

# SANCOR NEWSLETTER

## South African Network for Coastal and Oceanic Research

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## Ascending from the abyss: *the shallow seamount of Walter's Shoal in the Western Indian Ocean*

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If Table Mountain were under the sea, it would barely qualify as a seamount. Typically of volcanic origin, seamounts are defined by oceanographers as independent topographic features that rise to at least 1,000 meters from the seafloor without breaking the water's surface. Despite such stringent conditions for recognition, there are an estimated 45,000 seamounts globally, although high-end estimates are in the hundreds of thousands. Consequently the cumulative geographic footprint of all seamounts is larger than the area of Australia. In fact, seamounts are considered a unique biome which, after the continental shelf, is the second largest in the marine environment and is comparable in extent to the terrestrial rainforest biome.

Since the first modern investigation of seamounts around 70 years ago, there has been much scientific debate regarding their ecological significance. A theory that seamounts are 'hotspots' of species richness and endemism has received little support, but other theories such as their role in maintaining high levels of fish and invertebrate abundance and biomass are now considered plausible. However, much uncertainty remains in this young field of marine science because of a paucity of investigations, with less than 300 seamounts (<0.05%) sampled to date, making it by far the least explored biome globally.

Despite this shortcoming, one theory has received substantial support and is now considered incontrovertible: seamount communities are particularly vulnerable to fishing disturbance. Because they support significantly higher abundances of exploitable resources than their abyssal surroundings, seamounts have been targeted by commercial fisheries throughout the world's oceans.

In contrast to continental shelf habitats, which barely extend below 200 meters of water depth, the majority of seamount habitat lies in



cold water below 1,000 meters. As a general rule, organisms adapted to life at lower temperatures grow more slowly, take longer to reach sexual maturity and live longer than warm-adapted species. For example, *Lophelia pertusa*, the most widespread reef-forming cold-water coral in the world, is an extremely slow growing seamount species with individual coral bushes as old as 1,000 years! Such characteristics render typical seamount species such as the orange roughy (*Hoplostethus atlanticus*), which can live up to 150 years, especially vulnerable to overexploitation. The orange roughy, which was renamed in the 1970s from the less appetizing appellation of 'slimehead', is a popular food fish species with firm, white flesh. It was one of the first seamount fish species to be exploited commercially and was soon heavily overfished. Bottom trawling, by far the most popular fishing technique on seamounts, has had devastating effects on exploited resources and representative biodiversity: on seamounts that have been trawled within the last century, fish and invertebrate communities have not even started to recover. It is therefore reasonable to assume that bottom trawling has irrevocably changed seamount habitats and their associated biota.

There are many seamounts around southern Africa, some of which are well known and have been intensively fished. Most of these seamounts summit far below the photic zone, with the exception of Walter's Shoal, a shallow seamount located on the Madagascar Ridge (refer to map). It rises from the abyssal plane to just 18 meters below the sea surface, making it particularly accessible to a variety of sampling techniques. When discovered in 1963 the



*Walter's Shoal is located on the Madagascar Ridge, 450nm south of Madagascar and 700nm east of South Africa.*

seamount supported a large population of Galapagos sharks (*Carcharhinus galapagensis*), which was subsequently heavily reduced. Since 1963 there were only a few scientific expeditions that included Walter's Shoal in their sampling plan, during which limited data were collected on the fish and benthic communities and no Galapagos sharks were reported. The most recent scientific expedition to the shoal was in 1990.

Nearly 25 years later, scientists will again be able to sample Walter's Shoal, during an expedition scheduled for early 2014, that will be facilitated through the African Coelacanth Ecosystem Programme (ACEP). For the first time, an expedition will completely focus on the shoal and as a result sampling will be more comprehensive than most other seamount expeditions in the past. The aim of the expedition is to assess the diversity and abundance of the major components of the shallow seamount ecosystem, such as phytoplankton, zooplankton, benthic sessile

invertebrates and fish, in relation to bathymetry, small- and meso-scale oceanographic patterns and biogeography. The field surveys will be supplemented with biomarker techniques, such as isotopes and fatty acids, to assist with the understanding of trophic linkages, and molecular genetic techniques to identify connectivity patterns.

The broad-scale investigation will be made possible by employing several innovative shallow- and deep-water sampling techniques. Apart from a remotely operated vehicle (ROV), alternative underwater camera systems will be employed, including stereo baited remote underwater video (stereo-BRUV), ski-monkey and different jump camera systems. In combination with conventional methods, such as dredging, diver collections and a wide array of fishing gear, the expedition will comprise one of the most comprehensive efforts to investigate a marine ecosystem to date.

It is expected that the programme will yield new insights into the significance of



seamount ecosystems for the maintenance of ocean basin-wide biodiversity conservation, and regarding their vulnerability and recovery potential if subjected to extractive and destructive exploitation. Scientific excellence is just one aim of this ambitious project.

This expedition, headed by Dr Toufiek Samaai (DEA), in collaboration with Drs Albrecht Götz (SAEON), Sven Kerwath (DAFF), Steve Kirkman (DEA), Wayne Florence (Iziko Museum), Mark Gibbons (University of the Western Cape), Savel Daniels (University of Stellenbosch) and Anthony Barnard (SAEON) is one of the first South African led investigations into seamount ecology and as such includes a large skills development component. There are funded opportunities for six MSc and one PhD projects, directed at South African students. Up to five deserving students will be able to join the expedition and work as an integral part of the sampling team during the 30-day voyage.

Interested candidates can contact the project liaison officer directly ([Ms Seshnee Maduray](#)) or one of the team members: [Dr Toufiek Samaai](#), [Dr Albrecht Götz](#), [Dr Sven Kerwath](#), [Dr Steve Kirkman](#) or [Dr Anthony Bernard](#).



## Coelacanth genome surfaces - *Unexpected insights from a fish with a 300-million-year-old fossil record*

Adapted from original release from the Broad Institute of MIT and Harvard and submitted by

*Penny Haworth*

South African Institute for Aquatic Biodiversity

A major research collaboration which has involved an international team of researchers from 40 institutions from 12 countries has decoded the genome of the African coelacanth: a creature whose evolutionary history is both enigmatic and illuminating.

Researchers from institutions including Harvard University, the Broad Institute of the Massachusetts Institute of Technology (MIT), the South African National Bioinformatics Institute within University of the Western Cape (UWC) and Rhodes University (RU), has decoded the genome of a creature whose evolutionary history is quite extraordinary: the African coelacanth.

A sea-cave dwelling, five-foot long fish with limb-like fins, the coelacanth was once thought to be extinct. A living coelacanth was discovered off the African coast in 1938, and since then, questions about these ancient-looking fish – popularly known as “living fossils” – have loomed large. Coelacanths today closely resemble the fossilised skeletons of their more than 300-million-year-old ancestors. Its genome confirms what many

researchers had long suspected: genes in coelacanths are evolving more slowly than in other organisms. In a paper on the coelacanth genome, which appeared in [Nature](#), researchers hypothesise that this slow rate of change may be because coelacanths simply have not needed to change: they live primarily off of the Eastern African coast (a second coelacanth species lives off the coast of Indonesia), at ocean depths where relatively little has changed over the millennia.

Because of their resemblance to fossils dating back millions of years, coelacanths today are often referred to as “living fossils” – a term coined by Charles Darwin. But the coelacanth is not a relic of the past brought back to life: it is a species that has survived, reproduced, but changed very little in appearance for millions of years. “It’s not a living fossil; it’s a living organism,” said Jessica Alföldi, from the Broad Institute and co-first author. “It doesn’t live in a time bubble; it lives in our world, which is why it’s so fascinating to find out that its genes are evolving more slowly than ours.”



*Seven coelacanths were filmed by the ACEP ROV off Sodwana Bay in KwaZulu Natal in May 2011- ©SAIAB*



In addition to sequencing the full genome – nearly 3 billion “letters” of DNA – from the coelacanth, the researchers also looked at RNA content from coelacanth (both the African and Indonesian species) and from the lungfish. This information allowed them to compare genes of lungfish with gene sets from coelacanth and 20 other vertebrate species. Their results suggested that land animals (tetrapods) are more closely related to lungfish than to the coelacanth.

However, the coelacanth is still a critical organism to study in order to understand what is often called the water-to-land transition. Lungfish may be more closely related to land animals, but the lungfish genome is simply too unwieldy for scientists to sequence, assemble, and analyze. The coelacanth’s more modest-sized genome (comparable in length to our own) is yielding valuable clues about the genetic changes that may have allowed tetrapods to flourish

on land.

Sequencing the full coelacanth genome was uniquely challenging for many reasons: Coelacanths are endangered animals, meaning that samples available for research are almost nonexistent. This meant that each sample obtained was precious: researchers would have one shot at sequencing the collected genetic material, according to Alföldi. But the difficulties in obtaining a sample and the challenges of sequencing it also knit the community together.

Researchers from 40 institutions across 12 countries contributed to this work and many funding agencies around the world provided support. From South Africa the South African Institute for Aquatic Biodiversity (SAIAB) African Coelacanth Ecosystem Programme (ACEP) which incorporates the South African Environmental Observation Network

(SAEON) and is funded by the South African National Department of Science and Technology, facilitated the collection of samples from coelacanths found off Sodwana Bay on the east coast of South Africa. Researchers from Rhodes University were involved with the project from its inception and the National Human Genome Research Institute supported the Broad Institute’s contributions, which included genome sequencing.

Dr Angus Paterson, Managing Director of SAIAB and ACEP, said, “Over the past decade, ACEP has made a conscious effort to provide specialised marine platforms including ROVs, submersibles and vessels to support marine research. We are thrilled that SAIAB’s support of the project has produced such high quality research and a well-deserved place in coelacanth research history, especially in this 75th year since the discovery of this enigmatic creature.”



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## Signed and sealed— Angola, Namibia and South Africa sign the Benguela Current Convention

*Claire Attwood*

Media consultant to the  
Benguela Current Commission

Almost two decades after scientists in Angola, Namibia and South Africa first began to collaborate in the study of the Benguela Current Large Marine Ecosystem, the governments of the three countries signed a groundbreaking environmental treaty that seeks to bring long-term social and economic benefits to the people of the Benguela.

A ceremony to mark the Convention signing was held in the Angolan city of Benguela in March, and attended by an impressive number of ministers and high-level government officials from all three countries. Among the dignitaries were a small number of scientists and resource managers, who took the important first steps towards regional collaboration when they met to discuss the establishment of the regional marine science and training programme, BENEFIT (the Benguela Environment Fisheries Interaction and Training programme) in 1995.

Most notably, the current Minister of Fisheries in Angola, Victoria de Barros Neto, herself a marine biologist, was involved with the establishment of BENEFIT. As she signed the Convention, it must have given her a great deal of pleasure to see how far the three countries have come since those early attempts to combine scientific effort and understanding and study the BCLME as a system, rather than as three separate entities.

Speaking at the signing ceremony, Minister de Barros Neto acknowledged the role that BENEFIT's main sponsors – the governments of Norway and German – played in the



*Bernhard Esau, Minister of Fisheries and Marine Resources in Namibia, Edna Molewa, Minister of Water and Environmental Affairs in South Africa and Victoria de Barros Neto, Minister of Fisheries in Angola, exchange signed copies of the Benguela Current Convention.*

regional programme, and also thanked the Global Environment Facility (GEF) and the United Nations Development Programme (UNDP) which funded and supported the BCLME Programme between 2003 and 2008.

Whereas BENEFIT was strictly a scientific programme, tasked with improving knowledge and understanding of the productive but complex Benguela ecosystem, the BCLME Programme added a management component to the mix. It funded 75 projects which recommended strategies for the transboundary management of industrial activities such as fishing and mining and laid the groundwork for the three countries to manage the BCLME's valuable marine and coastal resources at the ecosystem level.

In 2007, Angola, Namibia and South Africa signed an Interim Agreement and established the Benguela Current Commission (BCC). Although the BCC has its roots in marine science, its mandate is to

### WHAT IS THE BENGUELA CURRENT CONVENTION?

It is a formal, written treaty, or agreement between the governments of Angola, Namibia and South Africa ("the Parties"). The Convention can be loosely compared to a contract between the three countries; it sets out their willingness to assume a range of obligations.

The objective of the Benguela Current Convention is to "to promote a coordinated regional approach to the long-term conservation, protection, rehabilitation, enhancement and sustainable use of the Benguela Current Large Marine Ecosystem, to provide economic, environmental and social benefits."



provide a platform for the three countries to promote the long-term conservation protection, rehabilitation, enhancement and sustainable use of the BCLME.

Since 2007, the Commission has coordinated comprehensive science and training programmes and its Annual Science Forum provides an ideal opportunity for scholars of the Benguela, and its processes and resources, to share knowledge and understanding and identify opportunities for future collaboration.

Significantly, the signing of the Benguela Current Convention on March 18 effectively established the BCC as a permanent inter-governmental institution through which the countries will continue to work and collaborate.

At the heart of the Benguela Current Convention is the concept of the ecosystem approach: a long-term approach that aims to maintain ecosystem goods and services for sustainable use, while recognising that humans are an integral part of the process.

The BCC is funded by the governments of South Africa, Namibia and Angola, but it has

also attracted support from a wide range of organisations and institutions. For example, the Government of Norway supports the implementation of the BCC Science Programme; the Icelandic International Development Agency (ICEIDA) supports implementation of the BCC's Training and Capacity Building programme; the GEF supports the implementation of the BCLME Strategic Action Programme; and the European Union

has provided a grant to fund the ECOFISH project which is expected to modernise and improve the management of key marine fisheries in Angola, Namibia and South Africa. The GEF and UNDP have played a key role in building the BCC as an institution. Other supporters include the Food and Agriculture Organization of the United Nations (FAO), though its EAF-Nansen



*Fish is on every menu in Angola and salted, dried and smoked fish is readily available at street markets. The dark, round shaped fish on this roadside stall are smoked catfish, while the lighter coloured fish are called bacalau, the Portuguese word for dried and salted cod. The signing of the Benguela Current Convention has pushed the management of marine resources to the forefront of the regional agenda.*

project, and the global conservation organisation WWF.

All three of the government ministers who signed the Benguela Current Convention on behalf of Angola, Namibia and South Africa, pledged their country's commitment to ratifying the treaty by the end of 2013.

#### THE PROCESS OF RATIFICATION

The Benguela Current Convention will come into force once it is ratified by each Party.

During the process of ratification, each country will review the text of the Convention, making sure its contents are consistent with national laws and policies. The countries will then present the Convention to their heads of state for signature. The Benguela Current Convention will come into force 30 days after it is ratified by each Party.



*Fishing boats lie at anchor in Porto Amboim, Angola. Fittingly, the Benguela Current Convention was signed in the Angolan town of Benguela, which shares its name with the cold Benguela Current, the source of a wide range of ecosystem goods and services.*

*For more information about the Benguela Current Commission, please visit [www.benguelacc.org](http://www.benguelacc.org)*



## Dr Abraham Iyambo honoured

*Claire Attwood*



The contribution of the late Dr Abraham Iyambo, was acknowledged and honoured during the Convention signing ceremony that was held in Benguela on March 18, 2013.

Dr Iyambo, a marine biologist and the former Minister of Fisheries and Marine Resources and Education in Namibia, passed away in February this year. Those attending the Convention signing ceremony honoured his commitment to marine science and regional cooperation with a minute of silence.

The outgoing chair of the BCC, Minister Edna Molewa of South Africa, said that Dr Iyambo held the position of Minister of Fisheries and Marine Resources for 12 years.

“He played a pivotal role in our countries’ collaboration,” she said. “As a scientist, he understood the rationale for ecosystem-based management and he provided invaluable encouragement and support for both the BENEFIT and BCLME Programmes. We know how proud he would have been to be standing here today, in this city of Benguela, watching his colleagues, compatriots and friends signing the Benguela Current Convention.”

Minister Molewa concluded that the Benguela Current Convention would form an important part of the late Minister’s legacy.

## ACCESS outreach events in Limpopo

*Carl Palmer*

Applied Centre for

Climate and Earth Systems Science (ACCESS) ACCESS have recently sponsored two outreach programmes in Limpopo high schools. These programmes share a common thread in that both are run by alumina from the ACCESS Habitable Planet Workshop (or HPW) undergraduate programme. This programme aims to inspire students to study science with a story about why Earth is habitable, and with a specific focus on why Southern Africa is special in this story. When we saw how inspired the students were on leaving HPW, we decided that we should let them channel their enthusiasm into engaging learners at rural high schools. Thus our schools programme run by HPW alumni (or Planeteers) was born. We hoped that these students would not only pass on their enthusiasm for HPW and for studying science, but act as role models too; letting the learners meet someone they identify with who is also a scientist. I recently travelled all the way from Cape Town to the north of Limpopo to find out how well this was working, and found two projects that although took on contrasting models and locations, were both achieve these goals and more.

The first group of students running a programme were all based at the University of Venda. They had chosen to work with grade twelve learners from one Marude Secondary school in Thohoyandou. Their programme entailed a series of lectures telling the learners why the Earth is Habitable, just like a HPW, but at level that the learners would understand. Just like HPW this was augmented by fun educational games, educational videos and field excursions. One of the Planeteers organising the events Lavhelesani Simba told me “The idea behind this was the youth learn better when learning from people in their age group, so we acted as role models exposing the learners to the range of degree programs available in South Africa. The highlight of the programme was the field trip to Kruger National Park, where the



*Learners at Sekgosese High School completing their poster presentations on the morning of the science fair. They had previously been refused access to printers by striking teachers.*

learners were exposed to the biodiversity held in Limpopo and also makes them appreciate their province as a special place in this special time”. That these Planeteers are having a huge impact is undeniable just from the touching letters the students wrote to thank them.

An hour or two’s drive out of Thohoyandou takes me to the second school’s programme which is being run with several high schools in the villages outside of Sekgosese East, near Giyani. This area is much more rural location than Thohoyandou, which is itself hardly a big city, and this presents a different set of challenges. The programme coordinator is an MSc student called Claude Moshobane. Claude studies at the University of Pretoria but is originally from around this area. This programme chose to promote activities which support the schools science curriculum, rather than augment it. I visited the programme on a day when they were holding a science fair.

The science fair was due to be held at a local primary schools (as none of the secondary schools had enough chairs to host) and was due to start at 10 am. I arrived slightly late and was surprised to find that none of the learners who were attending the event had arrived yet. Claude asked me if I could drive us around the schools to find out what was happening. On the way he told me how he had put a lot of work into building relation-



ships with the local education managers and had deliberately arrived to the villages a few days earlier and visited every school (many don't have working telephones) in person to inform the principals of the ACCESS sponsored events. It was therefore somewhat of a surprise on arriving to the first school to discover that none of the learners were ready. The reason soon became clear; industrial action from one of the teachers unions (a work-to-rule strike). Teachers from this union had deliberately not passed on the information about the event's start time to their learners, and had refused to allow the students to print their posters for the science fair. Claude thus got to work finding a non-union teacher to help the students print and to make sure they were all ready to travel to the venue. This situation was repeated at all of the three schools we visited.

Whilst on our trip around the schools, two more problems arose. The first was that the education authority's circuit manager had not come to sign the learner's participation certificates as planned. A quick visit to local education government office (a tiny building with no PCs or fax machine) revealed that the manager had been busy all morning completing paper work after some children had been killed in a road accident outside one of the schools we visited. Although there was clearly a lot of red tape associated with the deaths, this did not appear to be anything out of the ordinary. Next, and more problematic for us, was that the schools had no running water that day. All had their own stored supplies, but they all refused to share with each other. Therefore, we had to go to the local shop to buy water for the students attending the event.

We arrived back to the venue at around 12 noon. Still none of the learners had arrived. Dr Matlabana, a mathematics lecturer from the University of Limpopo, and 3 police officers who had been invited to speak to the learners about

careers, were all patiently waiting alone. By 2 pm we were still waiting for one school, but decided to start nonetheless. I spoke to the learners about ACCESS and having given a brief introduction to myself I asked the learners about themselves. One of the questions I asked was about their career ambitions. Interestingly at least 50% of the students wanted to be doctors; the likely reason for this is that being a doctor is the only career in science most of the learners and their parents know of. Amazingly however, one of the learners said she wanted to be a seismologist!

The amount of time Claude dedicates to achieving even the simplest of tasks is both an incredible testament to his dedication to this project but also a shocking indictment of the anarchical conditions hampering educators in rural South Africa. In one respect it was good that I got to see some of the challenges the project has been facing, but this did mean that I didn't actually get to see the science fair itself! Since getting back to Cape Town I've heard back however that the learners projects were a huge success and some have been selected to compete at regional level in Phalaborwa on 16-17 August 2013.

These two school projects have very different approaches and thanks to the different locations have met very different challenges. However, my experience of both these programmes has left me with no doubt that the sheer hard work and enthusiasm of the Planeteers has ensured that the learners have learned a lot and been inspired to study science. Also, perhaps more importantly,



*A learner waiting for transport to the event takes shade under her poster.*



*Claude outside the principal's office at the second school we visited (Sekgosesse High School).*

given the way in which the Planeteers have handled the many obstacles to completing their project, I don't think the learners could have wished for better role models as scientists. ✂



*Group photos of the programme participants. Left: University of Venda students' programme (participants from Marude Secondary school in Thohoyandou) on field work in the Kruger Park and Right: University of Pretoria students' programme (learners from Sekgosesse High School near Giyani).*





## Educators conference 'CAPS' the ocean

The Marine and Coastal Educators Network (MCEN) hosted another successful regional conference for the Western Cape on the 25th of May 2013 at the Two Oceans Aquarium. The conference brought educators in the region together to share new information and giving practical methods on teaching scientific concepts while linking it to the requirements of the current curriculum (CAPS -Curriculum and Assessment Policy Statement for each grade). The conference was themed: "How do we cap the ocean?". Participants were educators in the formal and informal environment, law enforcement officers, Eco-Schools educators, conservationists and researchers.

As educators are natural performers, it was captivating and inspiring to participate in these lessons. In Xavier Zylstra's Underwater Wonders lesson, live marine organisms were placed under a microscope and projected onto a screen. In this lesson, children are encouraged to gently explore the marine organisms while learning about structure and function, habitats and the digestion process.

Khonzani Lembhani presented the Fish Mathematics lesson which aims to improve literacy and numeracy. The lesson was adapted for Grades 7-9. Using life size replicas of the fish, children could 'catch' fish and determine whether it was within the given size and bag limits.

Lauren de Vos produced three short films based on her recent MSc thesis which aimed to develop a more cost-effective, time- and labour-efficient method of surveying fish species in the False Bay region. Her current role as conservation biologist is to translate science into a user friendly package. She shared footage of her recent MSc project which gained wide popularity due to the



*From drama skits to crafts, from presentations to experiments, MCEN members received plenty of ideas and information to take back to the classroom.*

antics of octopi, executing a different strategy each time to steal the bait canister attached to the underwater camera. These films documenting the underwater life of False Bay were certainly inspiring, showing that one is never too old or too young to be enchanted by the oceans.

Anton Fortuin illustrated how CAPS has been incorporated into environmental themes. He provided a document that was produced by an eco-school in Howick. The spreadsheet could be used by Grade R to Grade 12 educators, showing all environmental lessons in the CAPS curriculum for each term. It covered the following subjects: Natural Science, Technology, Life Skills, Social Sciences and Languages.

Bianca Engel presented a salinity experiment which demonstrated how ocean circulation drives seawater density, which in turn is determined by salinity and temperature. SAEON Interns Amy Weeber and Thembelihle Mlokoti presented on ocean acidification

and SAEON's marine programmes at schools, respectively. Dr Meaghan McCord (SA Shark Conservancy) shared her passion for sharks and debunked several myths of these charismatic creatures. Keshnee Pillay (DEA) presented on Plankton: The driver of life on Earth. Nicci Hoal showed members how to creatively use the performing and visual arts to promote an appreciation of marine life and highlight issues affecting our coasts and oceans.

This workshop was successful in bridging the gap between scientists and educators. Not only were educators equipped with the tools and information to assist with integrating marine biology/ science into the CAPS curriculum, but they were encouraged to add freshness and excitement, to stimulate, enrich and spark an interest in marine science.

*The Marine and Coastal Educators Network (MCEN) is a coordinating group of SANCOR.*

*To join MCEN contact [Bianca Engel](#).*



## ACEP Phuhlisa Programme develops scientific capacity

One of the key issues associated with transforming the demographics of the marine science community is that, even with quotas, open competitive research calls often do not result in the levels of successful transformation wished for. Currently, marine science is primarily conducted by historically white, previously advantaged universities and the postgraduate schools within these institutions do not reflect the demography of South Africa. After discussions with the National Research Foundation (NRF) and the Department of Science and Technology (DST) it was decided that in addition to the open research call quotas, a specific and ring-fenced tool was required to ensure black South African postgraduates are trained within the marine sector and that marine science is entrenched more deeply at Historically Black Universities (HBUs). The ACEP Phuhlisa (Development) programme has been planned and designed around key impediments which limit entrance or participation in marine science as articulated by HBU researchers and students.

The ACEP Phuhlisa programme was established in early 2012 and is being run in partnership with the University of Fort Hare and Walter Sisulu University. The programme not only offers postgraduates financial assistance but also logistical support as well as academic and professional development including various scientific and life skills courses. The programme, which started with 26 postgraduates, is now fully subscribed with students going into the following fields - marine microbiology, marine geology, marine biology and Coastal GIS. The programme will run until 2015.

Key characteristics of the programme are:

- Life skills courses form a key part of the programme (such as swimming, skipper training, field safety and first aid).
- Additional academic courses for second



*Students using the plankton pump to collect samples in Algoa Bay and filtering water to collect chlorophyll samples.*

language science students (e.g. academic writing, statistics, professional communications).

- Provision of field logistics for HBU researchers.
- Provision of specialised marine equipment and technicians to HBU researchers.
- HBU researcher/supervisor development courses.

ACEP believes that this programme of intensive one-on-one training which is not always provided in the traditional postgraduate environment at Universities produces the outcomes which are required to address current demographic imbalances. Working closely with HBUs, ACEP aims to produce top class black graduates from disadvantaged backgrounds through guided Honours and Masters programmes and specialized tutoring by mentors to cover possible gaps in their skill sets.

The support from the Universities and ACEP partner Institutions, in particular SAEON, has been excellent.

The Phuhlisa concept has the potential to be expanded in the next phase. Future plans are to expand the programme to target 50 students.

The African Coelacanth Ecosystem Programme (ACEP) is a DST Flagship programme which includes the following key partners: the Department of Science and Technology (DST), the South African Institute for Aquatic Biodiversity (SAIAB), the South African Environmental Observation Network (SAEON), the Department of Environmental Affairs (DEA), the Department of Agriculture, Forestry and Fisheries (DAFF) and the Agulhas and Somali Current Large Marine Ecosystem Project (ASCLME).

Source: [www.saiab.ac.za](http://www.saiab.ac.za)



*The ACEP Phuhlisa programme recently celebrated its first graduation at the University of Fort Hare. It is anticipated that the three year programme will produce 15 honours, 10 MSc and 2 PhD students.*



## Social Media and the Ma-Re Students network

*By Morgan John Brand*

University of Cape Town

In the age of the internet, social media tools offer a powerful way for scientists to boost their professional profile and act as a public voice for science. The use of online tools and cutting-edge technology is growing among scientists, but their adoption and acceptance remains limited across the wider research community.

Mid-2012 a group of students from the Marine Research Institute (Ma-Re) at UCT, took on the task of testing various forms social media as a tool to promote interdisciplinary connections. This involved the creation of the Ma-Re Student network which consisted of a Facebook group, Twitter account and an open blog. The group's main goal was to provide a link between postgraduate students from various disciplines, all within the broader marine arena and promote a collaborative future in Marine Research by connecting students in cyberspace through Social Media networks.

A Facebook group was created (MA-RE UCT Students) that currently has 140 members generating at least one post per day. The main objective of using Facebook was to create a forum that would allow like-minded people to share journal articles, advertise their thoughts and scientific opinions, post updates from conferences and meetings, and circulate information about professional opportunities and upcoming events.

Twitter has helped busy academics keep up with new research developments and is able to can also broaden a scientist's impact in the research world. Tweeting from conferences by discussing cutting-edge research developments can introduce other scientists to valuable content, and consequently provide networking opportunities for users who actively post during meetings. Twitter is also a useful tool in building an international presence that will be able to promote notable student achievements. @MARE\_UCT (Twitter handle) currently has 76 followers, including some notable and international organisations such as, @SimonGear,

@marinexplore (The Ocean's Big Data Platform), CSIROnews and more.

The final tool that has been chosen to aid in the mission is an [online Blog](#) which is available on the Ma-Re Website. Communicating science can be one of the most challenging tasks for a novice writer and developing the skill set to write effectively can be challenging. Students are encouraged to write about their experiences in a popular style in order to acquire the necessary skills and to develop confidence in our writing.

As social media continues to evolve and grow, the benefits become more apparent. MA-RE UCT Students Facebook group has produced a range of interesting posts such as, scientific journal articles, everyday thoughts, outreach opportunities, job listings and relevant funding opportunities. @MARE\_UCT was used to advertise #MAREForum, #MAREChatties and continues to grow an international presence. The Blog has generated 11 articles by six authors with some interesting stories. Finally the Facebook, Twitter, and blog have been successful in developing a student network with active posts which is a step towards a more collaborative future.

The use of social media in science should not be overlooked because there is no set way in which it can work but instead dedicated metrics need to be developed to supplement scientists' portfolios as social media may soon become an integral part of the researcher's toolkit.

Do your part by sharing an idea, asking and answering questions, posting links to your new publication and follow the postgraduate students involved at the Marine Research Institute at UCT.

- Join our group on Facebook – [MA-RE UCT Students](#)
- Follow us on Twitter - [@MARE\\_UCT](#)
- Read our [Blog](#)

For more information on social media in science please read through: Bik and Goldstein 2013. An Introduction to Social Media for Scientists. *PLOS Biology* 11 (4): 1-8.

## Open Day on the Yokosuka



During the Yokosuka stopover in Cape Town in April 2013, the Japan Agency for

Marine-Earth Science and Technology (JAMSTEC), invited the local marine science community to attend an open day on board the research vessel. *Yokosuka* is a support ship for *Shinkai 6500*, a manned submersible that can dive to depths of 6,500 meters – deeper than any other manned submersible for academic research. The vessel is undertaking a yearlong voyage (since January 2013) around the world to explore the diversity and distribution of marine organisms in the southern hemisphere. The voyage named, "QUELLE", is an acronym for "Quest for the Limit of Life". It also means "roots" or "origin" in German.

Representatives of JAMSTEC, the Japanese Embassy, MA-RE and SANCOR co-ordinated tours for 70 participants consisting of researchers, university postgraduates, dignitaries and a high school group. Crew members gave an overview of the operations of the vessel and the submersible which was going to be launched in hydrothermal vent fields, submarine seepage sites, the ultra-hadal zone of deep sea trenches and other extreme environments, where it will shed light on the habitable limits of life and its unique survival strategies.

The day was concluded with an exchange of memorial plates between the SANCOR Western Cape Representative, Dr Juliet Hermes and Captain Shinya Ryono (pictured below). More information on the QUELLE 2013 Voyage is available [here](#).





## SANCOR hosts student workshop in the Eastern Cape

SANCOR hosted a regional student workshop on 1 March 2013 to strengthen capacity building in science in the marine and coastal environment. The event, held at Rhodes University in Grahamstown, attracted 46 students from Eastern Cape universities and research institutions: Nelson Mandela Metropolitan University, University of Fort Hare, Rhodes University, Walter Sisulu University, the South African Environmental Observation Network (SAEON) and the South African Institute of Aquatic Biodiversity.

Organised by SANCOR Student Representative, Paula Patrick (based at NMMU) and the SANCOR Eastern Cape Representative and Vice Chairperson, Anusha Rajkaran (based at RU), this workshop was successful in stimulating interaction and promoting the exchange of information on developments in marine and coastal research. Dr Tommy Bornman (SAEON Elwandle Node Manager) delivered the keynote address summarising current regional research, priorities and gaps in the Eastern Cape, as the region is a Biodiversity Hot Spot. The seminar was followed by a series of presentations by the postgrad-

uates (honours, masters and doctoral students), summarising their research and current developments. The sessions covered a wide range of topics in diverse coastal ecosystems from phylogenetics to microbiology, seabirds to filter feeders (click here for the Abstract Book).

In the concluding feedback session, students agreed that the workshop provided a useful networking opportunity and enjoyed the informal atmosphere of sharing information among their peers. They also learnt about what other students were doing in their region and what further themes need to be explored.



*SANCOR Representatives Anusha Rajkaran (left) and Paula Patrick (right).*

## Trends in South African estuarine research

*Alan Whitfield*

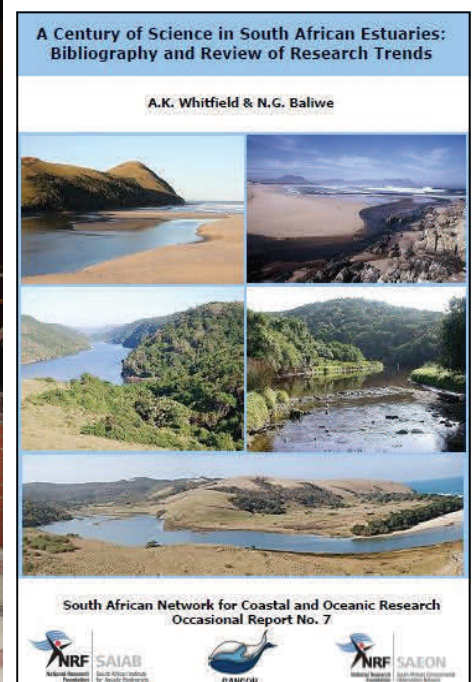
South African Institute for Aquatic Biodiversity

A bibliography of research in South African estuaries over the past century has just been published as a SANCOR Occasional Report (can be downloaded from the SANCOR website [here](#)). The production of this bibliography has facilitated a numerical analysis of research trends in various operational areas and some interesting findings have emerged, including:

- We know very little about the vast majority of our estuaries. Seventy-nine percent of our systems have little or no information, 10% have been moderately studied and only 11% have good or excellent information.
- There are more than 100 extremely small inlets along the coast about which we know almost nothing. Most of these micro-inlets do not have names and we are unsure as to whether they perform an estuarine function or not.
- Biological and ecological studies dominate the country's estuarine outputs, with the Eastern Cape and KwaZulu-Natal each having more publications



*Participants at the student workshop*





than the Western Cape.

- Not surprisingly, most postgraduate student theses deal with biological and ecological issues (69%), with physical and chemical orientated theses 21%, environmental management and fisheries theses 8% and socio-economic theses only 2%.
- In terms of MSc and PhD theses produced, NMMU leads the field with 36%, followed by UKZN 28%, RU 13% and UCT 12%.
- The number of theses (total = 249) produced per decade has risen exponentially since the 1950s and reached an all-time high during 2002-2011.
- Unfortunately it would appear that the contents of many of the more recent theses are not being published because the overall number of formal scientific outputs has declined markedly from the 1990s onwards.
- This decline has also coincided with a decrease in the number of highly active researchers publishing within this scientific field. Probable reasons for this decrease are the emigration, redeployment and retirement of a number of well-established estuarine scientists over the past two decades.

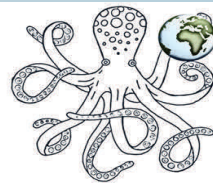
In summary, South African universities have recently trained a large cohort of young estuarine scientists but very few of them seem to have managed to carve out a permanent career within this field, possibly due to the limited number of suitable employment

opportunities in the relevant government and NGO sectors. Of major concern is the tailing off of formal scientific outputs on our estuaries – a trend that needs to be reversed in the light of the increasing human pressures being brought to bear on the ecological well-being of these systems. Limited involvement of socio-economic experts in the South African estuarine research field is another area of concern, especially as local, provincial and national government departments have all prioritized societal needs in estuarine research initiatives. However, on the positive side there is little doubt that our scientific understanding of South African estuaries has grown considerably over the past few decades, an important step forward in facilitating wise management of these valuable coastal ecosystems.

## New Editor –in-Chief for AJMS

Dr Stan Pillar, DAFF, was Editor-in-Chief of the *African Journal of Marine Science* (AJMS) for 17 years after he retired in 2012. This position has now been taken over by Dr Sheldon Dudley, who, after 25 years with the KwaZulu-Natal Sharks Board, joined DAFF as a Specialist Scientist in 2013. The *AJMS* is one of the leading marine science journals produced in the Southern Hemisphere and its standard and content compare well with influential international journals of similar research coverage worldwide.

[Source](#)



**SAMSS 2014**

Waves of Change – a Southern African Perspective

The Western Cape representatives of the South African Network for Coastal and Oceanic Research (SANCOR) are pleased to announce the 15<sup>th</sup> SAMSS meeting. While the overall theme is 'Waves of Change – a Southern African Perspective' all aspects of marine science will be accommodated in a wide range of thematic sessions.

### What to do now?

- Keep these dates free in your diary

## 15<sup>th</sup> Southern African Marine Sciences Symposium

Stellenbosch University  
15-18 July 2014

and those of your students!

- Make sure you have funding for your group to attend.
- Propose running a special session on your topic of research.
- Let the organisers know if you have suggestions for keynote speakers.

### For additional information contact:

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