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*SALAB's National Fish Collection provides essential point of reference for IUCN Shark Assessment*

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By  
**Penny Haworth**  
*National Research Foundation (NRF),  
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shark species that are not found anywhere else in the world. In late April a group of shark experts from around the globe gathered at NRF-SAIAB in Grahamstown to assess the conservation status of South African shark species.

South Africa is one of five hotspots for endemic sharks - these are

The workshop at SAIAB is the first in a series of ten shark assessments



The shark assessment team was drawn from government agencies, universities and non-governmental organisations with participants from Kenya, Tanzania, Mozambique and South Africa.

to be conducted worldwide by the International Union for the Conservation of Nature's Shark Specialist Group (SSG). The SSG is a global network of experts in the biology, taxonomy, use, and conservation of sharks, rays, and chimaeras (cartilaginous fishes, Class Chondrichthyes). The SSG currently has more than 170 members from 55 countries collaborating to assess threat level, collate knowledge, highlight species at risk, and advise decision makers on effective, science-based policies for sustainable use and long-term conservation.

SAIAB has an outstanding collection of preserved fish specimens, which includes a large collection of sharks, rays and skates. This collection has

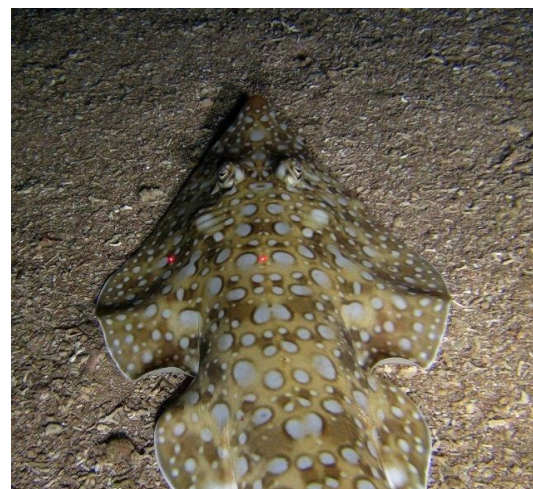
been built up over many years and provides an essential point of reference for the 15-strong shark assessment team which looked at 105 species endemic to the region – of which 21 have not been assessed before.

The IUCN SSG's Vice Chair of Taxonomy, Dave Ebert, Director of the Pacific Shark Research Centre at Moss Landing in California, has a long-standing association with SAIAB having begun shark research at the institute over thirty years ago with ichthyology stalwart, Leonard Compagno. Ebert and Compagno picked up on research that had been carried out ten to twenty years earlier and in the late 1980s a new era of shark research began in earnest. Ebert

has continued working with SAIAB and during the last 15 years, this research has been stepped up in collaboration with SAIAB's Principal marine scientist, Paul Cowley, through acoustic telemetry and tracking the movement of important shark species along South Africa's east coast.

With technological advances and access to remotely operated submersible vehicles (ROVs) through research platforms such as SAIAB's Marine Platforms, scientists are also finding sharks that have not been seen in their natural habitat before.

There are still many new species being discovered that need to be identified and described. This has implications for the effective management of sharks, especially as



Two sharks belonging to the species commonly known as guitarfish were filmed by the SAIAB Marine Platform ROV at 87m (left) and between 97-102m (right) for the ACEP Imida Project off the Eastern Cape coast of South Africa during 2017.

many of these unknown shark species are of high conservation concern as they live off-shore at greater depths than coastal sharks and are increasingly being caught as bycatch in trawl nets or targeted for their flesh and fins.

In trying to tackle food security and other environmental issues linked to population growth, governments worldwide are committed to holding to the Aichi Biodiversity Targets and United Nations Sustainable Development Goals, but there are very few marine indicators for

fisheries species. Nick Dulvy, who heads up the IUCN shark assessment team, confirms that sharks are useful indicator species for assessing the health of marine ecosystems so as to inform marine management decisions but, as is the case with sharks, scientists are constantly discovering new species, so it is very difficult to assess the conservation status of fisheries species accurately.

Asked why the assessment team chose SAIAB for this workshop, Dulvy replied that the SAIAB Fish

Collection is a mecca for ichthyologists and every ichthyologist should aim to visit the institution at least once in a lifetime. At least ten of the 17 species Ebert has described from the region have type specimens housed at SAIAB. In the past 18 months Ebert has described nine new species from the southern/southwestern African region alone, and of the twenty new shark, ray and skate species named in 2017 globally, seven were from South Africa which is why the country is considered a hotspot for endemic sharks. ☞

## Student / Training Opportunities

	Organisation	Closing Date
2018 Galapagos Ocean Acidification School at the Charles Darwin Research Station, Puerto Ayora, Galápagos, Ecuador on 19-28 August 2018. See the <a href="#">flyer</a> and <a href="#">application form</a> for more information.	SCOR	6/4/2018
<a href="#">Short course</a> in Statistical Data Analysis and Experimental Design using R, 18-20 July 2018 at UCT.	ACCESS, SEEC	6/15/2018
<a href="#">Hydrography Information Day for Students</a> The Hydrographic Society of South Africa invites you to join them for a 40-minute informative presentation on introducing students to the exciting field of Hydrography. The presentation will be held at UCT on 21 June 2018 at 15h00.	Hydrographic Society of South Africa	6/21/2018
<a href="#">PhD position</a> to work on the bioregionalization of zooplankton on the Canadian west coast. Closing date unspecified. Start date: Sep 2018.	UBC	-
<a href="#">Scicom Skills Development for African Communicators</a> This 6-week online course (6 Aug - 17 Sep 2018) is aimed at communicators or managers at the interface between research and public/policy audiences, as well as scientists who are interested in exploring new, evidence-based approaches to communicating their research.	Stellenbosch University	7/9/2018
Short Course: Introduction to Environmental Impact Assessment Procedures 3-7 September 2018, Grahamstown Click on these links for the <a href="#">website</a> , <a href="#">registration form</a> and <a href="#">brochure</a> .	EOH and Rhodes University	7/17/2018
MSc/PhD project on <a href="#">molecular tools for fisheries management</a> . No closing date indicated.	Stellenbosch University	-
Comprehensive bursaries available for studies in critical scarce skills in the agricultural, forestry and fisheries sectors for the 2019 academic year. Click on the links to download the <a href="#">Bursary Advert 2019 Academic Year</a> , <a href="#">2019 Undergraduate Application Form</a> and <a href="#">2019 Postgraduate Application Form</a> .	DAFF	9/30/2018



## South African ship and robots to uncover the future of climate change in Africa

An adventurous team of South African scientists is preparing for a journey to an ocean at the bottom of the Earth. Their expedition will delve deeper into how the climate will change in Africa, and how South Africa can better protect its food supplies.

In July 2019, researchers led by Dr Pedro Monteiro at the Southern Ocean Carbon & Climate Observatory (SOCCO) in Cape Town, will sail to the Southern Ocean, which swirls around Antarctica.

Known as the stormiest place on the planet, conditions here are incredibly miserable all year around, and only a few research teams visit regularly. But scientists say the Southern Ocean is one of the most important bodies of water when it comes to understanding the future of climate change.

The Southern Ocean is so critical because it absorbs half of the carbon dioxide (CO<sub>2</sub>) released into the atmosphere by the burning of fossil fuels. Its temperature is also rising: it has absorbed more than two-thirds of the extra heat that has blanketed the Earth due to global warming.

The ocean sucks up differing

amounts of CO<sub>2</sub> and heat each year, which has a knock-on effect on climate elsewhere on Earth. But it also has a little-understood seasonal cycle, something which Dr Monteiro and his team are hoping to shed light on

"The processes that we now understand to be driving the sensitivity of the climate to the [Southern]

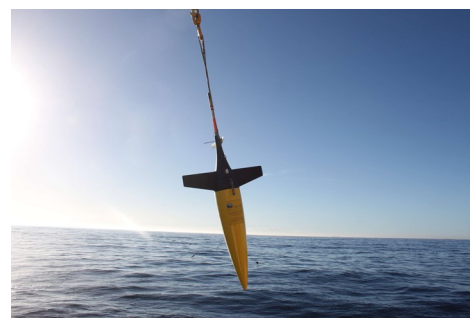
Ocean are actually happening on the timescale of minutes to one year," says Monteiro.

For years, international teams of scientists have mounted expeditions to measure how much CO<sub>2</sub> is absorbed and released from different parts of the ocean, using ships, and also robotic buoys. As part of the Centre for Scientific and Industrial Research (CSIR), this expedition is its biggest project since it was founded five years ago, which marks South Africa's entry into this effort.

On a three-week winter journey from Cape Town to Antarctica, a multidisciplinary team of oceanographers, climate scientists,



SA Agulhas II departs for the Southern Ocean carrying ocean gliders for deployment near the ice. Photo: Twitter/SOCCOgliders .



Seaglider being lifted overboard for deployment. Photo: twitter.com/SOCCOgliders

and marine ecologists will drop water-gliding robots into the ocean.

The robots will continuously measure the presence of carbon dioxide in the ocean's top 1000 metres, while the team's research vessel, SA Agulhas II, will take measurements of the deeper ocean as it passes through. On a second journey, six months later, the team will collect the robotic data and integrate that with the ship's measurements.

The results should help other

researchers understand in more detail the rates at which the Southern Ocean takes up and releases CO<sub>2</sub>, says Professor Francois Engelbrecht.

Engelbrecht leads a team in Pretoria that is developing a model of the Earth's



*Prof Francois Engelbrecht, CSIR*

changing climate using

the Lengau Cluster, Africa's most powerful supercomputer housed at the Centre for High Performance Computing in Cape Town, also part of the CSIR. "Of the current global climate models that exist, not one of them can realistically simulate the seasonal cycle of carbon above the Southern Ocean," he says.

Monteiro's team is betting that their method of collecting data in the ocean will significantly improve these models, especially the Variable Resolution Earth Systems Model (VRESM) Engelbrecht is developing. The model is being developed especially for Africa as other global models have focused on better predicting the climates of the global north.

Africa, in particular, would benefit from models that more accurately predict CO<sub>2</sub> exchange in the

Southern Ocean, because global circulation patterns mean the changing ocean has a greater influence on the continent's than anywhere else.

At the moment, climate models are better at predicting changes in the northern hemisphere than they are in Africa, but researchers like Engelbrecht and Monteiro are changing that.

"The ocean-atmosphere dynamics of CO<sub>2</sub> and heat exchange in the Southern Ocean drive weather in South Africa," says Monteiro.

Scientists expect that the next 30 years in South Africa will see hotter and drier conditions with more extreme weather, droughts, and floods which pose a threat to the country's food security.

But precise predictions are hampered by blurry climate models, says



*Ndoni Mgunu, PhD candidate at Wits University*

Wits University who studies the effects of climate change on food production in South Africa.

Better models would be unlikely to help South Africa reduce the impacts of climate change, but they

would help inform what actions should be taken to cope with those impacts, like droughts and floods, says Professor Bob



*Prof Bob Scholes, Wits University*

Scholes, an ecologist at Wits University.

Better climate models would thus also help South Africa adapt in terms of ensuring food security. Mgunu makes the example of the 2015 drought that hit farmers in the hardest in South Africa as a possible future that better climate models can help farmers and researchers prepare for.

"Currently, the biggest limitation we have in climate research is data — we need data," Mgunu says.

And this data is exactly what Monteiro's team will go in search of in the depths below Antarctica next year.

#### Source:

Byela, S. (2018, May 18). South African ship and robots to uncover the future of climate change in Africa. Retrieved from <https://scibraai.co.za/south-african-ship-robots-uncover-future-climate-change-africa/> ↗

## Ross seal research in Antarctica

By  
Mia Wege and  
Marthán Bester

*Mammal Research Institute,  
University of Pretoria*

Ross seals (*Ommatophoca rossii*) are the least studied Antarctic pack-ice seals. Currently, there are only three published papers on their at-sea distribution of which only two report on their diving. For this reason, Prof Marthán Bester and his postdoctoral fellow, Dr Mia Wege, from the Mammal Research Institute (MRI) at the University of Pretoria joined Dr Horst Bornemann of the German Alfred-Wegener-Institute Helmholtz-Centre for Polar- and Marine Research (AWI) aboard the RV *Polarstern* (the German polar research vessel) for cruise PS111.

The ship departed Cape Town (19 January 2018) to the Filchner-Ronne Outflow System within the deep Weddell Sea, Antarctica, and ended in Punta Arenas, Chile (14 March 2018). The Filchner-Ronne Ice Shelf (Map 1) is the second largest Antarctic ice shelf (roughly the size of Sweden). So far, extremely salty and cold water has protected the shelf from the inflow of warm water masses and melting it from below.

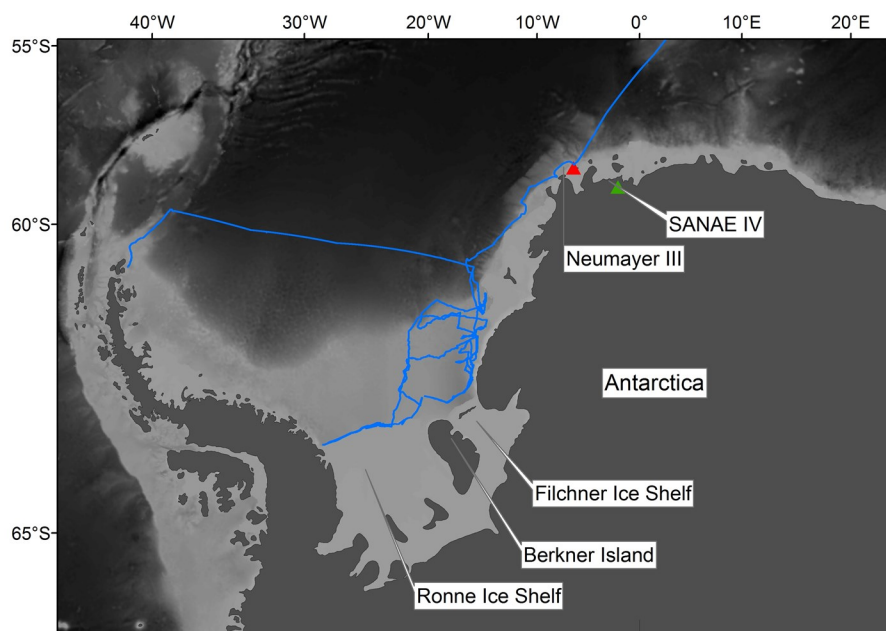
However, recent Computer simulations of AWI oceanographers have now shown that with the increasing warming in Antarctica the sea ice formation in the southern Weddell Sea will decrease - and thus the salt content of the cold water. This causes basal melting of the ice sheet, contributes directly to sea level rise, and alters oceanic processes. PS111 was part of a larger multinational collaborative project to study the changes within the Filchner-Ronne Outflow System, which conveniently also gave the expedition its colourful name - FROST.



A curious adult female Weddell seal.

Prof Bester, and Drs Wege and Bornemann formed the "seal team" of the expedition. They aimed to obtain a comprehensive picture of the Ross seal's foraging activity in a three-dimensional environment and gain an understanding of how the Weddell Sea marine ecosystem shapes the Ross seal's foraging behaviour.

In 2016, Prof Bester, Dr Wege, and two fellow colleagues carried out the



Map 1 : The cruise track (blue) of PS111 within the Weddell Sea. The South African Antarctic base (SANAE IV) and the German Antarctic base (Neumayer III) are indicated by the green and red triangles respectively.





Physical restraint and satellite tracker deployment of a Ross seal next to the RV *Polarstern* at midnight.



The elusive Ross seal with a newly deployed satellite tracker.

first leg of this research from aboard the MV *SA Agulhas II* along the east coast of the Weddell Sea. They managed to deploy satellite trackers on 11 Ross seals and collect body tissue samples of another 10 individuals – 21 may sound like a small sample size but this was to date the most successful sampling campaign of this species and further highlight the dearth of data on this species.

During PS111, their Ross seal research was extended to the rarely visited, deep Weddell Sea. Favourable weather conditions allowed the RV *Polarstern* to travel to the Ronne Ice Shelf; due to the high concentration of thick, multi-year ice, the last time any ship visited this part of the ocean was in 1995. This allowed a unique opportunity to census all pack-ice seal species within areas of the Weddell Sea that is rarely visited.

The seal team additionally worked on Weddell seals (*Leptonychotes weddellii*) to extend the data collected on this species during an earlier expedition aboard the RV *Polarstern* (PS82 - 2013/2014). The team was deposited over the side of the ship onto an ice floe where they temporarily captured

Ross and Weddell seals. They deployed satellite-linked temperature-time-depth data loggers on the seals to measure diving and movement behaviour and, with bulk stable isotope analyses on sampled blood, fur, and whiskers, their diet.

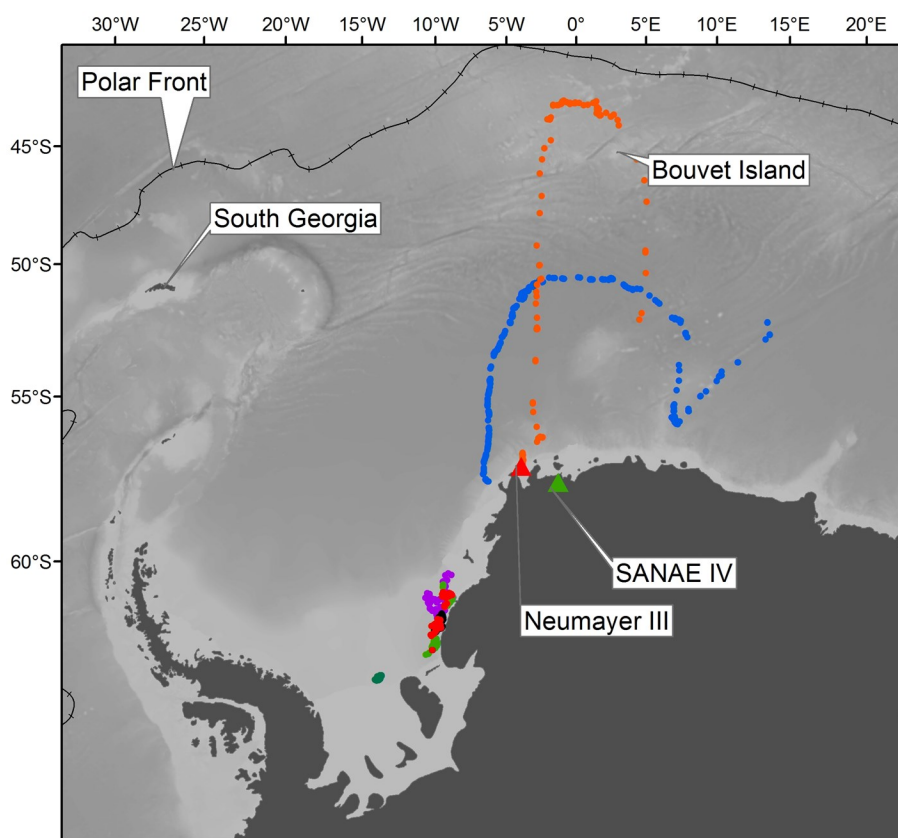


Dr Horst Bornemann tending to an immobilised Weddell seal post-deployment.

They also used helicopter flights ahead of the *Polarstern's* cruise track to locate seals on the ice floes and fast ice, for temporary capture and instrumentation. This data will also be used to update the current understanding of the distribution and abundance of Ross and Weddell seals within the Weddell Sea. At the time of publication of this newsletter, all the satellite-linked instrumented seals were still being tracked successfully. The Weddell seals were still foraging deep within the fast-ice areas of the Weddell Sea whereas the Ross seals are swimming in the open Southern Ocean (Map 2). The sea-temperature data currently collected by these devices further provide unique oceanographic data during winter – a time of the year when ships or robotics as oceanographic sampling instruments cannot enter the Antarctic ice field.

During the seven weeks of PS111 the RV *Polarstern* travelled 9125 nm (~16900 km), the seal team deployed seven satellite trackers, spent more than 210 hours on the bridge doing observations, and flew 1378 nm spread across 16 helicopter flights in search of seals.

*All photos by Mia Wege. ☞*



Map 2: Satellite tracking data of the Ross seals (orange and blue) and Weddell seals (green, red, black, purple, and dark green) deployed on during PS111. The South African Antarctic base (SANAE IV) and the German Antarctic base (Neumayer III) are indicated by the green and red triangles respectively.



Prof Bester and Dr Bornemann enjoying -40C post-deployment of a Weddell seal, while waiting on helicopter pick up.



## Musings of a deshelled tropical hermit from the mudflats of the Western Indian Ocean

By

**Charles Kihia**

Department of Biological  
Sciences, Egerton  
University, Kenya

We, the hermit crab fraternity of Africa and environs, are distressed. Your first encounter with us was probably picking an exquisite shell from a tropical beach, only to cringe from the emerging creepy crawly. We are renowned, for residing in vacant shells, to protect our delicate abdomen, at some stage in life. Nonetheless, we hail from diverse backgrounds, dominated by three families (Coenobitidae, Diogenidae and Paguridae), ranging in size from minute *Avarus* and *Diogenes* (>5mm), to massive contemporaries of over 4kg (e.g. coconut crab; *Birgus*).

Contrary to popular perception, we are complex beings, with free swimming young which, migrate and mature on dryland. Our adults, occupy various homesteads, ranging from bare sand to forested shores, where stranded detritus and flotsam, sustain us. In the nooks and crannies of beaches, we mate with willing females, who transport fertilized eggs to the ocean. This



Hermit crabs: deshelled *Clibanarius longitarsus* (left) and shelled *Dardanus megistos* (right).

constant sojourn into these interlinked; dryland, shoreline and oceanic realms, exposes us to a suite of dangers. In temperate and subtropical locales, we are deservedly recognized, but in the Western Indian Ocean (WIO) and Africa, as a whole, we are largely ignored.

Despite widespread ignorance, our larger kin, such as *Clibanarius* and *Dardanus*, are extensively harvested as marine hook fishing bait. In Kenya, and elsewhere, this involves concerted search from mangrove forests. In response, we have evolved a war-chest of tricks (encrusting fauna, mold, etc.) to escape detection. We are nonetheless, vulnerable to experienced harvesters, who have developed elaborate techniques to capture us. Our nemesis, collect us in tens (~50) bash and crush our

shells, to extract the individuals therein, subsequently used as bait. Several fishers swear that "hermits (also known as *dophe*) land more fish, faster than any other bait". We, are thus more important than conventionally recognized, and demand our dose of the limelight! Our concern is, without harvesting restrictions, our eminent extinction is a done deal.



Hermit crabs used as fishing bait.

Furthermore, widespread harvesting of tropical gastropod shelled organisms, invariably imperils shell availability, and consequently, our very survival. Now, this issue of shell supply, is a critical matter! On molting, our old smaller shells, are

discarded for specimen that snugly fit our protruding extremities. Irrespective of age or kinship, we wage scuffles and battles, for access to these invaluable empty shells, bearing debilitating scars as mementos of these epic encounters. Residing in mismatched shells is a death knell, not only because our mortal enemies; fish, birds, among others, devour us with gusto, but unfavorable climate and other natural calamities, take their toll.

Shelled gastropods are harvested by man for various purposes - edible snails such as conch (*Strombus*), cowries (*Cypraea*) for ornamental use, periwinkles (*Littorina*) for medicinal purposes, mangrove whelk for fishing bait (*Terebralia*) as well as shell debris from a mixture of species in the manufacture of lime.

Although accurate figures on gastropods that have fallen to this scourge, are unavailable, we think



Shelled gastropod use by man: ornamental cowry shells (left) and edible conch (right).

many billions, have abruptly departed. We watch with creeping despair, as heaps of damaged gastropod shell middens, multiply along our environs. Meanwhile, a section of mankind, benefits from the sweat of our comrades, but also this prime real estate, is irrevocably lost. In most regions of Africa, trade and exploitation of gastropods and their shells is largely undocumented and unregulated, and in the rare occasions that legislation exists, enforcement is weak. On behalf of our benevolent benefactor (the gastropod), we seek an intervention, in the foreseeable future.

As if that is not enough, our esteemed cousins, the large land hermit crab *Birgus* (commonly known as the coconut crab), which entirely abandons its shell to become fully terrestrial, are besieged. Found in Indo-Pacific



Adult giant coconut crab (*Birgus*).

islands, this slow moving, long lived behemoth, is a highly sought delicacy, throughout its range. Shell bearing, shoreline dwelling juveniles, molt, discard their shells, acquire a hardened exterior and penetrate further inland. Moreover, in several jurisdictions, our kin is hounded as a coconut pest. Coupled with poor recruitment and habitat destruction, these have precipitated local disappearance. Alas, in the WIO, apart from isolated records from Madagascar, the status of our iconic kin, remains speculative, and their prospects seem additionally bleak.

For now, I refrain from bemoaning the looming twin horrors of global warming and ocean acidification. Without doubt, our epitaph will soon read; 'for here lies the last known carcass of the hermit crab'. Nevertheless, our dwindling faith in African goodwill, are kindling faint glimmers for a rosy future. I remain your faithful elocutionary, *Clibanarius longitarsus* in the year of our Lord, 2018. ☞

## *Understanding the Agulhas Current's complex relationship with our shores*

Barrelling down the east coast of southern Africa, the Agulhas Current is one of the natural world's behemoths.

Transporting some 80 million cubic metres of sea water per second at speeds approaching two metres a second and driven by the aggregate effect of winds over the entire Indian Ocean, the amount of energy involved in this system is somewhat inconceivable.

With this great power comes great complexity, and the collision of this great ocean current with the continental shelf of southern Africa results in extremely strong, and rapidly evolving, gradients of ocean temperature, salinity and currents. These strong dynamics are both a blessing and a curse for oceanographers seeking to understand the Agulhas System, with ocean models struggling to consistently simulate the currents, and the observational system being too limited to capture the vigorous dynamics of the Current.

The goal of my PhD was to understand the way in which the

Agulhas Current interacts with the shelf waters that lie between it and the southern African coastline. The power of the Current has a large effect on these coastal waters, but due to an incomplete observing system, we lack a coherent understanding of how the Agulhas might drive these processes along the continental shelf. These shelf waters are always of interest, as they act as the interface between the deep ocean and the coast, where the human population interacts with the sea.

Due to the lack of long-term observations at depth, we chose to use an ocean modelling approach, which allowed us to try and coherently understand what the various historical observations have told us about the dynamics of the Agulhas Current's interaction with coastal waters. Unfortunately, the Agulhas Current is somewhat notorious as one of the more difficult places in the world's oceans to accurately model, and with no obvious solution to these products, we chose to make use of two very different ocean models. The idea behind this being that, if

these two different systems agree, the results are likely to be robust, and not due to individual model bias.

First stop was to try and understand the effect of the large meander events which propagate down the east coast a couple of times a year.

### ***What did the models tell us?***

Well, the good news is that they agreed with observations and with each other, showing that large current meanders are a robust intrinsic property of the current. They also showed that the change in the shape of the continental shelf which happens to the west of Port Elizabeth has a strong effect on how meanders drive cold, nutrient-rich water onto the shelf.

Next stop was a glance into the past, using the long-term (1948–2008) INALT01 model to simulate multi-decadal variability in the temperature of continental shelf water between East London and Cape Agulhas. Good news? The model recreates the mid-nineties shifts which have been related to changes in small pelagic fish



populations.

*The interesting part?* The model suggests that these shifts in temperature are in fact part of a multi-decadal cycle which is controlled by changes in the large-scale wind regime.

### ***What the satellite-tracked ocean drifters told us***

Lastly, we put the fancy computer models down for a bit, to peer into the fine scales of 10 km or less, where our understanding of the ocean is very limited. Here a pair of satellite-tracked ocean drifters showed how the strong shear between the main Agulhas Current jet and the calmer shelf waters can spin up small coherent vortices, which carried our pair of drifters hundreds of kilometres.

*The interesting part?* After being caught in this submesoscale vortex, both these drifters ended up in the



Neil and colleagues on a cruise in the Agulhas Current in 2011, where it all began.

Benguela Current and disappeared off into the South Atlantic Ocean as part of the much written about Agulhas Leakage. The next generation of Agulhas Current ocean models will resolve these finer scales and allow us to further understand the important linkages and biological consequences of these small, strong eddies.

I suppose as with all PhDs I have ended up with more questions than I began with. But one thing's for sure, we still have much to learn

about the ocean behemoth which goes tearing down our eastern shores.

#### **Source:**

Malan, N. (2018, May 9). Understanding the Agulhas Current's complex relationship with our shores. Retrieved from <http://www.nrf.ac.za/content/understanding-agulhas-currents-complex-relationship-our-shores> ☞

## The hunt for more coelacanths

A team of marine scientists and filmmakers hope to pull off a remarkable coup over the next few days as they hunt for more “dinosaurs” in the deep underwater canyons off Sodwana Bay in KwaZulu-Natal.

The unique creature they hope to find and film is the coelacanth, the prehistoric fish species thought to have been extinct for 65 million years until a single small specimen was found on the deck of a fishing vessel near East London in 1938.

The discovery led to the subsequent capture and examination of a number of coelacanths off the coast of East Africa and Indonesia, but no living specimens were found in South Africa until 18 years ago, when six were found by deep-water divers in the Jesser and Wright canyons off the coast off Sodwana Bay in KwaZulu-Natal.

Since that initial discovery in 2000, the African Coelacanth Ecosystem Programme (ACEP) has confirmed the presence of at least 32 in the area, each of them identifiable by the unique colour markings on their bodies.



The RV *Angra Pequena* will be used by scientists and filmmakers to produce a new documentary series “Our Oceans” off the coast of Sodwana this week. Photo by Kirsten Oliver.

Over the weekend, the 72-foot research vessel *Angra Pequena* left Durban at the start of a two-week research and filming expedition off Sodwana and scientists hope that they will be able to find number 33 or 34 in canyons that have yet to be fully explored.

“Nobody has ever captured a juvenile coelacanth on camera and the team hopes to make history by doing so,” said a spokesman for WILD Oceans, a local environmental organisation that works closely with the national and provincial governments to improve knowledge



South Africa’s ‘dinosaur fish’ have a deep blue color which is thought to help camouflage them from predators in deep underwater canyons and their eyes are very sensitive to light. Photo by Ryan Palmer.

of marine ecosystems in South Africa.

Dr Angus Paterson, managing director of the SA Institute for

Aquatic Biodiversity, said: "We are very proud to have been involved in the research around cataloguing the 32 known coelacanths and are excited about the potential of finding others off Sodwana during this cruise."

With funding support from the Department of Science and Technology, the research and filming crew will have at their disposal a submersible remote operating vehicle (ROV) and a baited remote underwater vehicle (BRUV) to explore the deep canyons.

The BRUV has two high-resolution cameras that help to measure the

size and abundance of fish species in an area. It also holds a canister filled with sardines that attracts the fish so they can be viewed, measured and counted.

WILD Oceans head Dr Jean Harris said: "We are looking forward to understanding more about the canyon ecosystem that the coelacanths inhabit. We suspect that the deep canyons that incise our continental shelf along the east coast are important productive features in the ocean landscape that deserve special attention."

The filming off Sodwana will form part of the first episode of a

documentary series entitled "Our Oceans: Dinosaurs in the Deep" by the Off the Fence wildlife film production company.

The series will examine a wide range of threats to the world's oceans, from overfishing to mining, pollution and climate change.

#### Source:

Carnie, T. (2018, May 28). The hunt for more coelacanths. Retrieved from <https://www.goexpress.co.za/2018/05/28/the-hunt-for-more-coelacanths/> ↗

Vacancies & consulting opportunities	Organisation	Location	Closing date
<a href="#">Service Provider to develop a National Guideline for the declaration of Special Management Areas in terms of the Integrated Coastal Management Act.</a>	DEA	-	6/1/2018
<a href="#">Postdoc position in Theoretical Oceanography and Modelling of Oceanic Processes</a>	IOW	Warnemünde, Germany	6/3/2018
<a href="#">Production Scientist Grade A: Seabird Research</a>	DEA	Cape Town	6/5/2018
<a href="#">POGO Scientific Coordinator</a>	POGO	Plymouth, UK	6/8/2018
<a href="#">Education Coordinator</a>	SOSF Shark Education Centre	Kalk Bay, Western Cape	6/8/2018
<a href="#">Consulting engagement on MASMA Programme: call for proposals to support organizations of training courses/workshops and Publications of books/manuals.</a>	WIOMSA	-	6/15/2018
<a href="#">ASCA Postdoctoral position in physical oceanography. No closing date indicated.</a>	SAEON	Cape Town	-



## *Marine Invertebrates Book puts a spotlight on SA's excellence in marine science*

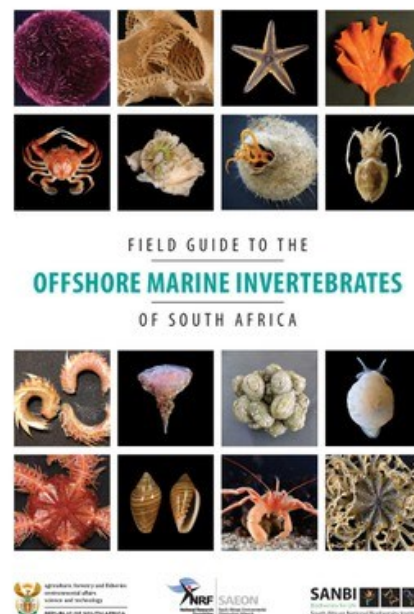
South Africa is exceptionally endowed with a rich marine environment and a huge diversity of ecosystems. On 10 May, South Africa celebrated the launch of the first-ever book of its kind in the country, the Field Guide to the Offshore Marine Invertebrates of South Africa, at the Two Oceans Aquarium in Cape Town.

The book, consisting of impressive collaborative work between the South African Environmental Observation Network (SAEON) and the South African National Biodiversity Institute (SANBI), and many other institutes, is a photograph-based field identification guide that enables researchers, fishery observers and fishers to readily recognise and identify commonly occurring invertebrate epifauna from South Africa's offshore region. It enables them to identify up to 409 offshore invertebrate species or classify unknown species into one of 12 phyla. Due to the nature of research, trawl sampling, species depicted in this guide are currently spatially limited to the Department of Agriculture Forestry and Fisheries' (DAFF) demersal

survey area which spans the continental shelf between 30 m and 1000 m from the Orange River mouth to Port Alfred. DAFF were instrumental in providing berths onboard their research vessel surveys thereby enabling this research to take place.

Over the past seven years, a dedicated team of researchers and a large team of co-authors, along with collaborators from South Africa and abroad, implemented as well as maintained a long-term, offshore invertebrate monitoring programme. Led by Dr Lara Atkinson and Dr Kerry Sink, the team has been able to collate the invertebrate information collected during these DAFF demersal research surveys to produce this first-ever *Field Guide to the Offshore Marine Invertebrates of South Africa*.

The information gathered informs research towards quantifying and assessing ecosystem impacts, leading to the implementation of sustainable management practices in the demersal trawl sector. The research supports international and



local interests which include fisheries eco-certification through the Marine Stewardship Council hake trawl certification; participation in a global trawl impact assessment, and national ecosystem classification.

The rich photographic display of deep-sea species is also being used for educational outreach and aims to generate broader public engagement and awareness of our ocean environment. This field guide, complemented by the extensive training of students, interns and emerging researchers, is an important contributor in addressing the gap in offshore invertebrate knowledge in South Africa. The

information gathered supports the long-term monitoring and data availability of marine invertebrates and advances taxonomy and biogeographic research. Moreover, the information contributes to the description, mapping, assessment and thus the improved management of marine ecosystems.

Because of its geographical position at the southern tip of Africa, South Africa not only serves as a gateway to the Southern Ocean benefiting from its three surrounding ocean ecosystems, but its advantaged position is also a major factor driving the high levels of marine biodiversity and endemism. Internationally, South Africa is ranked as having the third highest number of marine species per unit area within its exclusive economic zone, creating an appealing research arena, and it has an internationally recognised, proud legacy of excellence in marine science.

SAEON's Dr Lara Atkinson commented that: "South Africa's Blue Economy vision for a stronger and sustainable ocean economy depends on the strength of its scientific foundation. Correct identification of marine taxa is a



Drs Lara Atkinson (left) and Kerry Sink (right) at the launch of the field guide.

fundamental requirement for long-term monitoring. Such monitoring enables scientists to detect changes in marine biota. In turn, understanding these changes in marine biota contributes to the effective science-based management of our marine ecosystems."

"Many new distribution records are being detected and these are making marine taxonomy and bio-discovery research in South Africa very appealing to the international sector. Although these discoveries are a testament to the limited state of knowledge prior to implementation of this monitoring

programme, they indicate the potential for further discoveries in South Africa's rich ocean environment," she concluded.

#### Source:

Marine Invertebrates Book puts a Spotlight on SA's Excellence in Marine Science. (2018, May 11). NRF Media Release. Retrieved from <http://www.nrf.ac.za/media-room/news/marine-invertebrates-book-puts-spotlight-sa%E2%80%99s-excellence-marine-science> ☒

The PDF publication of the field guide is [available for download](#) as either the full document or individual phyla chapters.

## Praise for the Marine Biologist

I'm a marine biologist.  
I tend to smell of fish,  
which keeps most folks quite out of  
reach.  
At least, that's what they wish.

I'm a marine biologist.  
I check what's in the sea,  
which covers 70% of earth,  
so, lots of work for me.....

I'm a marine biologist  
and slightly weird they say.  
I love the strange and crawly stuff  
which keeps most guys at bay.

I'm a marine biologist.  
Deep down I feel at home,  
where fairy shrimps and manta rays  
and spineless sharks do roam.

I like the little crabby things  
with lots of creepy legs  
and pincers which they use to eat  
and clean up nature's dregs.  
I also love the shells and snails  
(called Molluscs if you're smart) -  
each one of them is so complete,  
a perfect work of art.

I love the starfish most of all  
of every rainbow hue.  
Their arms are magical for sure.  
If lost, they just grow new.  
We have to bow to these creatures  
low.  
They form the base of life,

and on the deep down oceanfloor  
they endure without strife.

I live my life and dream my dreams  
there where it's deep and wet  
and cold and dark and void of air,  
and I no e-mails get.

I'm a marine biologist.  
I'll never eat my fish.  
Please give me chicken, pork or  
beef  
or any other dish.

If ever to a seafood place  
or sushi den I roam  
I'll hurry off with painful face  
and eat my veggie stew at home.

I'm a marine biologist.  
A crab has got my name.\*<sup>1</sup>  
An honour that is so profound,  
and yes, we're quite the same:  
I too prefer to hide away  
inside my peaceful shell,  
and search no glamour, shy the  
light,  
and get on good and swell.

I'm a marine biologist.  
We'll never know enough  
of all these creatures down below.  
To ID them is tough.  
We hardly know that they exist  
until we dive real deep,  
or send our flashy monkey\*<sup>2</sup> down  
with images to keep.

I'm a marine biologist.  
I want this world to stay  
long after I have done my dues,  
and packed my books away.  
I hope there'll still be this bright zoo  
cavorting on the floors.  
No diamond pumps and dredging  
nets  
with gaping open jaws.

I'm a marine biologist.  
It's up to me, I guess,  
and all of us who love the seas  
to not leave it a mess.

I hope my work will help to save  
the treasure chest we hold  
and in the pages of this book  
the treasure maps unfold.

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Beate@saeon.ac.za

Dedicated to Lara Atkinson at the launch of the  
*Field Guide to Offshore Marine Invertebrates of  
South Africa*, May 2018.

\*<sup>1</sup> The deep-water hermit crab *Paragiopagurus  
atkinsonae* was named after Lara Atkinson, who  
first discovered this species on a trawl off the  
West Coast of South Africa.

\*<sup>2</sup> The SkiMonkey is a deep-sea camera,  
mounted on ski's which enable it to be dragged  
over the seafloor and capture valuable images  
of marine habitats and its associated fauna. This  
camera forms part of SAEON's strategic  
research infrastructure platforms.



## Dr Gilbert Siko joins the SANCOR Steering Committee

The SANCOR Steering Committee is pleased to welcome Dr Gilbert Siko as the Representative for the Department of Science and Technology (DST) on the committee.



Dr Gilbert Siko

Gilbert is the Director of Science Platforms at DST where is engaged in marine & coastal research support coordination, policy and strategy development, public awareness & engagement, human capacity development, research capacity development and oceans governance.

We extend a warm welcome to Gilbert and look forward to working with him. ☞

## NRF Call for Marine & Coastal Research Proposals

The [Marine and Coastal Research funding instrument](#) is a discipline-specific funding instrument which supports research and associated human capacity development in the coastal and marine sectors in South Africa. The research themes addressed are based on the Marine Research Plan (2014-2024), and are underpinned by the overarching South African Marine and Antarctic Research Strategy (MARS) of 2016. The Marine Research Plan focuses on understanding the role of biodiversity in maintaining ecosystems functionality, the relationships between human pressures and ecosystems, and the impact of Global Change on marine ecosystems.

Call Closes: 2 July 2018

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

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