

NELSON MANDELA  
UNIVERSITY

# CMR RESEARCH SYMPOSIUM



Optimising Marine  
and Coastal Research  
for Global  
Sustainability

Friday, 24 November  
2023

# 2023

**CMR**  
COASTAL & MARINE  
RESEARCH

Time	Item
09:00-09:10	<p><b>Welcoming Address</b> Dr Palesa Mothapo</p>
09:10-09:30	<p><b>Dr Nomtha Hadi</b> Institute for Coastal and Marine Research</p>
09:30-10:10	<p><b>Prof Nikki James</b> South African Institute for Aquatic Biodiversity</p>
10:10-10:50	<p><b>Prof Tommy Bornman</b> South African Environmental Observation Network</p>
10:50-11:10	<p><b>Comfort break</b></p>
11:10-11:50	<p><b>Dr Tajudeen Sanni &amp; Ms Ntemesha Maseka</b> Nelson Mandela University</p>
11:50-12:10	<p><b>Dr Jessica Thornton</b> Nelson Mandela University</p>
12:10-13:30	<p><b>Mr Bayanda Laqwela</b> Nelson Mandela University</p>
12:30-13:10	<p><b>Dr Dylan Bailey</b> Bayworld</p>
13:10-13:50	<p><b>Lunch</b></p>
13:50-14:30	<p><b>Dr Eckart Schumann</b> Consultant</p>
14:30-15:10	<p><b>Dr Danica Marlin</b> Sustainable Seas Trust</p>
15:10-15:20	<p><b>Lucky Draw</b></p>
15:20-15:30	<p><b>Thanks, and Closure</b> Dr Nomtha Hadi</p>

**RSVP: [cmr@mandela.ac.za](mailto:cmr@mandela.ac.za) by 12:00 on 20 November 2023 to receive venue details**  
Tea/coffee and lunch will be available

# Welcome Address

## Dr Palesa Mothapo

Director of Research &  
Support Management



Dr Mothapo joins Nelson Mandela University from Stellenbosch University where she was Deputy-Director: Postdoctoral Research Support in the Division for Research Development. In 2022, she launched the Pan-African Postdoctoral Network, to develop transferable skills for PhD students and Postdocs, driving higher education policy and industry engagement, and enhancing the African Postdoctoral experience through mobility and skills exchanges.

Spanning her academic career, Dr Mothapo's research in invasion biology, with specialisation as a myrmecologist, has focused on the biodiversity impact, control, and management of invasive species, as well as the socio-economic and socio-cultural impacts of policies on the management of invasive species. She is an ardent advocate for young women in STEM and devotes much of her time to mentoring young women from rural and underdeveloped areas - serving as a Mentor for STEMI-Africa and Smart Tribe (Multi-National STEM Mentoring Programme). Dr Mothapo is one of 2020s Inspiring Fifty Women in STEM, an alumna of the 2018 Mandela Washington Fellowship for Young African Leaders and the GreenMatter WWF Nedbank Green Trust Emerging Leaders Program. She is listed on the 2014 Mail & Guardian 200 Young South Africans to Watch, is a Lifetime Member of the Golden Key International Honour Society, and a Global Goodwill Ambassador for Science and Technology.

### Dr Nomtha Hadi

Acting Director

### Optimising Marine and Coastal Research for Global Sustainability



The United National Decade of Ocean Science for Sustainable Development, the 'Ocean Decade' (2021–2030), is a once-in-a-lifetime opportunity to trigger the ocean knowledge revolution that is much needed in promoting sustainable ocean economies. Achieving a sustainable ocean economy requires identifying critical ocean priorities and promoting interdisciplinary approaches that will unlock the potential of science and innovation to develop innovative ocean sustainability solutions. In linking with the theme for the symposium, we could never over-emphasise the need for engagement and communication amongst various stakeholders and the promotion of integrated approaches, research, and innovative activities for sustainable oceans.

Dr Hadi is the Acting Director for the Institute for Coastal and Marine Research and a full-time faculty member at the Nelson Mandela University's Business School. Her PhD research explored scenarios for South Africa's ocean economy towards 2060. She has a keen interest in multidisciplinary and impactful approaches with a focus on sustainable ocean economies, strategic planning and development, and mixed research approaches.

## Professor Nikki James

Visiting Professor

### Climate Change Impacts on South Africa's Estuarine-Associated Fish Species



Understanding the vulnerability of coastal ecosystems and associated species to climate change is important in planning for a future climate. Climate change in the coastal environment (estuaries and nearshore) results in changes in temperature variability, increasing winds and ocean currents, increased freshwater flow (rainfall), sea level rise, ocean acidification and other extreme weather events such as droughts; all of which are having profound consequences for estuarine-associated fish. This talk summarizes some of the impacts of climate change on South Africa's estuaries and the research undertaken by SAIAB to understand and predict the impacts of these changes for estuarine-associated fish.

Professor James is a senior scientist at the South African Institute for Aquatic Biodiversity and has been a research associate of the CMR since 2019. Her research focuses primarily on fish habitat ecology (how fish interact with their environment) and the effects of global and climate change on coastal and estuarine fishes. Her work has improved our understanding of the effect of climatic variability and extreme events on estuarine and coastal ecosystems, particularly in South Africa, as well as the importance of different coastal habitats as nursery areas for juvenile marine fishes within shallow-water seascapes.

### **Professor Tommy Bornman** Honorary Professor **Open and Collaborative Research Infrastructures in Support of Sustainable Marine Ecosystems**



Research Infrastructures (RIs) are large-scale facilities that provide resources and services for the scientific communities to conduct high-level research and foster innovation. RIs are ideally positioned to establish and maintain these high-quality systematic observations to develop science-based knowledge on global change that will assist scientists and decision-makers to develop more accurate future scenarios, policies and mitigation measures. One of the RI's that are accelerating the impact of scientific research in South Africa is the DSI funded Shallow Marine and Coastal Research Infrastructure (SMCRI), managed by SAEON, and hosted on the Ocean Sciences Campus of the Nelson Mandela University. SMCRI established and operates 15 research platforms to facilitate coastal research, the collection of long-term datasets and to make these samples and data available according to FAIR principles. This presentation will focus on how these platforms and data can be used by the community to optimise their research in the sustainable use and conservation of our marine ecosystems.

Professor Bornman is the manager of the Coastal Node of the South African Environmental Observation Network (SAEON) and the DSI funded Shallow Marine and Coastal Research Infrastructure (SMCRI). Professor Bornman worked as the Research Coordinator of the African Coelacanth Ecosystem Programme (SAIAB) and the Agulhas and Somali Current Large Marine Ecosystem (ASCLME) Project, before joining SAEON in 2011.

11:10 - SPEAKER 4 & 5

**Dr Tajudeen Sanni &  
Ms Ntemesha Maseka**

Post-Doctoral Fellow &  
Doctoral Student/Lecturer

**Purpose of State Ocean  
Jurisdiction Analytical  
Framework and its Implication  
for Sustainable Development**



As part of the United Nations Sustainable Development Goals (SDGs), States are increasingly focusing their governance and policy efforts on sustainable ocean development. However, the jurisdictional framework of ocean governance remains problematic in terms of what State ocean jurisdiction implies in practice. This study examines the implication of State ocean jurisdiction on sustainable development in the context of the analytical framework developed by Prof Patrick Vrancken in a new book titled 'State Ocean Jurisdiction'. The analytical framework composes of the form, scope, ground and purpose of State ocean jurisdiction. By looking at State ocean jurisdiction in the light of this analytical framework, the talk will examine the purpose of State ocean jurisdiction specifically with reference to sustainable development. The purpose of State ocean jurisdiction is the premise on which the exercise of State ocean jurisdiction is based. The thesis is that by examining relevant international instruments together with customary international law and soft law instruments, one can discern several general goals such as sustainable development towards which States are expected to exercise their jurisdictions.

Dr Sanni is a One Ocean Hub funded post-doctoral fellow at the Nelson Mandela University and Ms Maseka is a doctoral student as well as lecturer from the Faculty of Law at Nelson Mandela University.

## Dr Jessica Thornton

Post-Doctoral Fellow

### **Sustainability, Well-Being and Health: Towards a Cultural Metric Approach in Ocean Accounting**



The sea embodies deep memories, meaning and identity which is expressed through coastal seafood heritage, well-being and health. Interactions, customs and convictions with the ocean are closely intertwined and linked with cultural heritage, as noted by Orthel's (2022) three perspectives through which health is related to heritage, namely cognitive health, physiological health, and social issues. However, the depth and complexity of cultural ocean interactions is absent in current ocean accounts frameworks. We posit that human well-being is not linear, it is sensory, complex and intricate and that by considering a cultural metric in an ocean accounts framework, there is a potential for the metric to serve as a vehicle in revalorising intangible cultural knowledge for ocean sustainability. By making use of an explorative and qualitative approach, data was collected to understand the deeper meaning, memories and lived experiences of participants making use of the ocean for either cognitive or physiological needs (Neuman 2014:157). The study was conducted along the coast from Knysna to Port Alfred.

Dr Thornton is a research anthropologist and postdoctoral fellow at Nelson Mandela University investigating the anthropological subject of food heritage and the various flows of food culture that present themselves as foodways in culture. She is currently involved in various projects under the NRF Research Chair in Ocean Cultures and Heritage, engaging with multi-layers of stakeholders.



### Mr Bayanda Laqwela

Doctoral Student

### The Relationship between the People and the Ocean in Selected Coastal Communities in Mpondoland



South Africa can be described as marine country due to its longest coastal line, from Namibian borders to Mozambique. In addition to this, it is positioned at the interface of three oceans, namely, Atlantic Ocean, Southern Ocean, and Indian Ocean. Along these coastlines there are diverse communities with different classes, cultures, and races. All these groups have different relationships with the ocean/coast which is informed by these social structures. This research, therefore, using a multi-sited ethnographic approach, seeks to investigate the cultural and provisioning services provided by the ocean/coast to the people of selected coastal communities in Mpondoland. Within the discipline of Sociology, the study is situated in environmental history, which is concerned with how people use, manage, or interrelate with natural resources and natural environment, in specific circumstances at given times and places.

Mr Laqwela is a PhD candidate in the Department of Sociology and Anthropology at Nelson Mandela University. His research is linked to the DSI-NRF South African Research Chair in Ocean Cultures and Heritage, under Professor Rose Boswell. His research interests are on youth subcultures and the relationship people have with the ocean. Mr Laqwela current research fieldwork is in the coastal communities of the Eastern Cape, particularly in Mpondoland, and it seeks to investigate the cultural provisioning and accessibility to ocean services in Mpondoland.

## Dr Dylan Bailey

Research Associate

### An investigation of a Coastal Trapped Wave Event on the Eastern Agulhas Bank



Coastal trapped waves have the potential to capture and transport a significant amount of energy from atmospheric wind systems, in turn inducing sudden changes to the coastal marine environment over large areas, even those remote to the propagating wind system. In the presented study, the effects of a large, eastward travelling coastal trapped waves that was captured on in situ moored acoustic doppler current profiler (ADCP) and sea level recording instrumentation in Algoa Bay on the eastern Agulhas Bank off South Africa is examined using a high-resolution ( $dx \sim 1\text{km}$ ) Regional Oceanographic Modelling System (ROMS) ocean model.

Dr Bailey is a marine researcher and curator of aquarium operations at Bayworld. He holds an MSc in Zoology and a PhD in Physical Oceanography from NMU, specializing in numerical ocean modelling of the south-eastern coastal and shelf region of South Africa.

## Dr Eckart Schumann

Research Associate

### Options for Renewable Ocean Energy in South Africa



The world climate crisis is necessitating a search for renewable energy sources to eliminate the release of further greenhouse gases into the atmosphere. The ocean is recognised as a possible major contributor in the future. This talk seeks to highlight the options available around South Africa to assess the possibilities. It is very important to first understand the ocean environment, and it turns out that South Africa has unique conditions for ocean energy options. There are the more regular options of waves and offshore winds, but the presence of the Agulhas Current along the east coast raises the possibility of using such a current directly. Moreover, the waters of the Agulhas Current also introduce the possibilities of ocean thermal energy (OTE). Nonetheless, it is important to recognise that the ocean is a harsh environment in which to work, and it will be some years before the viable use of such ocean energy becomes a reality.

Dr Schumann has degrees in physics and geophysical fluid dynamics from UKZN, UNISA and Cambridge. He was Head of the Physical Oceanography Division at the CSIR, and then as a B-rated scientist was acting head of the Department of Oceanography at the then University of Port Elizabeth. After the department was closed, he retired in 2000 and has been doing consulting work since then. He has published over 70 papers, numerous articles and reports, attended many conferences and is still a research associate at Nelson Mandela University.

## Dr Danica Marlin

Associate Member

### **Sustainable Seas Trust: Using Research as a Basis for Actions Towards Sustainable African Seas and Thriving Coastal Communities**



Sustainable Seas Trust is a non-profit, research-based organisations working towards uplifting and sustaining African communities by fostering solutions that enable the blue economy. Through education, research, targeted actions and partnerships, SST's aim is to curb marine pollution through integrating waste management principles into value chains. Over the past four years, SST has established baselines of marine pollution in Algoa Bay through litter surveys on beaches, in rivers and on land, as well as determining plastic-related pollutants in several marine species commonly consumed by humans. This talk will focus on some of the results of SST's research and how it is being applied to guide actions to mitigate plastic pollution.

Dr Marlin is the Head of Scientific Research at Sustainable Seas Trust, where she manages a team of researchers working on topics such as litter monitoring in different environments, use of remote sensing to monitor litter, microplastics analyses, and research into land- and sea-based sources of waste. Dr Marlin studied at Rhodes University where she completed her honours and master's in marine biology, and her doctorate in entomology. As a certified Facilitator, she has been involved in facilitating workshops on marine pollution for diverse stakeholders such as DFFE, Transnet, students, and local fishermen and communities. Dr Marlin has travelled to numerous countries to do field work and set up international research collaborations, and currently lives in Gqeberha with her husband and two children.