

NELSON MANDELA  
UNIVERSITY

2022



GLOSSY REPORT

**CMR**  
COASTAL & MARINE  
RESEARCH

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# MESSAGES FROM THE DIRECTORS

The institute keeps sailing the oceans of trans-disciplinary research and growing its crew members. This year has been very successful in terms of research outputs, from peer-reviewed scientific articles to policy documents and governmental reports. The CMR, through its members, strongly contributes to the science to policy engagement. It is particularly important in a time when the effects of global changes are being felt by our society and our environment more rapidly and strongly than perhaps anticipated, and science-based solutions must be put in place by governments in earnest. Engagement with the public also continues at the CMR, to bridge the gap between academia and civil society. Our new offices on the Ocean Sciences campus give us a larger space to operate and to host events, allowing us to support the steady growth of marine and coastal research at Nelson Mandela University and in South Africa. We look forward to the winds of 2023.

**Professor Lorien Pichegru**  
**Acting Director**

Under the leadership of Professor Lorien Pichegru ably supported by the CMR management team our Institute continued to flourish with an increase in both members and outputs in 2022. We have progressed towards the goal of being a world class transdisciplinary institution responsive to the challenges of our time. Research has addressed the "Science to Society" imperative and is locally relevant but globally significant. Important contributions have been made across the science-policy-practice continuum on the conservation and management of coastal and marine ecosystems. Our Institute has played a significant role in advancing knowledge in terms of publications and student training. Members are thanked for their active participation and excellent outputs for 2022. Intra-disciplinary and inter-institutional research collaborations are strong, and we look forward to a bright future.

**Professor Janine Adams**  
**Deputy Director**



# 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 underwrite 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 that advances 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 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 source funding in key areas.
- Build capacity in knowledge and skills 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, including other activities of wide interest to showcase expertise and achievements.
- Be the first point of contact for marine issues at the 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.
- A 5-year contract at professorship level was approved by Senate in 2022 for a dedicated Director for the CMR.

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

- The Management Committee met four times during 2022, however the Advisory Board only met once, this is due to quorum not being met.
- 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 were 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 2022.
- The CMR's transdisciplinary membership continued to grow.
- Areas for increased collaboration with certain faculties have been identified.



# CMR GOALS & TARGETS

## Run research diver training courses through the Research Diving Unit:

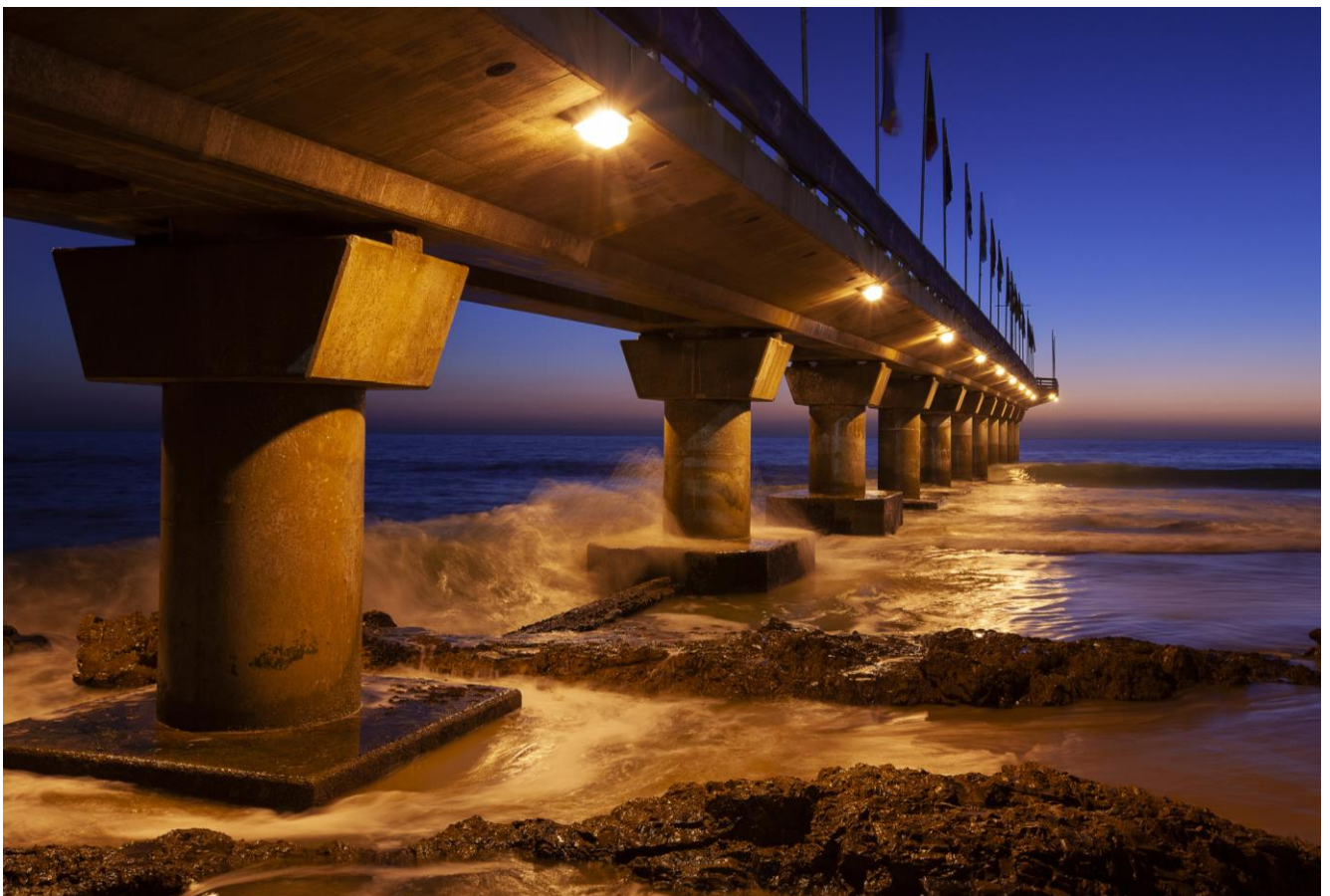
- The Research Diving Unit remained closed during 2022.
- No diver training courses were offered during 2022.

## Host a number of programmes to showcase ocean and coastal research:

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

## Make use of opportunities under Operation Phakisa:

- This is a continuous process through a number of 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.
- The Community of Practice (CoP) Project towards developing a marine spatial plan for Algoa Bay (phase two) is in response to Operation Phakisa: Growing the Blue Economy in a responsible manner.
- FishFORCE continues to serve 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 vision is to be values-driven, optimising the potential of our communities towards sustainable development in Africa. The CMR aims to perform in such a way that its activities form an integral part in 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 on 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 Masters and Doctoral programmes and through hosting Post-Doctoral Research Fellows, registered in participating academic University Departments. Programmes with a transdisciplinary nature, are encouraged.

## Consulting

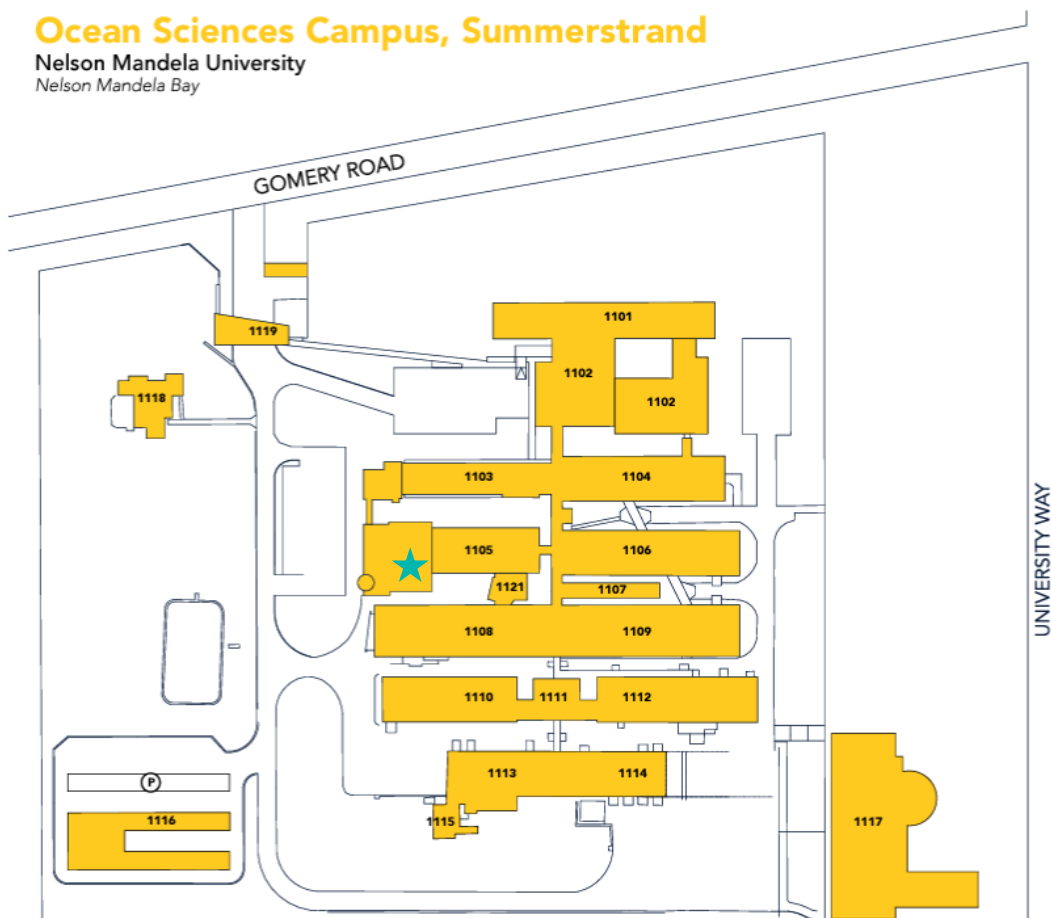
The CMR embraces a wide and unique spectrum of expertise relevant to coastal and marine issues through its members, who are drawn from varied disciplines. This CMR pool of expertise is the broadest in the region and is used to provide a community service in the form of commercial consultancies on issues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



# CMR LOCATION AND FACILITIES

## Ocean Sciences Campus, Summerstrand

Nelson Mandela University  
Nelson Mandela Bay



The CMR Offices are located on Ocean Sciences Campus, Building 1105, E-Block Extension, on the second floor (see the map above: ★).



# CMR GOVERNANCE STRUCTURES

The CMR is led by an Acting Director and two Deputy Directors. The governance of the CMR is through its Advisory Board and Management Committee. The Acting Director, assisted by the Deputy Directors, provides overall vision and leadership to the CMR, and assumes responsibility for all activities. The Acting Director is assisted by a Management Committee, which represents a wider membership and guides the running of the CMR. The Acting Director reports to the Deputy Vice-Chancellor: Research, Innovation and Internationalisation (DVC: RII), on the Management Committee's behalf. 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. The Advisory Board screens CMR annual research reports before submission to Council and Senate. The CMR is cognisant of ensuring relevant representation of University Faculties and external stakeholders on both panels. Membership on these panels remained mostly unchanged for 2022.

Professor Janine Adams and Professor Pierre Pistorius remained appointed as Deputy Directors for the CMR, together with Professor Lorien Pichegru appointed as CMR Acting Director. A 5-year contract at professorship level was approved by Senate for a dedicated Director for the CMR. This position was advertised three times in 2023, and by the end of 2022, final decisions were still pending. Two Units exist under the CMR: the Marine Apex Predator Research Unit (MAPRU), and the Research Diving Unit (RDU). Professor Pierre Pistorius remained the Manager for MAPRU, and Professor Tommy Bornman remained the Manager for the RDU.

In terms of CMR Office Support, Ms Ammaarah Abrahams was appointed as the CMR's Communications and Administrative Assistant from 2022 (whilst continuing to provide support to the CoP OAF Project). Ms Anne Jacobs full-time Finance Officer position was not extended in 2022, she was remunerated for a part-time (8:00 to 12:00) position from January 2022 to April 2022. Ms Anne Jacobs resigned with immediate effect at the end of April. She passed away on Sunday 21 August. Mrs Moefeda Mahadev took over from Ms Anne Jacobs as the full-time Finance Officer from 1 October 2022. Ms Taryn Smit received the approval for her permanent residency application to Canada at the end of June 2022. Her last day was 20 September. Mr Landile Mondile took over from Ms Taryn Smit and was appointed as the CMR's Research Chairs Manager from 1 September 2022. Various additional research assistants were appointed by the CMR Office during 2022 to provide specific support to CMR projects.

Five Research Chairs (SARChI) fell under the CMR during 2022: Law of the Sea and Development in Africa; Marine Spatial Planning; Ocean Science & Marine Food Security; Ocean Cultures and Heritage; Shallow Water Ecosystems. When ocean and coastal sciences opportunities are presented, the CMR collaborates with a sixth Research Chair: Identities and Social Cohesion in Africa

# CMR GOVERNANCE STRUCTURES

Changes in CMR Advisory Board and Management Committee membership for 2022, include:

## **Advisory Board**

All Advisory Board memberships, but two, were renewed from January 2022. The two Advisory Board membership changes made were the stepping down of Professor Avinash Govindjee, replaced by Dr Lynn Biggs, Acting Dean for the Faculty of Law, and that of Dr Denning Metuge as student representative for post-doctoral research fellows, replaced by Dr Bernardino Malauene.

## **Management Committee**

The two changes to the management committee were the replacement by Dr Gavin Rishworth of Professor Nadine Strydom as the representative for the Faculty of Science, and the retirement of Dr Derek Du Preez. There will be no replacement for Dr Du Preez, who representing the School of Environmental Sciences, as their representation in the committee was deemed sufficient.

The CMR is led by an Acting Director and two Deputy Directors. The governance of the CMR is through its Advisory Board and its Management Committee. The Acting Director, assisted by the Deputy Directors, provides overall vision and leadership to the CMR, and assumes responsibility for all activities. The Acting Director is assisted by a Management Committee, which represents a wider membership and guides the running of the CMR. The Acting Director reports to the Deputy Vice-Chancellor: Research, Innovation, and Internationalisation (DVC: RII), on the Management Committee's behalf. 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. The Advisory Board screens CMR annual research reports before submission to Council and Senate. The CMR is cognisant of ensuring relevant representation of University Faculties and external stakeholders on both panels. Membership on these panels remained mostly unchanged for 2022.

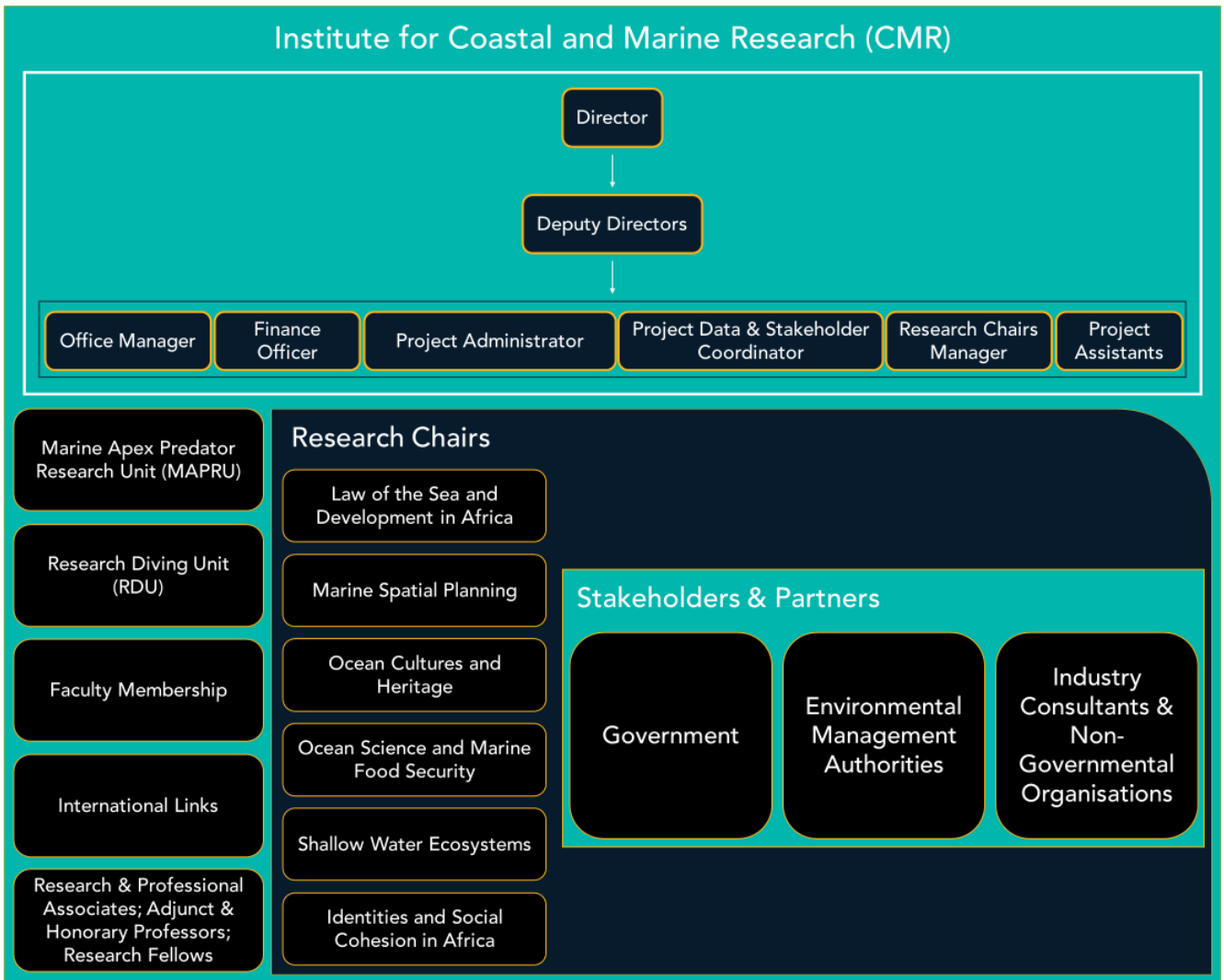


Positions for representation on the CMR Advisory Board and Management Committee for 2022:

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

One Advisory Board meeting was held during 2022: 31 March. Four Management Committee meetings took place: 25 March, 15 June, 13 September and 2 November.

The schematic below indicates the CMR's structure and linkages for 2022:



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, Masters and Doctoral students, and Post-Doctoral Research Fellows.

### Associate Members

Colleagues from external entities, who are 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.

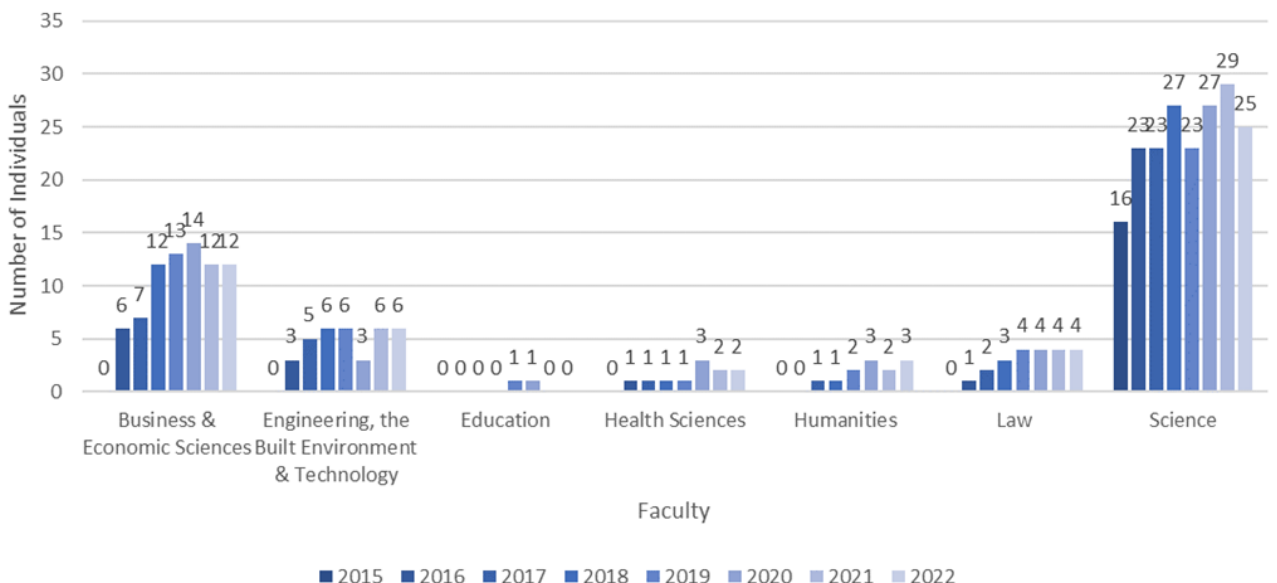
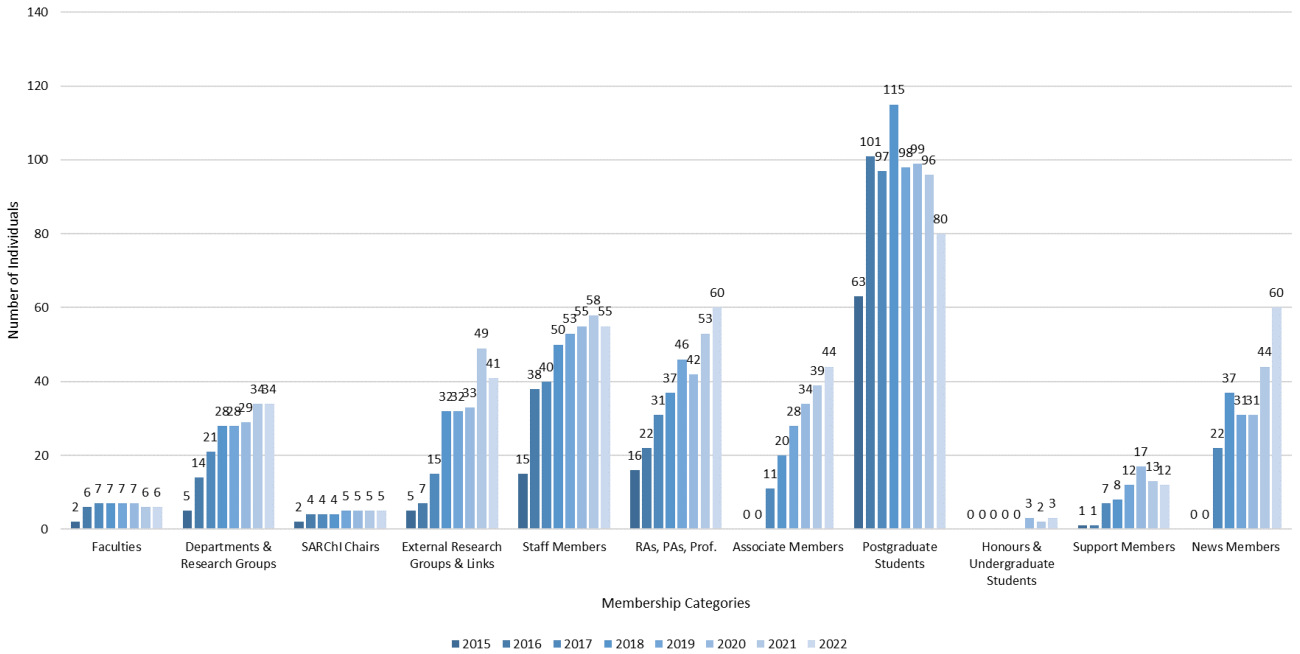
### News Members

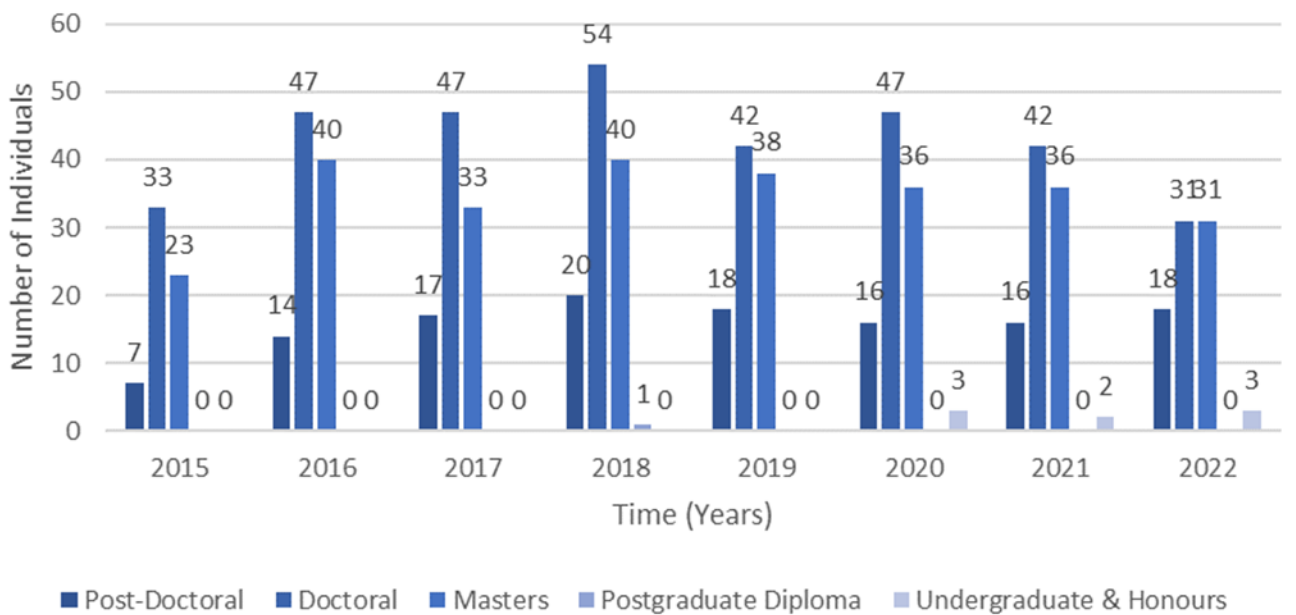
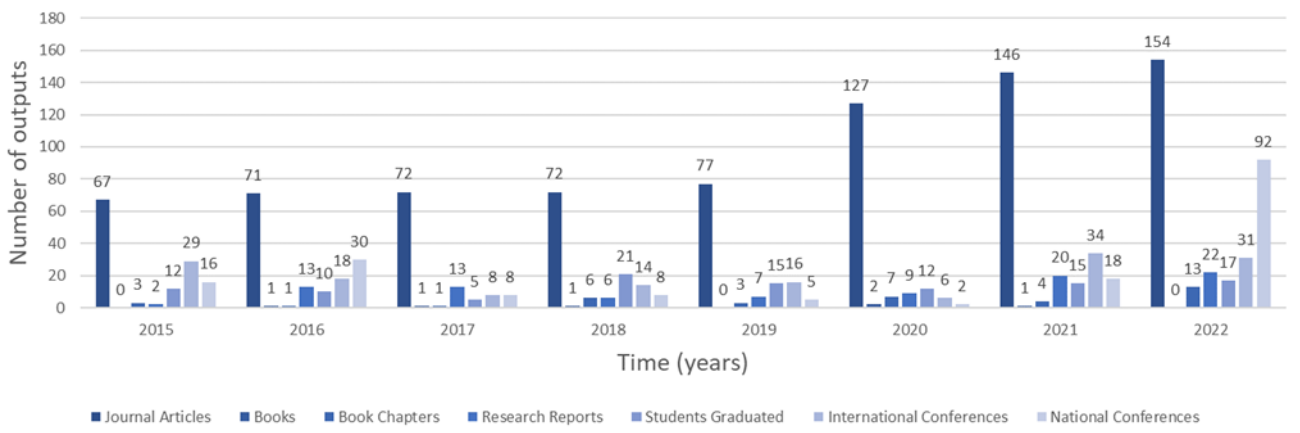
University members not involved in ocean and coastal sciences research, past students, and members of the public who wish to receive updates on CMR activities.

# SUMMARY OF CMR OUTPUTS

The CMR and its members enjoyed a very successful year.

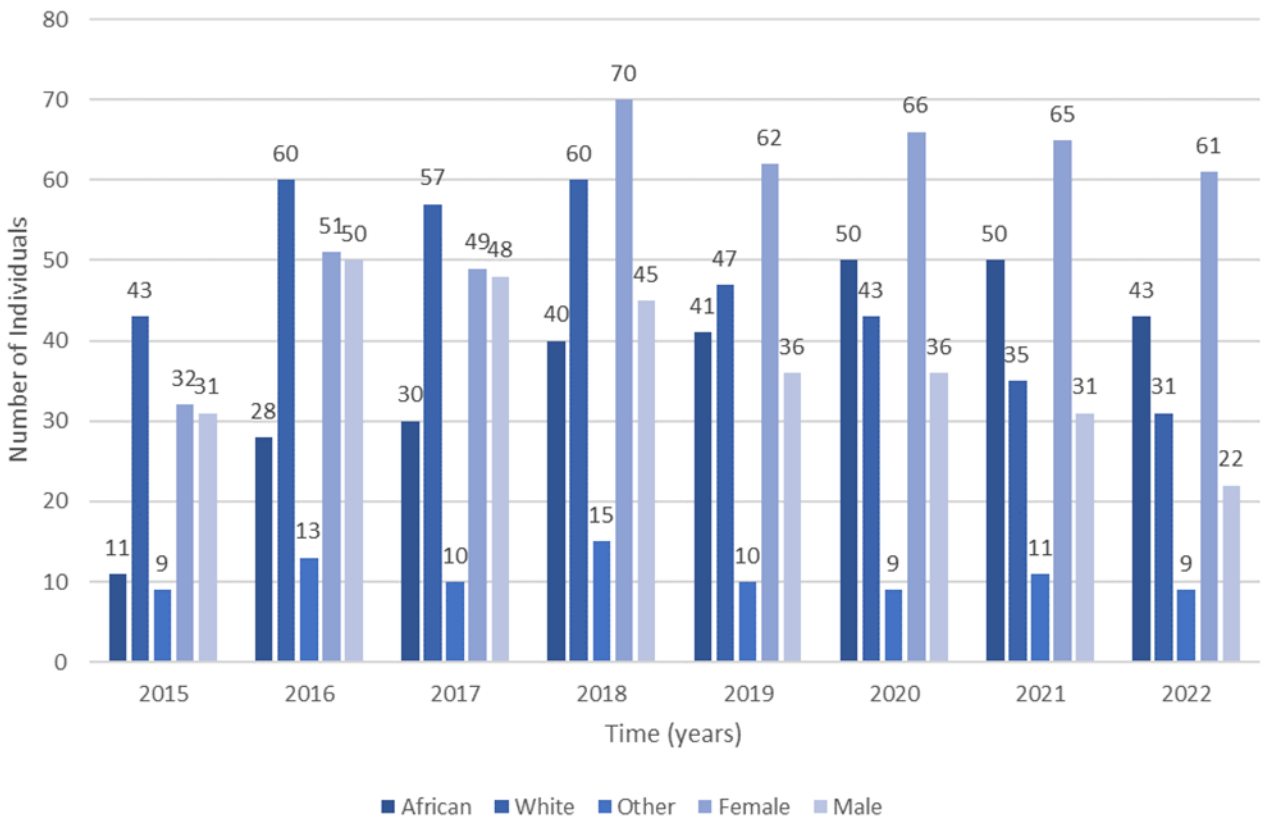
The graphs below indicate various aspects of membership growth within the CMR from 2015 to 2022.







The graphs below indicate CMR student race and gender demographics trends from 2015 to 2022.



### Summary of Trends in Graphs

Overall, the CMR’s growth in membership followed a positive trend. Fluctuations are expected – various factors influence membership numbers annually. Student membership fluctuates within cycles, depending on the number of graduating students and new student intake. Many student members graduated in 2022. The CMR Office is conscious of transformation in its membership, particularly for postgraduate students.



# RESEARCH THEMES

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

## **Living Resources and Marine Food Security**

This covers projects studying and developing coastal and marine living resources which are, or can be, utilised as food sources. The Research Chairs for 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 food security and community research aspects.

## **Biodiversity, Conservation and Management**

Projects under this Research Theme broadly relate to 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 for Marine Spatial Planning and Shallow Water Ecosystems (which are administered by the CMR) specifically have projects investigating and assisting with the three aspects of this Research Theme.

## **Global Change**

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



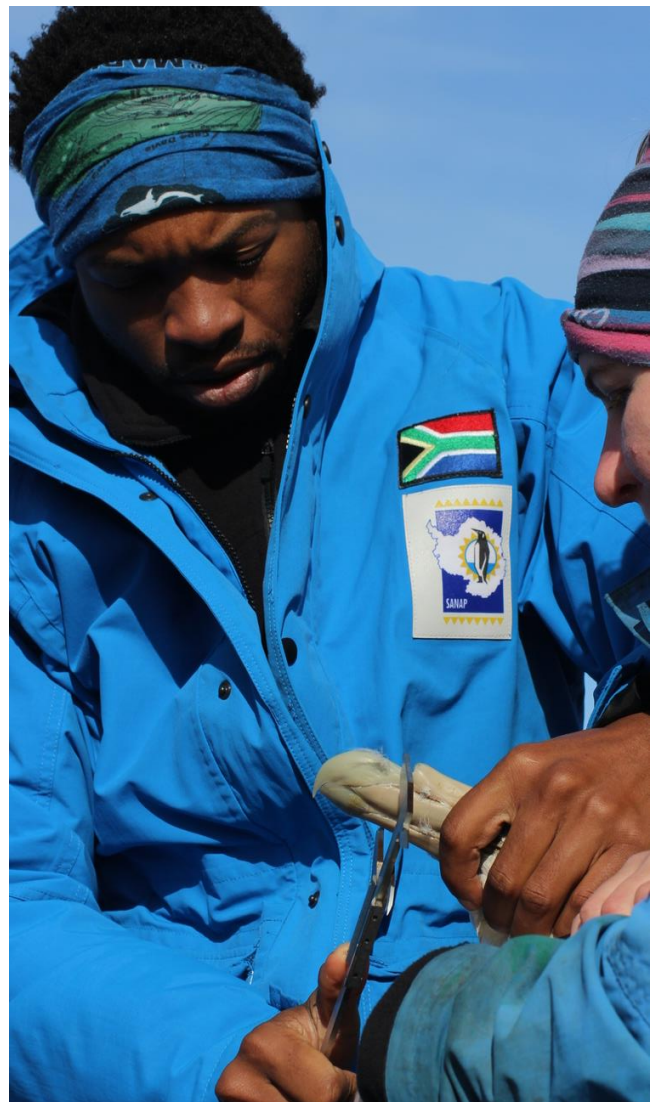
# MARINE APEX PREDATOR RESEARCH UNIT (MAPRU)

The Marine Apex Predator Research Unit (MAPRU) is a research Unit within the CMR. It was established in 2015 and is managed by Professor Pierre Pistorius.

MAPRU's research activities focus on marine top predators as a group, and questions of fundamental and applied interest are addressed by drawing on a range of disciplines. Many marine top predator species are threatened, and research undertaken by this group places emphasis on conservation. At the upper limit of the marine food chain, marine top predators are generally good indicators of global change and areas of high productivity. Marine top predators are therefore used at the species and community level to better understand ecosystem changes and for conservation-based spatial planning.

Objectives for MAPRU 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 involving marine top predators.
- Be involved in various forms of engagement, using charismatic predator species to stimulate public 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: Manager
- Adj. Prof Lorien Pichegru: Acting Director CMR
- Dr Malcolm Smale: Research Associate
- Dr Maelle Connan: Research Fellow
- 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

The postgraduate membership for 2022 consisted of the following:

	<b>Registered</b>	<b>Graduated</b>
Masters Students	4	1
Doctoral Candidates	2	1
Post Doctoral Research Fellows	1	

This research group published a total of 28 academic articles in international, peer-reviewed journals. Noteworthy conferences attended include the following:

- WIOMSA, Gqeberha, South Africa, October 2022.
- Southern African Marine Science Symposium, Durban, South Africa, June 2022.

Professor Pistorius together with Professor Pichegru received R1.5 million from DFFE for seabird research and monitoring in the Eastern Cape.



# 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.

RDU Task Team members:

- Prof Lorien Pichegru: Acting Director: CMR
- Mr Graham Gouws: Deputy Director: Physical Planning and Infrastructure Services
- Dr Paul-Pierre Steyn: Faculty of Science
- Prof Thomas Bornman: Manager: SAEON Elwandle & SMCRI
- Mr Andrew Young: Director: eNtsa Engineering
- Mr Nico Louw: Department of Emergency Medical Care
- Mr Sean Bailey: Senior Technician: SAEON Elwandle Node
- Mr Pierre de Villiers: Coastal Programme Manager: CapeNature
- Prof Janine Adams SARCHI
- Dr Kwezi Mzilikazi: Director: Department for Research Management
- Dr Bernard Dreyer: Faculty of Engineering, the Built Environment and IT
- Prof Nadine Strydom: Faculty of Science
- Mr Brian Godfrey: Senior Technician: UK-SA Bilateral Chair
- Dr Angus Paterson: SAIAB & NRF

Dive tank construction

The dive tank construction is completed

Decompression chamber

The chamber is being used for Hyperbaric Oxygen Therapy (HBOT), as well as for diving medical emergencies.



# 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 2022. 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



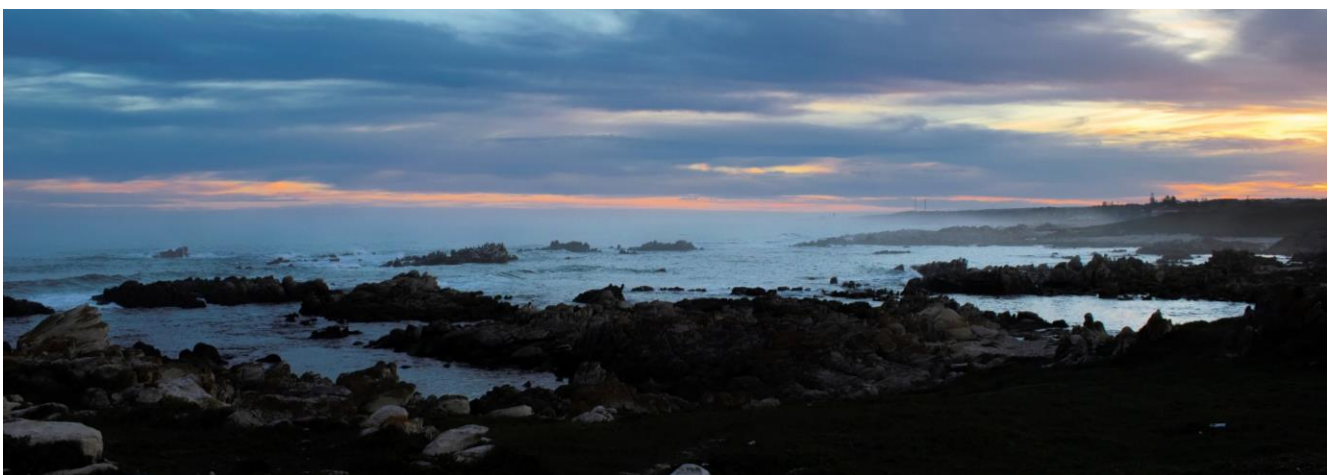
Ocean Science and Marine Food Security  
Professor Mike Roberts



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

Research undertaken by this Chair emphasises the following four areas:

- Legal developments affecting the African coasts and maritime environment.
- Incorporation of the international law of the sea into the domestic legal system of African states.
- Legal aspects of coastal and marine tourism.
- Legal regime of ports in the SADC region.

Prof Vrancken continued to act as the principal investigator of the community of practice (CoP) entitled "*Western Indian Ocean: Assessing the applicability of the ocean accounts framework (OAF)*". The CoP involves researchers from several disciplines and institutions. Phase 1 was successful and a phase 2 has been approved.

Prof Vrancken continued to participate in the international One Ocean Hub (OOH) project as: (a) a Nelson Mandela University representative, (b) the co-lead of the work package on global law for integrated ocean management, (c) an editor, co-author, reviewer and adviser for several OOH outputs, and (d) a member of the OOH executive committee and the OOH international impact working group.

Prof Vrancken partnered with the university's Department of Public Law to host the first conference of the Law and Development Research Network organised outside of Europe, which brought together experts from around the world. He also partnered with the university's Department of Public Law and the Faculty of Law at the University of Warwick to host an international conference on Ocean, Justice and Human Rights.

Prof Vrancken co-led and contributed to a Nelson Mandela University – University of Johannesburg joint two-book project. The book is entitled "*African Perspectives on Selected Marine, Maritime and International Trade Law Topics*". Prof Vrancken contributed 4 chapters.

Prof Vrancken continues to successfully run the LLM coursework programme on Ocean Governance at the Nelson Mandela University Faculty of Law.



# MARINE SPATIAL PLANNING

SARChI Marine Spatial Planning  
Chair Holder: Professor Amanda Lombard

The chair's research focuses on the following five themes:

- Strategic strengthening and analysis of knowledge on the spatial and seasonal distribution of marine biodiversity features in coastal, benthic and pelagic environments.
- Evaluation of ecosystem services (ecological infrastructure) and development of accounting techniques for the marine environment.
- Sourcing and collating available baseline biodiversity information to evaluate marine management strategies.
- Development of predictive spatial models of the outcomes of environmental, and anthropogenic, drivers of change in the marine environment.
- Use of outputs from themes 1 to 4 in an MSP framework to inform policy and management.

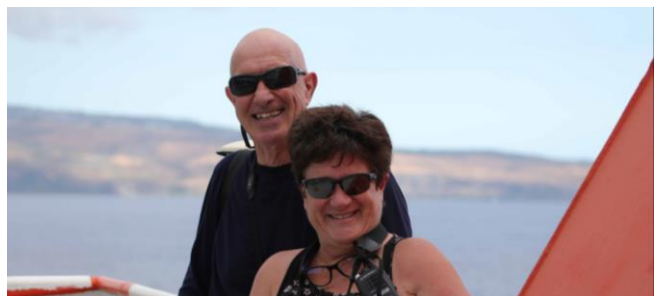
Three of Prof Lombard's PhD students graduated in 2022. She has two new Post-doctoral Fellows to grow her system dynamics modelling work and begin an ecosystem restoration project.

Prof Lombard published eight peer-reviewed papers and submitted another 10, as well as a book chapter, and either presented or co-authored 22 conference presentations.

The broader team has grown the cetacean research component, as well as the social science component of Prof Lombard's Chair, and members of the team have started to raise their own funding, craft their own networks and collaborations, and produce significant outputs (7 additional peer reviewed papers, 3 more in review, one technical report, and one policy brief). This growth and development adds to the sustainability and legacy of the Chair.

Collaborative work with the NGO WildOceans advanced the inclusion of Sharks and Rays into conservation planning efforts to expand our Marine Protected Area Network in South Africa and has introduced a new PhD student into Prof Lombard's team.

Prof Lombard spent five weeks aboard the French RESILIENCE cruise in the Western Indian Ocean, to trial drone work for on-board cetacean identification and blow sampling. Prof Lombard also received an invitation to join the Editorial Board of the new Nature journal "Ocean Sustainability".





# OCEAN SCIENCE AND MARINE FOOD SECURITY

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

Current research investigates the underpinning processes that sustain food security (i.e., ecosystem functioning) with a strong focus on how climate change and a changing global ocean will impact marine upwelling systems in the western Indian Ocean.

Prof Robert and his team are strongly focused on the research of three WIO ecosystems. In March 2022, they retrieved their slope moorings off Port Edward, and executed a ship sampling survey of an active cyclonic eddy in May. His MSc and PhD students are analysing and integrating this with the satellite and ocean modelling studies which are being done in parallel. 11 one-year multidisciplinary studies have been completed, covering physics, biology fisheries and social aspects. This will be published in mid-2023. This work is seen as the quick assessment of Climate Change on the Mozambique shelf ocean. It paves the way and shapes a larger ship/moorings/ecosystem project which will start in early 2023. Several field trips were made in 2022 to Mozambique to prepare for this next phase with checking out infrastructure and diving to assess suitable study habitat sites.

Prof Roberts hosted a workshop on the *"Potential role of atmospheric deposition in driving ocean productivity in the Southwest Indian Ocean"* at Nelson Mandela University in October 2022. Over 30 local, regional and international scientists attended this workshop. Two papers are currently being written that capture the outcome from this work. He also used this workshop to train 25 local and regional postgrad students from many disciplines.

In 2022 Prof Roberts expanded the Mozambican cohort of students in his Chair program from 2 to 6 ranging from MSc, PhD and postdoc.. He also took on a new MSc student from Kenya.



# SHALLOW WATER ECOSYSTEMS

SARChI Shallow Water Ecosystems  
Chair Holder: Professor Janine Adams

Research undertaken by this Chair focusses on the following four areas:

- Conservation and management of estuaries, including environmental flow requirements, ecological health & importance indices.
- Blue carbon ecosystems and responses to climate change of salt marshes, mangroves and seagrasses.
- Ecophysiology of estuarine macrophytes.
- Water quality management and harmful algal blooms.

Prof Adams was nominated as the South African Project co-ordinator for International Atomic Energy Agency project "*Establishing Regional Capacities to Assess the Importance of Carbon Sequestration in Aquatic Systems for Climate Change Mitigation, Environmental Conservation and Economic Purposes*". This contributes towards the establishment of a National Blue Carbon laboratory on Ocean Sciences campus, a collaboration with SAEON. Prof Adams was also appointed to the SANBI National Species Specialist group to provide input to IUCN. Prof Adams was appointed Senior Editor of the journal Coastal Futures published by Cambridge University Press. She is also currently associate editor of Estuarine Coastal and Shelf Sciences and African Journal of Aquatic Sciences. Prof Adams is also the Regional Chairperson of the West Indian Ocean mangrove network.

Over the past five years Prof Adams and her team published 93 articles in peer-reviewed journals and she has graduated 11 Honours, 12 Masters and 7 PhD students. Seven post-doctoral researchers have been hosted and mentored as well as seven emerging researchers. Six new PhD students will start their studies in 2023.

Prof Adams has developed an ongoing research culture at the Nelson Mandela University through her activities. This has been acknowledged by the university through awarding her with the Faculty Researcher of the Year (Science) again in 2022.

African-German Partners for Ocean Knowledge and the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) announced three winning projects of the 3<sup>rd</sup> MeerWissen Call for Proposals. Prof Adams and her team are proud to be part of the winning project: "*Nature based Solutions for Mitigation of Watershed Pollution: Cross-habitat facilitation by coastal seagrass meadows*" (SOMWAT).



# OCEAN CULTURES AND HERITAGE

SARCHI Ocean Cultures and Heritage  
Chair Holder: Professor Rose Boswell

The chair's research focuses on exploring, investigating, identifying, documenting, reporting on, debating and advancing national and global knowledge of a diversity of ocean cultures and heritages in South Africa, Africa and selected regions of the world.

Prof Boswell contributed to the One Ocean Hub (OOH) IIWG (International Working Group), the Customary Law working group, the UN World Ocean Week 2022 and the UNEP Plastics Working Group.

Prof Boswell was invited by Stanford University to present on "*Disseminating, Popularising and Texturizing ICH in southern Africa and the Indian Ocean Region*", as part of their Global Series on Reframing Enslaved Pasts. Prof Boswell was also invited by the World Council for Applied Anthropology (WCAA) to present in a roundtable ANTHROPEN discussion on '*Privilege*'.

Prof Boswell was asked by the COMOS for a commissioned report on World Heritage suitability of the property "*Eglise catholique d'Ambodifotatra de Sainte Marie*" (Madagascar) and TotaleEnergies to conduct baseline research and complete 3 Cultural Heritage Impact Assessments in South Africa and one in Namibia. Prof Boswell was also asked by the Volkswagen Foundation to be part of a five-member international, transdisciplinary committee to review a funding proposal for a global integrated ocean-assessment model.

Prof Boswell supervised 6 PhDs and 3 Postdocs. She enrolled a further 1 postdoc, attracted PhD application requests from a further 7 candidates, and mentored an additional 10 emerging researchers.

Prof Boswell was the lead editor of *The Palgrave Handbook of Blue Heritage*. Prof Boswell was awarded a (second) Rockefeller Foundation Bellagio Residency for 2023, to complete a book on cultural protection in Africa.

Prof Boswell published 3 peer reviewed articles, 4 cultural heritage impact assessments, 5 book chapters and 3 baseline reports.



# 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 virtually on 28 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 Pierre Pistorius Research Excellence Award
- Professor Janine Adams Faculty Researcher of the Year Award
- Professor Russel Phillips Innovation Excellence Award

## SANCOR Awards

The South African Network for Coastal and Oceanic Research (SANCOR) announced the recipients of the SANCOR Awards. The awards were presented on 22 June 2022 at the gala evening of the 17th Southern African Marine Science Symposium (SAMSS) in Durban. Nominations for these awards were submitted by members of the marine science community and assessed by independent panels. CMR Distinguished Professor Kerry Sink won the Marine and Coastal Communicator Awards in recognition of her outstanding contributions towards communication of information about the marine and coastal environment to the public. This award serves as an acknowledgement of, and a symbol of appreciation for, the dedication, enthusiasm and diligence of the persons performing such communication.

## Oldenburg University Visit

Nelson Mandela University and Oldenburg University celebrated their 25-year partnership in November 2022. This was an important visit to strengthen the ties with the university and the CMR.

## General

The CMR Research Symposium took place in-person for the first time since 2019 and was a huge success. The UN GESAMP Workshop was hosted by the CMR. This workshop included many local and international institutions. The Italy-South Africa bilateral workshop took place at the end of 2022 and the success of this workshop was due to CMR's input.



# 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 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
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 161 articles in good quality, high impact, peer reviewed journals.

Below is a list of the transdisciplinary (SI & IBSS) journal articles published by CMR members during 2022:

Adegoke K.A., Oyedotun K.O., Ighalo J.O., Amaku J.F., Olisah C., Adeola A.O., Iwuozor K.O., Akpomie K.J., Conradie J. 2022. Cellulose derivatives and cellulose-metal-organic frameworks for CO<sub>2</sub> adsorption and separation. *Journal of CO<sub>2</sub> Utilization*. <https://doi.org/10.1016/j.jcou.2022.102163>.

Adeniran, A.A. and Shakantu, W. 2022. The health and environmental impact of plastic waste disposal in South African Townships: A review. *International Journal of Environmental Research and Public Health*, 19(2): p.779.

Adeniran, A.A., Ayesu-Koranteng, E. and Shakantu, W. 2022. A Review of the Literature on the Environmental and Health Impact of Plastic Waste Pollutants in Sub-Saharan Africa. *Pollutants*, 2(4): pp.531-545.

Adeniran, A.A., Shakantu, W. and Ayesu-Korateng, E. 2022. A proposed digital control system using a mobile application for municipal solid waste management in South Africa. *Waste Technology*, 10(1): pp.30-42.

Adeola A.O., Iwuozor K.O., Akpomie K.G., Adegoke K.A., Oyedotun K.O., Ighalo J.O., Amaku J.F., Olisah C., Conradie J. 2022. Advances in the management of radioactive wastes and radionuclide contamination in environmental compartments: A review. *Environmental Geochemistry and Health*. <https://doi.org/10.1007/s10653-022-01378-7>.

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Bailey, D.F., Hermes, J., Penven, P., Bornman, T.G. and Goschen, W., 2022. An investigation of sea level and circulation response during a coastal trapped wave event on the Eastern Agulhas Bank, South Africa. *Continental Shelf Research*, 240, p.104698.

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- Zeyl JN, Snelling EP, Connan M, Basille M, Clay TA, Joo R, Patrick SC, Phillips RA, Pistorius PA, Ryan PG, Snyman A, Clusella-Trullas S. 2022. Aquatic birds have middle ears adapted to amphibious lifestyles. *Scientific Reports*. <https://doi.org/10.1038/s41598-022-09090-3>

Below is a list of the transdisciplinary (DoE) journal articles published by CMR members during 2022:

Grobler, B.A. and Campbell, E.E. 2022. Road and landscape-context impacts on bird pollination in fynbos of the southeastern Cape Floristic Region. *South African Journal of Botany*, 146: pp.676-684.

Helm, C.W., Cawthra, H.C., De Vynck, J.C., Hattingh, R., Lockley, M.G. 2022. Possible Pleistocene hominin tracks from South Africa's west coast. *South African Journal of Science*. <https://doi.org/10.17159/sajs.2022/11842>

Huggett, J.A., Groeneveld, J.C., Singh, S.P., Willows-Munro, S., Govender, A., Cedras, R., Deyzel, S.H.P. 2022. Metabarcoding of zooplankton to derive indicators of pelagic ecosystem status. *South African Journal of Science*. <https://doi.org/10.17159/sajs.2022/12977>

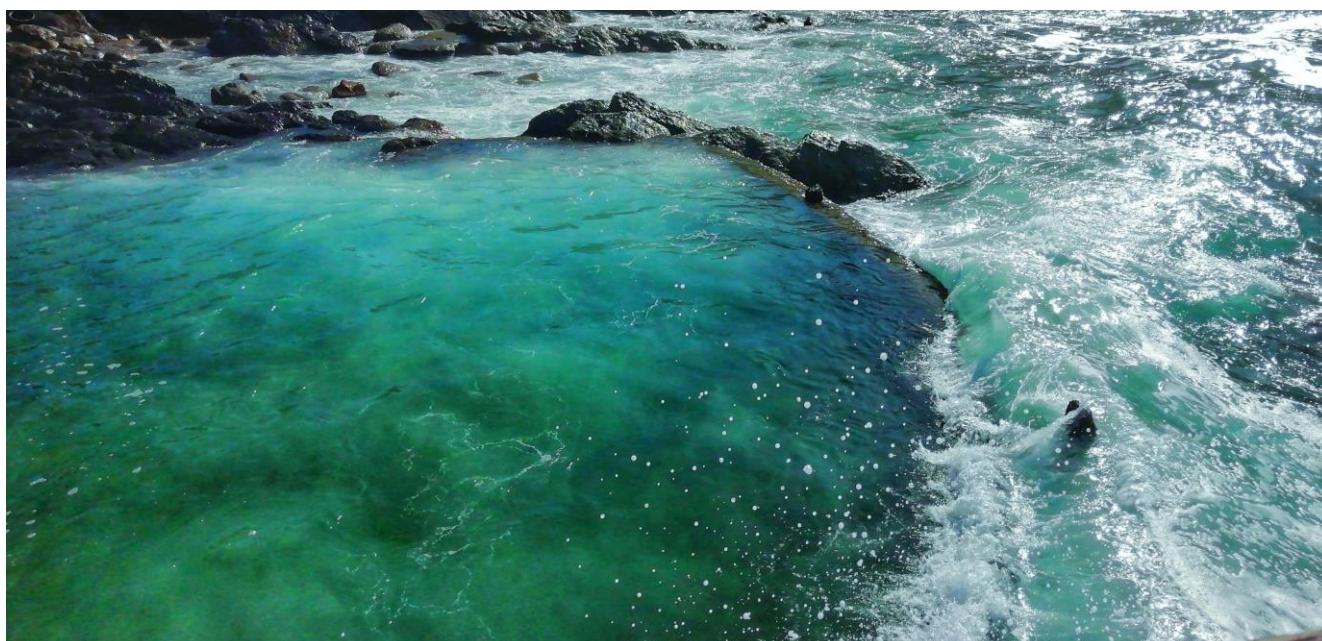
James, N.C. and Harrison, T.D. 2022. A preliminary fish survey of the estuaries on the east coast of South Africa, Mpande to Mtentwana: a comparative study. *Water SA*, 48(4): pp.394-412.

Olatunji, T. L., Olisah, C., Adetunji, A, E., Adegbaaju, O. D., Olawale, F, Siebert, F. and Siebert, S. 2022. The genus Aloe: A bibliometric analysis of global research outputs (2001–2020) and recent advances in its biological activities. *South African Journal of Botany*. <https://doi.org/10.1016/j.sajb.2022.01.030>.

Pittaway, D. 2022. The hepplemeyer phenomenon: subtly demonstrating the co-opting of science into unscientific contexts. *South African Journal of Higher Education*, 36(1): pp.279-295.

Strand, M. 2022. Coloniality and othering in DFID's development partnership with South Africa. *South African Journal of International Affairs*, 29(3): pp.365-386.

Swartbooi, T.B., Rubidge, G., Gibbs, M.D. and Ferg, E.E. 2022. Effect of a Hands-On Chemistry Intervention on the behavioural and effective attitudes of learners from low socio-economic high schools. *South African Journal of Chemistry*, 76: pp.102-110.



Below are the book chapters published by members:

Adams, J. 2022. Advancing Mouth Management Practices in the Groot Brak Estuary, South Africa. In: d'Hont F, Taljaard S & Slinger J. (eds) *Complex coastal systems transdisciplinary learning on international case studies*. Delft Academic Press.

Boswell, R. 2022. Introduction: Blue Heritage, Human Development and the Climate Crisis. In: Boswell, R. (ed) *The Palgrave Handbook of Blue Heritage*. Springer Nature.

Boswell, R. 2022. Waking up to Wakashio: Marine and Human Disaster in Mauritius. In: Boswell, R. (ed) *The Palgrave Handbook of Blue Heritage*. Springer Nature.

Boswell, R. 2022. World and Marine Heritages. In: Boswell, R. (ed) *The Palgrave Handbook of Blue Heritage*. Springer Nature.

Freitas, L. & Penry, GS. 2022. Bryde's Whale *Balaenoptera edeni* Anderson, 1878. In: *Handbook of marine mammals*. Springer Nature.

Greyling, J. 2022. Coding Unplugged—A Guide to Introducing Coding and Robotics to South African Schools. In: Halberstadt J, Bissett S, Alcorta de Bronstein A, Greyling J. (eds) *Transforming Entrepreneurship Education*. Springer Nature.

Harris, L. 2022. Sandy Beach Management and Conservation: The Integration of Economic, Social and Ecological Values. In: Ferreira S, Gonçalves S. (eds) *Sandy Beaches as Endangered Ecosystems*. CRC Press-Taylor & Francis Group.

Hermes J, Venkatesen R, Morris T, Heslop E, Narayanaswamy V, Aucan J & Malauene BS. 2022. The Role of Sustained Ocean Observations to the Society and Blue Economy. In: Urban Jr., E.R., Ittekkot, V. (eds) *Blue Economy*. Springer, Singapore. [https://doi.org/10.1007/978-981-19-5065-0\\_14](https://doi.org/10.1007/978-981-19-5065-0_14)

Hurst, A. 2022. From Sea to Source: A Pilgrimage along the Water's Edges. In: Jeffery, C. (ed) *Ephemeral Coast Visualizing Coastal Climate Change*. Vernon Press.

Perez-Alvaro, E. 2022. Sustaining the Underwater Cultural Heritage. In: Boswell, R. (ed) *The Palgrave Handbook of Blue Heritage*. Springer Nature.

Strydom, N. 2022. Habitat Use and Connectivity. In: Elliott M, Whitfield A, Blaber S, Able K. (eds) *Fish and Fisheries in Estuaries: A Global Perspective*. Wiley-Blackwell Publishing Ltd.

Strydom, N. 2022. Reproduction, Ontogeny and Recruitment. In: Elliott M, Whitfield A, Blaber S, Able K. (eds) *Fish and Fisheries in Estuaries: A Global Perspective*. Wiley-Blackwell Publishing Ltd.

Thornton, J. 2022. 'Other' Social Consequences of Marine Protection in Tsitsikamma, South Africa. In: Boswell, R. (ed) *The Palgrave Handbook of Blue Heritage*. Springer Nature.

# RESEAECH REPORTS

The following list details research reports produced by members:

Adams JB and Riddin T. 2022. Chapter 4.2: Swamp forests. In State of the Coast KwaZulu-Natal - A review of the state of the coast of KwaZulu-Natal, eds. Goble, B.J. and van der Elst, R.P. KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs, Pietermaritzburg, pp 55-58.

Adams JB, Wasserman J, Raw J, Van Niekerk L. 2022 Chapter 7: Evaluating the vulnerability of South Africa's estuarine lakes to climate change. In Climate Change Impacts on Water Resources: Implications and Practical Responses in Selected South African Systems, ed. Brilliant M Petja. Water Research Commission Report No. SP 155/22. WRC, Pretoria, South Africa. pp 143-170.

Adams JB, Wasserman J, Raw J, Van Niekerk L. 2022. Chapter 6: Response of South African coastal wetlands to climate change. In Climate Change Impacts on Water Resources: Implications and Practical Responses in Selected South African Systems, ed. Brilliant M Petja. Water Research Commission Report No. SP 155/22. WRC, Pretoria, South Africa. pp 126-142.

Adams JB. 2022. Chapter 5.2: Mangroves. In State of the Coast KwaZulu-Natal - A review of the state of the coast of KwaZulu-Natal, eds. Goble, B.J. and van der Elst, R.P. KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs, Pietermaritzburg, pp 92-96.

Adams JB. 2022. Chapter 5.3: Submerged Macrophytes. In State of the Coast KwaZulu-Natal - A review of the state of the coast of KwaZulu-Natal, eds. Goble, B.J. and van der Elst, R.P. KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs, Pietermaritzburg, pp 97-100.

Cawthra, H.C. 2022. The offshore geology of Mossel Bay. Explanation: onshore-offshore sheet 3422AA. Scale 1:50,000. 66 pp. ISBN 978-1-990942-11-2

Dodd, C, van Vuuren, L, Manziya, M, Human, LRD, O'Connell, TW, Lemley, DA, Adams, JB, & Rishworth, GM. 2022. Progress Report: Quantifying the extent of nutrient input to groundwater-fed coastal microbialite seeps in Nelson Mandela Bay. Report for Project C2022/2023-00833: Water Research Commission.

Febrica, S., Strand, M., Niner, H., McGarry, D., Morgera, E. and Snow, B. 2022. The One Ocean Hub Written Evidence to Special Rapporteur in the Field of Cultural Rights: Inputs to a report on cultural rights and sustainable development. The One Ocean Hub.

Harris, L. 2022. National Coastal and Marine Spatial Biodiversity Plan: Securing South Africa's coastal and marine biodiversity to support development and sustainable resource use. SANBI Factsheet Series. South African National Biodiversity Institute, Pretoria.

Harris, L. 2022. National Coastal and Marine Spatial Biodiversity Plan: Technical Summary. Department of Forestry, Fisheries and the Environment, South African National Biodiversity Institute, and Nelson Mandela University, South Africa.

Harris, L.R., 2022. Sandy Shores, In: State of the Coast: KwaZulu-Natal - A review of the state of KwaZulu-Natal's coastal zone. eds B.J. Goble, R. van der Elst, pp. 49-54. KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs, Pietermartizburg.

Harris, L.R., Sink, K.J., Holness, S.D., Kirkman, S.P., Majiedt, P., Driver, A. 2022. National Coastal and Marine Spatial Biodiversity Plan, Version 1.2: Technical Report. Nelson Mandela University, Department of Forestry, Fisheries and the Environment, South African National Biodiversity Institute, South Africa.

Niner, H., Strand, M. et al. 2022. Transformative partnerships for co-developing sustainable blue economies. One Ocean Hub Policy Brief, available here. 10.13140/RG.2.2.35631.82080.

O'Connell, T.W., Van Vuuren, L., Dodd, C., Bornman, T.G., Anderson, C., Rishworth, G.M. 2022. Progress Report: Quantifying groundwater discharge through coastal microbialite systems in Nelson Mandela Bay. Report for Project C2022/2023-00833. Water Research Commission.

Rishworth, GM, Van Vuuren, L, Dodd, C, & O'Connell, TW. 2022. Literature review on coastal groundwater seeps in the Nelson Mandela Bay environment. Report for Project C2022/2023-00833: Water Research Commission.

Rivers, N., Strand, M., et al. 2022. Integrating Indigenous and local knowledge into marine spatial planning processes: lessons from Algoa Bay, South Africa. SAIIA (Manuscript undergoing final SAIIA revisions).

Snow, B., Rivers, N., Strand, M., Come, J. 2022. Situational report of Tanzania for the terms of reference to develop a marine spatial planning tool for the Northern Mozambique Channel. Commissioned by the World Wildlife Foundation.

Strand, M., Morgera, E. et al. 2022. Advancing participation in the conservation & sustainable use of marine biodiversity of areas beyond national jurisdiction (BBNJ). One Ocean Hub Policy Brief, available here. 10.13140/RG.2.2.22210.04807.

Van As, H. 2022. Training manual and Wildlife Trafficking for the South African Judiciary and USAID (Vukanow) curriculum. 15 November 2022.

Van Niekerk L, Adams, JB, Lamberth, SJ, Dayaram, A 2022. A description of South Africa's Estuarine Ecosystems. Summary of ecosystem description, threat status and protection levels. Report produced by the Council for Scientific and Industrial Research (CSIR), South Africa.

Van Niekerk L, Taljaard S, Adams JB, Lamberth SJ, Weerts SP, Lemley D, Riddin T. 2022. Development of Climate Change Mitigation and Adaptation Strategies for South Africa's Estuarine Lakes. Volume I: A Review of available information. (WRC Report No. TT 871/1/21).

Van Niekerk L, Taljaard S, Adams JB, Lamberth SJ, Weerts SP, Lotter D, Lemley D, Riddin T. 2022. Development of Climate Change Mitigation and Adaptation Strategies for South Africa's Estuarine Lakes. Volume II: Climate Change Vulnerability assessment and recommended Mitigation and Adaptation Strategies. (WRC Report No. TT 871/2/21).

# CREATIVE OUTPUTS

The following list details creative outputs produced by members:

Agulhas Current Affairs: Marine biology podcast tidings from the waters around Southern Africa. Marine Science communication media brand.

Annual Australian Mangrove and Saltmarsh Network Conference video uploaded, Conservation & Management of Mangroves & Salt Marshes. 173 views, <https://studio.youtube.com/video/Y1BwpTBWc7I/edit>

Facilitating knowledge co-creation for more inclusive ocean management through photostories and exhibition, Coastal Justice Network. May 2022, available online.

FishFORCE Virtual Law Enforcement Game - FishFORCE Bridge Inspection. February 2023.

How art can support the advancement of human rights and the ocean. One Ocean Hub blog post. June 2022, available online.

Hub emerging researchers reflect on transdisciplinarity in transformative ocean governance research. One Ocean Hub blog post, October 2022, available online.

Indigenous leaders, fishers & community members slam Gas Amendment Bill, Coastal Justice Network. January 2022, available online.

Indigenous peoples' traditional knowledge and ocean climate action. One Ocean Hub blog post, December 2022, available online.

Ocean Connections in Algoa Bay. An arts-based participatory research project film. Produced by Amehlo Productions.

Ocean Connections: a multimedia exhibition from Algoa Bay, South Africa. 24 to 31 March.

Ocean Connections: a multimedia exhibition from Algoa Bay, South Africa. Film of exhibition. Produced by: Amehlo Productions.

Olisah C, Rubidge G, Human LRD, Adams JB. 2022. The sequestration of organophosphate pesticides in common reed growing in an agricultural estuarine environment. SAEON Elwandle Node. SAEON eNews. #01/2022. <https://enews.saeon.ac.za/issue-01-2022/the-sequestration-of-organophosphate-pesticides-in-common-reed-growing-in-an-agricultural-estuarine-environment/>

Participation at BBNJ negotiations matters. One Ocean Hub and MARIPOLDATA joint blog post. April 2022, available online.

Popular Article. Deyzel, S.H.P. and T. Joshua 2022. The SMCRI LTER observations move onwards and eastwards with the successful launch of the KwaZulu-Natal Bight Sentinel Site. SAEON e-Newsletter #04 2022. <https://enews.saeon.ac.za/issue-04-2022/the-smcri-lter-observations-move-onwards-and-eastwards-with-the-successful-launch-of-the-kwazulu-natal-bight-sentinel-site/>

Popular Article. Hermes, J., Veitch J. and S.H.P. Deyzel 2022. A 'One NRF' face of marine sciences: individually we are a drop, together we are an ocean. SAEON e-Newsletter #03 2022. <https://enews.saeon.ac.za/issue-02-2022/a-one-nrf-face-of-marine-sciences-individually-we-are-a-drop-together-we-are-an-ocean/>

The ocean is included in the zero draft of the un general comment on children's rights to a healthy environment. One Ocean Hub blog post, December 2022, available online.

Third Science Spaza worksheet in a series of comics my collaborators and I have been making, we compiled and completed in 2022. It is entitled 'Sediment science: muddy tales of the past / Isayensi ye-sediment: izindaba ngodaka lwasemandulo / Inzululwazi ngeentsalela intsomi ngodaka' and arose from the TRAIN-ME 2 summer school in November 2021. This was published in 2022 and is available in three languages (English, isiZulu, isiXhosa). [http://www.sciencespaza.org/index.php/download\\_file/view/803/134/](http://www.sciencespaza.org/index.php/download_file/view/803/134/)





# 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 Professor Kerry Sink on the topic Deep Secrets, Deep Forests and Deep Connections: Progress and Plans in Advancing Marine Ecosystem Protection in South Africa. This presentation drew from 16 years of team work to improve marine ecosystem protection in South Africa. Professor Kerry Sink shared stories, imagery, and lessons from efforts to classify and map marine ecosystems, engage stakeholders and build the knowledge base to support the development of an effective and fair Marine Protected Area (MPA) network. This took place in-person (28 attendees) and via Zoom (58 attendees) on 30 March. This was followed by a workshop, where fields of collaboration and avenues for funding were discussed, as well as how the CMR can assist Professor Sink (i.e., providing new datasets) with the next set of MPAs and the next national biodiversity assessment.

The Quarter 2 seminar was presented by CMR Research Associate, Dr Christo Rautenbach on the topic Modelling of low- and high-frequency sea level variability and their drivers around the southern African coast. Dr Rautenbach presented on how his study aimed to address knowledge gaps in understanding and improving the incorporation of oceanographic dynamics, underpinning hind- and forecasting models and reported results of a methodical exploration of water level and wave dynamics in these waters. This took place in-person (11 attendees) and via Zoom (34 attendees) on 6 June.

The Quarter 3 seminar was presented by CMR Research Associate, Dr Ernita Flynn on the topic Science-policy links for coastal research: an urban, multi-level governance perspective. This presentation offered reflections from two ICLEI scientists, focused on the supply of and demand for science in a complex, multi-level governance policy context. This took place in-person (15 attendees) and via Zoom (14 attendees) on 26 September.



### **CoP Marine Spatial Planning Stakeholder Meeting**

The CoP Marine Spatial Planning Stakeholder Meeting took place on 2 March via Zoom and was presented by the following CMR members: Dr Anne Lemahieu, Professor Mandy Lombard, Professor Bernadette Snow, Ms Mia Strand, Dr Nina Rivers, Dr Estee Miltz and Mrs Hannah Truter, and was attended by 56 participants. The meeting aimed to bring awareness to the second phase of the CoP with particular focus on the Marine Spatial Planning aspects including the economic valuation, cultural seascape, data sharing, system dynamics modelling, providing feedback on conflict matrices and sharing work done on the Ocean Accounts Framework Community of Practice. The meeting minutes and recording are available on the Algoa Bay Project Facebook page (<https://www.facebook.com/AlgoaBayProject>).

### **CICLICO Workshops**

CICLICO held two workshops in March. The first workshop took place via Zoom on 22 March and was on the development and use of climate services to support municipal coastal authorities in South Africa. The second workshop was on the development and use of climate services to support municipal coastal authorities in South Africa, focusing on Nelson Mandela Bay Municipality and took place in person on 30 March.

### **Ocean Connections - A Multimedia Exhibition**

This exhibition took place from 24 to 31 March at the South End Museum in Gqeberha. The exhibition shared indigenous and local knowledge holder's ocean and coastal knowledge and places of cultural significance, along the coast in Algoa Bay through photographs and stories. The exhibition was interactive and invited participants to share their ideas of how indigenous and local knowledge should inform coastal and marine management in South Africa.

### **Tacking Climate Change Webinar**

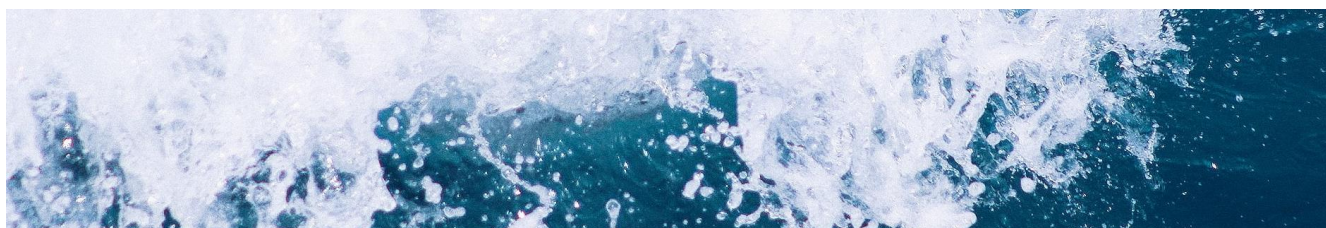
The CMR was contacted to help the Eastern Cape Provincial Legislature office host and organise a webinar on tacking climate change. Professor Bernadette Snow gave a presentation at this high-profile event that took place on 25 May.

### **Seminar by Dr David Kaplan**

The topic of the seminar was Reducing plastic waste and other negative environmental impacts from drifting fish aggregating devices (dFADs) used by tropical tuna purse seine fisheries. This took place in-person (7 attendees) and via Zoom (26 attendees) on 18 August. The recording of the talk and presentation are posted on the CMR website: <https://cmr.mandela.ac.za/News-and-Events/Additional-Seminars>

### **Seminar by Professor Erik Franckx**

The topic of the seminar was Lawyers and Scientists under the Law of the Sea: Transdisciplinary Ideal and Ensuing Practice. This took place in-person (3 attendees) and via Zoom (25 attendees) on 19 September. The recording of the talk and presentation are posted on the CMR website: <https://cmr.mandela.ac.za/News-and-Events/Additional-Seminars>



## Heritage Month Seminars

September was celebrated as Heritage Month, and the CMR hosted four separate sessions on Coastal Issues and Cultural Heritages by Professor Rose Boswell's students (Dr Jess Thornton, Dr Zanele Hartmann, Dr Elena Perez-Alvaro, Mr Bayanda Laqwela, Ms Anezia Asse, Ms Noluyolo Gqoza-Qwasha, Ms Rina Siyengwa, Ms Joyleen Sagandira, Ms Sharon Gabie, Mr Athabile Xuba, Ms Jentrix Chochy and Mr Charles Vonza) in celebration of this occasion. These took place online, via Zoom.

The themes included:

- Ports, Mega Ports and Services: 22 September from 11:00 – 12:00 (28 attendees).
- Underwater Cultural Heritage, Heritage in Maputo, and Heritage in Namibia: 22 September from 13:00 – 14:00 (22 attendees).
- The Senses: 23 September from 11:00 – 12:00 (16 attendees).
- Capacity Building and Learning in Cultural Heritage Research: 23 September from 13:00 – 14:00 (19 attendees).

The recording of the talks are posted on the CMR website: <https://cmr.mandela.ac.za/News-and-Events/Additional-Seminars>

## UN GESAMP Workshop

The CMR hosted the UN GESAMP workshop "Potential role of atmospheric deposition in driving ocean productivity in the Southwest Indian Ocean" and was coordinated by Mrs Tara Bonnesse and Ms Ammaarah Abrahams. This workshop took place at the Ocean Sciences Campus from 4 to 7 October. Over 30 participants from local and international institutions attended in person while a few also attended online. On 4 October a regional capacity building session was held for regional and local students. The rest of the days included presentations and synthesis sessions. On 7 October two panel talks took place with national managers and decision makers.



## Oldenburg University Visit

Nelson Mandela University and Oldenburg University celebrated their 25-year partnership in November. The CMR met with the delegation from Oldenburg University to discuss potential expansion and future of the collaboration as well as a roadmap for the next 5-10 years which will serve as the implementation plan going forward. The CMR team gave a short presentation, the delegation enjoyed a tour of the Ocean Sciences Campus and a lunch thereafter.

## Italy-South Africa bilateral workshop

The CMR hosted the Italy South Africa bilateral workshop organised by the Italian embassy on 1 and 2 December on the theme of Green Solutions and Marine Biodiversity for a Sustainable Blue Growth. This took place in person (30 attendees) and via Zoom (25 attendees).



## CMR Research Symposium

This event took place on 9 November 2022 on the theme of Sustainable Futures. There were six talks that took place by CMR associates, as well as CMR Acting Director, Professor Pichegru and research chair, Professor Vrancken. 70 people attended in person and 34 attended virtually. This symposium formed part of the inaugural research week.

The event recording, programme booklet (with details on speakers), and presentations are available on the CMR website.



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

### International Conferences (Published Papers)

Minguzzi, M. 2022. Traditional dwellings and techniques of the First Indigenous Peoples of South Africa in the Eastern Cape. Heritage 2022 International Conference-Vernacular Heritage: Culture, People and Sustainability. Editorial Universitat Politecnica de Valencia.

Minguzzi, M. 2022. Vernacular Heritage: Culture, People and sustainability. Heritage 2022 International Conference-Vernacular Heritage: Culture, People and Sustainability. Editorial Universitat Politecnica de Valencia.

Scholtz, B. 2022. A Theoretical Classification of Organizational Success Factors for Workplace Learning Analytics. 3rd International Conference: Next Generation Computing Applications 2022 (NEXTCOMP2022). University of Mauritius.

Scholtz, B. 2022. Access to Technology and Data in Smart Cities for South African Digital Citizens. 8th African Conference on Information Systems & Technology (ACIST) 2022. Malawi University of Science & Technology.

Scholtz, B. 2022. Expert Views on Value Alignment for Stakeholders in Smart Cities. 3rd International Conference: Next Generation Computing Applications 2022 (NEXTCOMP2022). University of Mauritius.

Scholtz, B. 2022. The Status of Adoption of Social Media Analytics: Three Cases in South African and German Government Departments. 8th African Conference on Information Systems & Technology (ACIST) 2022. Malawi University of Science & Technology.

Shakantu, W. 2022. Influence of Construction Micro, Small and Medium Enterprises' Innovation on Clients in Northern Nigeria. World Building Congress 2022. Institute of Physics Publishing (IOP).

Shakantu, W. 2022. Knowledge, attitude, and practice of construction waste prevention among construction professionals. World Building Congress 2022. Institute of Physics Publishing (IOP).



## National Conferences (Published Papers)

Greyling, J.H. 2022. Guidelines for Introducing Learners to Computer Programming in a Developing Country. In ICT Education: 51st Annual Conference of the Southern African Computer Lecturers' Association, SACLA 2022, Cape Town, South Africa, July 21–22, 2022, Revised Selected Papers (pp. 75-90). Springer International Publishing.

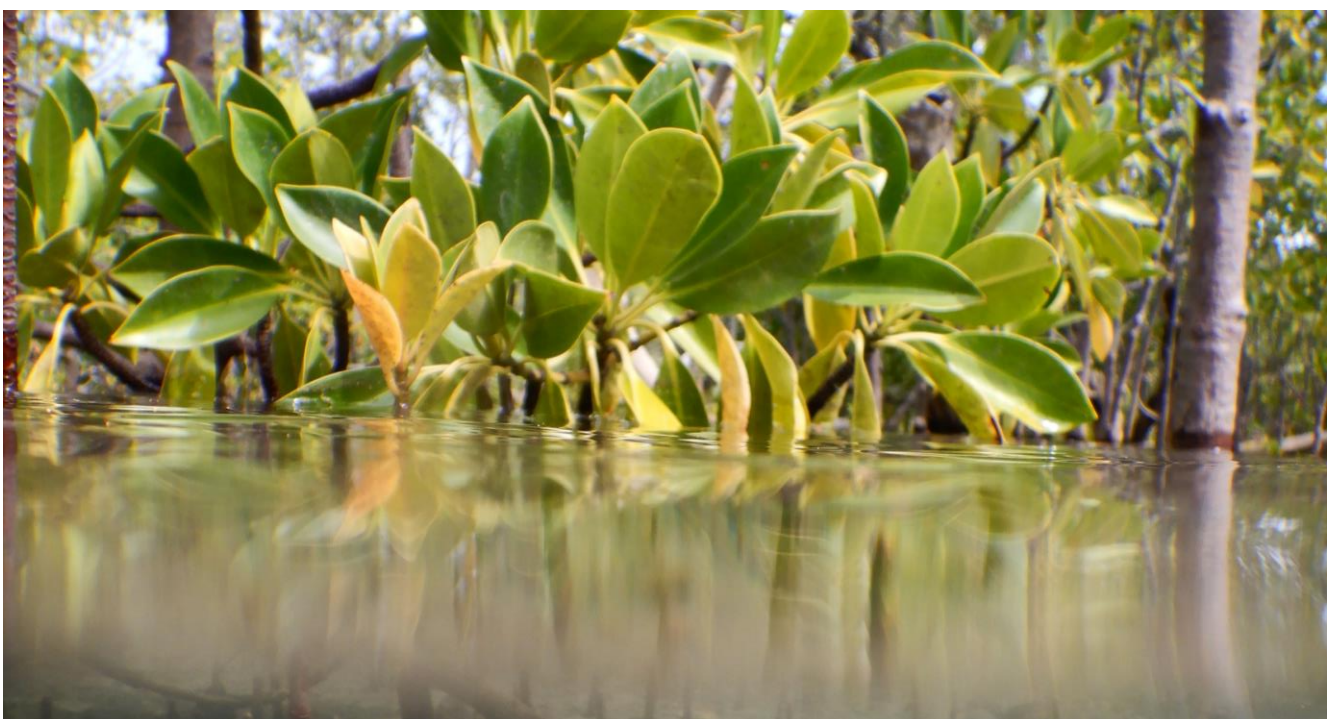
Lombard, A. T., Clifford-Holmes, J- K., Snow, B., Goodall, V., Smit, K. P., Strand, M., Truter, H. and Horigue, V. 2022. A regional Marine Spatial Planning strategy for the Western Indian Ocean. *WIO Science - Policy Platform Series*, 1, 139-144. <http://dx.doi.org/1x.xxx/wio.18>.

Rivers, N., Truter, H.J., Strand, M., Jay, S., Portman, M., Lombard, A.T., Amir, D., Boyd, A., Brown, R.L., Cawthra, H.C., Faure Beaulieu, N., Findlay, K., Gal, G., Grossmark, Y., Perschke, M.J., Pillay, T., Pyrgies, O., Ramakulukusha, M., Smit, K.P., Stockdale, V., Stockill, J., Schwartz, I., Treibitz, T., Vargas-Fonseca, O.A., Vermeulen (Miltz), A. 2022. Shared visions for marine planning: insights from Israel, South Africa and the United Kingdom. *Ocean and Coastal Management*. <https://doi.org/10.1016/j.ocecoaman.2022.106069>.

Shakantu, W. 2022. A comparative assessment of the sanitary facilities in IDP camps with UNHCR and SPHERE standard provision. Proceedings of the construction business & project management conference 2022. University of Cape Town, Department of Construction Economics and Management.

Shakantu, W. 2022. Digitalization of the South African Construction Industry: A Potential for Further Future Research. Construction in 5D: Deconstruction, Digitalization, Disruption, Disaster, Development Proceedings of the 15th Built Environment Conference. Springer Nature.

Yakobi, K. and Scholtz, B. 2022. Methods and Tools for Social Media Analytics to Support Citizen Relationship Management: A Dataset Analysis of Tweets from Germany and South Africa. In The Role of Digital Technologies in Shaping the Post-Pandemic World: 21st IFIP WG 6.11 Conference on e-Business, e-Services and e-Society, I3E 2022, Newcastle upon Tyne, UK, September 13–14, 2022, Proceedings (pp. 123-135). Springer International Publishing.



## International Conference (presented but not published papers)

Adams, JB. 2022. Codesign: estuary conservation and management. Plenary Talk for the OSM Networking Session on Co-Design of Science – at the innovative panel session at the OSM2022. 28 February 2022. <http://www.oceansciencesmeeting.org>.

Adams, JB. 2022. Estuarine & Coastal Sciences Association (ECSA) conference 59. Using the best scientific knowledge for the sustainable management of estuaries and coastal seas. San Sebastian, Spain. 5-8 September 2022.

Adams, JB. 2022. Perspectives on protecting mangroves and salt marsh habitats in dynamic estuarine environments: learning from past interventions. Annual Australian Mangrove and Saltmarsh Network Conference (Ballina, NSW, Australia, August 2020) – invited plenary presented in October 2022

Baade, J., Zoller, K., van Zyl, W., and Cawthra, H. Reservoir siltation mapping uncertainties – experiences from South Africa, EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022, EGU22-9930, <https://doi.org/10.5194/egusphere-egu22-9930>, 2022.

Cawthra, H.C. Rivers of the submerged Palaeo-Agulhas Plain, and implications for early human use on this landscape. River Mouth Systems and Marginal Seas - natural drivers and human impacts. Baltic Earth & University of Szczecin online international conference, 5 – 7 December 2022.

Cawthra, H.C., Esteban, I., Pargeter, J., Fisher, E.C. Ancient land-sea connections in Mpondoland, on the South African Wild Coast. 4th Baltic Earth Conference, May – June 2022.

Cawthra, H.C., Esteban, I., Pargeter, J., Fisher, E.C. Ancient land-sea connections in Mpondoland, on the South African Wild Coast. GeoHab, Venice (virtual attendance), 16 – 20 May 2022.

Doiron, K., Wagner, T., Bijl, P., Herrle, J.O., Bohaty, S.M., Uenzelmann-Neben, G., Childress, L., Brassell, S.C., and the Expedition 392 Science Party. Preliminary assessments of biomarkers in sediments from the Transkei Basin (IODP Site U1581). AGU 2022.

Doiron, K., Wagner, T., Bijl, P., Herrle, J.O., Bohaty, S.M., Uenzelmann-Neben, G., Childress, L., Brassell, S.C., and the Expedition 392 Science Party. Preliminary assessments of biomarkers in sediments from the Transkei Basin (IODP Site U1581). Midwest Geobiology Symposium 2022.

Doiron, K., Wagner, T., Bijl, P., Herrle, J.O., Uenzelmann-Neben, G., Bohaty, S.M., Childress, L., Brassell, S.C., and the Expedition 392 Science Party. Preliminary assessments of biomarkers in sediments from the Transkei Basin (IODP Site U1581). Gordon Research Conference on Organic Geochemistry, USA, 31 July – 5 August 2022.

Edworthy C., James NC., Potts WM., Dupont S. 2022. Combining monitoring and eco-physiology to assess the response of a coastal fish to ocean acidification. 5th International Symposium on Oceans in a High-CO2 World Conference, Lima, Peru. September 2022.



Esteban, I., Cawthra, H.C., Pargeter, J., Fisher, E.C., Integrating contrasting signatures of archaeobotanical proxies: the case of Waterfall Bluff, Eastern Cape Province, South Africa. European Association of Archaeologist Conference 31 August – 3 September 2022.

Geldmacher, J., Davidson, P.C., Liu, J., Ichiyama, Y., Hoernle, K. and the Expedition 392 Science Party. The origin of the Agulhas Plateau at the African-Southern Ocean gateway:Planned research on igneous rocks from Exp. 392. IODP/ICDP colloquium, Postdam Germany, 1 – 3 November 2022.

Hains, D., Ponce, R., Mihailov, M.E., Bergmann, M., Obura, V., Maschke, J., Kim, S-P., Pang, P., Lavagnino, A.C., Geetha, P.N., Hernandez, P.E., Cawthra, H.C. Hydrosatial is the Blue Geospatial...an integrated approach to our Blue Planet and its Contiguous Zones. 2nd climate Observation conference, Germany, 17 – 19 October 2022.

James, N.C., Childs, A-R., Rishworth, G., Rajkaran, A., Human, L., Steyn, P-P, Adams, J., Murray, T., Mkhize, T., Nodo, P., Jacobs, A., Gayiza, M., Pollard, M. & Brown, K. 2022. The seascape of coastal nursery areas in temperate Algoa Bay, South Africa. Estuarine Coastal and Shelf Science Association (ECSA) Conference, San Sebastian, Spain. September 2022.

Kulhanek, D.K., Archontikis, O.A., Herrle, J.O., Bijl, P.K., Burkett, A.M., Coenen, J.J., Dallanave, E., Sprain, C.J., Batenburg, S.J., Westerhold, T., Uenzelmann-Neben, G., Bohaty, S.M., Childress, L., and the IODP Expedition 392 scientific party. Cretaceous–Paleogene calcareous nannofossils from International Ocean Discovery Program Expedition 392 to the Agulhas Plateau. International Nannoplankton Association conference, Avignon, France. 28 August – 3 September 2022.

Kulhanek, D.K., Archontikis, O.A., Herrle, J.O., Penman, D.E., Bohaty, S.M., Westerhold, T., Burkett, A.M., Sprain, C.J., Batenburg, S.J., Uenzelmann-Neben, G., Childress, L., and the IODP Expedition 392 scientific party. Well-preserved calcareous nannofossils across the Paleocene–Eocene Thermal Maximum, International Ocean Discovery Program (IODP) Site U1580, central Agulhas Plateau, southwestern Indian Ocean. Climatic and Biotic Events of the Paleogene conference, Bremen, Germany. 22 – 25 August 2022.

Lemley, D.A., Nunes, M., Adams, J.B., and Bate, G.C. 2022. Phytoplankton and water quality responses to anthropogenic pressures in small temporarily closed estuaries. ECSA 59 conference: "Using the best scientific knowledge for the sustainable management of estuaries and coastal seas", San Sebastián, Spain.

Lombard, A.T, Clifford-Holmes, J.K. & Vermeulen, E.A. 2022. A systems approach to marine spatial planning. ICES Annual Science Conference, Dublin, Ireland, September 2022.

MacHutchon, M.R., Van Zyl, F.W., Adam, U., Krahtz, N.J., Kupido, W., Britz, S., Jelbert, H., Cawthra, H.C., Salzmann, L. A country and continental first of its kind — 50 000-scale offshore geological series mapped to international best practice standards and full seafloor coverage. Council for Geoscience Summit 2022, Durban.

Morgera, E., Samuel, M. M. and Strand, M. 2022. The Role of Human Rights and Arts in Ocean Research for Inclusive and Integrated Governance. Oral presentation for the People and the Ocean virtual workshop series. April 2022, online.

Ndhlovu, A, Adams, J, Rishworth, G, & Human, L. 2022. Consolidating the patterns of trophic and metal bioaccumulation in estuarine macrofauna. Estuaries and Coastal Sciences Association (ECSA 59). San Sebastian, Spain.

Nodo, P., James, N.C., Pattrick, P. & Childs, A.R. 2022. Nursery function of shallow nearshore and estuarine benthic habitats for demersal fishes in Algoa Bay. . Estuarine Coastal and Shelf Science Association (ECSA) Conference, San Sebastian, Spain. September 2022.

Oertle, A., Szabó, K., Gaqa, S., Cawthra, H., Esteban, I., Pargeter, J., and Fisher, E. Identifying taxa from highly degraded shell micro-fragments in anthropogenic soils from Waterfall Bluff, South Africa, EGU General Assembly 2022, Vienna, Austria, 23 – 27 May 2022, EGU22-4341, <https://doi.org/10.5194/egusphere-egu22-4341>, 2022.

Perschke, M.J., Harris, L.R., Sink, K.J., Lombard, A.T. 2022. Ecological Infrastructure as an ecosystem centered framework for comprehensive coastal ecosystem services mapping in the context of systematic conservation planning. Oral remote presentation in session O3: Novel contributions to ecosystem service research - from early career researcher perspectives. 4th ESP Europe Conference 2022 - Ecosystem Services Empowering People and Societies in Times of Crisis: Crete, Greece 14th of October (online).

Perschke, M.J., Harris, L.R., Sink, K.J., Lombard, A.T. 2022. Ecological Infrastructure as a framework for including ecosystem services in systematic conservation planning. Oral remote online presentation at the seminar of the Institute for Coastal Systems of the Helmholtz Centre Hereon, Geesthacht, Germany, 10 November 2022.

Photopoulou, T. 2022. Hidden Markov models in movement ecology. Annual Meeting of the British Ecological Society Movement Ecology Special Interest Group. Glasgow, United Kingdom, 7-8 September 2022.

Pillay, T., Cawthra, H.C., Lombard, A. Benthic habitat mapping using marine geophysics and machine learning on the continental shelf of South Africa. Council for Geoscience Summit 2022, Durban.

Strand, M. 2022. Arts-based participatory research methods for more inclusive area-based ocean management. University of British Columbia Institute for the Oceans and Fisheries Seminar. November 2022, available online.

Strand, M., Rivers, N. and Snow, B. 2022. Reimagining ocean stewardship and coexistence: arts-based approaches to highlight indigenous and local knowledge in marine governance. Oral presentation at LHE conference. March 2022, online.

Thiebault A, McInnes A, Pichegru L, Carpenter-Kling T, Ludynia K, Huetz C, Aubin T, Charrier I. 2022. Acoustic foraging network in African penguins. The Association for the Study of Animal Behaviour ASAB 2022, 06-07/12/2022.

Thiebault A, McInnes A, Pichegru L, Carpenter-Kling T, Ludynia K, Huetz C, Aubin T, Charrier I. 2022. Acoustic foraging network in African penguins. 3rd African Bioacoustics Community Conference 02-07/10/2022.

Thiebault A, McInnes A, Pichegru L, Carpenter-Kling T, Ludynia K, Huetz C, Aubin T, Charrier I. 2022. Acoustic foraging network in African penguins. 51e colloque Société Française pour l'Étude du Comportement Animal, 31/05-2/06/2022 (France).

Uenzelmann-Neben, G., Bohaty, S.M., Childress, L.B., and the Expedition 392 Science Party. IODP Expedition 392: Agulhas Plateau Cretaceous Climate. IODP/ICDP colloquium, Postdam Germany, 1 – 3 November 2022.

Van As, H. 2022. World Police Summit, Dubai, UAE: 14-17 March 2022. International Conference on Transnational Organised Crime & Terrorism (ICTOCT), Las Vegas, USA: 17 – 20 April 2022.

Vargas-Fonseca, A. 2022. Sustainability Research and Innovation Congress (SRI). Anthropogenic pressures to the ocean: A review of the state-of-the-art. June. South Africa (virtual presentation).

Vermeulen-Miltz, E., Clifford-Holmes, J. K., Lombard, A. T, Snow, B. 2022. Applying System Dynamics Modelling to Support Marine Spatial Planning in Algoa Bay, South Africa. International Institute for Applied Systems Analysis (IIASA) Scenarios Forum, 20-22 June 2022. Online.

Vermeulen-Miltz, E.A, Clifford-Holmes, J.K, Snow, B & Lombard, A. 2022. Exploring the impacts of COVID-19 on Coastal Tourism to Inform Recovery Strategies in Nelson Mandela Bay, South Africa. 2022 International System Dynamics Conference, Frankfurt, 18-22 July.

Wanda, T., Wiles, E.A., Cawthra, H.C., de Wit, A. Multibeam bathymetry as the baseline for marine research: application in marine habitat mapping, South Africa. GeoHab, Venice (virtual attendance), 16 – 20 May 2022.

Wilson, D. and Strand, M., Erinosh, B., et al. 2022. Indigenous Peoples, Traditional Knowledge, and Ocean-Climate Action. Oral presentation for the UN Climate Conference (COP27) Virtual Ocean Pavilion. November 2022, online.

Yakutchik, M., Cotterill, C. and Expedition 392 scientists. Science in Seventeen Syllables: 3.9.2 Haiku. AGU 2022.



## National Conference (presented but not published papers)

Adams JB, Raw J, Van Niekerk L. 2022. Protection and restoration of coastal ecosystems for climate change mitigation and adaptation. WIOMSA symposium, Gqeberha, South Africa, 10-14 October 2022.

Adams, JB. 2022. Environmental Flows for Estuary Restoration. 17th South African Marine Science Symposium. Keynote address. Conference theme: Marine Science for the Future South Africa. 20-24 June 2022.

Adams, JB. 2022. Restoration research at the Swartkops Estuary. Presentation at the AGM of the Swartkops Conservancy. Bluewater Bay 14 September 2022. (public talk - knowledge transfer activity).

Adams, JB. 2022. Source to sea: estuaries at the pressure interface. Keynote lecture at the 2022 conference of the Southern African Society of Aquatic Scientists. 59th conference meeting. Conference theme: Valuing our river systems: source to sea. Brandfort, Free State. 26-30 June 2022.

Ajiboye-Dare, F. 2022. On 26th September, 2022 between 16:20 – 16:40, I presented a paper titled "Maritime cyber-attack as use of force" during the Women in the Law of the Sea (WILOS) Conference 2022.

Bailey, D.; Hermes, J.; Goschen, W.; Penven, P.; Bornman, T. 2022. An investigation of sea level and circulation response during a coastal trapped wave event on the eastern Agulhas Bank, South Africa. Paper presented at 12th WIOMSA Scientific Symposium, Gqeberha, 10-15 October 2022.

Bayanda, L. 2022. Online International Conference. River Mouth Systems and Marginal Seas – Natural Drivers and Human Impacts, online conference, Dec 5-7, 2022.

Bayanda, L. 2022. SASQUA 22: 23rd Conference of the Southern African Society for Quaternary Research. Southern African climates and environments in a changing world: A view from the Quaternary. 25 – 30 September 2022

Bizani, M., Bornman, T.G., Campbell, E.E., Perissinoto, R., Deyzel, S.H.P. 2022. Mesozooplankton Responses to A Harmful Algal Bloom Induced by the Expatriate Dinoflagellate *Lingulodinium Polyedra*. Southern African Marine Science Symposium, 20 – 24 June 2022, Elangeni Hotel, Durban, South Africa.

Bowmaker-Falconer K, McInnes J, Von de Heyden S, Pistorius P, Makhado N, Dyer B, Connan M. 2022. Dietary assessment of Cape gannets in Algoa Bay using DNA metabarcoding. Oral.

Brown, E., Findlay, K., du Plessis, N., Hermes, J., Bornman, T., Wilson, H. 2022. Ocean Accounts: Bringing Long-Term Ocean Monitoring to Your Fingertips. Southern African Marine Science Symposium, 20 – 24 June 2022, Elangeni Hotel, Durban, South Africa.

Buhl-Mortensen L, Malauene B, Santana P, Amoda C, Nassongole B, Sola E, Bakkeplass K, Cervantes D, Ostrowski M, Serigstad B. 2022. Benthic Communities and Habitats of Northern Mozambique WIOMSA Scientific Symposium, Gqeberha, October.

Cawthra, H.C., Anderson, R.J, de Vynck, J., Fisher, E.C., Jacobs, Z., Jerardino, A., Kyriacou, K., Marean, C.W. Migration of Pleistocene shorelines across the Palaeo-Agulhas Plain: evidence from dated sub-bottom profiles and archaeological shellfish assemblages. MEDECOS XV conference Langebaan, 5 – 9 September 2022. (poster presentation)

Cawthra, H.C., Cowling, R.M., Andò, S., Marean, C.W. Cawthra et al MEDECOS oral Producing geological and soil maps of the Palaeo-Agulhas Plain's submerged landscape for the Last Glacial Maximum. MEDECOS XV conference Langebaan, 5 – 9 September 2022.

Cawthra, H.C., Esteban, I., Pargeter, J., Fisher, E.C. Mpondoland provides a glimpse into ancient human use of coasts and seascapes. SASQUA 2022 St Lucia, 25 – 30 September 2022.

Cawthra, H.C., Frenzel, P., Gander, L., Hahn, A., Compton, J.S., Zabel, M. Seismic stratigraphy of the inner to mid Agulhas Bank, South Africa. MEDECOS XV conference Langebaan, 5 – 9 September 2022. (poster presentation)

Cawthra, H.C., MacHutchon, M.R., van Zyl, F.W., Pillay, T., Kupido, W. Future direction of marine geoscience at the CGS from a 70-year legacy. Geoscience Summit, Durban, 25 – 27 October 2022.

Cawthra, H.C., Uenzelmann-Neben, G., Bohaty, S.M., Childress, L.B. and the Expedition 392 Science Party. Two months at sea and over 2 km of seafloor core from southern South Africa sheds light on 100 million years of regional climate history. South African Geophysical Association 17th biannual conference, Sun City, South Africa, 28 November – 1 December 2022.

Connan M, Weideman E, Ryan P. 2022. Seasonal attendance patterns and habitat use of three avian scavengers at sub-Antarctic Marion Island. Poster.

Connan M, Whittington P, Hofmeyr G. 2022. Long-term trends in wader and shorebird populations at Cape Recife (Eastern Cape).

Cotiyane-Pondo, P., Bornman, T., Dąbek, P. 2022. Epilithic Diatoms Along the Coast of South Africa: Insights from Baseline Studies. Southern African Marine Science Symposium, 20 – 24 June 2022, Elangeni Hotel, Durban, South Africa.

de Menezes L, Ryan PG, Thompson M, Connan M. 2022. Trophic ecology of Blue Petrels *Halobaena caerulea* and Salvin's Prions *Pachyptila salvini* at Marion Island. Poster.

Dlomo, X., Bornman, T. 2022. Ocean Structures and Dynamics of Two Open Bays on the Eastern Agulhas Bank. Southern African Marine Science Symposium, 20 – 24 June 2022, Elangeni Hotel, Durban, South Africa.

Dodd, C, Rishworth, G, Cawthra, H, & Massmann, G. 2022. The Algoa Water Supply System: Drought and Groundwater Use Linked To Coastal Aquifer Discharge. 17th South African Marine Science Symposium. Durban, South Africa.

Dodd, C., Rishworth, G.M., Cawthra, H.C., Massmann, G. The Algoa Water Supply System: Drought and groundwater use. What do we know and what should we know? South African Marine Symposium, Durban, 20 – 24 June 2022.

Edworthy C., James NC., Potts WM. & Dupont S. 2022. Combining monitoring and eco-physiology for ocean acidification research. South African Marine Science Symposium (SAMSS). June 2022.

Edworthy, C., James, N.C., Potts, W.M. and Dupont, S. 2022. Variability in pH and associated parameters in a dynamic coastal embayment. Ocean Science Meeting, February/March 2022.

Faure Beaulieu, N, Olbers, J, Goodall, V, Lombard, A., Harris, J. 2022. A systematic conservation plan for sharks and rays in South Africa. Oral in person presentation. 17th South African Marine Science Symposium, Durban, 20-24 June 2022.

Finch J.M., Cawthra H., Dreyer D., Haberzettl T., Kirsten K., Mkhonza N., Pretorius L., Viehberg F. 2022. Jive Media Africa and the participants of the 2021 Train-ME2 CONNECT Summerschools: Research-led community engagement in the palaeosciences: A case study presenting a Science Spaza educational comic and activity worksheet, and supporting short videos. SASQUA 2022 St Lucia, 25 – 30 September 2022.

Gayiza, M., James, N.C., Bernard, A. & Steyn, P-P. 2022. Nursery provision of macroalgae reefs in a coastal seascape in Algoa Bay. 17th South African Marine Science Symposium (SAMSS). June 2022.

Gayiza, M., James, N.C., Bernard, A. and Steyn, P-P. 2022. The importance of structural complexity for nursery provision within a mosaic of habitats in a temperate rocky cove. 12th WIOMSA Scientific Symposium, Gqeberha, October 2022. Poster presentation.

Gibb, R.; Bornman, T.; Dorrington, R. 2022. Molecular techniques provide insight into the importance of phytoplankton communities as ecosystem indicators. Poster presented at 12th WIOMSA Scientific Symposium, Gqeberha, 10-15 October 2022.

Harris, L.R., Holness, S.D., Kirkman, S.P., Sink, K.J., Majiedt, P., Driver, A., 2022. South Africa's National Coastal and Marine Spatial Biodiversity Plan: biodiversity priorities for marine spatial planning. Western Indian Ocean Marine Science Association 12th Symposium. Gqeberha, South Africa.

Hawkes, S, Human, L, Lemley, D, Steyn, P-P, Welman, S, & Rishworth, G. 2022. Food Quality As A Predictor of Macroinvertebrate Dietary Consumption In Modern Supratidal Microbialite Ecosystems of Nelson Mandela Bay, Gqeberha. 17th South African Marine Science Symposium. Durban, South Africa.

James, N, Childs, A, Rishworth, G, Rajkaran, A, Human, L, Steyn, P-P, Adams, J, Murray, T, Edworthy, C, Mkhize, T, Nodo, P, Jacobs, A, Gayiza, M, Pollard, M, & Brown, K. 2022. The Seascape of Coastal Nursery Areas In Temperate Algoa Bay, South Africa. 17th South African Marine Science Symposium. Durban, South Africa.

James, N.C. 2022. Climate change effects on estuaries and associated fish. 22nd National MCEN Conference. March 2022.

James, N.C., Childs, A-R., Rishworth, G., Rajkaran, A., Human, L., Steyn, P-P., Adams, J., Murray, T., Edworthy, C., Mkhize, T., Nodo, P., Jacobs, A., Gayiza, M., Pollard, M. & Brown, K. 2022. The seascape of coastal nursery areas in temperate Algoa Bay, South Africa. Ocean Science Meeting, February/March 2022.

James, N.C., Jacobs, A., Gayiza, M., Pollard, M, Mkhize, T, Murray, T., Childs, A., Human, L., Steyn, P-P., Rishworth, G. & Bernard, A. 2022. The role of macroalgae reefs as nursery areas within the Algoa Bay coastal seascape. 12th WIOMSA Scientific Symposium, Gqeberha, October 2022.

Kalyan, B., Snow, G., Bornman, T. 2022. Bridging the Gap Between Morphological and Molecular Identification of Diatoms. Southern African Marine Science Symposium, 20 – 24 June 2022, Elangeni Hotel, Durban, South Africa.

Kalyan, B.; Snow, G.; Bornman, T. 2022. Bridging the gap between morphological and molecular identification of coastal diatoms. Poster presented at 12th WIOMSA Scientific Symposium, Gqeberha, 10-15 October 2022.

Kisten, Y. 2022. The Effects of Environmental Variability on The Early Life Stages of Marine Estuarine-Dependent Cape Stumpnose. Southern African Marine Science Symposium, 20 – 24 June 2022, Elangeni Hotel, Durban, South Africa.

Lamberth, S.J., Baur, N., Bornman, T., Brett, G., James, N.C., Krug, M., Russo, C. & Steyn, P-P. 2022. A sequential account of major ocean weather anomaly, direct and indirect impacts on marine life. 17th South African Marine Science Symposium (SAMSS). June 2022

Lemahieu A., Lombard A.T, Truter A., Snow B. 2022. A Marine Spatial journey: the case of Algoa Bay (Port Elizabeth, South Africa). 17th South African Marine Science Symposium, Durban, 20-24 June 2022.

Lemahieu A., Lombard A.T., Truter H., Snow B. 2022. Designing a Marine Spatial Planning Methodological Framework for Algoa Bay (Gqeberha, South Africa): challenges and lessons learned. 12th Western Indian Ocean Marine Science Association Symposium (WIOMSA), Mini-Symposium "Creating a future for Marine Spatial Planning in the West Indian Ocean", Gqeberha, South Africa, 10-14 October 2022.

Lemley, D.A., Human, L.R.D., Rishworth, G.M., Whitfield, E., and Adams, J.B. 2022. Managing the seemingly unmanageable: Water quality and phytoplankton dynamics in a heavily urbanised low-inflow estuary. 17th Southern African Marine Science Symposium (SAMSS): "Marine Science for the Future of South Africa", Durban, South Africa.

Lombard, A.T, J.K. Clifford-Holmes, B. Snow, V. Goodall, K.P. Smit, M. Strand, H. Truter and V. Horigue. 2022. A Strategic Framework for Marine Spatial Planning in the Western Indian Ocean. 12th Western Indian Ocean Marine Science Association Symposium (WIOMSA), Mini-Symposium "Creating a future for Marine Spatial Planning in the West Indian Ocean", Gqeberha, South Africa, 10-14 October 2022.

Lombard, A.T., E.A. Vermeulen, J.K. Clifford-Holmes and B. Snow. 2022. The advantages of system dynamics models in decision-support for integrated ocean management. 17th South African Marine Science Symposium, Durban, 20-24 June 2022.

Malauene BS, Vianello P, Roberts M, Fennessy S, Everett B, Kamau J, Mutia D, Kische M, Semba M, Ostrowski M. 2022. Temperature gradients and stratification along the East African coast using 5 decades of ship data. WIOMSA scientific symposium, Gqeberha, October.

Malongweni, N. 2022. Spatial distribution of vertical carbon fluxes on the Agulhas Bank and its possible implication for the benthic nepheloid layer (BNL) formation. Southern African Marine Science Symposium, 20 – 24 June 2022, Elangeni Hotel, Durban, South Africa.

McInnes A, Vibert L, Thiebault A, Charrier I, Carpenter-Kling T, Ludynia K, Stander N, Pichegru L. 2022. Has increased marine traffic driven the recent catastrophic decline of African penguins at their largest global colony? 17th Southern African Marine Science Symposium, 20-24/06/2022 (South Africa).

Meiklejohn, A., Childs, A-R., Smith, K., Meiklejohn, I., Nodo, P. & James, N.C. 2022. Spatial and temporal analysis of fish assemblages within the Knysna Estuary System. 17th South African Marine Science Symposium (SAMSS). June 2022.

Mfikili, A.N., Bornman, T.G., Cawthra, H.C. 2022. Onshore Sedimentary Deposits – Reconstruction Towards Palaeo-Extreme Marine Events Inundation Along the South African Coast. Southern African Marine Science Symposium, 20 – 24 June 2022, Elangeni Hotel, Durban, South Africa.

Mkhize, T., James, N.C., Adams, J. & Parker-Nance, S. 2022. Habitat use by juvenile coastal fish in vegetated habitats of Algoa Bay's shallow-water seascape. 17th South African Marine Science Symposium (SAMSS). June 2022

Mkhize, T., James, N.C., Parker-Nance, S. and Adams, J. 2022. Structural complexity of *Zostera capensis* and *Plocamium corallorhiza* in the Algoa Bay shallow-water seascape. 12th WIOMSA Scientific Symposium, Gqeberha, October 2022. Poster presentation

Moloi, P, Carrasco, NK, Bird, MS, & Rishworth, GM. 2022. Benthic Macrofaunal Community Structure of The St Lucia Estuary Mouth, Following The Latest Mouth Restoration Project. 17th South African Marine Science Symposium. Durban, South Africa.

Ndalen, P., James, N.C., South, J. 2022. Understanding resource partitioning in three species of Gobiidae living in the warm-temperate Sundays Estuary. 17th South African Marine Science Symposium (SAMSS). June 2022.

Ndhlovu, A, Adams, J, Rishworth, G, & Human, L. 2022. Consolidating The Patterns of Trophic and Metal Bioaccumulation In Estuarine Macrofauna. 17th South African Marine Science Symposium. Durban, South Africa.

Ndhlovu, A, Rishworth, GM, Adams, JB, Ndoto, A, & Human, LRD. 2022. Consolidating the patterns of trophic and metal bioaccumulation in estuarine macrofauna. 12th Symposium of the Western Indian Ocean Marine Science Association (WIOMSA). Gqeberha, South Africa.

Nodo, P., James, N.C., Childs, A-R. and Pattrick, P. 2022. The nursery function of shallow marine nearshore and estuarine benthic habitats of Algoa bay for demersal fishes. 12th WIOMSA Scientific Symposium, Gqeberha, October 2022. Poster presentation.



Nodo, P., James, N.C., Pattrick, P. & Childs, A-R. 2022. Nursery function of shallow nearshore and estuarine benthic habitats for demersal fishes in Algoa Bay. 17th South African Marine Science Symposium (SAMSS). June 2022.

Oosthuizen, C & Keys, D. 2022. ISEC 2022 conference (International Statistical Ecology Conference) in Cape Town, 25 Jun 2022 to 01 Jul 2022.

Ortega-Cisneros, K., Weigum, E., Chalmers, R., Grusd, S., Lombard, AT., Shannon, L. 2022. Supporting marine spatial planning with an ecosystem model of Algoa Bay, South Africa. 17th South African Marine Science Symposium, Durban, 20-24 June 2022.

Passuni, G., Human, L., Riddick, S., Bizani, M., Pattrick, P., Deyzel, S., Bornman, T., Strydom, N., Pichegru, L. 2022. Limited Influence of the Largest African Penguin Colony on the Nearshore Productivity on Algoa Bay. Southern African Marine Science Symposium, 20 – 24 June 2022, Elangeni Hotel, Durban, South Africa.

Perschke, M.J., Harris, L.R., Sink, K.J., Lombard, A.T. 2022. Ecological Infrastructure as a framework for including ecosystem services in systematic conservation planning. Oral in person presentation in session 4f: advances and tools for marine conservation. 17th South African Marine Science Symposium, Durban, 20-24 June 2022.

Perschke, M.J., Harris, L.R., Sink, K.J., Lombard, A.T. 2022. Including ecosystem services in systematic conservation planning using Ecological Infrastructure. Oral remote presentation in session VII: Systematic spatial planning. 12th Western Indian Ocean Marine Science Association Symposium (WIOMSA), Gqeberha, South Africa, 10-14 October 2022 (online).

Perschke, M.J., Harris, L.R., Sink, K.J., Lombard, A.T. 2022. Integrating Equitable Access to Ecological Infrastructure into Systematic Conservation Planning. Oral remote presentation in conference workshop: Regional challenges and opportunities for advancing biodiversity assessment and planning in the Western Indian Ocean. 12th Western Indian Ocean Marine Science Association Symposium (WIOMSA), Gqeberha, South Africa, 10-14 October 2022 (online).

Pistorius, P. 2022. McInnes of global change (plenary address). 17th South African Marine Science Symposium, Durban, 20-24 June 2022.

Raw J., Van Niekerk L, Adams JB. 2022. Blue carbon ecosystem responses to climate change in impact assessments. Oral presentation. International Association of Impact Assessments. International climate change symposium, Cape Town 27-28 September 2022.

Rishworth, G, Adams, J, Cawthra, H, Dodd, C, Emami-Khoyi, A, Schnelle, C, Strydom, N, & Teske, P. 2022. Coastal Biodiversity Connections of Living Microbialite Refugia In The Past and Present. 17th South African Marine Science Symposium. Durban, South Africa.

Rishworth, G.M., Cawthra, H.C., Dodd, C., Strydom, N.A., Teske, P. Living stromatolites as past and present coastal refugia. South African Marine Symposium, Durban, 20 – 24 June 2022.

Rivers, N., Strand, M. and Snow, B. 2022. Participatory stakeholder engagement for equitable Marine Spatial Planning: lessons from the Algoa Bay Project. Oral presentation at Ocean Justice and Human Rights Conference, Law Faculty, Nelson Mandela University, Gqeberha, South Africa. 3-5 November 2022, in person.

Rivers, N., Strand, M., Snow, B. 2022. Integrating Indigenous and local knowledge holders into marine spatial planning processes: lessons from Algoa Bay, South Africa. Oral presentation at the 12<sup>th</sup> Western Indian Ocean Marine Science Association (WIOMSA) Scientific Symposium. Gqeberha, South Africa. October 2022, in person.

Roberts, M. 2022. UN GESAMP workshop "Potential role of atmospheric deposition in driving ocean productivity in the Southwest Indian Ocean".

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Witteveen, M., Pegg, J., Adams, J., Lemley, D. and Lombard, A.T. 2022. Assessing the present ecological state of Groenvlei, a limnetic wetland, with a view towards restoration through common carp *Cyprinus carpio* removal. In: 4th Garden Route Interface and Networking meeting. Pine Lake Marina: 11-13 October 2022.

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Witteveen, M., Pegg, J., Adams, J., Lemley, D. and Lombard, A.T. 2022. Assessing the present ecological state of Groenvlei, a limnetic wetland, with a view towards restoration through common carp *Cyprinus carpio* removal. In: CapeNature Landscape Ecological Meeting. Hybrid event: 02 December 2022.



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

### **BirdLife South Africa Webinar**

CMR Research Associate Dr Tegan Carpenter-Kling (BirdLife South Africa) co-presented a talk on the Bird of the Year 2022, the Cape Gannet at a webinar hosted by BirdLife South Africa on 8 February 2022. She also presented a talk on Keeping track of our threatened seabirds at a webinar hosted by BirdLife South Africa on 18 October 2022.

### **Know Your Bay Talks**

CMR Associate Professor Kerry Sink gave a presentation entitled: Deep Secrets, Deep Forests and Deep Connections: Progress and Plans in Advancing marine Ecosystem Protection in South Africa, at Bayworld Museum on 5 April. In her talk, she shared stories, imagery, results, and plans from work undertaken to sample proposed and established protected areas, map and manage Vulnerable Marine Ecosystems and better address connectivity in MPA expansion efforts.

CMR postdoctoral research fellows Dr Nina Rivers and Dr Anne Lemahieu gave a presentation entitled: Marine Spatial Planning (MSP) in South Africa: What, Why, Who and How and The Algoa Bay Marine Spatial Planning Project: Who, What and How, respectively, at Bayworld Museum on 24 August. In Dr Rivers talk, she covered the What and Why: broad overview of what MSP is and use to SA; the Who: is leading it at national level and stakeholders; and the How: update on the national process so far and link to AB Project. In Dr Lemahieu's talk, she focussed on Algoa Bay in particular, presenting a map of all the human uses of the Bay, the economic value of ecological services of the Bay and how Bay residents can get involved.

Acting Director Professor Pichegru gave a presentation on African penguin conservation at Bayworld on 11 November. She explained the various threats African penguins are facing in South Africa and all the conservation efforts, as well as issues, put in place by various management authorities, government departments, NGOs and scientists.

### **People and the Ocean Webinar**

CMR PhD student, Mia Strand was invited to present on the role of human rights and arts in ocean research for inclusive and integrated governance as part of a virtual webinar series on people and the ocean. This webinar took place on 27 April.

### **Inaugural Lecture**

Professor Ronel Nel delivered her inaugural lecture titled Sea turtles as ocean ambassadors: Opportunities and challenges on 16 May. The lecture was streamed live on the University's YouTube channel: <https://www.youtube.com/channel/UChgJhLchQSrZMYyV06zy9pw>.

### **African Marine Waste Network International Conference**

The Sustainable Seas Trust (SST) conference took place in May, this was the second international conference of the African Marine Waste Network.

### **SAEON Webinar**

CMR research associate Dr Shirley Parker-Nance gave a presentation entitled: BELTER the way forward: a new LTER platform to inform on benthic change at a webinar hosted by SAEON Elwandle Node. This webinar took place on 3 June.

### **One Ocean Hub's Blue Heritage Event**

CMR Research Chair, Professor Rose Boswell, was a panellist for the One Ocean Hub's Blue Heritage Event for the UN World Ocean Week and discussed Blue Heritage: The Role of Ocean Art and Culture in Ocean Science and Management. This webinar took place on 7 June.

### **SAMSS**

Many CMR members (including staff, RA's, associate members, and support staff) presented at this year's SAMMS symposium. This included CMR's acting director, CMR's deputy directors and 3 of the 5 research chairs. Professor Pierre Pistorius presented a Plenary session entitled Seabirds and marine mammals as sentinels of global change. The symposium, which took place in June, aimed to explore the links, continuity, and changes in marine science of the past and present.

### **National Science Week Mini Symposium**

In August, CMR research associates, Dr Shaun Deyzel, Dr Shirley Parker Nance and Prof Nikki James, as well as CMR student member, Phumlile Cotiyane-Pondo and CMR associate Dr Carla Edworthy gave a talk entitled: What's going on in Algoa Bay? at the National Science Week Mini Symposium.

### **Africa Climate Week**

Professor Bernadette Snow presented One Ocean Hub research findings at two events during Africa Climate Week: Ocean and Climate Action Adaptation and Resilience Practices and Tools Clinic co organised by the Global Ocean Forum, Plymouth Marine Laboratory, and One Ocean Hub on 30 August. Africa Climate Week Session 6 Harnessing nature for transformative adaptation in Africa 31 August, organised by the UNFCCC.

### **WIOMSA Symposium**

The WIOMSA symposium took place between 10 and 14 October in Gqeberha. The Special Sessions hosted 750 participants and were held on 14 October on the Ocean Sciences Campus.

### **Oceans, Justice, and Human Rights Conference**

The Department of Public Law hosted this conference in collaboration with the SARChI Chair in the Law of the Sea and Development in Africa, the Warwick University Law School, and the South African International Maritime Institute. It took place from 3 to 5 November on the Ocean Science Campus. This conference provided an opportunity for interdisciplinary discussions about the relationship between the oceans, justice, and human rights, and will cover a wide range of issues related to ocean governance, including sustainability, development, climate change, the human rights of people living in close proximity to the ocean and impacted upon by environmental violations, and climate and environmental justice.

### **Indigenous Peoples, Traditional Knowledge, and Ocean Climate Action**

CMR doctoral student, Ms Mia Strand, was one of the panellists for this event. This took place on 10 November. The panel practiced the art of listening through the stories and experiences of traditional and Indigenous knowledge holders from Namibia, Madagascar, Ghana, and South Africa. The panel encouraged a short discussion on participants' main take aways, reflections, feelings, and thoughts after listening to the stories and interventions, and reflected on how different project methodologies can bridge the gap between traditional knowledge, intangible ocean heritage, and climate action.

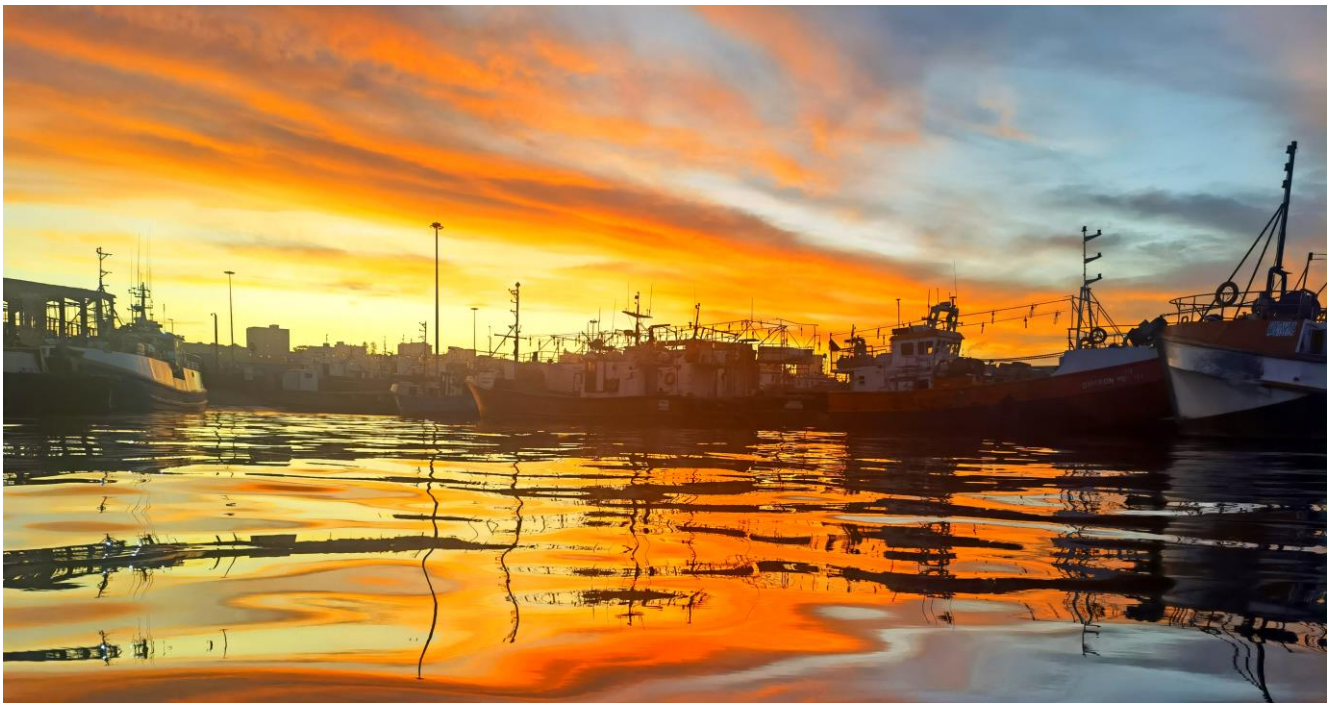
# COMMUNITY ENGAGEMENT

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 Ocean Connections. Individuals were encouraged to submit up to three of their best photographs that showcase what connects them to the ocean. Over 40 entries were received. First prize was three boat cruises donated by Stampedes Cruises and second prize was two prints from Katz Camera World. The winner was Andrew Witte and the runner-up was William Veitch. The winners were announced on World Oceans Day via the CMR mailing list and social media accounts.

Winner: Andrew Witte – Oceans on Fire



Runner-up: William Veitch - Baruch



# 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 South Western 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 (see below), 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 is due to open in June 2023 for funding available late 2023. The proposals are for multi-disciplinary research involving at least three countries in the Indian Ocean.

## South Africa Higher Education and Research Week

The South Africa Higher Education and Research Week was held in France from 27 June to 2 July 2022. South African universities were represented by 138 representatives from 23 public universities, and were part of 50 engagements, meetings, and workshops. For Mandela University, the engagements enabled new prospects for academic exchange and collaborations. The new research program ECO-SWIO, to be funded by NRF, AFD and ANR (among others), was announced and will present a real opportunity to start extending SA-France cooperation soon. There was strong interest from MARBEC regarding CMR activities. It was identified during that week that collaborations between French institutions and Mandela University could be developed in several fields, including biodiversity/ecology, robotics, and humanities. In SA, MARBEC essentially cooperate with UCT. The Research Week showed that there is a real opportunity to start additional, new, cooperation with NMU in ocean sciences, including interdisciplinary research and joint degrees.





# EXC2 EXCHANGE PROGRAMME

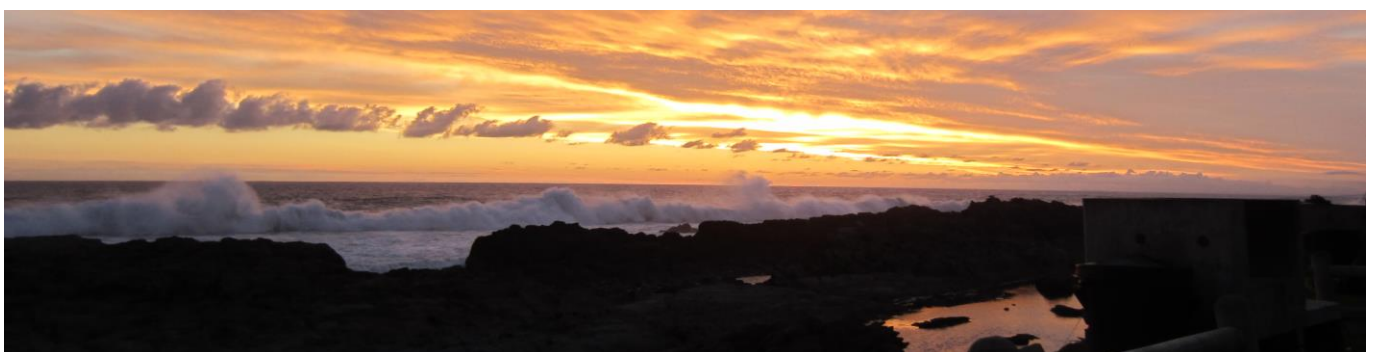
The CMR has built a strong partnership with the University of Oldenburg since first meetings took place in 2017. Since the CMR-University of Oldenburg research staff exchange visits during 2019, the CMR and Helmholtz Institute for Functional Marine Biodiversity (HIFMB) were in discussion regarding a 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 2024/5). Dr Gavin Rishworth will lead this exchange programme under the CMR, with support from Professor Janine Adams. The first call for applicants was made in November 2022. It is envisioned that five PhD or Postdoctoral Fellows will travel bidirectionally each year, for three years. There has been limited interest thus far in terms of applicants (word of mouth only) and no formal applications received. Dr Priscilla Mensah has engaged with the exchange programme and an information session will soon be held (Dr Rishworth to participate) to encourage interest and answer questions. The call will also be sent out again via CMR, as well as the University MEMO and social media channels.



# 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 seven South African universities (CMR/Nelson Mandela University; University of Cape Town; University of the Western Cape; Cape Peninsula University of Technology; University of Zululand; Rhodes University; University of Kwa-Zulu Natal, Walter Sisulu University), 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 in light of 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 Acting Director of the CMR and as the CMR-French Embassy link, Professor Lorien Pichegru is currently the local coordinator of this master's programme and exchange opportunities at the Nelson Mandela University. She has been engaging with various individuals on the logistics to have this established, during the visit of Dr Steven Herbette at the CMR in June and August 2022, as well as Dr David Kaplan in August 2022. The team has been meeting regularly and has now finalised the curriculum. A hybrid workshop took place on Ocean Sciences Campus on 5 and 6 of October 2022, with participants from all SA universities and EU institutions. Significant progress was made on the accreditation process and the EU Erasmus + application. A Memorandum of Understanding signed by all universities has been attached to the application and the application has been submitted for Erasmus + Higher Education funding, with outcome due in October 2023. A Memorandum of Agreement between all universities will be drafted and signed in 2023, as it is necessary for the accreditation process, currently lead by Dr Robert Gerber from NMU, which will be submitted in 2023.



# 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. This will be delivered through 5 research programmes:

- Global law and governance for integrated ocean management.
- Emotionally connecting with the ocean.
- Sustainable and equitable fisheries in an ecosystem context for human wellbeing.
- The role and potential of (non-fisheries) offshore marine resources to support a sustainable blue economy.
- Transformative governance for an inclusive, innovative, and responsible blue society.

A new evidence base and innovative methodologies aim to support transformative governance for a healthy ocean and an equitable, circular blue economy, primarily in West Africa and South Pacific.

Numerous CMR researchers are involved in this project. By the end of 2022, The Nelson Mandela University team were busy completing articles and reports, arranging workshops and photo exhibitions, working on models, image databases, maps and spatial layers and contributing to book publications. A research cruise will take place in February 2023, which will assist in building research capacity in deep-sea knowledge, tools and techniques to enable more ecologically just ocean governance, now and in the future.



## **CICLICO: Cities and Climate Change in Coastal Western Indian Ocean**

This project explores and plans, with decision-makers and society in Algoa Bay and the city of Gqeberha, how diverse and often uncoordinated objectives of coastal and marine planning can be implemented to enable better adaptation to climate change using climate services for city planning tools. This project is funded by the Western Indian Ocean Marine Science Association (WIOMSA) and is linked to the prestigious Helmholtz Association Centre (GERICS) in Germany, and the Universidade de Lisboa in Portugal.

Two workshops were held in March 2022. The first workshop took place on 22 March and was on the development and use of climate services to support municipal coastal authorities in South Africa. The second workshop was on the development and use of climate services to support municipal coastal authorities in South Africa, focusing on Nelson Mandela Bay Municipality and took place on 30 March. This project has now come to an end (April 2022), with most funds spent. Mrs Fernandes was employed until the end of November 2022 and was assisting with the completion of a few outstanding deliverables. These deliverables will be made available for access on the Algoa Bay website and ResearchGate. Two background reports, a policy brief, interim and close out report, blog post and three papers (2 still under review) form the main outputs of the project. A PhD thesis by Lena Rölfer using Algoa Bay as a case study has also been submitted. Relationships established with stakeholders and lessons learnt during the project will contribute to the wider Algoa Bay Project and ongoing research with the CMR.

## **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. It is led by Professors Bernadette Snow and Mandy Lombard.

Despite different start dates of the various organisations, deliverables are on track for completion by February 2024. By the end of 2022, two papers had been published, meeting five deliverables of the project. Seven papers are in preparation and a further two, including a synthesis paper on development/application of ocean management tools, are pending. The core project team met in Dublin in September 2022 to discuss progress and deliverables. Ongoing deliverables include reporting to the BELMONT Forum and public information sharing through blogposts and articles. All data produced through the project will be shared on appropriate sources.



## CoP: Algoa Bay Marine Spatial Plan

The Algoa Bay Community of Practice Project aims to co-develop a marine spatial plan for Algoa Bay with stakeholders, and to mainstream systems thinking into marine spatial planning methods and processes. This project consists of two phases. Phase 1 (2017-2019) aimed to collect data on and model the biophysical and governmental systems in Algoa Bay. Phase 2 (2020-2022) aimed to address the socio-economic system and will tie all three systems together to develop an overall model that can inform marine spatial planning decisions in Algoa Bay. The project is funded by the National Research Foundation (NRF). It is run by the Research Chair for Marine Spatial Planning (Professor Mandy Lombard) and the Rhodes University Research Chair for Marine Natural Products (Professor Rosy Dorrington). The CMR provides administrative support.

Final reporting to the funder has been completed and submitted in Dec 2022, however the work will continue on several publications, an online Marine Spatial Planning course is being produced and the final Marine Spatial Plan will be completed by December 2023 (additional funding has been provided). Dr Gavin Rishworth (stromatolite sub-project) leveraged funding from two new grants that commenced in 2022 (WRC "Coastal seeps and groundwater connectivity" 2022/2023-00833 & DFG "Hydrological and geobiological drivers of modern supratidal microbialite connectivity and formation" MA 3274/16-1), running until 2024/25, for approximately ZAR 7 million in total, ZAR 3 million for Dr Rishworth. This work will focus on the geochemical and biological connectivity of the stromatolites, linking hydrological processes (stromatolites as groundwater monitoring sites - Carla Dodd, PhD candidate; Tristin O'Connell as MSc candidate) to observed biological drivers linked to coastal risks (eutrophication and sea-level rise - Sarah Hawkes, MSc candidate; Dumisile Mbuyazi, Hons candidate).



## 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). This project is funded by the National Research Foundation (NRF) and is a collaboration between the Nelson Mandela University through the Research Chair for Law of the Sea and Development in Africa/CMR, Cape Peninsula University Technology (CPUT), Council for Scientific and Industrial Research (CSIR), University of the Western Cape (UWC), South African Environmental Observation Network (SAEON) and Human Sciences Research Council (HSRC). It is led by Professor Patrick Vrancken. The Institute for Coastal and Marine Research (CMR) provides the administrative support.

Phase 1 was initiated from January 2020 to December 2021. During 2021, NRF allowed the Grant duration for Phase 1 to be extended until December 2022. Phase 1 aims 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. The NRF report was finalised by October 2022 and Phase 1 came to an end in 2022. So far there are 85 outputs:

- 27 Academic Papers
- 15 Technical Research Reports and Policy Briefs
- 11 Informative/Outreach Materials
- 4 Workshop Reports
- 2 Student Reports
- 25 Seminar/Workshop/Conference Presentations
- 1 Film Documentary

The application for Phase 2 has been approved. Phase 2 will be executed from 2023-2024. 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 will expand on Phase 1 objectives in the greater WIO region.



## 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.

The core project team met in Norway in June 2022 for a writing workshop where they worked on the final outputs and publications from the work packages. The project came to an end in December 2022. The team is still in the process of wrapping up the final close out report. The close out report will draw on the findings across all 4 work packages (2 x estuarine fish ecology, socio-economic value of estuaries, and estuarine and coastal governance and estuarine users). The fifth work package will draw everything together into knowledge based adaptive management recommendations for estuaries in South Africa. Professor Bernadette Snow will be working on the project until February 2023, Dr Nina Rivers will be working until the end of March 2023 and Mr Aidan Wood will be working on the project until mid-year. Two students (PHD and Masters) are still receiving bursaries from the project for 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; University of Ulster (Northern Ireland) and University of Wollongong (Australia).

The South African leg of field sampling occurred in March 2022, and the UK/Ireland field sampling campaign took place successfully in July (Prof Adams and Dr Rishworth both attended). The following campaign took place in November in southwestern Australia (Dr Rishworth and his student, Ms Carla Dodd attended). The project duration has been extended until 31 July 2023. Funding for EPStromNet-2 will be pursued in 2023.



## **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.

The team has been working towards replacing the iMirabilis cruise, but there has been no confirmed decision on whether it will take place yet. Dr Linda Harris has been appointed as the systematic conservation planner to assist with work package 5 deliverables. In addition to support in workshops and meetings, Dr Harris has prepared a table of data to be included in the spatial planning and wrote a report on the proposed methods that will be used to identify focus areas for MPA expansion. She also completed some initial analyses for internal use, which will be developed further with stakeholders in 2023. A Marxan course is planned for 2023 to develop capacity in systematic conservation planning for project partners in Brazil.

## **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.

The initial timeline for this project was from October 2020 to September 2022. However, due to the project contract agreements only being finalised in March 2021, this has been extended to March 2023 (no cost extension). CoastWise supported writing up the recent National Biodiversity Assessment report for the Coast, which provided the foundational information regarding the status of coastal biodiversity in South Africa. The team then developed a number of new data layers that can advance coastal biodiversity assessment and planning in the country. New technologies to generate ecological data were piloted, e.g., a machine-learning approach is being taken to identify species from rocky shore survey photographs, and remote sensing was applied to map fluvial plumes around estuary mouths. New methods for mapping ecosystem services for inclusion in systematic conservation planning were also developed and tested. With support from natural and social science experts, the team has been working on identifying and mapping culturally significant areas at a national scale along the South African coast for the first time. These data and others were included in a national systematic biodiversity plan for coast, identifying biodiversity priority areas across the terrestrial, estuarine and marine realms. From this, a Map of Critical Biodiversity Areas, and Ecological Support Areas (CBA Map) was developed for the seashore (dunes, shores, and estuaries) to facilitate seamless alignment of land-based and marine planning in the coastal zone in South Africa. The key outputs from the project to date include: a PhD degree; four publications on 1) the state of coastal biodiversity in South Africa, 2) pressures on estuaries, 3) ecosystem services provided by beaches, and 4) bays as areas with high coastal retention, with another five papers in review or preparation; technical reports; and spatial data.



## 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, in order to advise appropriate policies to reduce marine waste in the country. CMR does not receive direct funding for his project.

A workshop was organised in May 2022 by the SST to report to WIOMSA on the Marine Litter Monitoring Programme across 7 Western Indian Ocean countries and to plan further publications. Prof Pichegru went on the Marion Dufresne with Prof Peter Ryan on the Resilience research cruise, to investigate the distribution of plastic at sea in relation with oceanographic patterns. A total of 3 scientific papers will be published from this research.

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). MSc student, Lyle de Menezes, submitted his MSc thesis in December 2022. One of his data chapters deals with plastic pollution at sub-Antarctic Marion Island.



## CMR Audio Project

Dr David Pittaway joined the CMR team as a Post-Doctoral Research Fellow from May 2020 to April 2022 and was registered with the Department of Development Studies. He led the CMR Audio Project, which introduces CMR members, the University community, national and international stakeholders, and the public to key players of the CMR and various aspects of CMR research, through audio recordings of interviews. This forms part of the larger Perspective Project, which helps individuals and groups of people to work with perspectives and benefit from the power of philosophical thinking and practices. This project broadens the context in which individuals think about problems, goals, and opportunities.

This project came to an end in April 2022. CMR Audio Project recordings are available on the CMR's social media accounts and are available on the CMR's YouTube channel: <https://www.youtube.com/channel/UCf6b7ncMbf4iPSP2oQINnZg/videos>.

## **Restoration of Estuaries using a Socio-Ecological Systems Framework**

This is an ongoing project funded by Water Research Commission and undertaken in collaboration with SAEON, UCT, CSIR and Zwartkops Conservancy. The research is investigating innovative methods for estuary water quality improvement, restoration of salt pans and salt marshes at the Swarkops Estuary.

Professor Janine Adams leads this research, with Dr Daniel Lemley, Dr Lucienne Human, Dr Lara van Niekerk, Dr Taryn Riddin and Professor Bernadette Snow contributing towards the overall WRC report. Additional CMR researchers and postgraduate students are involved in the research undertaken for this project. Priscah Lakane and Emily Whitfield are currently completing their MSc studies. Thandi Mmachaka (PhD) and Vusumzi Tsipa (MSc) both graduated in 2022 along with Marele Nel who received her MSc cum laude. In April 2022, Professor Janine Adams presented on the restoration of coastal water quality. This was for the Institute for Nanotechnology and Water Sustainability (iNanoWS) – College of Science, Engineering and Technology, UNISA, Pretoria, South Africa. It was online with 88 attendants.

The research provided input to the Swarkops Estuary Management Plan that is being revised by the Province of the Eastern Cape, Economic Development, Environmental Affairs & Tourism; a requirement of the National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008). The final draft report will be submitted to the WRC early 2023.

## **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. Funding has been received and field work has commenced. It is funded by the National Research Foundation. It is led by Professor Mandy Lombard and is administered by the CMR.

## **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. This project is led by Dr Maëlle Connan and is administered by the CMR.

Dr Maëlle Connan had a successful field trip on Marion Island where field assistant Eleanor Weideman collected data from April 2021 to May 2022. Lucy Smyth is the field assistant for April 2022 to May 2023. The second year of sampling is underway at Marion Island with field assistant Lucy Smyth. The first results were presented on a poster at SAMSS (Connan M, Weideman E & Ryan P. Seasonal attendance patterns and habitat use of three avian scavengers at sub-Antarctic Marion Island).

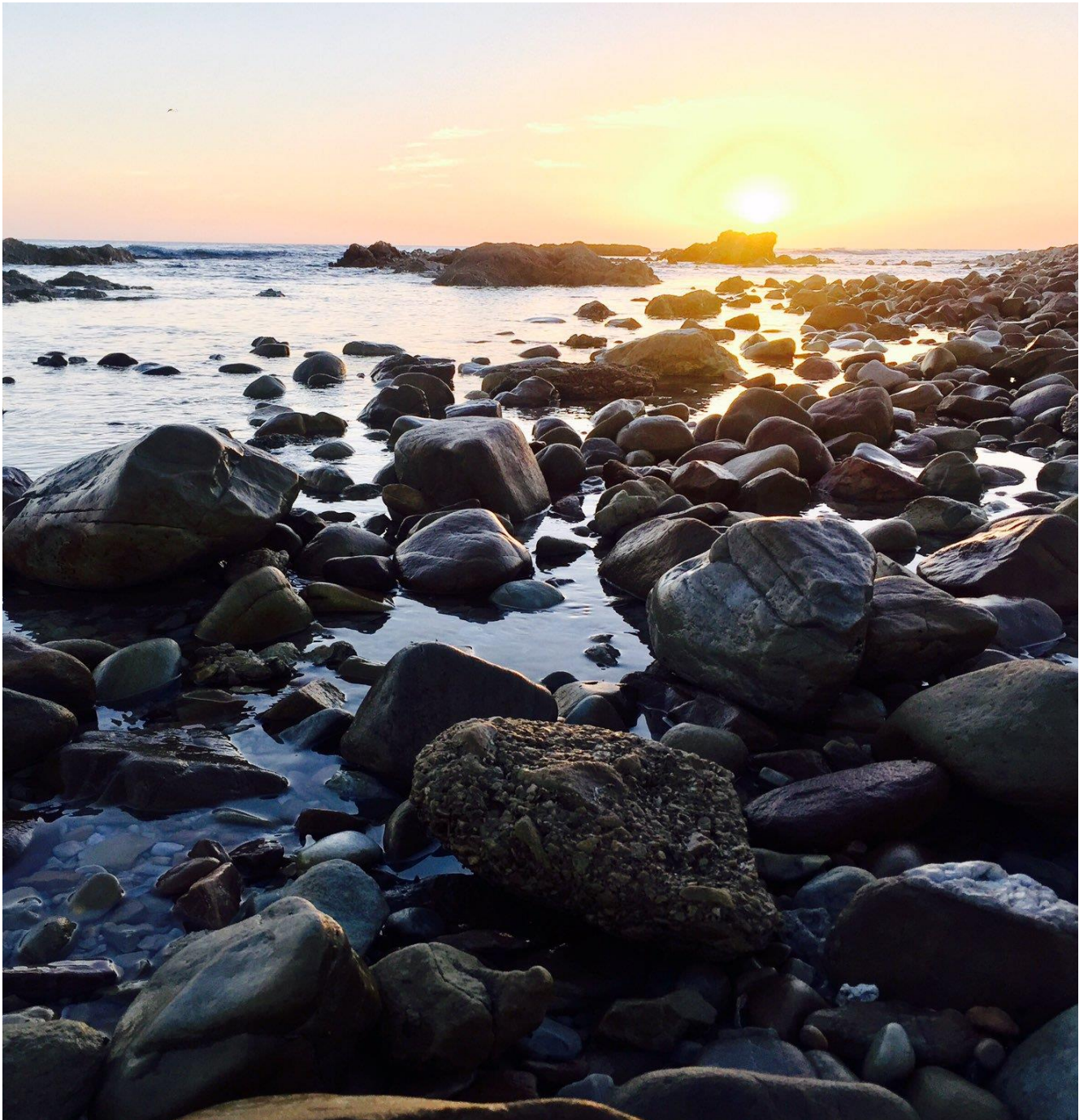


# CONSULTING PROJECTS

## **BCLME-EBSA Project**

Since its inception in 2016, the CMR has been administrating 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. The project is finalising reports and project reporting in quarter 1 of 2023.



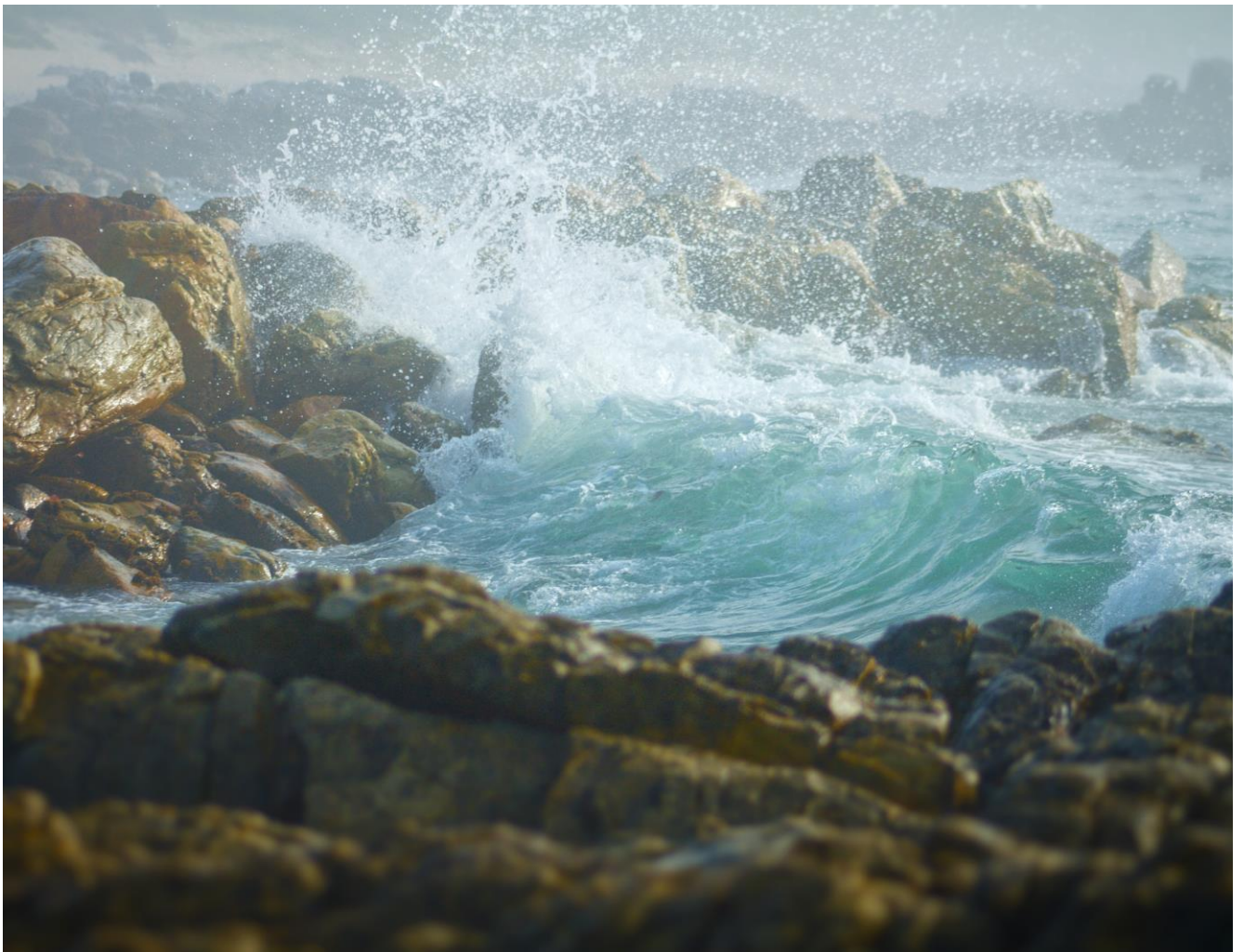
# GRADUATION

## Autumn Graduation

Magaretha Magdalena Burger - Bachelor of Science: Biological Sciences  
Avuziwe Unathi Nkontle - Bachelor of Arts (Honours): Development Studies  
Azile Kwanele Silinga - Bachelor of Laws  
Catherine Louise Currin - Master of Science: Zoology  
Aidan Glenn Jacobs - Master of Science: Zoology  
Marele Annette Nel - Master of Science: Botany  
Vusumzi Tsipa - Master of Science: Botany  
Mfundo Bizani - Doctor of Philosophy: Oceanography  
Myriam Johanna Perschke - Doctor of Philosophy: Oceanography  
Minke Tolsma - Doctor of Philosophy: Oceanography  
Eugin Bornman - Doctor of Philosophy: Zoology  
Jonathan Aubrey Botha - Doctor of Philosophy: Zoology  
Nghililewanga Hashali Hamukuaya - Doctor of Laws: Public Law

## Summer Graduation

Emily Cailyn Whitfield (Cum Laude) - Master of Science: Botany  
Melindi Frances Engelbrecht - Master of Science: Biological Oceanography  
Praxedes Vimbai Rukuni - Master of Science: Zoology  
Foluke Mary Dare - Doctor of Laws: Public Law  
Yusuf Adam - Doctor of Business Administration



# SUMMARY

The Institute for Coastal and Marine Research (CMR) enjoyed a successful year in 2022. It was led by Professor Lorien Pichegru, Professor Janine Adams and Professor Pierre Pistorius as the Director and Deputy Directors, respectively. CMR membership exceeded 310 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 (particularly those under the umbrella Algoa Bay Project and the EPStromNet project) and contract studies (specifically the long-term and ongoing BCLME-EBSA Project). Through hosting local workshops (CICLICO) and an international conference (UN GESAMP), 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 in the UK, Germany, France and elsewhere 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:



Institute for Coastal  
and Marine  
Research - CMR



@CMR\_MandelaUni



@cmr\_mandelauni



CMR\_MandelaUni

Building capacity in knowledge and skills through research-based postgraduate training and short courses is an important academic output for the CMR. 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 2022, 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 and Mr Brian Godfrey has been appointed as the manager of the unit. It is hoped that this process will be finalised during 2023 and that the RDU will be operational from 2023 to continue providing research diving and boating support. With regards to the decompression chamber, the public & private partnership has been signed and Bay Hyperbaric Medicine is now officially operating. 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. A number of research groups who can provide infrastructure support, are based at the Ocean Sciences Campus.

The CMR continued to host meetings to showcase expertise and achievements. The highlight for 2022 UN GESAMP Workshop which the CMR hosted from 4 to 7 October. The CMR Research Symposium, on the theme of Sustainable Futures, took place in-person (part of the inaugural research week) for the first time since 2019 and was a huge success, with over 100 people attending. Nelson Mandela University and Oldenburg University celebrated their 25-year partnership in November 2022. Lastly, the Italy-South Africa bilateral workshop which was hosted by CMR on 1 and 2 December. This was an important visit to strengthen the ties with the university and the CMR.



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 and Professional 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 leads tours through 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 161 articles, generally in high impact journals. 13 book chapters and 23 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 10 additional grants respectively. Seventeen student members graduated. Three 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 153 conferences. Visits from international colleagues from Germany were significant. Overall, the CMR and its membership rose and enjoyed a successful year.





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