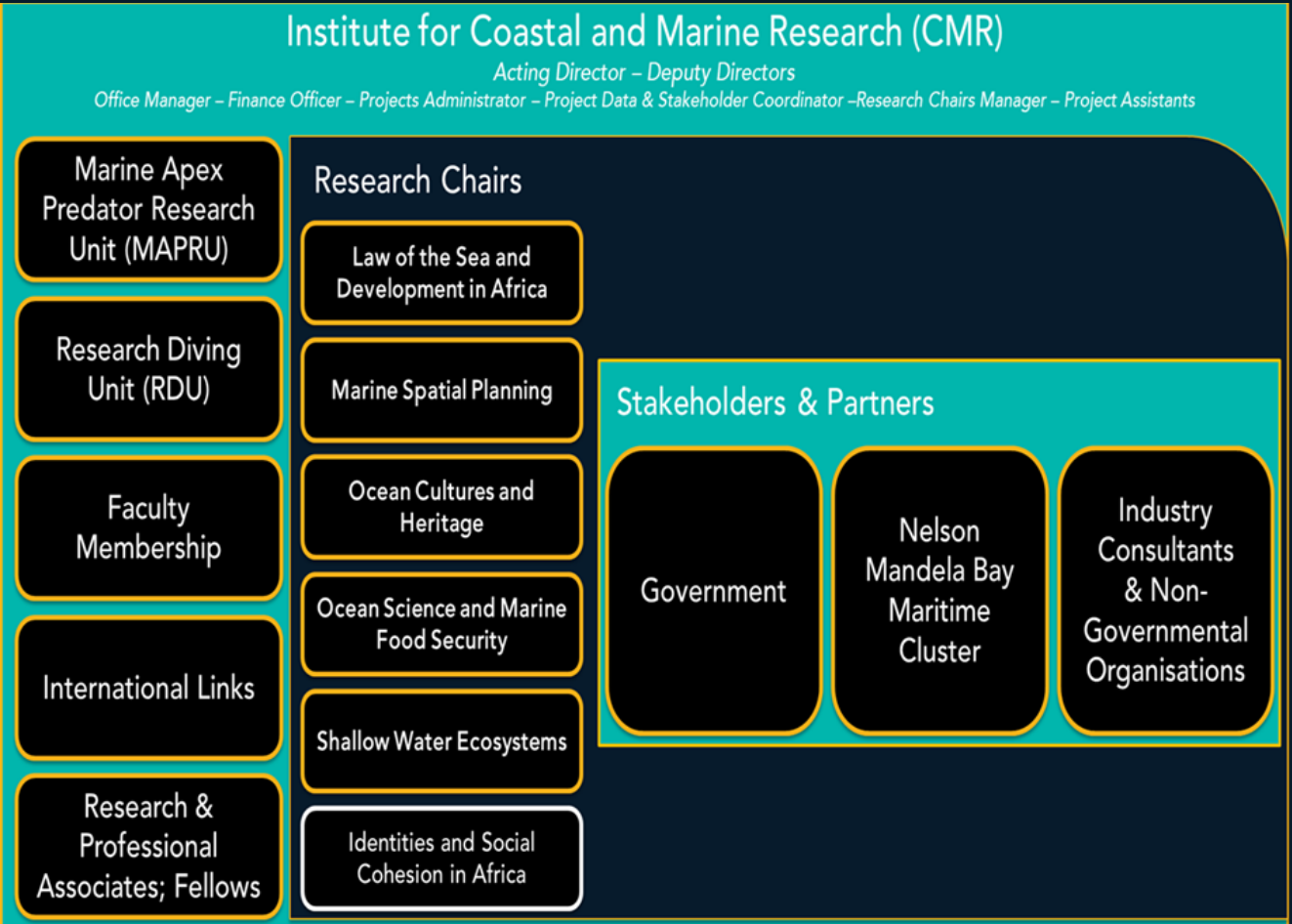


Positions for representation on the CMR Advisory Board and Management Committee for 2023:

Position/Representation	Advisory Board	Management Committee
DVC: Research, Innovation & Internationalisation	Chair	
CMR Acting Director	X	Chair
CMR Deputy Director & Representative: Research Chair	X	X
Manager: MAPRU		X
Director: Research Support & Management	X	
Dean: Faculty of Business & Economic Sciences	X	
Dean: Faculty of Engineering, the Built Environment and Technology	X	
Dean: Faculty of Humanities	X	
Acting Dean: Faculty of Law	X	
Dean: Faculty of Science	X	
Representative: Faculty of Business & Economic Sciences		X
Representative: Faculty of Health Sciences		X
Representative: Faculty of Engineering, the Built Environment and Technology & Representative: Marine Robotics		X
Representative: Faculty of Humanities & Representative: Research Chair		X
CMR Deputy Director & Representative: Faculty of Law & Representative: Research Chair	X	X
Representative: Faculty of Science		X
Representative: Faculty of Education		X
Representative: Research Chair		X
Representative: Research Chair		X
Representative: Marine Waste		X
Representative: DEA Oceans & Coasts	X	
Representative: SAIAB & Representative: NRF	X	
Representative: SAEON	X	
Representative: SAEON & Representative: RDU		X
Representative: SAIAB		X
Representative: BCRE		X
Representative: NMB Metro	X	
Representative: DFFE	X	
Representative: COEGA	X	
Student Representative: Post-Doctoral Research Fellows	X	X
Student Representative: Masters & Doctoral Candidates	X	X

Two Advisory Board meetings were held in 2023: on 3 May and 7 December. Four Management Committee meetings took place: on 31 March, 20 June, 20 September and 28 November.

The schematic below shows the CMR’s structure and linkages for 2023:



CMR membership categories were as follows:

Staff Members

University academic and technical staff employed within Departments.
Research Associates and Professors (Honorary; Adjunct; Visiting)
Researchers and Professionals that are formally registered and affiliated with the University, some directly under the CMR.

Students

Honours, Master’s and Doctoral students, and Post-Doctoral Research Fellows.

Associate Members

Colleagues from external entities involved in CMR research. These members do not have formal University affiliations.

Support Members

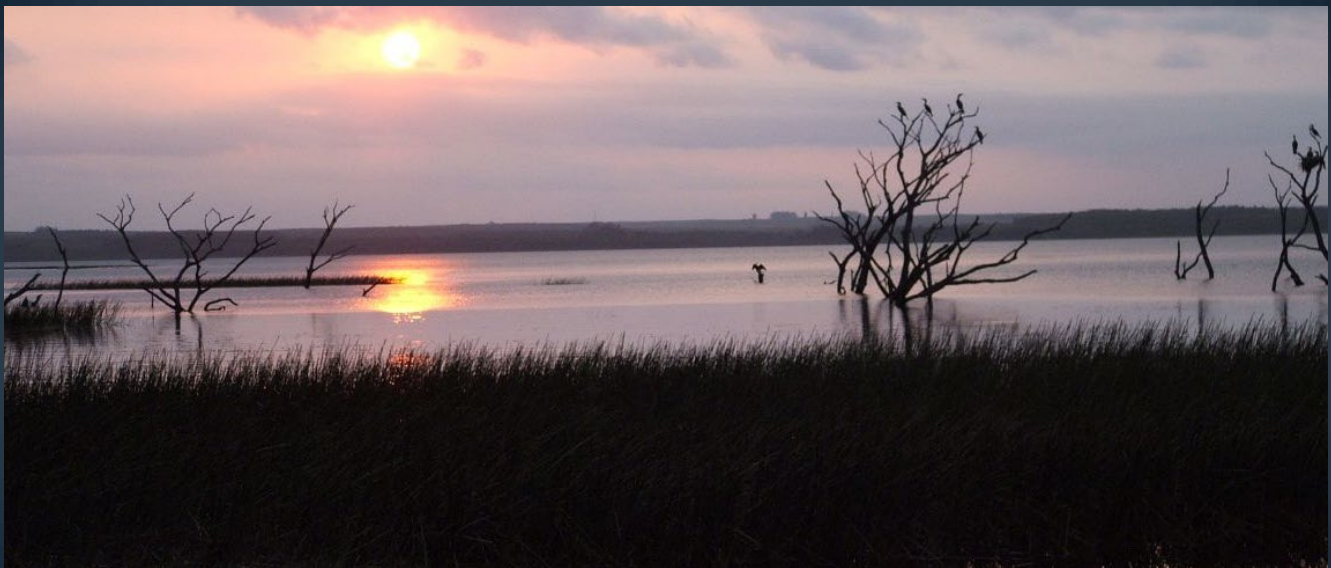
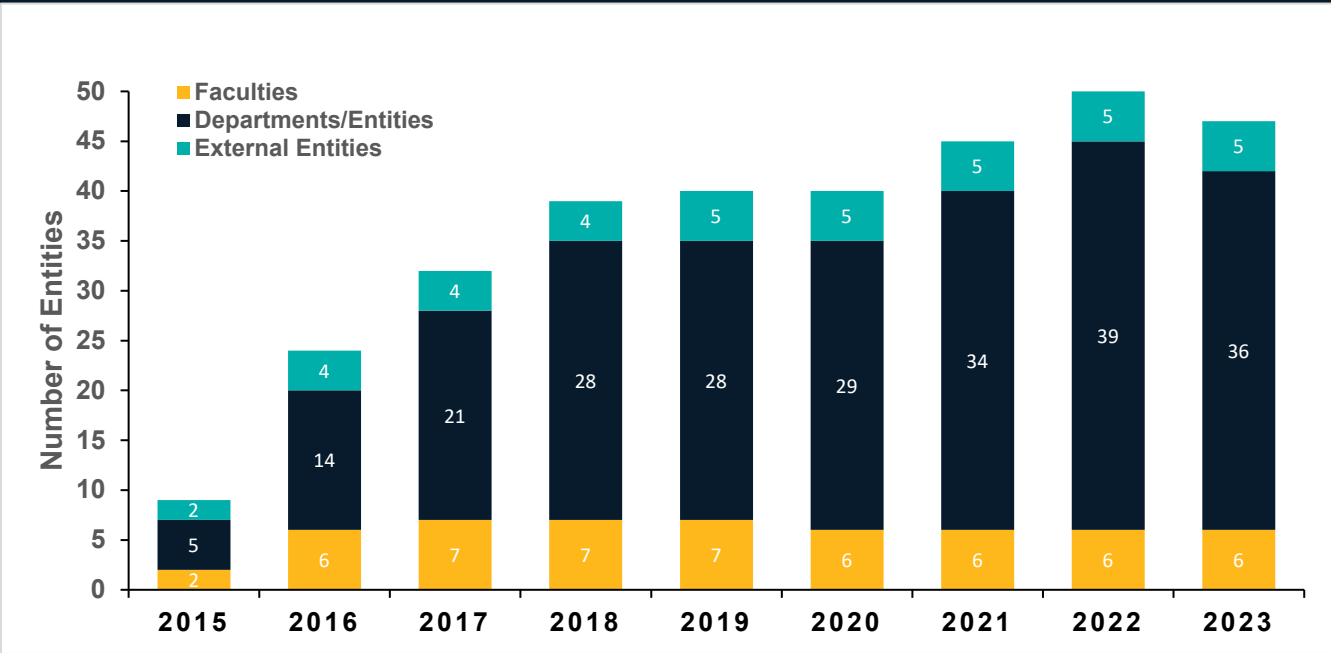
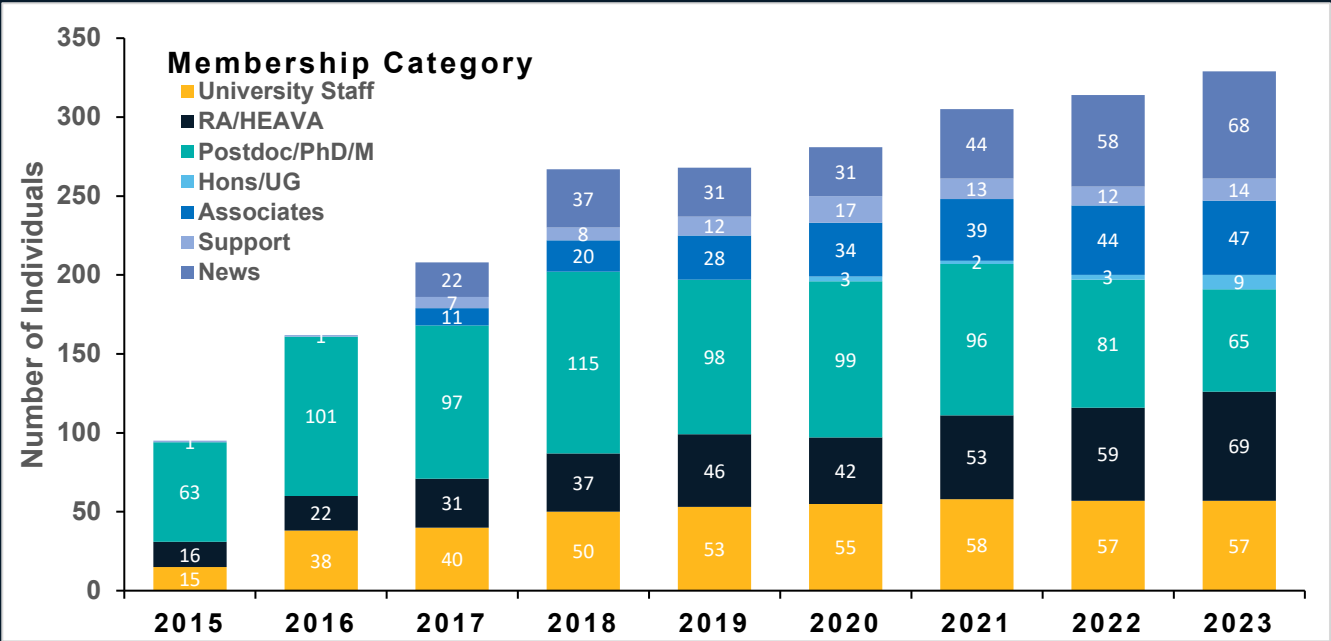
Staff that provide administrative, logistic and research support within the CMR Office.

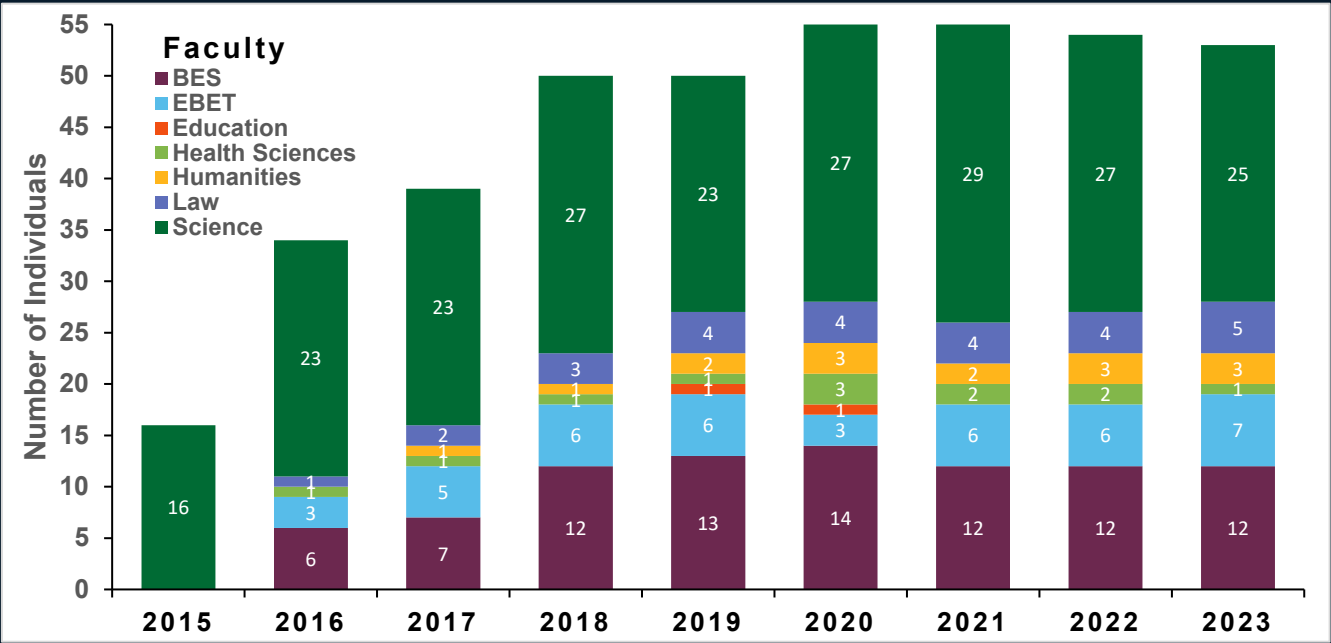
News Members

University members not involved in ocean and coastal sciences research, past students, and members of the public who wish to receive updates on CMR activities.

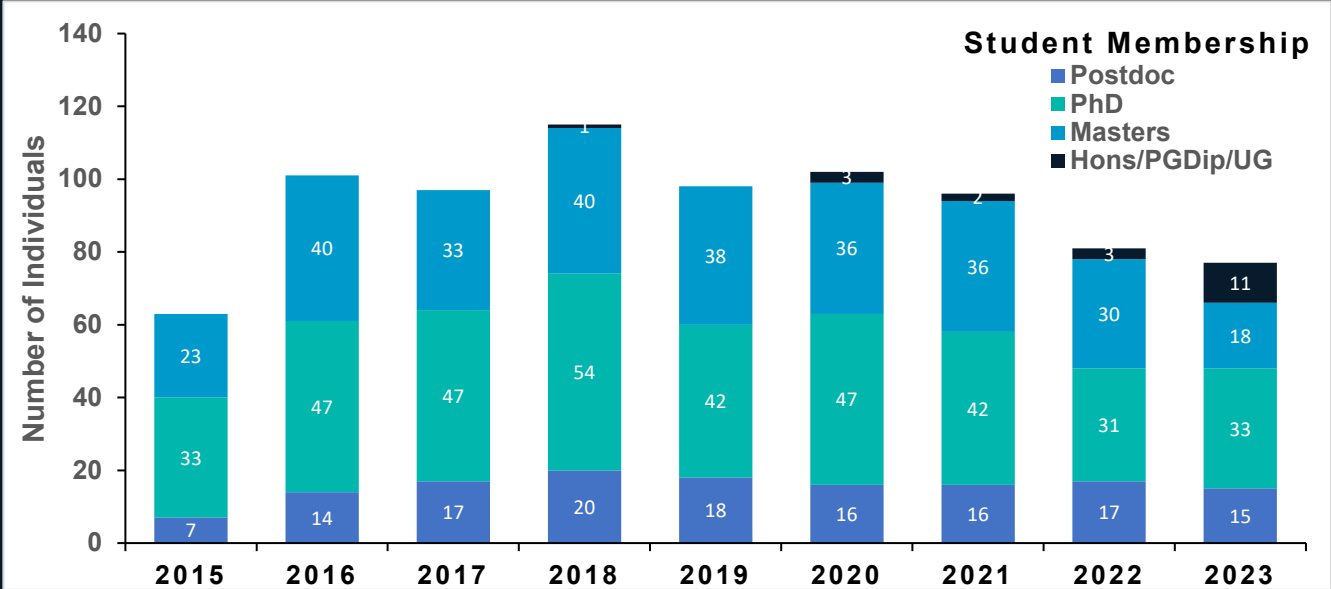
SUMMARY OF CMR OUTPUTS

The CMR and its members enjoyed a very successful year. The graphs below show various aspects of membership growth within the CMR from 2015 to 2023.



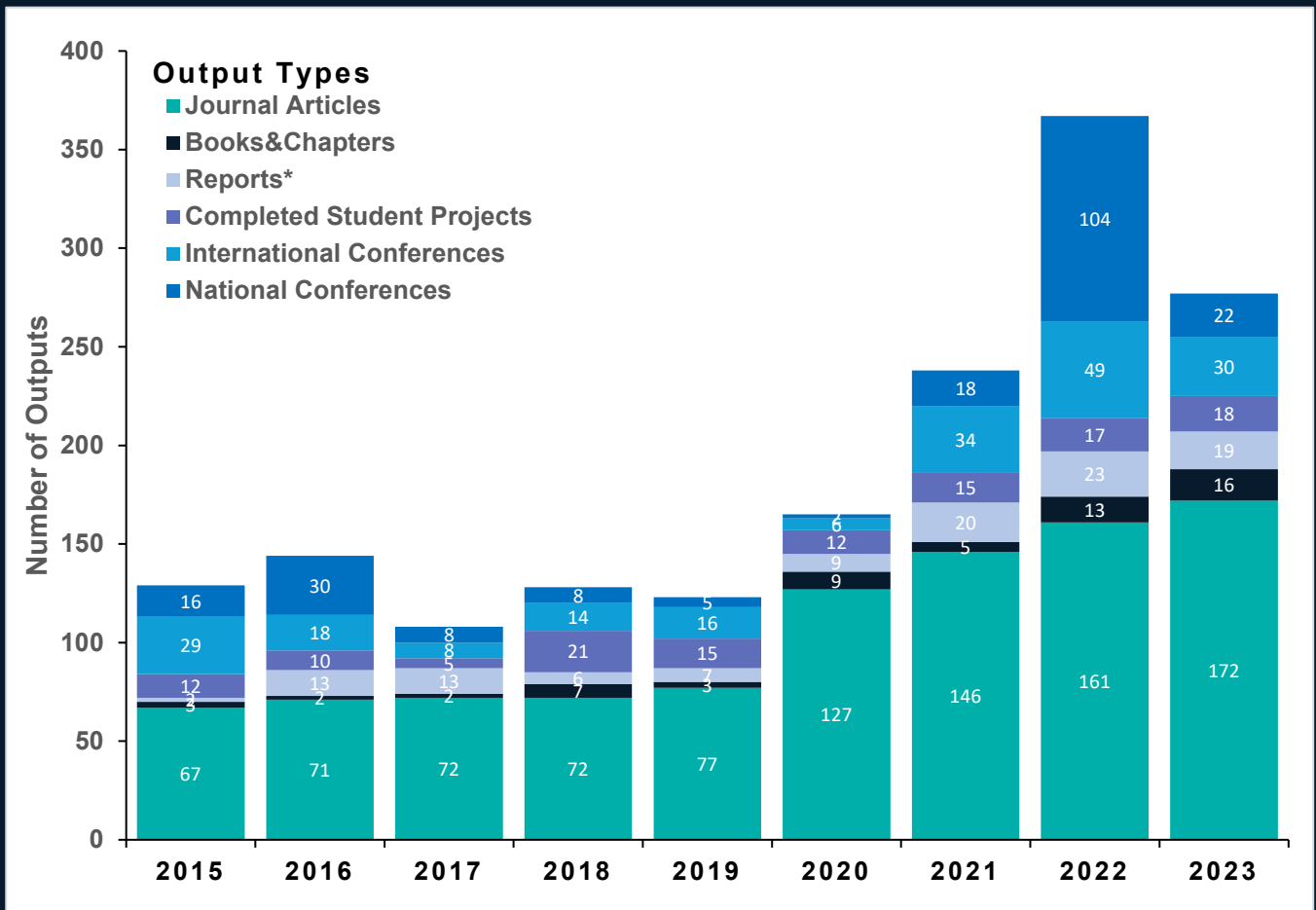


Representation of staff members per faculty. BES = Business and Economic Sciences; EBET = Engineering, Built Environment and Technology



Number of postdoctoral fellows and postgraduates, including Honours, Postgraduate Diploma and Undergraduate students (Hons/PGDip/UG)

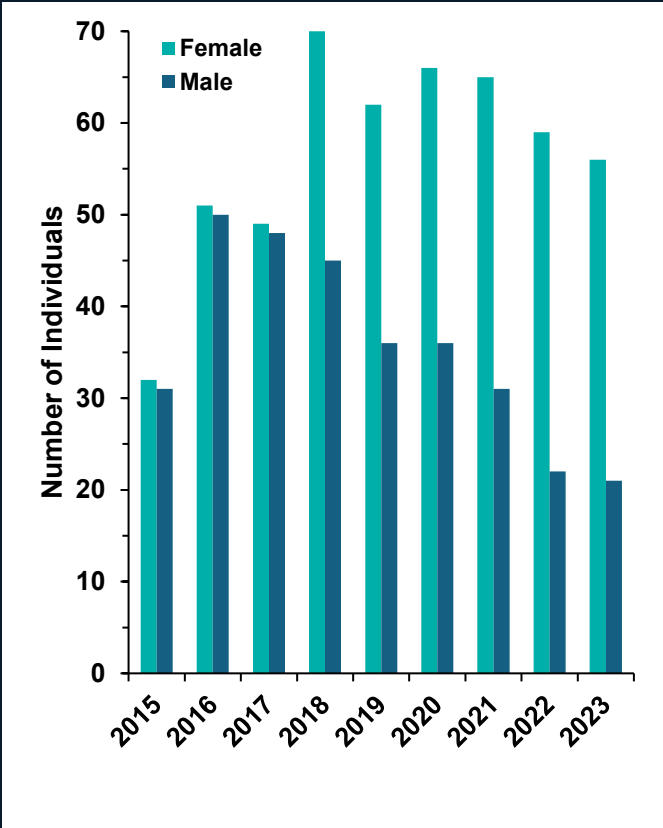
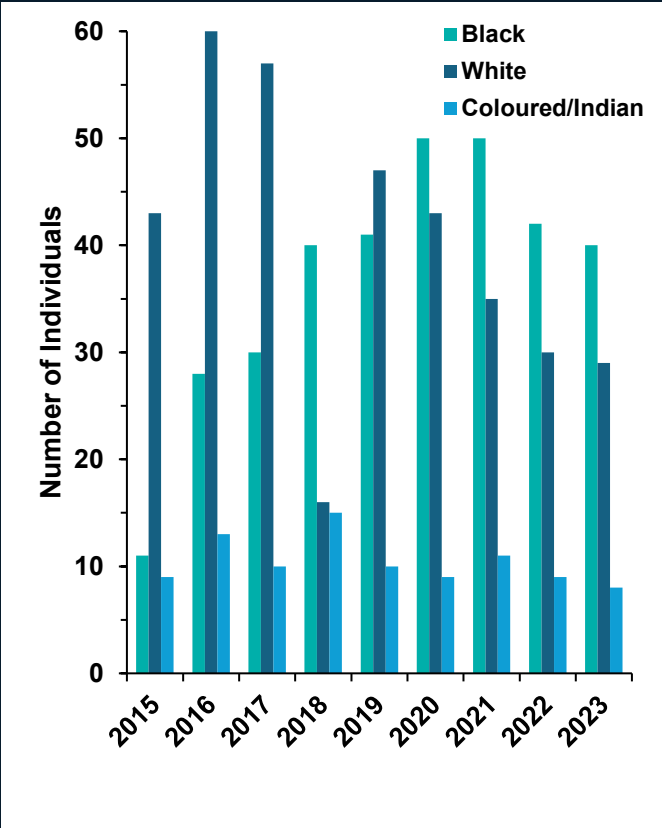




Outputs produced by CMR members by type. Note the number of books and book chapters are combined. * denotes reports, policy briefs, manuals and proceedings



The graphs below indicate CMR student race and gender demographics trends from 2015 to 2023.



Summary of Trends in Graphs

Overall, the CMR’s membership growth followed a positive trend. Fluctuations are expected, as various factors influence membership numbers annually. Student membership tends to fluctuate in cycles, depending on the number of graduating students and new student intakes. Many student members graduated in 2023. The CMR Office is committed to promoting transformation in its membership, particularly among postgraduate students.



RESEARCH THEMES

The focus of the CMR and its transdisciplinary projects, as listed above, resides within the University's Ocean and Coastal Sciences Institutional Research Theme. The CMR Office significantly contributed to the development and outputs of the 2016-2020 Ocean Sciences Strategy and has also provided input for the development of the 2021-2025 Ocean Sciences Strategy. Research within the CMR is organised into three broad Research Themes, as detailed below.

Living Resources and Marine Food Security

This theme covers projects that study and develop coastal and marine living resources which are, or can be, utilised as food sources. The Research Chairs in the Law of the Sea and Development in Africa, Ocean Science and Marine Food Security, and Ocean Cultures and Heritage (all administrated by the CMR), as well as the FishFORCE Academy (a CMR collaborator), work on various aspects of food security and community research.

Biodiversity, Conservation and Management

Projects under this Research Theme broadly focus on understanding, protecting, and managing coastal and marine ecosystems—both for conservation and sustainable human use. The CMR's Marine Apex Predator Research Unit (MAPRU) and developing marine waste research initiatives also play a role. The Research Chairs in Marine Spatial Planning and Shallow Water Ecosystems (both administered by the CMR) specifically lead projects that investigate and support the three aspects of this Research Theme.

Global Change

This theme includes research aimed at monitoring and understanding both anthropogenic and natural changes, and how these changes affect coastal and marine systems, as well as the human communities that depend on them. Climate change is monitored through several processes and avenues. MAPRU and marine waste initiatives investigate different aspects of global change. The Research Chairs in Ocean Science and Marine Food Security, Shallow Water Ecosystems, Marine Spatial Planning, and Law of the Sea and Development in Africa all incorporate global change aspects linked to their work.

MARINE APEX PREDATOR RESEARCH UNIT (MAPRU)

The Marine Apex Predator Research Unit (MAPRU) is a research Unit within the CMR. Established in 2015, it is managed by Professor Pierre Pistorius.

MAPRU's research activities focus on marine top predators as a group, addressing both fundamental and applied questions by drawing on a range of disciplines. Many marine top predator species are threatened, and the research conducted by this group emphasises conservation. As apex species at the upper limits of the marine food chain, marine top predators are generally good indicators of global change and areas of high productivity. These predators are used at both the species and community level to better understand ecosystem changes and inform conservation-based spatial planning.

MAPRU's objectives are as follows:

- Conduct research on marine top predators, particularly in relation to global change, conservation, and sustainable resource management. Research is focused on seabirds, seals, sharks and cetaceans.
- Provide learning opportunities and train postgraduate students in various aspects of marine top predator research.
- Engage the public using charismatic predator species to stimulate interest in marine biodiversity and conservation.



MAPRU’s membership consists of a number of research staff, research fellows, research associates and associate members:

- Prof Pierre Pistorius: Professor
- Prof Lorien Pichegru: Research Associate
- Dr Malcolm Smale: Research Associate
- Dr Maelle Connan: Research Associate
- Prof Mandy Lombard: Chair: Marine Spatial Planning
- Dr Greg Hofmeyr: Research Associate
- Dr Steve Kirkman: Research Associate
- Dr Andrea Thiebault: Research Associate
- Dr Tegan Carpenter-Kling: Research Associate
- Dr Florian Orgeret: Research Associate
- Dr Ralph Vanstreels: Associate Member
- Dr Ryan Reisinger: Associate Member
- Dr Newi Makhado: Associate Member
- Dr Chris Oosthuizen: Research Associate
- Dr Sibusisiwe Nqgulana: Research Associate
- Dr Alistair McInnes: Research Associate

The postgraduate membership for 2023 consisted of the following:

	Registered	Graduated
Masters Students	1	2
Doctoral Candidates	3	

This research group published a total of 17 academic articles in international, peer-reviewed journals. Noteworthy conferences attended include the following:

- International Penguin Conference, Viña del Mar Chile, September 2023.
- 50th Annual Meeting of the Pacific Seabird Group, La Jolla USA,13-18 February 2023.
- CCAMLR meeting (Working Group on Ecosystem Monitoring and Management), Kochi India, 3-14 Jul 2023.



RESEARCH DIVING UNIT (RDU)

The Research Diving Unit (RDU) has been closed since the start of 2019. Various options were investigated to get the RDU operational again as the RDU and Ocean Sciences Campus stakeholders as well as the CMR Management Committee and Advisory Board were unanimous that the unit should not only be retained but expanded to serve the broader trans-disciplinary university community, support new ocean science projects (e.g., Marine Robotics, microplastics, etc.), the public (diver training and use of the chamber) and industry partners.

The RDU remained closed for 2023. However, the RDU is being resurrected as a diving unit and not a diving school. Professor Roberts has been appointed as the director of the diving unit. With regards to the decompression chamber, Bay Hyperbaric Medicine has been officially operating since 2022. CMR members from groups involved in diving (SAEON; SAIAB; Ocean Science and Marine Food Security Research Chair) provided such support in their personal or professional capacity where possible.



RESEARCH CHAIRS

The Department of Science and Technology and National Research Foundation established the South African Research Chairs Initiative (SARChI) in 2006. Through the establishment of Research Chairs at public universities in South Africa, this initiative attracts and retains excellence in research and innovation. The focus is on developing postgraduate student and early career researchers, and the aim is to feed new research leadership and capacity into public universities.

Five Research Chairs were hosted at the Ocean Sciences Campus during 2023. The CMR provides administrative and research support to the Chair Holders, and these Chairs are considered as falling under the CMR.



Shallow Water Ecosystems
Professor Janine Adams



Law of the Sea and Development in Africa
Professor Patrick Vrancken



Ocean Cultures and Heritage
Professor Rose Boswell



Ocean Science and Marine Food Security
Professor Mike Roberts



Marine Spatial Planning
Professor Mandy Lombard



Identities and Social Cohesion in Africa
Professor Andrea Hurst



LAW OF THE SEA AND DEVELOPMENT IN AFRICA

SARChI Law of the Sea and Development in Africa Chair Holder: Professor Patrick Vrancken

Prof Vrancken published one book in 2023 titled *State Ocean Jurisdiction, as well as* submitted a new batch of edited chapters of *The Law of the Sea: Contemporary Norms and Practice in Africa* to the publisher. He also published a multi-author output in Nature Sustainability flowing from a 2020 conference initiated by the Chair.

In 2023, three of Prof Vrancken's doctoral students completed their projects.

Prof Vrancken was formally invited by the incumbent to avail himself to being a member of the new International Law Association's Committee on the Protection of Persons at Sea.



MARINE SPATIAL PLANNING

SARChI Marine Spatial Planning (MSP) Chair Holder: Professor Amanda Lombard

Two of Prof Lombards' PhD students, Zoleka Filander and Lize von Staden, and one of her MSc students, Victoria Stockdale, graduated in 2023. Prof Lombard has two new post-doctoral fellows, Tegan Carpenter-Kling and Kaylee Smit, who will assist in completing the Algoa Bay Marine Spatial Plan and synthesise the biophysical data from the mesophotic region on the East Coast of South Africa from all our previous ACEP projects, respectively.

Together with her research team and collaborators, Prof Lombard published 17 peer-reviewed papers, an international book chapter and a report for the Convention on the Conservation of Antarctic Marine Living Resources, and either presented or co-authored 11 conference presentations (six international and five national).

The MSP team is now the “go to team” for East Africa and the Western Indian Ocean region, as well as Uruguay, for providing assistance to NGOs, International Institutions (like UNEP) and Governments with their marine spatial planning processes.

Prof Lombard discovered stromatolites in Groenvlei, a coastal paleo-lake which she is trying to restore, which has led to the collaboration with Research Chair, Prof Rosemary Dorrington, to determine the genetic composition of these stromatolites (the restoration work is led by my post-doc Minke Tolsma);

Prof Lombard was invited to present her Nature Sustainability paper at the UN Nairobi Convention and Western Indian Ocean Science Policy Platform (WIO-SPP) in Maputo, Mozambique, in December 2023.



OCEAN SCIENCE AND MARINE FOOD SECURITY

UK-SA Bilateral Research Chair in Ocean Science and Marine Food Security
Chair Holder: Professor Michael Roberts

Slope moorings off Port Edward were collected and a ship sampling survey of an active cyclonic eddy was executed. These huge physical and biological in situ datasets are now ready to be analysed and integrated with the satellite and ocean modelling studies being done in parallel. MSc and PhD students are respectively doing these.

Eleven one-year multidisciplinary studies investigating the impacts of Climate Change on the Mozambique shelf, covering physics, biology, fisheries and social aspects were completed. A final workshop was hosted to shape the manuscripts for publication in a Special Issue.

In 2022 the Mozambican cohort of students was expanded from 2 to 6 ranging from MSc, PhD and postdoc, as well as a new MSc student from Kenya. This will be expanded once scholarships are available through the new MNF PhD training program.



SHALLOW WATER ECOSYSTEMS

SARChI Shallow Water Ecosystems Chair Holder: Professor Janine Adams

In 2023, Prof Adams received the Department of Science and Innovation, South African Woman in Science Award as a distinguished women researcher in the Natural and Engineering Sciences category for her outstanding contribution to building South Africa's scientific and research knowledge base. She also received the Nelson Mandela University, Faculty of Science researcher of the year award.

Prof Adams was appointed by the South African Department of Mineral Resources and Energy as the South African co-ordinator for the IAEA RAF7020 project "Establishing regional capacities to assess the importance of carbon sequestration in aquatic systems for climate change mitigation, environmental conservation and economic purposes."

Prof Adams attended the Technical Meeting on Nuclear and Isotopic Techniques in Blue Carbon Habitats as a Nature-Based Solution for Climate Change (Evt2104589) in Vienna, Austria from 13-16 November 2023. This was organised in collaboration with the GO-BC (UN Decade Programme for Ocean Science for Blue Carbon in the Global Ocean).

In 2023, a total of 20 articles were published in high-ranking peer-reviewed journals as well as an Editorial and 5 research reports. Prof Adams' H-index has increased from 45 in 2023 to 50 in 2024.

Prof Adams supervised 15 postgraduate students and three honours students. She acted as host to two post-doctoral fellows. She was an external examiner at the University of Cape Town, Rhodes and the University of KwaZulu-Natal.



OCEAN CULTURES AND HERITAGE

**SARChI Ocean Cultures and Heritage
Chair Holder: Professor Rose Boswell**

In April 2023, Prof Boswell was awarded a Scholarly Residency from the Rockefeller Foundation, Bellagio, Italy.

Prof Boswell presented two masterclasses in Windhoek at the University of Namibia on cultural heritage research in Africa.

Prof Boswell completed three cultural heritage impact assessments and prepared project proposals for five further impact assessments for offshore exploration and development.

On 28 July 2023, Prof Boswell was invited by the Istanbul University to present a keynote lecture for the International Conference on Data Management, Digitization and Economic Practices in Preserving & Promoting Cultural Heritage - DEPCH2023. In September 2023, Prof Boswell was also invited to present research findings at the IORA Member State meeting in Cape Town to present the Blue Values Journey Project and to present findings on Coastal Heritage and Cultural Tourism in the Western Indian Ocean region.

Prof Boswell conceived and implemented the NRF Ocean Cultures and Heritage and Global Ocean Accounting Waterways International Conference, 22-23 September 2023.

Prof Boswell supervised 9 PhDs and 4 Postdocs. She published 3 peer reviewed articles, finalized the draft of a new poetry anthology of 50+ poems, and one photographic book, completed several coastal cultural heritage impact assessments, submitted 2 papers for review, prepared proposal for Palgrave Macmillan for a book series on Blue Heritage.

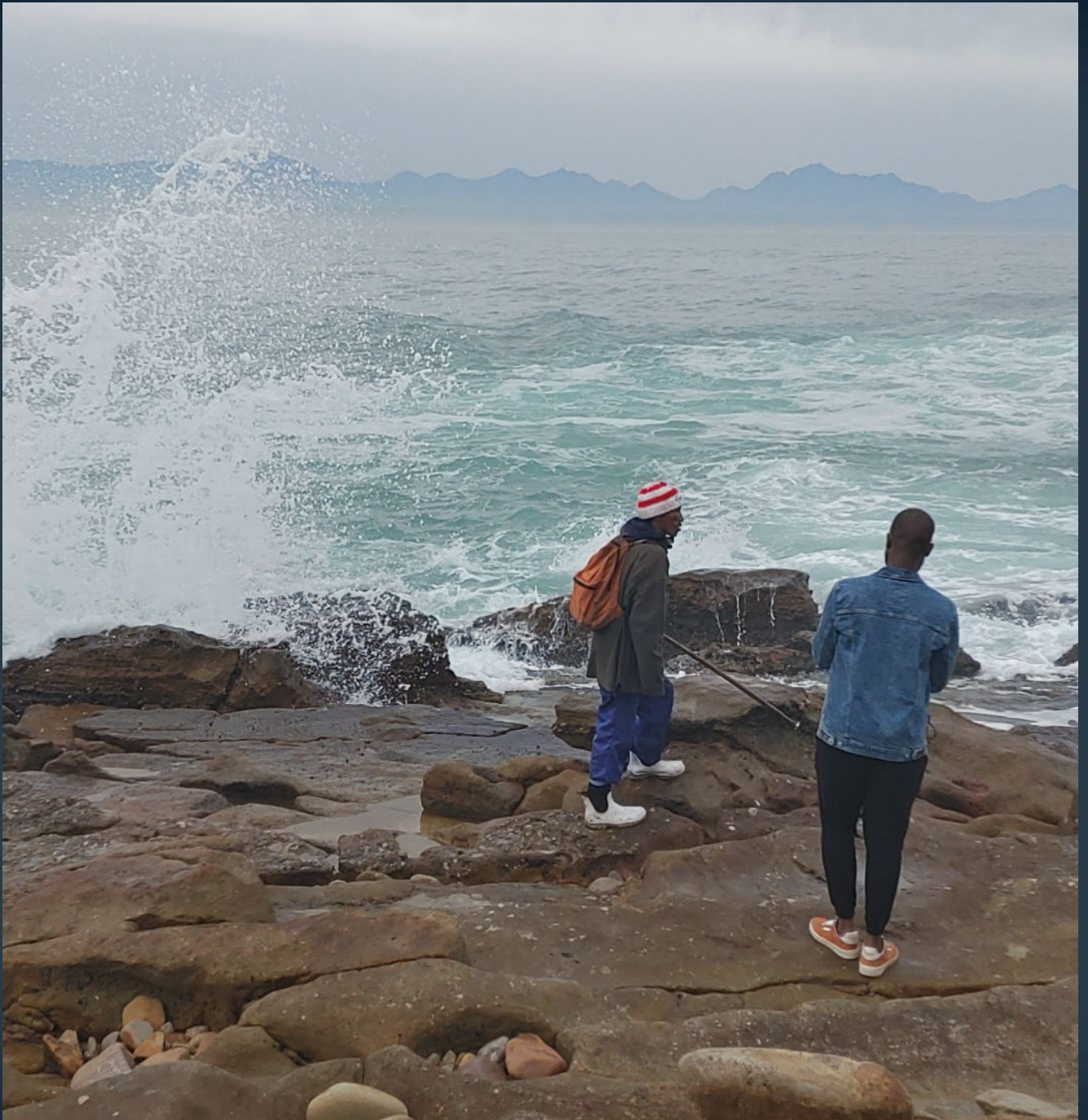


IDENTITIES AND SOCIAL COHESION IN AFRICA

SARChI Identities and Social Cohesion in Africa
Chair Holder: Professor Andrea Hurst

Research undertaken by this Chair focusses on examining the interfaces between philosophy as a way of life in its many dimensions, psychoanalytic thinking, and the development of notions of ethical responsibility within the contemporary paradigmatic shift from “simplicity” to “complexity.”

This is not an Ocean Sciences Campus Research Chair, and it does not fall under the CMR, but when ocean and coastal sciences opportunities are presented, the CMR collaborates with this sixth Research Chair.



AWARDS & HIGHLIGHTS

Vice Chancellor's Excellence Awards

This annual event took place on 27 November. This celebration recognises and showcases excellence in research, teaching, innovation, creative outputs, and institutional support. The following CMR members received awards and were acknowledged for their excellence during this ceremony:

- Professor Magda Minguzzi - Research Excellence Award
- Professor Janine Adams - Faculty Researcher of the Year Award
- Tanya Wagenaar - Faculty Excellent Teacher of the Year Award
- Professor Magda Minguzzi - Engagement Excellence Award
- Dr Denise Schael - Professional, Administrative and Support Service Staff (PASS) Award (Peromnes level 5-7)

NRF Awards

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).

DSI Awards

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.

Three Minute Thesis (3MT) Competition

CMR doctoral student, Mia Strand, claimed the second runner-up position in the national 3MT competition, hosted in South Africa by the University of the Free State. She also took the runner-up position at the institutional level at Mandela University, where eight students were selected to compete.

RATED RESEARCHERS

The researcher rating system is a key driver in the National Research Foundation’s aim to build a globally competitive science system in South Africa. This tool provides a benchmark for the quality of South Africa’s researchers against the best in the world. Ratings are allocated based on a researcher’s recent outputs and impact, as perceived by international peer reviewers. The rating system encourages excellent quality publications in high impact journals and outlets.

Ratings are awarded within the following categories: A - Leading international researchers; B - Internationally acclaimed researchers; C - Established researchers; P - Prestigious awards and Y - Promising young researchers.

The table below details the most recent ratings for CMR university researchers:

NAME	RATING	FACULTY	SPECIALISATION
Adams, JB (Professor)	B	Science	Estuarine & Coastal Systems
Boswell, Rose (Professor)	C	Arts	Cultural Diversity; Social Justice
Connan, M (Dr)	C	Science	Marine Ecology; Stable Isotopes; Genetics
Cowling, R (Professor)	A	Science	Evolutionary Ecology; Palaeobotany
Fritz, H (Dr)	C	Science	Earth and marine sciences
Hattingh, DG (Professor)	B	EBEIT	Friction Processing; Manufacturing Technologies
Hurst, A (Professor)	C	Arts	Philosophy
Kirkman, SP (Dr)	C	Science	Earth and marine sciences
Leitch, AWR (Professor)	C	Sciences	Physics
Lombard, A (Professor)	B	Science	Systematic Conservation Planning; Animal Welfare
Miranda, NAF (Dr)	C	Science	Aquatic Invertebrate Ecology
Neethling, JH (Professor)	B	Science	High Resolution Transmission Electron Microscopy
Nel, P (Professor)	B	Science	Coastal Ecology & Conservation; Sea Turtle Research
Oosthuizen, WC (Dr)	Y	Science	Ecology
Pichegru, L (Professor)	C	Science	Seabird Ecology; Plastics; Education
Pistorius, PA (Professor)	C	Science	Marine Apex Predators; Global Change
Potts, A (Dr)	P	Science	Coastal Palaeoscience; Genetics
Rishworth, G (Dr)	Y	Science	Marine Biology
Scholtz, B (Dr)	C	Science	Data Analytics; Business Intelligence
Shakantu, W (Professor)	C	EBEIT	Building Economics
Strydom, NA (Professor)	C	Science	Estuarine Ichthyology
Vrancken, PGH (Professor)	C	Law	Ocean Governance

ACADEMIC JOURNAL & BOOK PUBLICATIONS

The CMR enjoyed another successful year in terms of publication outputs. CMR members published a record high of 176 articles in good quality, high impact, peer reviewed journals.

Below is a list of the transdisciplinary (SI, IBSS & DoE) journal articles published by CMR members during 2023:

Adams JB, Taljaard S, Van Niekerk L. 2023. Water releases from dams improve ecological health and societal benefits in downstream estuaries. <i>Estuaries and Coasts</i> 46: 2244–2258.
Adams LA, Karenzi N, Parker D, Sink K. 2023. Patterns and potential drivers of mesophotic communities of the warm-temperate Amathole shelf of South Africa. <i>Estuarine, Coastal and Shelf Science</i> 295: 108562.
Adeniran AA, Mngomezulu SK, Mbanga S, Shakantu W. 2023. The study of waste composition in Joe Slovo Township, Nelson Mandela Bay Municipality, South Africa. <i>Waste Technology</i> 11(1): 33-41.
Agbakoba VC, Webb N, Jegede E, Phillips R, Hlangothi SP, John MJ. 2023. Mechanical Recycling of Waste PLA Generated From 3D Printing Activities: Filament Production and Thermomechanical Analysis. <i>Macromolecular Materials and Engineering</i> 2300276.
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Amone-Mabuto M, Mubai M, Bandeira S, Shalli MS, Adams JB, Lugendo BR, Hollander J. 2023. Coastal community's perceptions on the role of seagrass ecosystems for coastal protection and implications for management. <i>Ocean & Coastal Management</i> 244:106811.
Bailey G, Cawthra HC. 2023. The significance of sea-level change and ancient submerged landscapes in human dispersal: A geoarchaeological perspective. <i>Oceanologia</i> 65(1): 50-70.
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Boswell R. 2023. Prioritizing the culture metric for transformative ocean management in South Africa. <i>Ecosystems and People</i> 19(1): 2260492.
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Rishworth GM, Dodd C, O’Connell TW, Adams JB, Anderson C, Bornman TG, Cawthra HC, de Kock L, Gama PT, Human LRD, Lemley DA, Manziya M. 2023. Coastal microbialite seeps as accessible monitoring locations of local aquifer resources. In: Coastal seeps and groundwater connectivity. WRC Project C2022/2023-00833. November 2023. Water Research Commission, Pretoria, South Africa.
Rivers N, Strand M, Snow B, Metuge D, Lemahieu A, Benkenstein A. 2023. Policy Briefing 268: Integrating Indigenous and Local Knowledge in Marine Spatial Planning African Perspectives Global insights.
Snow B. 2023. ROCA report. COP28.
Strand M, Shields S, Morgera E. 2023. Policy Brief: 10 key messages for reimagining ocean literacies that consider children’s human rights to development and culture.
Van Niekerk L, Adams JB, Hougane A, Lamberth S, Macamo C, MacKay F, Taljaard S, Weerts S, Lamberth S. 2023. Services for an Integrated Flows Assessment to facilitate the development and agreement of “Objective Flows” at key sites in the Pungwe Basin. Estuary Supporting Specialists’ Report. Global Water Partnership Southern Africa (GWPSA), Project No. GWPSA/0120/003/April 2022, South Africa.
van Niekerk L, Taljaard S, Adams JB, Allan A, Lemley D, MacKay F, Riddin T, Weerts SP, Lamberth SJ. 2023. Classification of Significant Water Resources and Determination of Resource Quality Objectives for Water Resources in the Usutu to Mhlathuze Catchments: Ecological Consequences Report, Volume 2: Estuaries. DWS PROJECT NUMBER WEM/WMA3/4/00/CON/CLA/0123, volume 2.



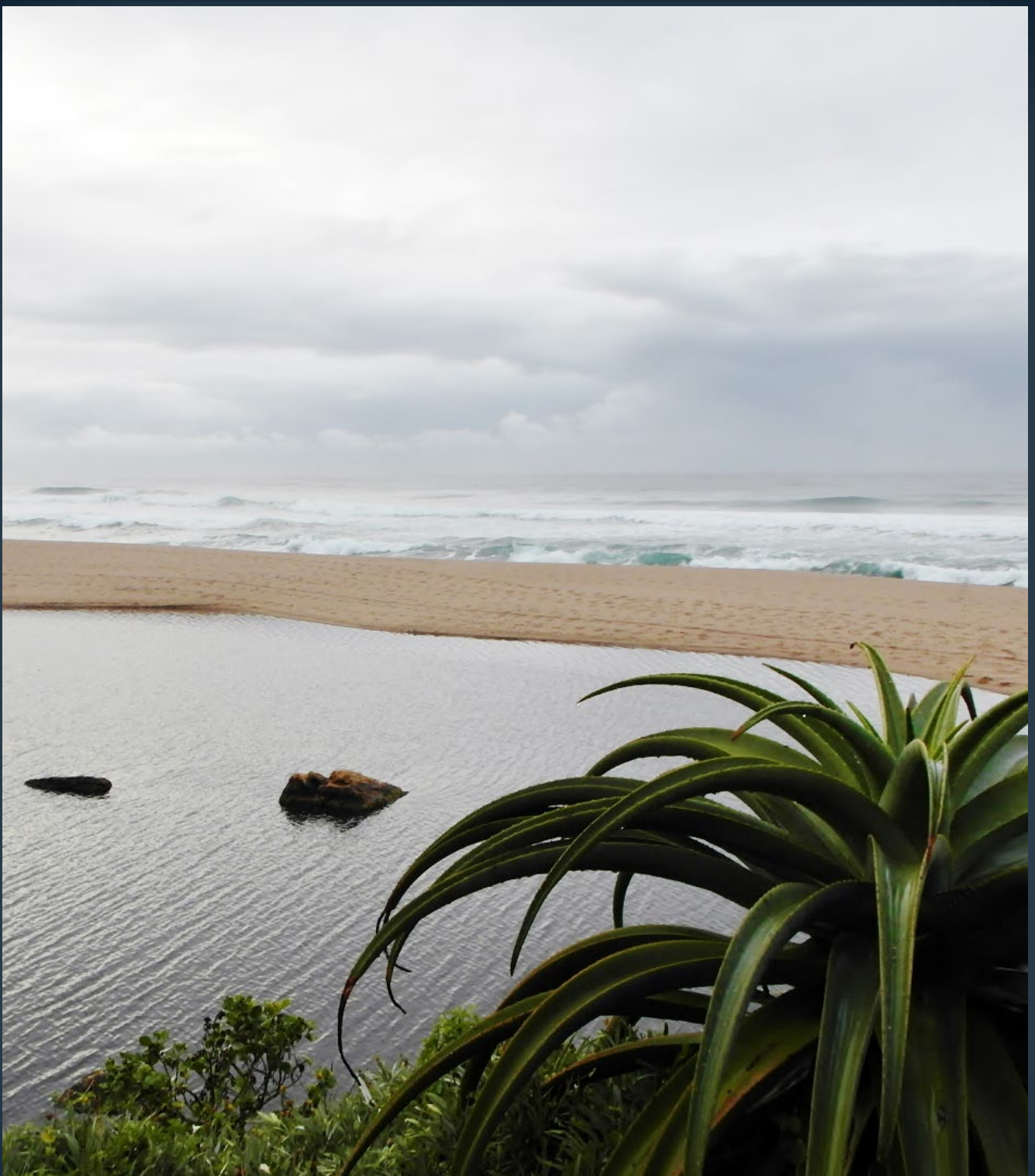
CREATIVE OUTPUTS

The following list details creative outputs produced by members:

FishFORCE Academy. 2023. FISHFORCE Virtual Law Enforcement Game - FishFORCE Bridge Inspection. It is mobile based, available on smartphones and desktops. The game allows players to learn through experience and through the use of a virtual environment, while leading them to approach problem solving through critical thinking. February 2023.

Strand M. 2023. Ukuxhumana Nolwandle (Ocean Connections) Exhibition in Mandeni, KwaZulu-Natal. March 2023. Virtual exhibition and project video.

Thiebault A. 2023. Radio podcast on the AFNAP project - Plongeon avec les manchots. 28 Septembre 2023. Le podcast immersif de l'océan, du studio Renée Prod.



ACADEMIC ENGAGEMENT

As the core function of the CMR, engagement on professional academic platforms is crucial. The CMR's strength lies in coordinating events with a transdisciplinary nature. Here, conferences, symposia, courses, talks and other events managed by the CMR are detailed.

CMR Quarterly Seminars

The CMR hosts a hybrid quarterly seminar series to showcase research done by prominent CMR researchers or valuable collaborators. Recordings of the talks and presentations are posted on the CMR website.

The Quarter 1 seminar was presented by Dr Tegan Carpenter-Kling on the topic From High Seas to Coastal Islands: From Counting Seabirds to Spatial Analyses in R. Dr Carpenter-Kling highlighted her past, present, and future research. This included her work on sub-Antarctic seabird species as well as how she applied her skills to contribute towards efforts to conserve South Africa's seabirds. This took place in-person (25 attendees) and via Zoom (18 attendees) on 22 February 2023.

The Quarter 2 seminar was presented by Dr Heidi van Deventer on the topic Using GIS and Earth Observation to Report Changes in Extent and Integrity of Aquatic Ecosystems Aligned with Global Biodiversity Framework Targets. The use of GIS and remote sensing in mapping and typing of Inland Waters for South Africa was also presented, demonstrating progress and challenges with ongoing projects. This took place in-person (35 attendees) and via Zoom (56 attendees) on 18 April 2023.

The Quarter 3 seminar was presented by Prof 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 in-person (45 attendees) and via Zoom (36 attendees) on 15 August 2023.

The Quarter 4 seminar was presented by Prof Helmut Hillebrand on the topic Are there tipping points for biodiversity change? Prof Hillebrand explored indications of such threshold transgression and disproportional change in diversity in ecological data. He also addressed the scale sensitivity of biodiversity responses to environmental change and interpret these in the context of tipping risks. This took place in-person (45 attendees) and via Zoom (37 attendees) on 8 November 2023.

Western Indian Ocean - Ocean Accounts Workshop

The Western Indian Ocean - Ocean Accounts (stakeholder engagement) workshop took place on 27 and 28 February. This workshop took place in-person (Day 1: 22 attendees; Day 2: 20 attendees) at the Beach Hotel and via Zoom (Day 1 & 2: 23 attendees). On 27 February those in attendance reported back on work achieved in the CoP to date and identified lessons learned. On 28 February the way forward for the OAF, in South African and across the Western Indian Ocean and the rest of Africa, was mapped.

Marine Megafauna in the WIO and Ocean fronts Workshop

The Marine Megafauna in the WIO and Ocean fronts workshop took place from 25 to 27 July 2023. This workshop took place in-person (11 attendees) in the CMR boardroom at the Ocean Sciences Campus and via Zoom (~15 attendees). The purpose of the workshop was to explore ocean fronts in the Western Indian Ocean 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.

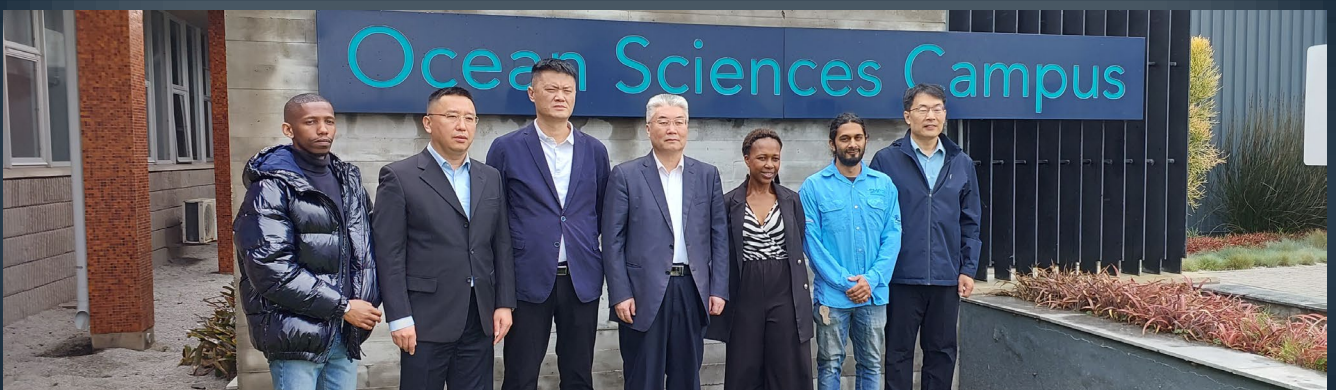


The MPA Day seminar was presented by Ms Nina Faure Beaulieu on the topic Developing a Shark and Ray Conservation Plan for South Africa. Ms Nina Faure Beaulieu presented on the findings from her recently published article “A systematic conservation plan identifying critical areas for improved chondrichthyan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

Chinese Delegate Visit

The Chinese delegation of 10 officials, led by Chinese Minister of Science and Technology Mr Wang Zhigang, visited the University's 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, Prof Patrick Vrancken, Prof Nikki James, Prof Tommy Bornman all gave presentations at the meeting.

The CMR hosted a meeting with a smaller delegation on 13 October. The purpose of the visit was to develop mechanisms for implementation of the recently signed MoU between the two universities. The discussions included modalities for collaboration in the strategic areas outlined in the MoU and the visit allowed broader engagement with various stakeholders at Nelson Mandela University. Dr Nomtha Hadi, Prof Patrick Vrancken, Prof Nikki James, Prof Tommy Bornman attended this meeting. The cooperation between Nelson Mandela University and the Ocean University of China will contribute to strengthening existing capacity development, training, and education to link with the relevant supply and demand of skills required by the oceans sector through academic and higher education opportunities.



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. The course content included (1) value, structure and function of estuaries; (2) threats to estuaries; (3) climate change considerations for estuaries; (4) legislation and estuaries; (5) resource utilisation including fisheries; (6) water quality management; (7) restoration and monitoring; (8) investigating the details of an Estuary Management Plan; (9) progress and success of EMP implementation; (10) Knysna Estuary as a case study; and (11) field trip to a nearby estuary to demonstrate estuary sampling and monitoring approaches in relation to estuary health status. 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; Zwartkops Conservancy). Presenters were from the following organisations: Western Cape Government, SANParks, SAIAB, SAEON, CSIR, Nelson Mandela University, DFFE, DEDEAT and CapeNature.



Professor Helmut Hillebrand Visit

Professor Helmut Hillebrand was hosted by CMR for the month of November 2023. During his visit he gave a CMR quarterly talk, presented a three-week course on biodiversity analysis to our PhD students, met with CMR researchers at a roundtable event, gave an impromptu talk at the CMR Research Symposium, and met informally with numerous researchers and students.



CMR Research Symposium

The CMR research symposium, Optimising Marine and Coastal Research for Global Sustainability, took place on 24 November in the main conference hall on Ocean Sciences Campus. Dr Palesa Mothapo gave the welcome address, and Dr Denise Schael did the thanks and closure of the symposium. There were 9 speakers, including Dr Nomtha Hadi, Prof Nikki James, Prof Tommy Bornman, Prof Helmut Hillebrand, Dr Jessica Thornton, Mr Bayanda Laqwela, Dr Dylan Bailey, Dr Eckart Schumann and Dr Danica Marlin. There were 61 participants in attendance.



The CMR was well represented at a number of national and international conferences, including the following:

International Conferences (Published Papers)

Kunjuzwa D, Scholtz BM, Fashoro I. 2023. The Importance of Knowledge for Influencing Citizens’ Attitudes and Practices of Water Sustainability: The Case of the Eastern Cape. International Development Informatics Association Conference 2022 (pp. 101-117). Cham: Springer Nature Switzerland.

National Conferences (Published Papers)

Calitz AP, Cullen M, Glaum A, Greyling J. 2023. An Alumni Satisfaction Model for Computing Departments. InAnnual Conference of the Southern African Computer Lecturers' Association 2023 (pp. 137-151). Cham: Springer Nature Switzerland.

Cullen M, Calitz AP, Twani M, Greyling J. 2023. First Year Computing Students’ Career Choice Influencers. InAnnual Conference of the Southern African Computer Lecturers' Association 2023 (pp. 164-179). Cham: Springer Nature Switzerland.

Izu L, Scholtz B, Fashoro I. 2023. Model of Affordances for Wearables in Support of Health Management. Southern Africa Telecommunication Networks and Applications Conference (SATNAC) 2023. SATNAC.

Taljaard I & Scholtz B. 2023. An Extended Process for Creating Visualisations: Exploratory Testing of Integrated Fitness and Menstrual Cycle Data. Southern Africa Telecommunication Networks and Applications Conference (SATNAC) 2023. SATNAC.



Conferences Proceedings

Bohaty SM, Uenzelmann-Neben G, Childress LB, Archontikis OA, Batenburg SJ, Bijl PK, Burkett AM, Cawthra HC, Chanda P, Coenen JJ, Dallanave E, Davidson PC, Doiron KE, Geldmacher J, Gürer D, Haynes SJ, Herrle JO, Ichiyama Y, Jana D, Jones MM, Kato C, Kulhanek DK, Li J, Liu J, McManus J, Minakov AN, Penman DE, Sprain CJ, Tessin AC, Wagner T, Westerhold T. 2023. Site U1579. In Uenzelmann-Neben G, Bohaty SM, Childress LB (eds.) The Expedition 392 Scientists, Agulhas Plateau Cretaceous Climate. Proceedings of the International Ocean Discovery Program, 392: College Station, TX (International Ocean Discovery Program).

Bohaty SM, Uenzelmann-Neben G, Childress LB, Archontikis OA, Batenburg SJ, Bijl PK, Burkett AM, Cawthra HC, Chanda P, Coenen JJ, Dallanave E, Davidson PC, Doiron KE, Geldmacher J, Gürer D, Haynes SJ, Herrle JO, Ichiyama Y, Jana D, Jones MM, Kato C, Kulhanek DK, Li J, Liu J, McManus J, Minakov AN, Penman DE, Sprain CJ, Tessin AC, Wagner T, Westerhold T. 2023. Site U1580. In Uenzelmann-Neben G, Bohaty SM, Childress LB (eds.) The Expedition 392 Scientists, Agulhas Plateau Cretaceous Climate. Proceedings of the International Ocean Discovery Program, 392: College Station, TX (International Ocean Discovery Program).

Bohaty SM, Uenzelmann-Neben G, Childress LB, Archontikis OA, Batenburg SJ, Bijl PK, Burkett AM, Cawthra HC, Chanda P, Coenen JJ, Dallanave E, Davidson PC, Doiron KE, Geldmacher J, Gürer D, Haynes SJ, Herrle JO, Ichiyama Y, Jana D, Jones MM, Kato C, Kulhanek DK, Li J, Liu J, McManus J, Minakov AN, Penman DE, Sprain CJ, Tessin AC, Wagner T, Westerhold T. 2023. Site U1581. In Uenzelmann-Neben G, Bohaty SM, Childress LB (eds.) The Expedition 392 Scientists, Agulhas Plateau Cretaceous Climate. Proceedings of the International Ocean Discovery Program, 392: College Station, TX (International Ocean Discovery Program).

Bohaty SM, Uenzelmann-Neben G, Childress LB, Archontikis OA, Batenburg SJ, Bijl PK, Burkett AM, Cawthra HC, Chanda P, Coenen JJ, Dallanave E, Davidson PC, Doiron KE, Geldmacher J, Gürer D, Haynes SJ, Herrle JO, Ichiyama Y, Jana D, Jones MM, Kato C, Kulhanek DK, Li J, Liu J, McManus J, Minakov AN, Penman DE, Sprain CJ, Tessin AC, Wagner T, Westerhold T. 2023. Site U1582. In Uenzelmann-Neben G, Bohaty SM, Childress LB (eds.) The Expedition 392 Scientists, Agulhas Plateau Cretaceous Climate. Proceedings of the International Ocean Discovery Program, 392: College Station, TX (International Ocean Discovery Program).

Dodd C, Cawthra HC, Massmann G, Rishworth GM. Flushed away – nutrient load distribution related to supratidal spring-fed living microbialite ecosystems. In: Cawthra HC & Devilliers R (eds). Proceedings of the 2023 International Symposium on Marine Geological and Biological Habitat Mapping (GeoHab ’23). Saint-Gilles-LesBains, La Réunion, France. 8-12 May 2023. 120 pp.

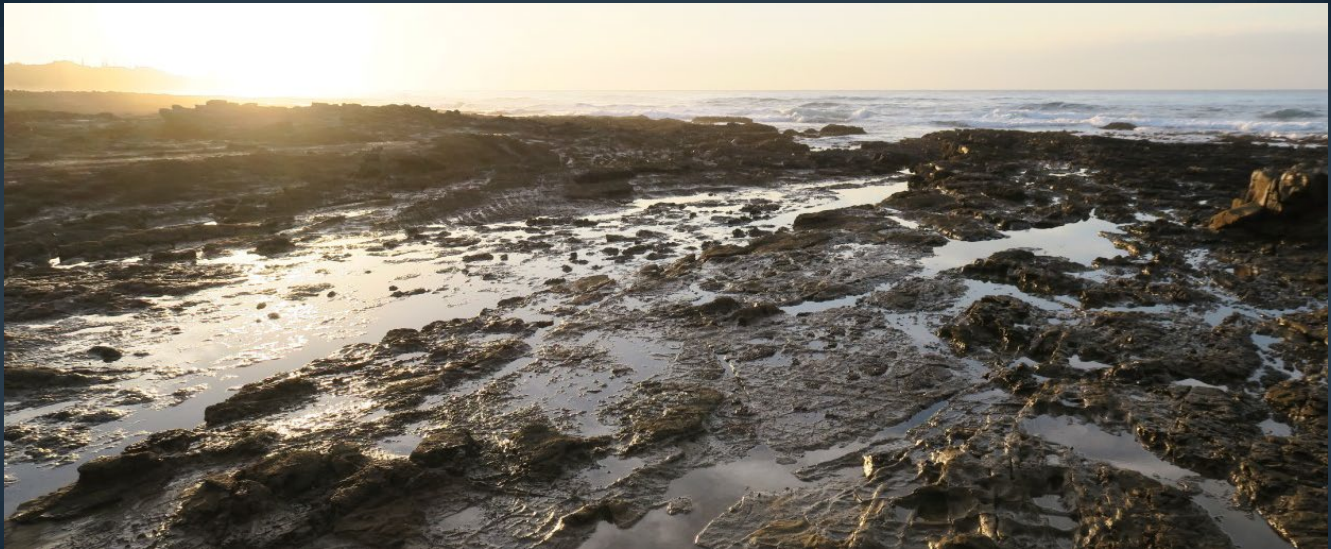
Uenzelmann-Neben G, Bohaty SM, Childress LB, Archontikis OA, Batenburg SJ, Bijl PK, Burkett AM, Cawthra HC, Chanda P, Coenen JJ, Dallanave E, Davidson PC, Doiron KE, Geldmacher J, Gürer D, Haynes SJ, Herrle JO, Ichiyama Y, Jana D, Jones MM, Kato C, Kulhanek DK, Li J, Liu J, McManus J, Minakov AN, Penman DE, Sprain CJ, Tessin AC, Wagner T, Westerhold T. 2023. Expedition 392 summary. In Uenzelmann-Neben G, Bohaty SM, Childress LB (eds.) The Expedition 392 Scientists, Agulhas Plateau Cretaceous Climate. Proceedings of the International Ocean Discovery Program, 392: College Station, TX (International Ocean Discovery Program).



International Conference (presented but not published papers)

Connan M, Bowmaker-Falconer K, von der Heyden S, Ludynia K, Pichegru L, Makhado A, Mergard G, McInnes J. 2023. DNA metabarcoding of faecal matter informs on African Penguins’ diet in South Africa. XIth International Penguin Conference, Viña del Mar, Chili, September 2023. Talk.
Connan M, Stowasser G, Dyer B, Ryan P, Glass T, Steinfurth A. 2023. Dietary plasticity of Endangered Northern Rockhopper Penguins in the South Atlantic. International Penguin Conference, Viña del Mar Chile, September 2023. Poster.
De Lange M. 2023. FishFORCE Bridge Inspection Game. SANORD Conference, 20 – 22 September 2023, Hamar, Norway.
Dodd C, Cawthra HC, Massmann G, Rishworth GM. 2023. Flushed away - nutrient load distribution related to supratidal spring-fed living microbialite ecosystems. GEOHAB, Reunion Island.
Dodd C, Cawthra HC, Massmann G, Rishworth GM. 2023. Multi-tracers unravel the threats to coastal ecosystems dependent on groundwater during droughts. XXI INQUA Congress, Sapienza University of Rome, Italy, 14-20 July 2023. Talk.
Edworthy C, James NC, Potts WM, Dupont S. 2023. Combining monitoring and eco-physiology to understand the response of a coastal fish to ocean acidification. Fisheries Society of the British Isles (FSBI) symposium, Colchester, United Kingdom. July 2023.
Faure-Beaulieu N, Olbers J, Harris J, Lombard A, Goodall V. 2023. A systematic conservation plan for sharks and rays in South Africa. International Marine Protected Area Congress 5 (IMPAC5), Vancouver, Canada, January 2023. Talk.
James NC, Jacobs A, Gayiza M, Pollard M, Human L, Rishworth G, Steyn P-P, Bernard A, Childs A-R, Murray T. 2023. Nursery role of red algae dominated reef in temperate Algoa Bay, South Africa. Fisheries Society of the British Isles 2023 Annual Symposium. 24-28 July 2023, University of Essex, UK.
Lombard A. 2023. Principles for transformative ocean governance. UN Nairobi Convention and Western Indian Ocean Science Policy Platform (WIO-SPP). Maputo, Mozambique, 5-7 December 2023.
Lombard AT et al. 2023. A National Threats Map for South Africa’s Most Endangered Dolphin, The Humpback Dolphin. Society for Conservation Biology (SCB), 31st International Congress for Conservation Biology (ICCB), Kigali, Rwanda.
Lombard AT, Durbach I, Harris J, Mann-Lang J, Mann B, Branch G, Attwood C. 2023. The Tsitsikamma Marine Protected Area: winners and losers. International Marine Protected Area Congress 5 (IMPAC5), Vancouver, Canada, January 2023. Talk.
Murray T et al. 2023. Benchmarking knowledge-based adaptive management of estuarine fisheries in South Africa for sustainable development. SANOCEAN Close Out Conference, Oslo, Norway. September 2023.
O’Connell T, Bornman T, Dodd C, Rishworth G, Anderson, C. 2023. Groundwater discharge and tidal flushing dynamics related to modern microbialite systems on a drought prone rocky coast. INQUA XXI Congress. Rome, Italy.
Oosthuizen WC. 2023. Identifying prey capture events in chinstrap penguins using accelerometer data and deep learning. CCAMLR meeting (Working Group on Ecosystem Monitoring and Management), 3-14 July 2023, Kochi, India.
Oosthuizen WC. 2023. Unreliable inferences about chinstrap penguin population trends: a statistical critique and reanalysis. CCAMLR meeting (Working Group on Ecosystem Monitoring and Management), 3-14 July 2023, Kochi, India.

Rishworth GM, Dodd C, Hawkes S, Mbuyazi D. 2023. Inferences from the cooccurrence of modern stromatolites with metazoans. Goldschmidt. Lyon, France.
Schumann E. 2023. The Agulhas current off southeast South Africa: options for power generation and OTE. The 2nd international conference on climate change and ocean renewable energy (CCORE 2023). 5-6 November 2023.
Smit KP, Bernard ATF, Harris J, Lombard AT, Sink KJ, Haupt P, Palmer R. 2023. The contribution of fish data to the last decade of conservation planning in South Africa. 11th Indo-Pacific Fish Conference and the Australian Society for Fish Biology Conference. Auckland, New Zealand. Talk.
Strand M, Rivers N. 2023. Recognising cultural heritage in marine protected areas in South Africa. IMPAC5, Vancouver, Canada. February 2023.
Strand M. 2023. Contribution to marine science roundtable. British SLS Conference, Edinburgh, United Kingdom. April 2023.
Strand M. 2023. Highlighting the ocean-development-culture nexus through reimagined ocean literacies. The GNHRE + UNEP 2023 Summer / Winter School. September 2023.
Thiebault A, Huetz C, Aubin T, Carpenter-Kling T, McInnes A, Pichegru L, Charrier I. 2023. At-sea experiments reveal the implementation of an acoustic foraging network in African penguins. The XXVIII International Bioacoustics Congress, , Tokyo, Japan, October 2023.
Thiebault A, McInnes A, Carpenter-Kling T, Huetz C, Pichegru L, Ludynia K, Aubin T, Charrier I. 2023. Acoustic foraging network in African penguins. Chen Institute Joint Conference on Brain, Behavior & Beyond, Paris-Saclay, France, May 2023.
Thiebault A. 2023. Group behaviors and communications in foraging seabirds. 50 th Annual Meeting of the Pacific Seabird Group, February 2023.
Van As H. 2023. Can we break the criminal strangle hold in Africa? Marine Regions Forum Conference: Navigating Ocean Sustainability in the Western Indian Ocean (WIO) and beyond, Dar es Salaam, Tanzania, 7 - 9 November 2023.
Van As H. 2023. Pro-active protection of marine living resources. 7th Global Fisheries Enforcement Training Conference (GFETW) - Moving from Words to Action: Innovative Collaborative Partnerships to Combat Illegal, Unreported, and Unregulated (IUU) Fishing. International Monitoring, Control and Surveillance Network, Halifax, Nova Scotia, Canada, 31 July - 4 August 2023.
Vargas-Fonseca A, Zylstra M, Clark B, Strand M, Lombard A, Snow B. 2023. Unlocking Traditional Ecological Knowledge of whales and dolphins in South Africa for inclusive conservation management. SRI/SSD and Futures Conference 2024: Futures of Natural Resources, 4 June 2024. Talk.
Von Staden L, Holness S, Lombard A, Lötter M, Skowno A. 2023. What works in landscape conservation? Insights from a multidimensional counterfactual evaluation of South Africa's biodiversity conservation strategy. Bridging the Impact Evaluation Research-Implementation Gap in Conservation Symposium, Society for Conservation Biology's 31st International Congress for Conservation Biology, Kigali, Rwanda, 23-27 July 2023. Talk.



National Conference (presented but not published papers)

Adebowale A, Naude V, Rodgers T, da Silva C, Dicken M, Waries S, Naidoo K, O’Riain J. 2023. Heavy metal and organic compound bioaccumulation in bronze whaler sharks (*Carcharhinus brachyurus*) along the coastline of South Africa. Southern African Shark and Ray Symposium. October 2023.

Bowlby HD, Dicken ML, Towner AV, Waries S, Rogers T, Kock A. 2023. Decline or shifting distribution? A first regional trend assessment for white sharks (*Carcharodon carcharias*) in South Africa. Southern African Shark and Ray Symposium. October 2023.

Dames V, Dicken M, Booth T. 2023. Port of Ngqura, a clearly artificial yet totally unexpected sanctuary. Southern African Shark and Ray Symposium. October 2023.

Edworthy C, Potts WM, Dupont S, Duncan MI, Bornman TG, James NC. 2023. A baseline assessment of coastal pH variability in South Africa and insights for future ocean acidification research. 5th National Global Change Conference. January 2023.

Faure-Beaulieu N, Olbers J, Lombard A, Harris J. 2023. Results from a systematic conservation plan for sharks and rays in South Africa and visualization of results via interactive web app. Southern African Shark and Ray Symposium, Durban, South Africa, October 24th - 27th. Talk.

Klein JD, Maduna SN, Dicken ML, da Silva C, Soekoe M, McCord ME, Potts WM, Hagen SB, Bester-van der Merwe AE. 2023. Local adaptation with gene flow in the highly dispersive bronze whaler *Carcharhinus brachyurus*. Southern African Shark and Ray Symposium. October 2023.

Lombard AT. 2023. Why we need Marine Protected Areas Plett Ocean Festival Marine Science Symposium. Beacon Island Resort, Plettenberg. Bay: 30 June – 2 July 2023.

Long K, Dicken M. 2023. The KwaZulu-Natal Sardine Run: evaluating the ‘wavelet hypothesis’ by tracking the movement of sardines up the east coast of South Africa. Southern African Shark and Ray Symposium. October 2023.

McGuinness-Dean B, Dicken M. 2023. Long-term trends in the composition and abundance of sharks within the Protea Banks Marine Protected area, South Africa. Southern African Shark and Ray Symposium. October 2023.

Murray T, Dicken M et al. 2023. The tip of the iceberg: Expanding our knowledge on chondrichthyan movements in South Africa using the Acoustic Tracking Array Platform. Southern African Shark and Ray Symposium. October 2023.

Olbers JM, de Necker L, Chapman N, Harris JM. 2023. Safeguarding South Africa’s Threatened Chondrichthyans. Southern African Shark & Ray Symposium, 25-27 October 2023. Umhlanga, Durban. Talk.

Pistorius P. 2023. Climate change impacts on marine predators. Zoological Society of Southern Africa conference, Drakensberg, 25-29 September.

Strand M, Rivers N, Snow B. 2023. Highlighting marine cultural heritage for equitable ocean management processes. SAHRA Heritage Week. Cape Town, South Africa. September 2023.

Strand M, Rivers N, Snow B. 2023. Recognising marine cultural heritage in ocean governance: the case of Algoa Bay and uThukela MPA. Waterways Conference, Gqeberha, South Africa. September 2023.

Strydom Z, Grémillet D, Fritz H, Venter JA, Collet J, Kato A, Pichegru L. 2023. Age and sex-specific foraging movements and energetics in an endangered monomorphic seabird. Marine and Conservation Educator Conference, Gqeberha, 9 January 2023.

Van As H. 2023. IUU fishing: Elimination vs reduction. Regional Workshop on Marine Resource Sustainability Challenges in Southern Africa and the West Indian Ocean - Promoting the interface between ocean science, society, and policy for sustainable blue economies in Africa, Port Elizabeth, South Africa, 29 - 30 June 2023.

Van As H. 2023. Movement of products of Illegal Wildlife Trafficking in Africa. Illegal Wildlife Trafficking (including Marine Living Resources) Colloquium for Mozambique and South Africa Judiciary Pretoria, South Africa, 25 - 27 October 2023.

Witteveen M, Pegg J, Attwood CG, Wiles E, Dorrington RA, Bornman TG, Adams J, Lemley DA, Gouws J, De Villiers MS, Turner A, De Lange F, Lombard AT. 2023. Filling in the blanks: A deep dive into some of Groenvlei’s lesser known biodiversity and features to inform restoration efforts. Western Cape Wetland Forum Student Day. 18 August 2023.

Witteveen M, Penry GS, Goodall V, Brown M, Lombard A.T. 2023. An importance-performance analysis to support tourist satisfaction with Plettenberg Bay’s boat-based whale-watching industry. 5th Garden Route Interface and Networking meeting. Premier Resort, The Moorings, Knysna: 10-12 October 2023.

Witteveen M, Penry GS, Goodall V, Brown M, Lombard AT. 2023. Assessing the sustainability of boat-based whale-watching in Plettenberg Bay, South Africa. Plett Ocean Festival Marine Science Symposium. Beacon Island Resort, Plettenberg Bay: 30 June – 02 July 2023.



The following events were not coordinated by the CMR Office, but members participated in their personal capacity:

Marine and Conservation Educator Conference

Professor Pichegru was invited to give a plenary talk at the “Marine and Conservation Educator Conference” in Gqeberha on 9 January 2023.

UCT Seminar

On 12 April, CMR Research Associate, Dr Olivier Bousquet, did a seminar presentation on Marine animals as oceanographers: Research opportunities in the SWIO and overview of the Sea Turtles for Ocean Research and Monitoring (STORM) regional research programme. The seminar took place at University of Cape Town.

Oldenburg University Visit

The Vice Chancellor, Prof Sibongile Muthwa, led a team from Nelson Mandela University including the DVC: RII Dr Thandi Mgwebi and DVC: L&T Dr Muki Moeng to the University of Oldenburg, Germany from 26-30 June 2023. This occasion celebrated and marked 25 years of collaboration between our 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 Prof Helmut Hillebrand who will visit the CMR in November 2023 while on sabbatical. Discussions included existing and new project ideas, as well as the EXC2 Early Career Researcher Exchange which funds mobility grants for PhD and postdoctoral students working within Oceans Science to spend 3-6 months in either respective university. Also, part of the delegation linked to the CMR were Prof Jean Greyling (Computer Sciences) and Dr Danai Thembo (Development Sciences). Several collaborative international research grants have been awarded to researchers from the CMR with HIFMB colleagues since 2018, including to Prof Janine Adams (GIZ Meerwissen: SOMWAT), Prof Mandy Lombard together with Dr Berny Snow (MARISCO), and Dr Rishworth (DFG) who also coordinates the EXC2 Programme at the CMR.



Ocean Law Group Seminar: A fair share of the ocean?

Professor Vrancken was invited to give a talk at the Ocean Law Group Seminar: A fair share of the ocean? in Sweden on 19 September 2023. This seminar focused on different aspects of equity in relation to governance of the ocean. Professor Vrancken's talk was entitled Equity and State Ocean Jurisdiction.

Water Ways Conference

Professor Rose Boswell hosted this conference from 22-23 September 2023. CMR Members, Dr Hayley Cawthra, Prof Rose Boswell, Dr Mia Strand, Dr Nina Rivers, Prof Bernadette Snow, Prof Juliet Hermes, Dr Elena Perez-Alvaro, Dr Zanele Hartmann, Dr Obinna Emmanuel Nkomadu and Dr Sharon Gabie all presented at the conference.

NRF-SAEON Webinar

Dr Lucienne Human gave a talk on The Water Quality of the Knysna Estuary – A Water and Sediment Biogeochemistry Perspective on 5 October 2023. The talk was part of the SAEON Seminar Series.

Visit from the Ambassador of Norway

FishFORCE hosted the Norwegian Ambassador and a delegation from the Norwegian Embassy on 21 November. There was a ceremonial signing ceremony with the Vice Chancellor, and thereafter a meeting on Ocean Sciences Campus. The Norwegian Ambassador and a delegation met with Prof Tommy Borman (CMR & SAEON), Prof Nikki James (SAIAB) Dr Jessica Fraser (Business School), Ms Soraya Artman (SAIMI), Dr Tanya Wagenaar (represented Prof Patrick Vrancken), and Elbert Liebenberg (eNtsa).



COMMUNITY ENGAGEMENT

Although academic engagement receives priority, the CMR and its members recognise the need for and the value of engaging with the community and members of the public. This section highlights the CMR's community engagement output, and a number of events arranged by other groups with CMR member involvement.

World Oceans Day Photo Competition

To celebrate World Oceans Day on 8 June, the CMR hosted a photo competition with the theme Conserve our Ocean for Future Generations. Individuals were encouraged to submit two photographs: One of Hope , where you can see the effect of conservation measures in place and one of Challenges we still face. Six individuals submitted a total of 6 entries. First prize was two Discover Scuba Diving Experience Vouchers from Pro Dive and second prize was a A2 Canvas Mounted Print from Katz Camera & Print. The winner was Tebatso Morena and the runner-up was Rachel Kibble. The winners were announced on World Oceans Day via the CMR mailing list and social media accounts.

Winner: Tebatso Morena
“Early morning” & “Afternoon”

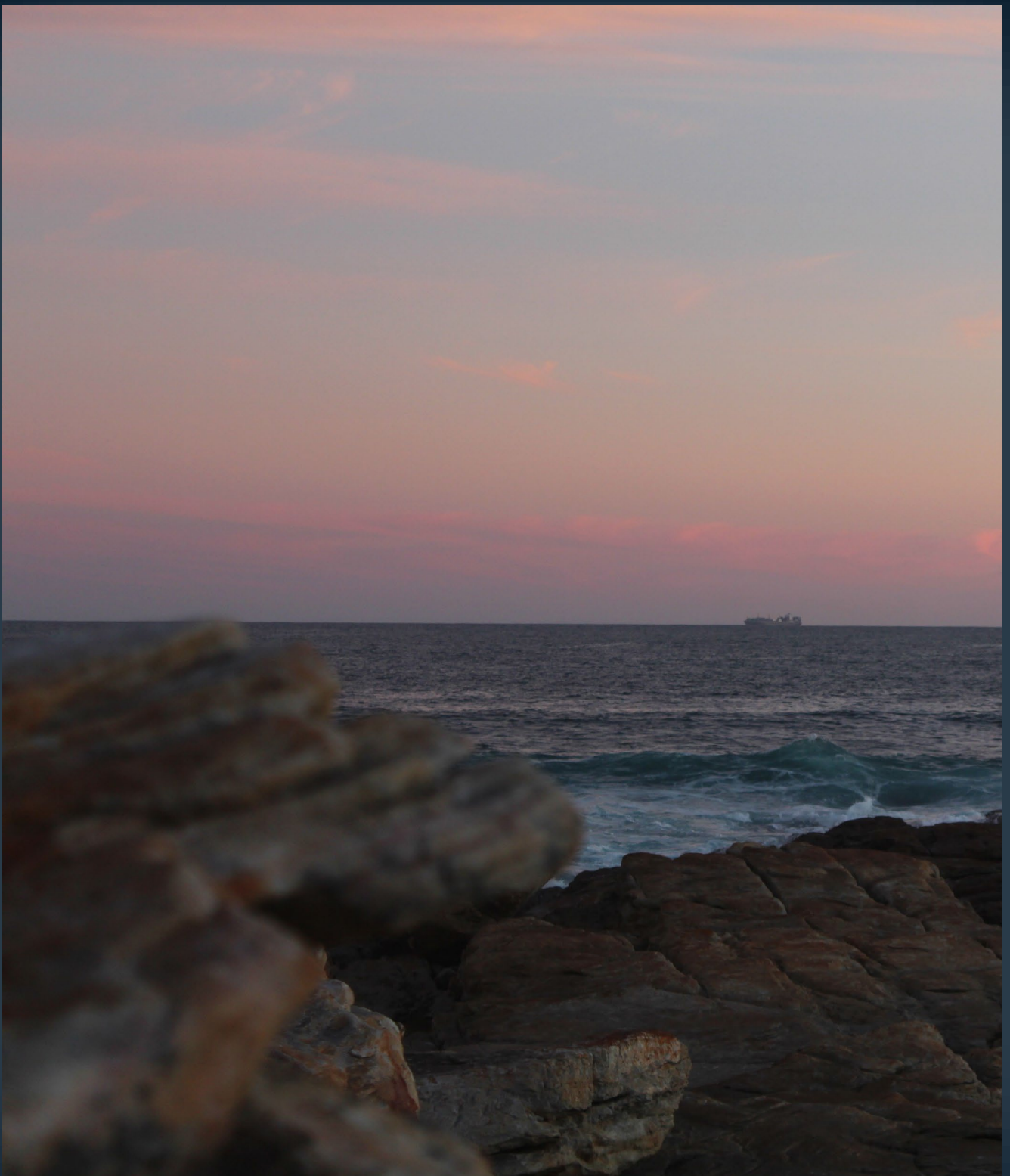


Runner-up: Rachel Kibble
- “Standing tall” & “A sore thumb”



FRENCH COLLABORATIONS

Dr Olivier Bousquet's position under the CMR as a Research and Project Manager for the French Embassy is to assist in growing CMR research by favouring collaborations with key French, European Union, and regional institutions in the Southwestern Indian Ocean (SWIO). His contract with the embassy has been renewed until 2024. A funding scheme was announced during the Research Week in Paris in June 2022, with approximately 10 to 12 million Euros that will be available to conduct research on the Ecological Connectivity of Marine Protected Areas in the Western Indian Ocean. The call for research proposals opened on 19 August and closed on 30 November 2023. The proposals are for multi-disciplinary research involving at least three countries in the Indian Ocean.



EXC2 EXCHANGE PROGRAMME

The CMR has built a strong partnership with the University of Oldenburg since first meetings took place in 2017. Since the CMR-University of Oldenburg research staff exchange visits during 2019, the CMR and Helmholtz Institute for Functional Marine Biodiversity (HIFMB) were in discussion regarding a formal exchange programme for Doctoral candidates. Professor Helmut Hillebrand, Director for the HIFMB, communicated in December 2020 that the funding application for this EXC2 exchange programme, was successful. This exchange programme will be funded by the Lower Saxony Ministry of Science and Culture (Niedersächsisches Ministerium für Wissenschaft und Kultur) to the value of €230 000. The grant is valid from 1 January 2021 – 31 December 2023 (updated to 2025). Dr Gavin Rishworth will lead this exchange programme under the CMR, with support from Professor Janine Adams. It is envisioned that five PhD or Postdoctoral Fellows will travel bidirectionally each year, for three years. The first call for applicants was made in November 2022, and again in early 2023. An information session was also held by Dr Gavin Rishworth to encourage interest and answer questions. CMR members, Dr Alejandra Vargas (postdoc) and Ms Carla Dodd (PhD), were approved to participate in this exchange. Ms Dodd (hosted by Prof Gudrun Massmann, the head of the Working Group in Hydrogeology and Landscape Hydrology and co supervisor of Ms Dodd's PhD) was the first exchange student to travel to Germany and returned to South Africa after 3 months in September 2023. The second candidate, Dr Vargas (hosted by Dr Ilse van Opzeeland at the Alfred Wegener Institute) has also returned to South Africa after 3 months in December 2023. Prof Helmut Hillebrand will be hosted by the CMR in November 2023. While on campus he will seek to transfer knowledge and encourage applicants to apply for this Exchange Programme.



SAMOS PROGRAMME

To broaden exchange programmes with international partners, the SAMOS (South African Masters in Ocean Science) Programme provided an excellent opportunity for the CMR. This programme will run over 18 months, with the Nelson Mandela University leading this collaboration between nine South African universities, and the Universities of Bretagne Occidental and Montpellier in France, University of Algarve in Portugal, and the University of Bergen in Norway. Additional partners are the French Institute for Research and Development (IRD), SAEON, SAIAB, SAIMI, and the NRF. This is designed to be a unique, international, and transdisciplinary master's course involving previously disadvantaged local universities and will contribute towards training and skills development for Ocean Sciences at the Nelson Mandela University. A needs analysis for marine master's programmes in South Africa was conducted in 2020 and it was identified that skilled students/graduates are critically required in marine sciences. Specific focus areas included the Blue Economy and the sustainable use of resources considering climate change, amongst others. The aim is to involve the Faculties of Science, Humanities, Engineering, Economic and Business Sciences, and possibly Health Sciences in this programme. Applications will be open to all students. The six-month core coursework component would be based at the Ocean Sciences Campus, with the nine-month research project component taking place across the other South African universities or in Europe.

As the new Acting Director of the CMR, Dr Nomtha Hadi is currently the local coordinator of this master's programme and exchange opportunities at the Nelson Mandela University. A second consortium meeting was hosted on Ocean Sciences Campus from 14 to 16 November 2023. The CHE submission for the SAMOS qualification was refined, and the Erasmus + Funding application and the MOA needed among the various consortium members was finalised.



RESEARCH PROJECTS

OOH: One Ocean Hub

The One Ocean Hub project funded by the United Kingdom Research and Innovation (UKRI) aims to transform our response to the urgent challenges facing our ocean. Its research seeks to bridge current disconnections in law, science, and policy, and integrate governance frameworks to balance multiple ocean uses with conservation. The One Ocean Hub will carry out innovative research and integrated knowledge translation towards its vision to enable integrated ocean governance for equitable and inclusive sustainability.

Various researchers in the CMR are involved in the hub and some highlights from the 2023 include:

- A successful deep-sea cruise led by Dr Kerry Sink from SANBI and a team of marine scientists in South Africa collected data in outer shelf and deep-sea habitats. This also provided an opportunity to enhance the capacity of young southern African scientists.
- Invited to present arts-based interventions (including Empatheatre's Lalela uLwandle play) at the Food and Agriculture Organisation International Year of Artisanal Fisheries and Aquaculture closing ceremony in Rome in March.
- Prof Patrick Vrancken published an international law book, titled State Ocean Jurisdiction in July that sheds light on improved ocean governance for sustainable development.
- A three-day science-to-policy workshop for marine ecosystem-based management was held at SANBI in August.
- Coastal Justice Network hosted regional small-scale fisheries workshops throughout the year culminating in a national SSF workshop in Gqeberha in October.
- A Climate adaptation for fisheries in South Africa workshop hosted by the UK Centre for Environment, Fisheries and Aquaculture Science, and funded by OOH, was held in October bringing together various policy makers.

The five-year programme draws to a close by mid-2024 and thus a lot of planning has gone into legacy and future funding. A short documentary highlighting the hubs work on cultural mapping in South Africa was also filmed this year and will be premiered in the new year. To keep up to date with OOH please refer to our website and frequently updated blog: <https://oneoceanhub.org/>

MARISCO: Marine Research and Innovation for a Sustainable management of Coasts and Oceans

In collaboration with the Helmholtz Centre for Functional Marine Biodiversity and the University of Oldenburg and with funding from the Belmont Forum, the MARISCO Project aims to develop, merge, and synthesise interdisciplinary, global knowledge for understanding the consequences of human actions for coastal and ocean sustainability, and produce strategies and tools for effective management. The project agreement contract was finalised in June 2021. It is led by Professors Bernadette Snow and Mandy Lombard.

Progress to date:

- Scientific Paper (Literature Review) - Knowns and unknowns in future human pressures on the ocean. A Vargas; M Frazier; B Halpern; and A Lombard. The aim is to submit this by December 2023.
- Project - A Biodiversity Management Plan for humpback dolphins in SA waters. A Vargas; A Lombard; SouSA consortium and other relevant stakeholders. This project has been put on hold, subject to further funding.
- Project - Cultural values of conserving dolphins in South Africa. Report to be integrated in the Biodiversity Management Plan for humpback dolphins. A Vargas; A Lombard; B Snow, B Clark, M Strand, and M Zylstra. The research proposal has been submitted to Faculty and the ethics department and is currently under review.
- MOOC – In the process of developing a MOOC: Lessons learnt in developing the Algoa Bay MSP. This will be available in January 2024.



CoP: Ocean Accounts Framework (OAF)

The applicability of the oceans-account framework in the Western Indian Ocean is assessed by this project. It aims to develop novel accounts towards an ocean accounting framework for the Western Indian Ocean.

Nelson Mandela University was awarded this CoP under the NRF: South African Research Chairs Initiative (SARChI). Phase 1 was initiated from January 2020 to December 2022 (extended). Phase 1 aimed to develop novel accounts towards an ocean accounting framework for the Western Indian Ocean that stretches into 8 various work research programmes which accommodates several Leads and researchers with diverse expertise. The categories that will be essentially explored are the ocean governance accounts, risks and vulnerabilities accounts, coastal ecosystem and condition accounts, gender, cultural and social aspects in the ocean space. Results from Phase 1 will be used to ascertain the efficacy and relevance of the OAF in the process of implementing ocean policy and applying ocean-governance instruments in selected African WIO states. Phase 2 commenced in 2023 and will be executed by 2024. Phase 2 will expand on Phase 1 objectives in the greater WIO region. It is led by Professor Patrick Vrancken. The CMR provides administrative support.

A National Research Foundation (NRF) grant award of R7 000 000.00, has been divided and allocated to the different Work Programme Leads, 3 CMR SARChI's, stakeholders and collaborators that are from the South African Environmental Observation Network (SAEON), South African International Maritime Institute (SAIMI), Bayworld Centre for Research and Education (BCRE), the Cape Peninsula University of Technology (CPUT), Human Sciences Research Council (HSRC), AfriSeas Solutions (PTY) Ltd., Mytami Consulting (PTY) Ltd. and select Research Associates and Professors from Nelson Mandela University, from the various institutional Faculties. Expect to receive the full feedback and an update of the deliverables produced in the first year of Phase 2 by the end of November in a CoP in-person meeting with all the Leads, Secundi and researchers.



SANOCEAN

Benchmarking knowledge-based adaptive management of estuarine fisheries in South Africa for sustainable development. Through the South Africa/Norway Co-Operation and using funding from the Norwegian Institute for Nature Research (NINA), the CMR is involved in this project that aims to produce high-quality, multidisciplinary policy-relevant research to address:

- Adaptive management needs of important estuarine fisheries in South Africa.
- Promote capacity building and gender redress through the involvement of female researchers and students at historically disadvantaged institutions.
- Provide popularised knowledge-based products to fisheries stakeholders.

The CMR collaborates with SAIAB on this project. Dr Nina Rivers, Department for Development Studies Post-Doctoral Research Fellow, is the principal CMR member involved in this research, with Professor Bernadette Snow as a collaborator. This project came to an end in March 2023.

EPStromNet: Extant Peritidal Stromatolite Network

Funded by the United Kingdom Research Council's (UKRI) Natural Environment Research Council (NERC), this project will develop a new collaboration of leading international researchers from three continents. It will address key scientific questions that underpin the fundamental nature of these microbial-geological systems. Professor Graham Underwood (University of Essex) and Dr Gavin Rishworth (CMR/Nelson Mandela University) are the Principal Investigators. Additional research partners include Council for Geoscience; Rhodes University; University of Johannesburg; University of KwaZulu-Natal; and University of Wollongong (Australia). This project came to an end in July 2023. Funding for EPStromNet-2 will be pursued next year.



iAtlantic

This European Union-funded Horizon2020 project is a multidisciplinary research programme that seeks to assess the health of deep-sea and open-ocean ecosystems across the full span of the Atlantic Ocean. It entails an integrated assessment of Atlantic marine ecosystems in space and time. Professor Kerry Sink leads a component of this project's research under the CMR.

Work is still ongoing. A workshop took place in Kirstenbosch on 14 November where planning results and proposed next steps were reviewed. The workshop also facilitated feedback and identified concerns, ideas and key areas for further research or problem solving. The second last tranche of funding has been received.

CoastWise

This project is a collaboration with MeerWissen in Germany through the Helmholtz Centre for Minerals and Coastal Research, the Nelson Mandela University through the CMR, and SANBI. It is funded by the German Corporation for International Cooperation (GmbH). This project aims to improve knowledge for the integrated management of the land-sea interface in South Africa. It will enhance the available knowledge base for informed decision-making, filling important knowledge gaps that can be used in spatial management and building capacity within South Africa. This research will raise awareness of the value of coastal and marine habitats among coastal communities and decision makers. Professor Kerry Sink leads this project under the CMR. This project came to an end in March 2023.



Marine Waste and Plastics Research

This research covers some of the work conducted by Professor Lorien Pichegru and CMR Research Fellow Dr Maëlle Connan, and with collaborators at University of Cape Town and the Sustainable Seas Trust (SST). Baseline data are being collected from beaches and cities across the country to quantify litter issue accumulation and assess waste origin, to advise appropriate policies to reduce marine waste in the country. The team was successful as a partner on a Darwin project 2022 – 2024 (Turning the tide on plastic pollution: Ascension and St Helena) headed by Fiona Llewellyn (Zoological Society of London, UK). Two South African partners: NMU and UCT (Prof Peter Ryan). Collaborations continue with colleagues from the University of Cape Town, the Zoological Society of London, and Ascension & St Helena islands. Currently working on several manuscripts that will be submitted in 2024.

ACEP Smart Zone MPA

Using the new uThukela MPA as a case study, this multi-disciplinary project uses rare time-sensitive opportunities to gain a socio-ecological baseline essential for future assessments of the achievement of MPA objectives. This project started in 2021 and will run until 2025. It is funded by the National Research Foundation. It is led by Professor Mandy Lombard. All funding has been transferred to WILDTRUST. Research is still ongoing.



Avian Scavengers as Indicators of Recovery of an Island Biota

The project stems from the proposed mouse eradication initiative at Marion Island. It focuses on the three poorly known avian scavengers Brown Skua, Kelp Gull and Black-faced Sheathbill, and burrowing seabird species which are prey species for the avian scavengers. The project will run from 2021-2023 and funding has been received. This project is led by Dr Maëlle Connan and is administered by the CMR.

Third and last year of fieldwork is currently underway on Marion Island with two over winterers Michelle Risi and Christopher Jones. Last April/May 2023, discovered the first adult Wandering Albatrosses killed by invasive mice on Marion Island. If mice attacking and killing seabird chicks has been known for over 20 years, this year was the first-time adults were killed by invasive mice. The death of breeding adults of these long-lived and threatened species emphasizes the urgent need to eradicate introduced mice from the island. This news was broadcasted nationally and internationally, and a scientific note has just been published in Biological Invasions.

MSc student Tegan Walker working on the project is aiming at submitting her MSc thesis for examination at the end of the year. She was awarded best MSc student presentation in May 2023 at the Learn About Birds Conference organized by BirdLife South Africa and the FitzPatrick Institute of African Ornithology (UCT).



Development of Maritime Spatial Planning (MSP) Scenarios in Madagascar

The project aims to support Service d'Appui à la Gestion de l'Environnement (SAGE) consulting in the identification and data collection methodology to be used to develop marine spatial planning scenarios for the Diana, Analanjirofo, Atsimo Atsinana, Anosy, Androy and Melaky regions in Madagascar.

Besides two deliverables (1: Inception report on the data and methodology to be used for the development of marine spatial planning scenarios for the intervention regions and 2: a report on the training provided, in Madagascar, for the development of the marine spatial planning scenarios for the intervention regions) other outcomes of this project included a greater regional collaboration with partners in the Western Indian Ocean region and increased and stronger networks brokered with regional governments and partners. This project was led by Professor Bernadette Snow, and came to an end in September 2023.

Go Blue

Funded by the United Nations Environment Programme (UNEP), this project will develop an integrated, ecosystem-based land-sea planning guidelines and support to Kenya's marine spatial planning process. The Go Blue project is highly relevant to the delivery of UNEP's current and future programmes of work, as well as to a variety of global initiatives. This project addresses the Sub-programme "Nature Action" – in the UNEP Medium Term Strategy 2022 – 2025. The project will build towards the following outcome of the 2022 - 2023 PoW: Sustainable management of nature is adopted and implemented in development frameworks. This project is led by Professor Bernadette Snow, and will come to an end in June 2024. Three of the seven deliverables have been completed.

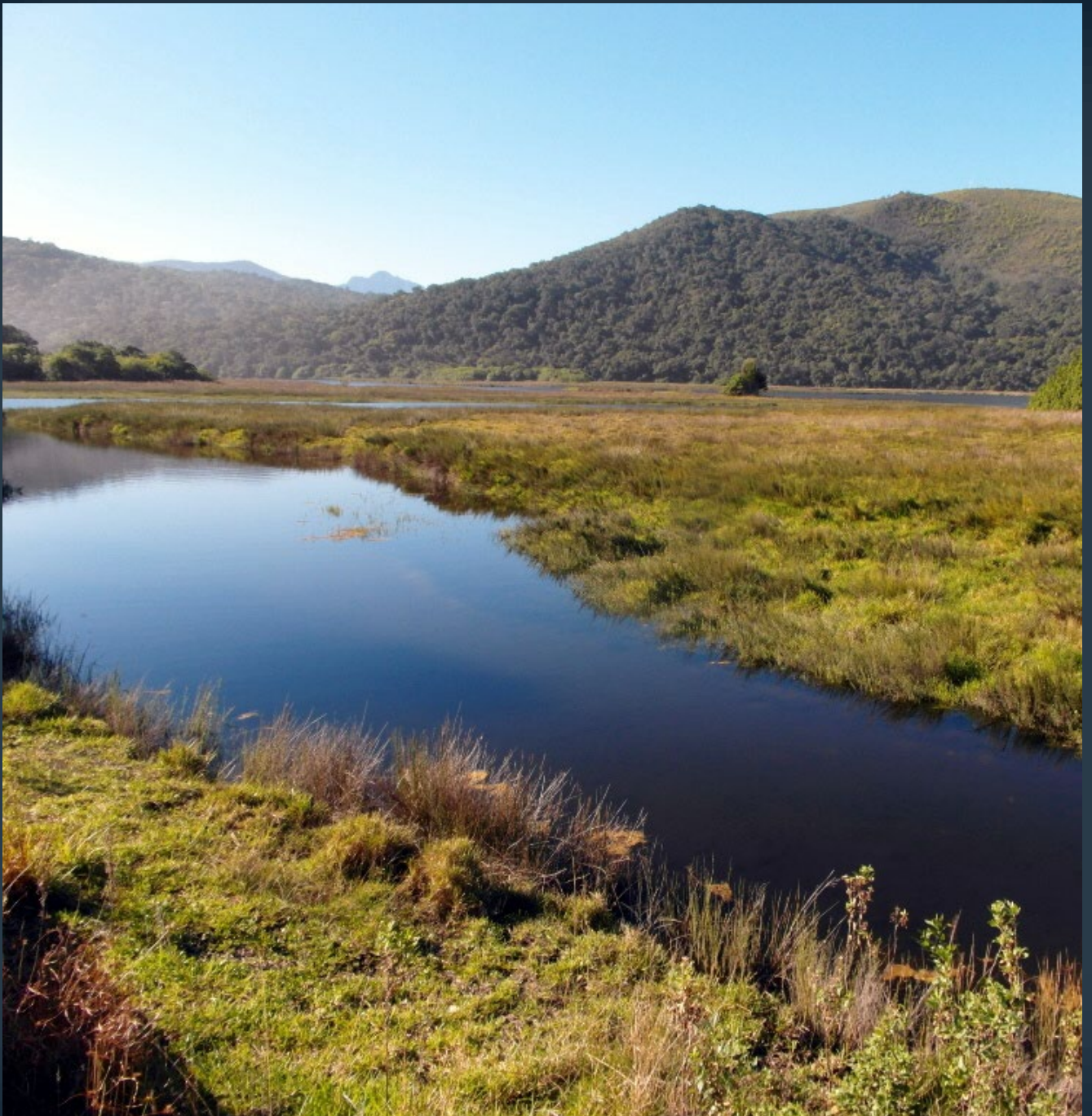
SeaMap

This project aims to map marine biodiversity to detect change and support South Africa's Ocean economy. SeaMap aims to deliver South Africa's first data-driven marine ecosystem map using species occurrence and associated barcode records to support biodiversity assessment, spatial planning, and the Phakisa Ocean Economy. Nelson Mandela University will contribute to this project in terms of compiling metadata and occurrence records for 3000 hard coral observations (Zoleka Filander, PhD student), and integrating these data into South Africa's National Coastal and Marine Spatial Biodiversity Plan. Records of deep-sea corals are currently being compiled and formatted. These and other data on a variety of offshore invertebrates from all project partners will be included in a spatial prioritisation for marine biodiversity in the coming year. This project is led by Dr Linda Harris and will come to an end in November 2024.

CONSULTING PROJECTS

BCLME-EBSA Project

Since its inception in 2016, the CMR has been administering the project Marine Spatial Management and Governance (MARISMA) of the Benguela Current Large Marine Ecosystem (BCLME) - Ecologically or Biologically Significant Marine Areas (EBSAs) and Marine Spatial Planning. Dr Stephen Holness is the principal investigator for this project, and Dr Linda Harris is the senior scientist. This project is funded by the German Development Corporation (GIZ). It supports the Benguela Current Convention (BCC), its three member states (South Africa, Namibia, and Angola) and other key stakeholders in the marine management sector to reach the objectives of the Benguela Current Convention regarding enhanced sustainable management and governance of the BCLME's marine biodiversity and natural resources. This project came to an end in February 2023.



GRADUATION

Autumn Graduation

Bachelor of Science (Honours): Zoology
Margaretha Magdalena Burger
Dumisile Engel Mbuyazi

Master of Science (Research): Chemical and Physical Oceanography
Nasreen Burgher

Master of Science (Research): Zoology
Sarah Ann Hawkes (Cum Laude)
Leigh-Ann Smit (Cum Laude)

Master of Science (Research): Botany
Chuene Priscah Lakane
Anesu Machite

Doctor of Laws: Public Law
Rachael Sharon Chasakara

Doctor of Philosophy: Oceanography
Sixolile Leonora Mazwane

Doctor of Philosophy: Botany
Lize von Staden

Summer Graduation

Master of Science (Research): Zoology
Kezia Bowmaker Falconer
Natalie Dos Santos (Cum Laude)

Master of Science (Research): Biological Oceanography
Rudzani Silima
Victoria Stockdale
Jordan van Stavel

Doctor of Philosophy: Oceanography
Athi Mfikili

Doctor of Philosophy: Botany
Phumlile Cotiyane-Pondo

Doctor of Philosophy: Development Studies
Mia Strand

Doctor of Laws: Public Law
Tanya Wagenaar

SUMMARY

The Institute for Coastal and Marine Research (CMR) enjoyed a successful year in 2023. It was led by Professor Lorien Pichegru, Dr Nomtha Hadi, Professor Janine Adams and Professor Pierre Pistorius as the Director and Deputy Directors, respectively. CMR membership exceeded 329 individuals.

Fulfilment of Objectives

The CMR continued to provide a forum to enhance collaborations and establish transdisciplinary teams of critical mass to address complex issues. This is evident through the CMR's projects and contract studies. Through hosting local workshops and an international conference, the CMR provided further platforms for enhancing collaborations. By hosting or participating in various in person and online events and courses, the CMR continued to promote collaboration.

The CMR is conscious of its brand, especially internationally, and emphasis is placed on continually strengthening the CMR's brand and reputation. The CMR ensures that its concise, eight-page glossy booklet that summarises the CMR's mission, vision, objectives, strategies, and activities, is up to date. This is available on the CMR website. The CMR publishes its annual research report as a glossy version (edited to be suitable for public distribution). These glossy reports have been highly praised by CMR members and has attracted international interest. The CMR website (<https://cmr.mandela.ac.za/>) was updated significantly during 2020 to remain relevant and informative. The website has resulted in international researchers contacting the CMR directly to discuss collaborative opportunities. The CMR's reputation as a leading transdisciplinary ocean and coastal sciences research institute has ensured that collaborations with partners have remained successful. To further increase its brand and to allow it to communicate with a wider audience, the CMR created various social media accounts during 2020, as well as a LinkedIn account in 2023:

Building capacity in knowledge and skills through research-based postgraduate training and short courses is an important academic output for the CMR. Various academic engagement activities are detailed under section 4.3 Research Performance – an Academic Engagement. These provided opportunities for building capacity in knowledge and skills. The CMR hosted and participated in several workshops and seminars. The five Ocean Sciences-linked and CMR supported Research Chairs are instrumental in developing postgraduate students and early career researchers. MAPRU grew its researcher capacity, research strengths and outputs, and it continued to play a significant role in developing postgraduate student capacity in the field of marine top predator research.

During 2023, the CMR continued to provide infrastructure support to its members to the best of its ability. The CMR's strength lies in providing administrative support (ranging from the development of proposals, gaining formal approval for project contracts following the legal system and managing project budgets, to capturing employment contracts on the HR system, assistance with procurement and finance processes, and facilitating contact and collaborations between individuals or groups, amongst others). The continued closure of the Research Diving Unit affected the CMR's ability to provide support. However, the RDU is being resurrected as a diving unit and not a diving school. Professor Roberts has been appointed as the director of the diving unit. With regards to the decompression chamber, Bay Hyperbaric Medicine has been officially operating since 2022. CMR members from groups involved in diving (SAEON; SAIAB; Ocean Science and Marine Food Security Research Chair) provided such support in their personal or professional capacity where possible. Although the CMR does not own any specialised marine equipment assets, it can provide contact details for researcher groups and/or individuals who can assist with access to these, when needed. Several research groups who can provide infrastructure support, are based at the Ocean Sciences Campus.

The CMR hosted several meetings to showcase expertise and achievements. The highlight for 2023 was the Estuary Management Short Learning Programme which the CMR hosted from 14 to 18 August, as well as Professor Helmut Hillebrand's visit for the month of November. The CMR Research Symposium, theme of Optimising Marine and Coastal Research for Global Sustainability, was also a huge success.



The CMR has firmly established itself to be the first point of contact for marine issues at the Nelson Mandela University. Its position at the Ocean Sciences Campus and being the only University-wide entity to be hosted on this Campus, has contributed towards this. The CMR's strong international brand brings much attention to the Ocean Sciences Campus, and the CMR is known to be the Institute that coordinates transdisciplinary ocean and coastal sciences research taking place on the Ocean Sciences Campus. The CMR's Management Committee and Advisory Board consist of numerous members in critical leadership positions. The CMR and Director report directly to the DVC: Research, Innovation, and Internationalisation. Through meetings with these panels, the CMR communicates with the University's top management on a regular basis. The CMR's membership database and mailing list include contact details for all CMR members, and the internal and external community are kept informed and up to date on CMR matters through regular communications on this platform. The CMR has links with external mailing lists for broader communication.

Employment of Strategies

The breadth of CMR collaborations and the range of coastal and marine expertise across the University and externally, is enhanced through hosting events and courses, the location of the CMR at the Ocean Sciences Campus, and maintaining strong local and international collaborations through excellence in research. The CMR aims to organise each event to have a transdisciplinary nature. This widens reach across University Faculties, but also attracts the attention of more varied stakeholders. Hosting events increases the CMR's membership. Reaching out to international researchers and circulating booklets and reports increase international recognition. Being the central coordinating facility for transdisciplinary ocean and coastal sciences research at the Ocean Sciences Campus has significantly increased the CMR's pool of expertise and has contributed towards increasing the CMR's reputation.

Increased funding for research and scholarships continued through international recognition and successful project proposals. Funding from international projects allowed the CMR Office to appoint assistants to perform specific tasks on an ad hoc basis. The growth in the CMR Office's management environment contributes to better support of research projects and overall increased success. CMR projects provide bursaries for postgraduate students, as well as opportunities for capacity development. Going forward, the CMR will place emphasis on increasing its reach in Africa.

Strengthening branding and marketing to maintain a high national and international profile is detailed above. The CMR's events, booklets and reports, website and social media accounts all contribute towards this.

Expertise to fill gaps in critical areas is built, grown, and developed specifically through the CMR's Marine Apex Predator Research Unit (MAPRU), and the five Ocean Sciences-linked and CMR supported Research Chairs. The appointment of Research Associates, as well as Professors (Adjunct; Honorary) greatly expand the CMR's pool of expertise. The CMR has expertise in developing strong transdisciplinary teams to address knowledge gaps.

Ocean Sciences Campus infrastructure is developed, maintained, and expanded by the CMR to strengthen ocean and coastal sciences research and capacity. The CMR collaborates closely with Ocean Sciences groups, such as SAEON, SAIAB, FishFORCE and SAIMI (in addition to the Research Chairs). These mutually beneficial collaborations give access to space, equipment, resources, and additional capacity. The CMR Office coordinates tours of the Ocean Sciences Campus for large groups, showcasing research, infrastructure, and facilities.

Conclusion

In addition to the details above regarding the CMR's Objectives and Strategies, there are other noteworthy successes. CMR members published a record high of 176 articles, generally in high impact journals. 15 book chapters and 19 research reports were published. The CMR received grants for 12 new and continuing projects that it coordinates, with CMR-supported Research Chairs and CMR members working on projects under 10 and 9 additional grants respectively. Eighteen student members graduated. Four CMR members were honoured at the Vice-Chancellor's Excellence Awards event this year. CMR members contributed towards international workshops, courses, and webinars, providing expert content and input. CMR members presented at 52 conferences. Overall, the CMR and its membership rose and enjoyed a successful year.



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