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SANCOR'S CURRENCY AND STRENGTH IS INFORMATION

# SANCOR Newsletter

## *Plastic Tide: On the front lines in the war against marine pollution*

Cape Town - It's hard to picture a more pristine coastline than the towering, green cliffs being battered by the rough breakers of South Africa's Wild Coast.

But though it may seem unspoiled, researcher Vonica Perold has come to learn there is no patch of ocean left that is untouched by human activity.

Perold is on board the flagship research vessel – the *SA Agulhas II* – taking water samples along the continent's east coast as part of the second International Indian Ocean Expedition. She is hoping to find out how much plastic waste is floating around in southeast African waters. But though she is yet to put a single sample under the microscope, her

A view of South Africa's Wild Coast from the deck of the *SA Agulhas II*.

Picture: Aletta Harrison/News24



experience leaves her in little doubt about what she will find.

Microfibres – tiny plastic strands from synthetic clothing – are now omnipresent. And just because they're not unsightly, like large pieces of trash, researchers are starting to fathom their far-reaching impact on the environment.

"We've been finding it in water around Antarctica, in the South Atlantic – everywhere – so we do expect to find it. How much, we're not sure – that's why we're doing these tests, but we will find it, definitely."

Perold, who is employed at the University of Cape Town's Percy FitzPatrick Institute of African Ornithology, had originally planned to become a biologist. But a year-

long stint on Marion Island in the southern Indian Ocean altered her career path. The abundance of man-made waste so far from civilisation came as a shock to the young researcher, and it was here that her eyes "opened to the plastic pollution problem."

"We found plastic in the albatrosses' nests right next to these beautiful chicks and that was just heart-breaking, because it's 2000km from Cape Town, in the middle of the open Southern Ocean," she explains.

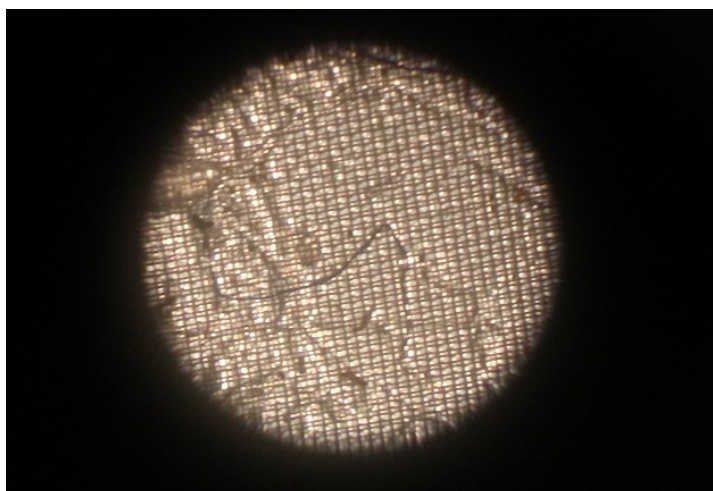
Researchers have divided plastic litter into three categories, according to size: macroplastics (pieces you can see with the naked eye); mesoplastics (smaller fragments between 5-20 mm); and microplastics (pieces smaller than

5mm). The latter includes fragments that were once part of larger pieces: raw pellets known as nurdles and microfibres.

Each of the size categories holds distinct threats to living organisms. The larger pieces, such as discarded fishing gear, regularly entangle marine animals, whereas smaller pieces are ingested because they often look like food. Turtles, for example, are known to eat plastic bags, mistaking them for jellyfish.

"It's a terrible death because they can't excrete it," Perold explains.

"It ends up in their intestines, in their cloaca, blocking their whole gastrointestinal tract and, really, it's a painful death."



Microfibres retrieved from filtered sea water as seen under a microscope aboard the SA Agulhas II. Picture: Aletta Harrison/News24



Small pieces of plastic debris that were retrieved from the gizzard of a white-chinned petrel. Picture: Aletta Harrison/News24

While they are almost invisible, scientists have started acknowledging the serious effects of microplastics on the environment. These materials are ingested by the smallest sea creatures and may travel all the way up the food chain to humans. The long-term consequences are not yet known, but the chemicals that are absorbed to the surface of marine litter can be dangerous to human and animal health.

Back in a lab at the University of Cape Town, Perold is helping the director of the FitzPatrick Institute – Professor Peter Ryan – with the grim task of dissecting a pile of dead seabirds.

He picks up a white-chinned petrel – one among thousands he has processed in his career. These birds spend most of their time in the Southern Ocean, far from cities and human settlements. But even they do not escape our impact on the marine environment. Vast numbers are killed when they get caught while trying to snatch the bait off longline fishing hooks.

Sad as it may be, these deaths present an opportunity for Ryan and his team. The stomach contents and tiny gizzards hold a treasure trove of

information – an indication of how much plastic the animals have ingested.

Petrels are not known as the most prolific plastic eaters, Ryan says, so he is surprised when tell-tale blue and green fragments protrude from the bird's small gizzard. The contents are extracted and logged. Although it's not the plastic that killed this specimen, it is not hard to imagine what happens when an animal keeps ingesting material it cannot digest or excrete.

"If they really have a lot of plastic, so that it starts to fill up the fore

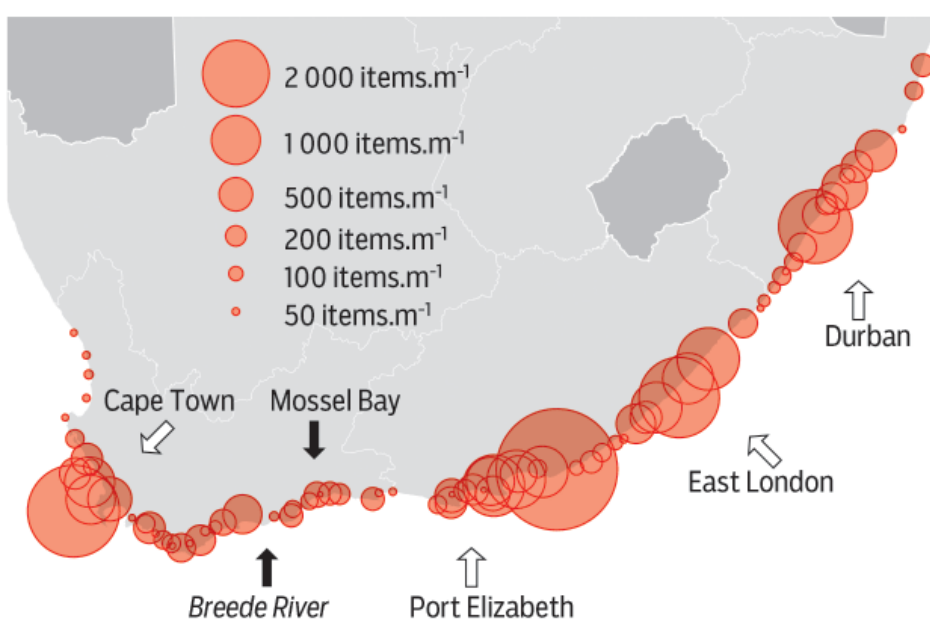
stomach, then it reduces their ability to eat – so they get this false feeling of satiation and when they do find something they can't eat as much in a single sitting... so if they've got a stomach that's really full of plastic then that obviously is a significant problem for them," Ryan explains.

The other issue relates to the contaminants that come with plastics.

"So, plastics that float around at sea, they act as little sponges and accumulate legacy pollutants like PCBs and DDT and those really horrible things that we banned, but

## Mesodebris on SA sandy beaches (2015)

The abundance of mesodebris on 82 South African sandy beaches in the austral winter of 2015 in relation to the location of four urban-industrial centres, Cape Town, Port Elizabeth, East London and Durban (white arrows), and other local sources (black arrows).



Source: P.G. Ryan et al / Environmental Pollution xxx (2018) 1–9

Graphics24

are still around in the environment. And because they absorb those plastics when the birds eat them, there's a mechanism for them to actually be released into the body of the bird. And then some plastics... if you're using plastics in a sort of long life application, you often put additives in to give them specific properties – like maybe flame retardants or something – and those can be quite nasty compounds, hormone disruptors and carcinogens and things..."

While the situation may seem impossibly depressing, Ryan has taken heart from his latest study examining plastic debris on South African beaches.

Three surveys – in 1994, 2005 and 2015 – saw Ryan and his team sieve samples of sand from 82 beaches, and count mesoplastic debris between 1-25 mm in size, in order to determine the patterns in abundance and distribution of small plastic items. The results suggest where most of the plastic in South Africa's marine environment comes from.

The study came to a startlingly positive conclusion.

Unlike some islands, where plastic from unknown origin accumulates, Ryan and his team determined much of the litter on South African beaches comes from local sources.

"This is good news, because we will benefit from local actions," he explains.

We don't have to wait for people in the northern hemisphere or Asia to change their behavior to improve the status of our coastal waters and beaches. It also means that we can monitor whether our mitigation actions are having real benefits."

But, he stresses, enormous challenges remain.

"All available evidence indicates that the amounts of litter entering the system continue to grow. We need a complete overhaul of solid waste management in South Africa, from government to grassroots levels."

Probably the biggest failing occurs at municipal level, where there is whole inadequate waste management. A recent study estimated that more than half of the solid waste in SA is mismanaged (compared to 12% in Brazil and 2% in the USA).


But central government also has a key role to play through setting policies that promote reduction of plastics in the packaging stream, and requiring producers to take responsibility for their packaging beyond the point of sale (so-called Extended Producer Responsibility).

Consumers can play a big role by demanding better packaged items, and appropriate mechanisms to recycle or reuse their packaging. And the retailers have a strong role as a choke-point in the supply chain, who can effect wide-ranging changes.

"We just need the motivation to act. Marine litter is a wholly avoidable problem, and this study shows that it is one that largely rests within our own control."

[Watch the video](#) and meet the researchers at the coalface of the issue.

*Source:*

Plastic Tide: On the front lines in the war against marine pollution. Retrieved 28 February 2018 from News24. <https://www.news24.com/Video/SouthAfrica/News/plastic-tide-on-the-front-lines-in-the-war-against-marine-pollution-20180228> 

## Avoidance of seismic survey activities by penguins

By

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Marine seismic surveys explore subterranean geological features for petroleum, natural gas and mineral deposits, and produce the most intense man-made ocean noise, that together with commercial shipping, sonar systems and blasting have altered the ocean environment. With the ever increasing demand on energy in recent years, both the frequency and total area surveyed by seismic activities has dramatically expanded, with impacts on marine fauna of growing concern.

Many marine animals, from invertebrates to cetaceans, use underwater sounds for crucial

biological activities such as foraging, orientation, communication, predator avoidance, mate selection, individual recognition or parent-offspring bonding. Much of the research on the impacts of seismic surveys has focused on marine mammals, revealing changes from diving patterns to hearing impairments. The Joint Nature Conservation Committee (JNCC) has established guidelines to minimise the impacts of seismic operations on cetaceans, including the use of "soft-starts", where power levels of airguns are slowly built up to operational levels over at least 20 minutes, "to give adequate time for marine mammals to leave the vicinity".

But other less conspicuous taxa are also affected by underwater noises and seismic operations. For example, seismic surveys may cause barotrauma in fish (i.e. damage of tissues and organs due to rapid changes in pressure) and increase mortality of fish eggs. Loud underwater sounds can damage sensory cells in fish ears and the statocysts of squids,

possibly leading to lethal acoustic trauma. Elevated mortality in zooplankton has also been recently demonstrated, with potential negative impacts on ocean ecosystem function.

There was, however, no evidence to date on the potential effects of these surveys on seabirds. In particular, flightless birds such as penguins, due to their largely aquatic existence, are expected to be sensitive to loud sounds underwater. Penguins are among the most threatened bird families, largely due to the negative effects of habitat change associated with human activities, such as oil pollution, competition with fisheries and climate change.

In particular, African penguins (*Spheniscus demersus*) population has decreased by 70% since 2004, raising grave concern about impacts of anthropogenic disturbances on land and at sea on the future viability of this species. African penguins can hear sounds between 100 and 15 000 Hz, well within the range of seismic survey operations. When breeding, they forage within

30-40 km of their colonies, therefore being limited in their capacity to avoid influences of seismic activity in close proximity to their breeding sites. In the study presented here (*Scientific Reports* 7, 16305, doi:10.1038/s41598-017-16569), we used a multi-year GPS tracking dataset to assess the foraging behaviour of African Penguins before, during and after seismic operations conducted within 100 km of their two largest breeding colonies, both situated in Algoa Bay, home to approximately half of their global population.

A total of 333 complete individual foraging tracks were collected from Bird and St Croix islands between March and May 2009-2013 from GPS recorders taped to the back of breeding African penguins during and outside seismic activities at St Croix Island (n = 31 and n = 74 respectively) and Bird Island (n = 20 and n = 208 respectively). Seismic surveys (2D) took place in the Algoa Bay/Gamtoos river mouth area from 15th of February to 22nd of March 2013, covering an estimated distance of 1 527 km and a total area of 6 700 km<sup>2</sup> (Fig. 1).

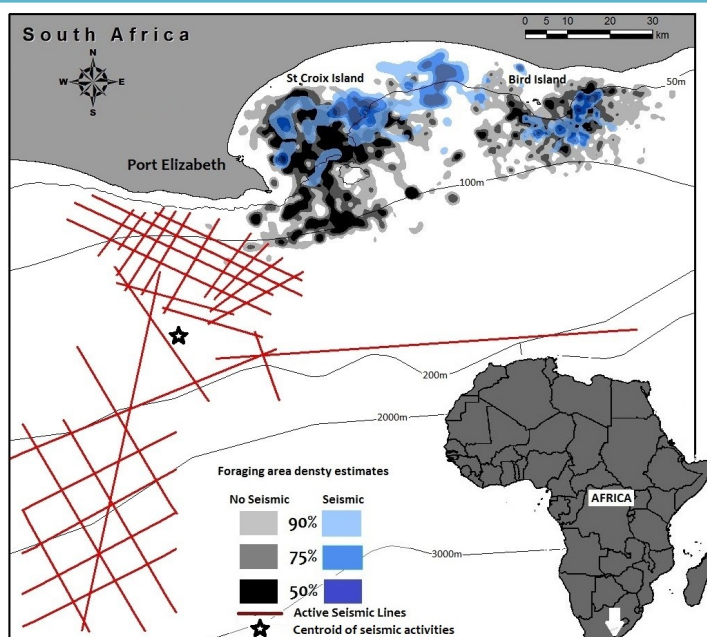
Over the entire study period, St Croix Island penguins generally

foraged towards the south east of their colony, or due south mostly within the 100 m bathymetric contour of the continental shelf (Fig. 1). Therefore, their preferred foraging areas were closer to where the seismic survey vessel was located in 2013 compared to that of Bird

Island birds (ca 65 km on average versus >100 km for St Croix and Bird islands respectively, Fig. 1). When seismic activities took place in March 2013, St Croix birds switched to foraging due east or north east of their colony (Fig. 1), constituting a significant change in bearing. As a result, the birds foraged significantly further away from the centroid of the seismic activities during that period (77 km, compared to ca 65 km on average in the absence of seismic activity, Fig. 2b). The maximum

foraging distance from the colony also increased significantly for St Croix birds during seismic activities (Fig. 2a). By contrast, Bird Island penguins consistently travelled due east to south-southwest of their colonies, regardless of seismic activities (Fig. 1).

This study was the first record of avoidance behaviour by a seabird to sounds generated from anthropogenic activities at sea. African penguins foraging <100 km from active seismic operations showed a clear change of foraging



**Figure 1.** Overlay of African penguin foraging area estimates based on 50%, 75%, and 90% utilisation distribution contours created using kernel density estimates of foraging tracks outside (2009-2013, grey shades) and during (March 2013, blue shades) seismic activities. Concurrent seismic operations in March 2013 are shown with red lines and the centroid of the activities is also shown. The map was produced using ArcGIS 10.4 (<http://desktop.arcgis.com/en/arcmap/10.4>).

direction during seismic periods, diverting from their traditional feeding grounds, and increasing their distance between their feeding area and the location of the seismic vessel.

This avoidance behaviour may be explained by either a direct disturbance from the noise generated by the operation or a change in fish distribution during that period (possibly as a result of seismic activities), and we could not disentangle the two effects. However, small-scale acoustic fish surveys assessing distribution and abundance of small pelagic fish in Algoa Bay around both penguin colonies did not show a significant change in distribution and/or abundance of small pelagic fish in the region in March 2013 compared to a few months prior to or after the seismic operations. Therefore, African penguins likely relocated away from their traditional feeding zone to avoid the disturbance generated by the noise of the seismic vessels, rather than to follow their prey.

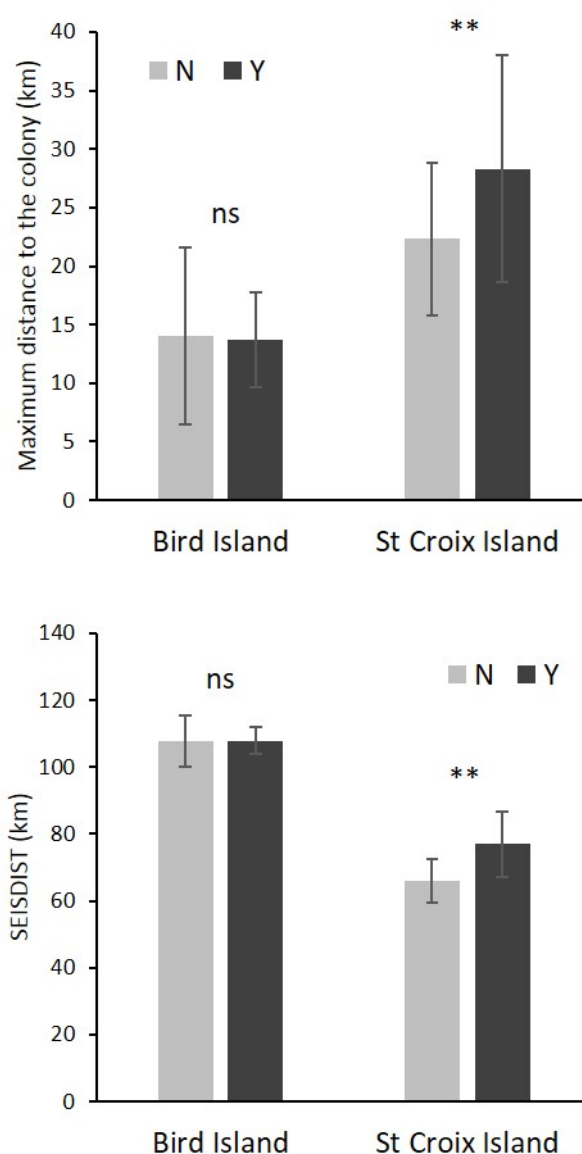
The exposure to intense sounds, such as the shooting of airguns during seismic operations, can adversely affect the hearing capacity

of marine species. This impairment can reduce individual foraging performance, by diminishing prey detection capabilities, but also indirectly by reducing their ability to detect predators or assess their environment, thereby reducing the overall fitness of the individuals affected. Loud underwater sounds, such as airgun shooting, may be uncomfortable for birds, especially as sounds travel five times faster in water than in air and cover much greater distances at higher amplitude levels. African penguins are known to be sensitive to sounds as low as 100 Hz and to respond

to underwater vocalisations of predators. Anthropogenic noise pollution may therefore be a direct disturbance to them, but also affect their capacity to detect the presence of a predator, with

potential negative consequence on their survival.

African penguins quickly reverted to normal foraging behaviour after cessation of seismic activities during this study, which suggest a relatively



**Figure 2.** Mean  $\pm$  SD maximum foraging distance from the colony (a) and distance between the location of a penguin fix at the maximum distance from its colony to the centroid of seismic activity (SEISDIST) (b) of birds breeding on Bird and St Croix islands in March-May 2009 – 2013, outside (N) and during (Y) seismic activity.

short-term influence of seismic activity on these birds' behaviour and/or that of their prey. Nevertheless, we cannot rule out potential longer-term impacts on their hearing ability. The potential for disturbance from cumulative impacts of repeated exposure to elevated underwater noise levels can be particularly high for resident species with limited dispersal abilities. This might be particularly true for African penguins breeding on St Croix Island, the largest African penguin colony, as it is located in the vicinity of two large industrial harbours in the bay.

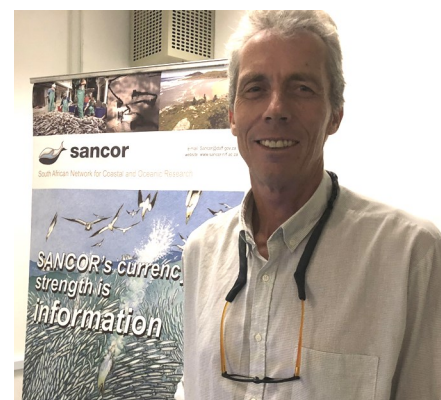
Rapid industrialization associated with resource extraction in the oceans has increased levels of underwater anthropogenic noises, a growing concern for the survival of a wide range of taxa. In addition to over-fishing, habitat destruction and chemical pollution, underwater noise pollution is now recognized as a significant threat to marine wildlife. Penguins are currently the most threatened seabird family, and based on the findings of this study, the exclusion of seismic exploratory activities within at least 100 km of their breeding colonies is required.

✂

## Gilchrist lecture on conserving seabirds

Prof Peter Ryan, Director of the UCT Percy FitzPatrick Institute of African Ornithology, presented a Gilchrist lecture on 30 January 2018 at the University of KwaZulu-Natal in Durban. Peter's talk was entitled: "Conserving seabirds—impacts of fisheries, introduced predators and plastic pollution". The lecture was preceded by a presentation from the recipient of the 2017 SANCOR Student Travel Award, Daniel Lemley.

Peter gave an informative overview with striking visuals of several issues affecting seabirds. Seabirds were often caught in trawl cables near fishing vessels. Bird scaring lines were introduced and proved highly effective in reducing seabird mortality caused by longlines. Marion Island hosts 25% of the world's population of wandering albatrosses. Surprisingly, mice have become predators of albatross chicks on the Island. Future treatments will potentially include an intensive eradication programme of mice on the island. The ingestion of plastic litter by seabirds ultimately leads to their starvation. Plastic itself acts like a sponge, absorbing chemical



Prof Peter Ryan

contaminants in the ocean resulting in the accumulation of toxic compounds. Peter recommended tackling pollution problems at catchments, before it reaches the oceans.

SANCOR awards the Gilchrist Memorial Medals every three years to distinguished marine scientists. The Medal serves as recognition of the recipients' contributions to marine science, to further stimulate excellence in South African marine science, and to focus attention on South Africa's marine and coastal environments. The award is named after John D.F. Gilchrist who played a significant role in pioneering ichthyology in South Africa. Peter, along with Prof John Bolton, won the award in 2017 in acknowledgement of their outstanding contributions to marine science. ✂



## New SANCOR Steering Committee Members

The SANCOR Steering Committee is pleased to welcome new members Prof David Glassom as the new Kwazulu-Natal Representative and announce the appointment of the newly elected chairperson of the committee, Prof Sophie von der Heyden.

Sophie is also the current SANCOR Forum chairperson. She is a marine



Prof Sophie von der Heyden

molecular ecologist at Stellenbosch University's Department of Botany and Zoology. Her research is by necessity broad, but primarily focusses on the conservation and sustainable utilisation of species and the marine environment. Her particular interests lie in the applicability of molecular ecological and genomics tools to inform marine spatial planning, understanding MPA connectivity patterns and resilience

and adaptation of marine species to ongoing and future change, as well as the impacts of changing marine communities on society.

Prof David Glassom was appointed as the new KwaZulu-Natal



Prof David Glassom

Representative in early February 2018. David is part of the academic staff of the marine biology group at the School of Life Sciences at the University of KwaZulu-Natal in Durban. His research areas are coral ecology and microplastics in the near shore environment and estuaries around the southern African coast. As part of the eThekweni Coastal Management group, through his collaborations in Mozambique and South Africa with various stakeholders, he is sharing his knowledge outside of the university space. Over the past several years, he has been involved

with the Ocean Stewards Programme for UKZN students, whom he teaches from undergraduate to postgraduate level. In meetings he is often valued as a welcome voice of reason, staying focussed on important issues and setting aside peripheral topics good for discussion on another day. Not only does he work in the marine environment, but he is also an avid ocean-paddler enjoying the odd race.

We thank outgoing Steering Committee chair, Dr Louis Celliers, for his leadership, guidance and service on the committee. Louis is now based in Hamburg at the Climate Service Center Germany (GERICS). We also thank Prof Ursula for her contribution and time as the outgoing KwaZulu-Natal representative and wish Sophie and David every success in their new roles on the committee. ☞

## MCEN's 18<sup>th</sup> National Conference

By

**Arno Munro<sup>1</sup> &**

**Erna Groeners<sup>2</sup>**

<sup>1</sup>*Department of Agriculture,  
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<sup>2</sup>*Northern Cape Department  
of Environment and Nature  
Conservation*

The Marine and Coastal Educators Network (MCEN) was established under the auspices of SANCOR and functions as the coordinating body for marine and coastal education in South Africa. The network held its 18<sup>th</sup> annual national conference during 14-19 January 2018 and was successfully hosted by the MCEN Northern Cape Branch chaired by Erna Groeners. The conference themed "River to sea" was attended by 31 participants from various marine and coastal related institutions in across the country. The programme commenced in Augrabies Falls National Park, proceeded to Port Nolloth and ended in Upington.

As part of the welcome address, MCEN National Chairperson, Arno Munro from the Fisheries Branch of the Department of Agriculture, Forestry and Fisheries (DAFF) reflected on the experiences of the



Participants of the 18<sup>th</sup> MCEN conference on the gala evening. Photo by Nazeera Hargey.

previous 17 MCEN Conferences. Carol Moses, Acting Director of Communications (DAFF), delivered the keynote and opening address of the conference and focused on the importance of water conservation as well as the opportunities that government creates through Operation Phakisa and the ocean economy.

Hands-on activities engage learners and provide unique learning opportunities. Artwork, games and discussion groups were demonstrated to inspire classroom lessons while building environmental literacy and awareness. Eleanor Yeld-Hutchings

from the Save our Seas Foundation in Cape Town, facilitated a game "Oceanopoly" on marine biodiversity, a resource that can be used in the classroom. Oceanopoly is a marine adaptation of a board-game based on Monopoly. It is a 4 player game, and simple enough for Grade R through to adults! It is aimed at primary school level and encourages literacy and numerical skills. Eleanor also facilitated a shark bingo game which can be adjusted for any environmental topic. Other presentations showed how to create artwork from recycled materials. Armstrong Mashakeni from National Zoological Gardens in Pretoria, showed how to build an aquarium at

home. Bonita Serjeant from the Soetwater Environmental Education Centre won the Best Novice activity award for her art activity using recycled material.

The Augrabies Falls celebrated its 50<sup>th</sup> year during 2017 and the People and Conservation Officer at the Park, Christine du Plessis, gave a presentation on the history of the park as well as the facilities and activities that the Park offers. Erna Groenens and Duduetsang Lehudi from the Northern Cape Department of Environment and Nature Conservation (DENC) outlined the importance and types of wetlands and demonstrated water purification through soil and plants. Morne Farmer (DENC), presented on the Northern Cape coastline and estuaries and emphasized the threats around estuary degradation. Guest speaker, Louise Geldenhuys, a Coastal Ecologist from DENC in

Springbok, gave a very informative presentation on the coastal vegetation along the Northern Cape coastline, highlighting the distinct vegetation types caused by mining activities.

Roxanne Olivier, an intern at Department of Environmental Affairs (DEA) Oceans and Coast informed the group on Harmful Algal Blooms and how it affects the ocean and the economy. Fellow intern, Jamie Poovan, gave an overview of the SEAmester programme, a 2-week intensive training programme at sea. Thomas Mtontsi, from the South African Environmental Observation Network reported on an ocean observation learner-oriented workshop he conducted. Transfer of presentation and evaluation skills were the key elements of the workshop. John Kieser from Plastics SA gave an informative

presentation on Communication by Industry. Anton Fortuin from the Centre for Conservation in Cape Town, described the [LIMPET](#) (Long-term Intertidal Monitoring through Participation, Evaluation & Training) Programme which educates learners on research methodology while monitoring marine life at identified rocky shores. The programme is coordinated by volunteer scientists and educators from Cape Town. Nicole Lockett, Education Coordinator at Shark Spotters, demonstrated their mobile app that provides beach users in Cape Town with information around shark safety and awareness direct to their mobile phones. The app provides shark sighting information and safety advice that helps users to make informed decisions around shark risk before heading to the beach. The app is a direct yet informal approach to shark safety education that can ultimately reduce the risk of shark attack and contribute to the sustainable management of shark-human conflict. Preleen Govender, from the South African Association for Marine & Biological Research (SAAMBR) in Durban, spoke on the role of marine microorganisms and the use of microscopes as education tools. She was voted as the Best Novice Presenter.



The conference included a classroom activity facilitated by Arno Munro on the classification of marine animals at 3 local schools in the Northern Cape.



The full programme consisted of demonstrations, talks and activities to promote education and awareness of the marine and coastal environment.

Conference participants travelled from Port Nolloth to Upington and en route, activities were conducted at 3 Eco-Schools namely Dr Izak van Niekerk Primary School in Bergsig; Aggeneys Primary School and Aggeneys High School. Arno Munro, facilitated educational activities on the classification of marine animals

with the Grade 7 learners at both primary schools and scientific classification of marine animals with the Grade 8 learners at the high school. This is the first time in the history of MCEN that conference activities were done with learners at schools. Arno's lesson was voted as the Best Activity of the conference.

The Gala programme on board *Sakkie se Arkie* along the Orange River marked the closure of the 18<sup>th</sup> MCEN Conference. The 19<sup>th</sup> MCEN Conference will be held in the Eastern and Southern Cape combined under the guidance of the newly elected chairperson Ms Phumeza Simelane from DAFF in Cape Town.

### Acknowledgements

MCEN thanks the Northern Cape team, chaired by Regional Representative Erna Groeners, from the Department of

Environment and Nature Conservation and the National Department of Environmental Affairs in the Northern Cape for the arrangements of the conference.

The following organisations are acknowledged for their financial support:

- SANCOR – National Research Foundation
- Augrabies Falls National Park
- Department of Agriculture Forestry and Fisheries, Fisheries branch Cape Town
- Plastics South Africa – Cape Town
- Northern Cape Tourism Authority
- Northern Cape Department of Environment and Nature Conservation
- Department of Environmental Affairs, Oceans and Coast



Phumeza Simelane (left) newly elected MCEN chairperson, pictured with outgoing chairperson, Arno Munro (right).

## The “ups and ups” of a trip to the other side of the world

By

**Daniel A. Lemley**

*Botany Department and the  
Institute for Coastal and  
Marine Research, Nelson  
Mandela University*



In November 2017, I was fortunate to attend the 24<sup>th</sup> Biennial Coastal and Estuarine Research Federation (CERF) conference hosted in Providence, Rhode Island, USA. The [CERF 2017](#) scientific program offered five days of timely, exciting and diverse information on a vast array of estuarine and coastal topics. The conference convened over 1,600 attendees from different professional backgrounds, including government, academia, business, non-profit organisations, and students. Presentations examined new findings within CERF's traditional science, education and management disciplines and encouraged interaction among coastal and estuarine scientists and managers. The CERF 2017 committee received 1,232 abstract submissions from authors in 27 different countries, illustrating the breadth and reach of the federation. Due to the vast

Presenting a synthesis of my PhD research at CERF 2017 hosted in Providence, Rhode Island, USA.

number of presentations, conference participants had the opportunity to choose between 10 different sessions that were divided between 12 different venues within the conference centre over 5 days. From a personal perspective, the opportunity to attend presentations of some of the most highly regarded global estuarine scientists – many of which I have admired and cited since the start of my research career – was the highlight of attending CERF 2017. The most notable of these researchers included: Prof. James E. Cloern, Prof. Hans W. Paerl, Prof. Christopher J. Gobler, and Prof. Patricia M. Glibert.

Of the more than 1,600 attendees, not only was I fortunate enough to be one of only two South Africans to attend the conference and give a

SANCOR Student  
Travel winner for  
2017, Daniel  
Lemley, shares his  
experience  
attending an  
international  
conference.

traditional oral presentation, but we were also the only representatives from the African continent. Furthermore, I feel privileged to have been able to present a synthesis of my doctoral research to an international audience. The talk was well-received and, more importantly from my perspective, was relevant in terms of topical global issues (i.e. Harmful Algal Blooms) discussed at the

conference. An additional benefit was the opportunity to contribute to an inter-disciplinary review manuscript based on the conference session in which I presented. The session chair co-ordinated willing presenters, with the objective of submitting the review paper for publication in the *Estuaries and Coasts* journal. The process of putting together the manuscript has already been initiated, with my contribution entitled: "Impacts of urbanization on estuarine ecosystems and water quality: Harmful algal blooms – insight from a South African case study". The possibility of a publication in a high-impact ISI-rated journal is an exciting outcome emanating from CERF 2017.

CERF 2017 exposed me to a wider science network from which I learnt many innovative ideas and approaches that will benefit me going forward with my Postdoctoral Research, commencing in 2018. Having attended and presented at the ECSA55 Conference hosted in London, United Kingdom in 2015, what was particularly interesting was the difference in the broad approach to research and environmental issues when comparing the

European and American scientists/agencies. More specifically, in Europe the approach is to attempt to reverse environmental impacts through long-term legislative measures with the ultimate objective of restoring ecosystems to natural conditions (i.e. as in South Africa). However, at the CERF 2017 conference, it quickly became apparent that management interventions in the United States are primarily geared at restoring ecosystem diversity and functionality to meet socio-economic demands, whilst not necessarily considering how the ecosystem would have functioned naturally. As a result, numerous talks at CERF 2017 entailed research whereby entire ecosystems had been artificially

manipulated with the objective of answering questions related to the efficacy of restoration efforts or alternatively using the system as a microcosm to answer broader ecological issues. This is not to say either approach is better, if anything, having been exposed to both ends of the spectrum I feel that I have a broader outlook regarding my approach to research which I can hopefully implement to ensure my research is applicable globally.

Attending this conference afforded me the opportunity of ticking a visit to the United States of America off my "bucket list". Some of the highlights included (1) an afternoon of sightseeing in the capital city, Washington, D.C., (2) exploring the scenery and quirky culture of Providence, and (3) getting to experience the hustle and bustle of New York City. Therefore, lastly and certainly not least, thank you to South African Network for Coastal and Oceanic Research (SANCOR) for awarding me the international student travel grant that has enabled me to attend such a prestigious conference, and to ultimately further myself as a researcher. ☺



Sightseeing in Providence.

## *Eau'de to an Oceanographer...*

*(adapted from and to be sung to the tune of  
I am a taxonomist, by B. Hölscher)*

I am an Oceanographer.  
I love my work, it's fab.  
I get to surf the waves all day  
and say I'm in the lab.

I am an Oceanographer.  
For those that do not know  
the meaning of this sacred job:  
it's how the currents flow,  
and how the balance of the salts  
makes water rise and sink,  
and causes climate and such stuff.  
More complex than you think.

I am an Oceanographer.  
The sea gives me my life.  
Each rolling wave beats in my heart,  
as if it was my wife.  
I find my meaning and my force  
inside this vast expanse  
where heat and salt and energy  
join in their ancient dance.

I am an Oceanographer.  
I've been one since day one  
A science that's ancient and exact  
and every day it's fun.  
I stand in awe of those great men,  
their footprints deep and wet,  
from explorers like Costeau and kind  
is where I my passion get.

I am an Oceanographer.  
Without us the world is stuck  
not knowing how the currents flow  
and how eddies run amuck.  
We service the conveyor belt

that warms up Europe's ice and sleet,  
to give them weather foul and damp  
and constantly wet feet.

I am an Oceanographer.  
Our perspective is so vast.  
We calculate tomorrows shape  
while building on the past.  
We like to take a larger view,  
the planet all in one,  
and then zoom down to plankton scale.  
So easily it's done!

I am an Oceanographer.  
We work with serious stuff.  
Of equipment HUGE and high tech gear  
we never have enough.  
We are not cheap to satisfy,  
expensive are our games,  
like ships, moorings and CTD's  
all with impressive names.

I am an Oceanographer.  
So few of me are found.  
We play with data, lots of it,  
and shuffle it around.  
And then we do the modelling  
and hope that it makes sense,  
and if it does not we just say  
the software code is dense.

I am an Oceanographer.  
We stand out from the rest  
by using dreadful acronyms,  
the longer ones are best.  
We like to talk in complex terms,  
so no one has a clue  
It's ROMS, PIRATA, OCIMS, SCOR  
SAMBA and POGO too.

I am an Oceanographer.  
It's off to work we go!  
About the oceans far and wide  
there's lots we still don't know.  
The sea is such a complex place,  
it's secrets hidden deep,  
Just give us funds and lots of time.  
The admin you can keep!

I am an Oceanographer.  
We study what goes wrong.  
Because of human greed and carelessness  
we sing a tragic song  
of global shifts in the machine  
That makes the planet tick.  
A new circulatory routine  
means our world is getting sick.

I am an Oceanographer.  
I watch the rising tide.  
The impact of 8 Billion men,  
no longer can it hide.  
The ocean covers most of earth  
and more so every day  
if we go on to melt the poles  
and flood the coasts away.

I am an Oceanographer.  
My calling is my trade.  
Practicing a vital job on earth,  
with far too little paid.  
Our finger on the pulse of earth,  
we do what we love best,  
and hope that in the science we do  
we leave a good bequest.

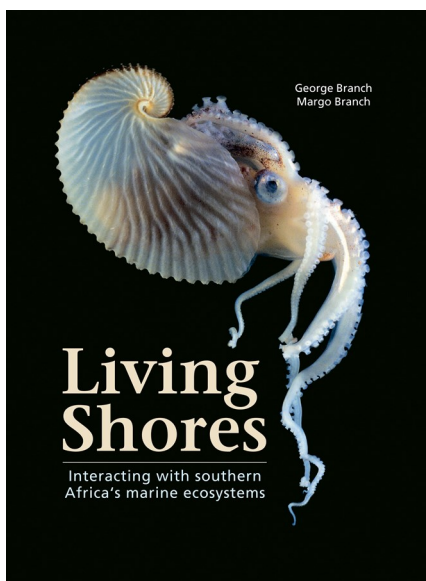
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## New book release: Living Shores

Originally published in 1981, *Living Shores* was for many years the standard reference for marine science students but was also embraced by a popular market for its fascinating insights into marine and coastal habitats and the life they support. After a long absence, this best-selling classic has been completely revised and reworked to incorporate the many spectacular discoveries about our changing oceans and coasts that have emerged over the last four decades.

This book is the first of a two-volume set, and examines the different marine ecosystems and how we interact with them. It discusses the dynamics of the oceans and continents and explores the ecology of coastal systems, including rocky shores, beaches, dunes, estuaries, islands, kelp forests, coral reefs and the open ocean.

The book unpacks the relationship



between humans and the marine environment from ancient archaeology to modern times, and the consequences of harvesting, alien species, development and mining. It also addresses the impact of climate change, and motivates people to love and protect our marine heritage.

Richly supported by exquisite full-colour photography and numerous explanatory illustrations and diagrams, this book will prove

invaluable to students and teachers but will also appeal to anyone with a fascination for nature and our marine world in particular.

George Branch has been a popular lecturer and an NRF A-rated scientist with many accolades, and is world renowned for his research on marine ecology. Margo Branch is an award-winning biologist and illustrator with wide interests in research, interpretation and education. Both are widely published authors of popular and scientific works, including the well-loved *Two Oceans – A guide to the marine life of southern Africa* and have a passion for communicating the excitement of marine life.

The book is available at a 33% discount (i.e., R300) if purchased directly from George or Margo Branch (email [mbranch@mweb.co.za](mailto:mbranch@mweb.co.za)). For more information, visit [www.penguinrandomhouse.co.za](http://www.penguinrandomhouse.co.za) ✂

Current Vacancies	Closing date
<b>Production Scientist: Grade A</b> at Bayworld Museum in Port Elizabeth	3/2/2018
<b>Chief Auxilliary Service Officer: Research</b> at Bayworld Museum in Port Elizabeth	3/2/2018
<b>Marine Conservationist</b> at the Wildlife Conservation Society in Zanzibar	3/14/2018
<b>Marine Biologist</b> at the British Antarctic Survey in Antarctica	4/1/2018



Student & early career training opportunities	Application Closing date
<a href="#">International Climate Protection Fellowship</a> for young climate experts from developing countries.	3/1/2018
<a href="#">10 month Oceanography Training Programme</a> in Germany. Training starts Sep 2018. A full scholarship will be provided by the NF-POGO CofE covering travel, accommodation, tuition and a modest allowance.	3/9/2018
A <a href="#">PhD project</a> entitled "Composition, dynamics and productivity of phytoplankton on the eastern and central Agulhas Bank" is being offered by the South African component of SOLSTICE, led by Nelson Mandela University. The study encompasses physical and biological oceanography (incl. biogeochemistry) as well as socio-economic aspects of the collapse of squid fishery.	3/10/2018
<a href="#">M.Sc. position in Marine Ecology</a> investigating the anthropogenic effects on invertebrate larval connectivity. We are seeking an enthusiastic and self-motivated South African Master's Degree candidate to join a multidisciplinary project investigating coastal water quality and the role of the natural environment in mitigating pollution effects on the South African south coast. The student will be based at the South African Institute of Aquatic Biodiversity (SAIAB) in Grahamstown, but with the possibility to spend time with collaborators at the University of Cape Town.	3/12/2018
<a href="#">5<sup>th</sup> African Ocean Discovery Camp</a> For research-based training on the sustainable use and scientific management of marine ecosystems 16 April – 11 May 2018 Swakopmund, Namibia	3/12/2018
<a href="#">Volunteer position: river pipefish conservation</a> The University of Johannesburg is looking for volunteer research assistants/interns to participate in a diving survey, genome screening and/or establishment of a captive breeding population of one of Africa's rarest coastal fish species, the critically endangered river pipefish, <i>Syngnathus watermeyerii</i> . No closing date indicated. The first field survey is expected to take place in late March 2018.	3/15/2018
<a href="#">Short course: São Paulo School of Advanced Science on Ocean Interdisciplinary Research and Governance</a> 13 - 25 August 2018, São Paulo, Brazil The course aims to provide graduate students with advanced knowledge on interdisciplinary ocean research and integrated science and governance, including issues related to public policy. Participants will discuss relevant themes with renowned scientists in a multidisciplinary and multicultural context. The 2-week course will include theoretical classes, work in groups, poster sessions, science-policy discussions, and a field trip to Baixada Santista, located in the central coast of the state of São Paulo.	3/15/2018
<a href="#">PhD position to study marine fish ecophysiology</a> We are seeking a highly-motivated South African candidate to join our multidisciplinary South African Linefish Physiology Assessment (SALPA) project team aiming to understand the impacts of exploitation on the physiology of resident coastal fishes as part of a project on the African Coelacanth Ecosystems Program (ACEP). The position is on a full-time basis for three years, starting in 2018 and is funded by an NRF PhD bursary to the value of R120 000 per annum. The student will be registered at the Department of Ichthyology and Fisheries Science, Rhodes University.	3/15/2018
Early Career Researchers based in the UK or South Africa are invited to apply to participate in a workshop on <a href="#">Research capacity for sustainable ecosystem-based management of estuaries and coasts</a> . 19-21 June 2018, uShaka Marine World, Durban, South Africa	3/16/2018
The <a href="#">ClimEco6 Summer School</a> will be held in Indonesia from 1-8 August 2018. The theme is: Interdisciplinary approaches for sustainable oceans.	3/26/2018
Applications are now open for both students & lecturers to participate in this year's <a href="#">SEAmester III Class Afloat</a> . The course aims to introduce marine science as an applied and cross-disciplinary field to students who have shown an affinity for core science disciplines. It will combine traditional class-room lectures with hands-on ship-based deck activities.	3/28/2018
The <a href="#">MSC Scholarship Research Program</a> is open to undergraduate and postgraduate students studying problems and solutions in fisheries science and management and the integrity of the seafood supply chain. Up to £4,000 per project is available for travel, equipment and other support.	3/31/2018
<a href="#">POGO-SCOR Visiting Fellowship Programme</a> The fellowship offers early career scientists from developing countries the opportunity to visit other oceanographic centres for a short period (1 to 3 months) for training on aspects of oceanographic observations.	4/9/2018

[Click here for an update on current opportunities.](#)

Upcoming Conferences	Start date	End date	Location
6th International Marine Debris Conference	12 Mar 2018	16 Mar 2018	San Diego, USA
European Geosciences Union General Assembly 2018	8 Apr 2018	13 Apr 2018	Vienna, Austria
International Conference: Marine Ecosystem Assessment for the Southern Ocean (MEASO2018)	9 Apr 2018	13 Apr 2018	Hobart, Australia
Workshop: Community voices - engaging with people in conservation	10 Apr 2018	11 Apr 2018	Port Elizabeth
10th International Abalone Symposium	8 May 2018	12 May 2018	Xiamen, China
World Conference on Marine Biodiversity	13 May 2018	16 May 2018	Québec, Canada
Communities, Conservation and Livelihoods	28 May 2018	30 May 2018	Halifax, Canada
50th International Liege Colloquium on Ocean Dynamics	28 May 2018	1 Jun 2018	Liège, Belgium
15th Annual Meeting of the Asia Oceania Geosciences Society	3 Jun 2018	8 Jun 2018	Honolulu, Hawaii
4th International Symposium on the Effects of Climate Change on the World's Oceans	4 Jun 2018	8 Jun 2018	Washington, D.C., USA
Early Career Researchers Workshop: Research capacity for sustainable ecosystem-based management of estuaries and coasts	19 Jun 2018	21 Jun 2018	Durban, South Africa
5th International Marine Conservation Congress (IMCC5)	24 Jun 2018	29 Jun 2018	Sarawak, Malaysia
10th International Workshop on Modeling the Ocean (IWMO2018)	25 Jun 2018	28 Jun 2018	Santos, Brazil
4th GEO Blue Planet Symposium	4 Jul 2018	6 Jul 2018	Toulouse, France
5th NRF SANAP Symposium	13 Aug 2018	16 Aug 2018	Hermanus, South Africa
4th CLIOTOP Symposium - CLimate Impacts on Oceanic TOp Predators	15 Oct 2018	19 Oct 2019	Keelung, Taiwan
IV International Conference on El Niño Southern Oscillation: ENSO in a Warmer Climate	16 Oct 2018	18 Oct 2018	Guayaquil, Ecuador
SciCOM 100 Conference 2018: Science communication and democratic South Africa: prospects and challenges	6 Nov 2018	7 Nov 2018	Stellenbosch
5th World Congress on Risk: Development and Resilience	6 May 2019	8 May 2019	Cape Town, South Africa
OceanObs'19	16 Sep 2019	20 Sep 2019	Hawaii, USA

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## Our Focus: Science in the Marine and Coastal Environments

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