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SANCOR'S CURRENCY AND STRENGTH IS INFORMATION

SANCOR Newsletter

R/V Phakisa opens new opportunities for marine research

By

Penny Haworth

South African Institute for Aquatic Biodiversity

Biodiversity's second coastal research vessel, R/V *Phakisa*, has started work. The vessel is a custom built, 14.5m Legacy Cat commissioned by the African Coelacanth Ecosystem Programme (ACEP) and built by Ocean Legacy Marine with funding secured from the National Research Foundation, through the Department of Science and Technology.

Recently completed in Port Elizabeth, the South African Institute for Aquatic



Powered by jet-propulsion engines, R/V *Phakisa* will enable research in strong current conditions. Photo – Ryan Palmer © NRF-SAIAB.

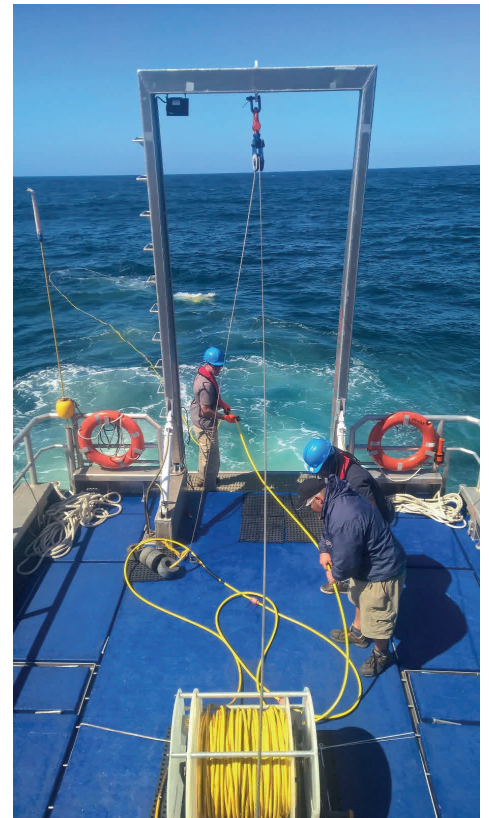
Moored at the Durban Marina, R/V *Phakisa* will work out of Durban along the KZN coast as a platform for research institutions in the province. Her crew of two technical staff is hosted by the Oceanographic Research Institute (ORI) at the South African Association for Marine Biological Research (SAAMBR), based at uShaka Marine World.

R/V *Phakisa* has been specially designed as a research platform and is capable of accommodating and deploying a variety of specialised equipment used for surveying the coastal waters of South Africa’s east coast. State-of-the-art jet propulsion engines with advanced navigational equipment allow for extremely accurate and fine scale maneuverability without the risks posed to over-the-side gear by propellers. The crew use an A-frame and hydraulic winch to deploy and operate heavy sampling gear such as benthic grabs, demersal trawls and water samplers, over the stern. The vessel can stay out at sea over-night, has a cruising speed of 18 knots,

can operate up to 40 nautical miles off shore and has a range of approximately 250 nautical miles.

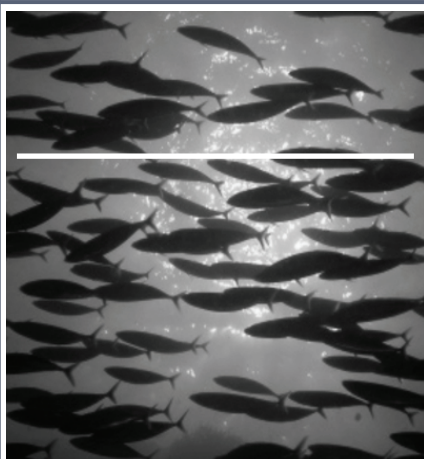
The vessel is custom built to allow remotely-operated underwater camera observation work to be undertaken in difficult, strong current conditions, which hasn’t been possible for marine researchers up until now. This opens up a completely new window to South Africa’s eastern shelf edge. This environment is driven by one of the world’s largest western boundary currents, the Agulhas Current, which transports nutrients and plays a large role in determining climate conditions in the region.

R/V *Phakisa* has been named in recognition of Operation Phakisa, a presidential initiative to unlock South Africa’s Ocean Economy. The vessel will be available to the South African marine science community on a competitive basis through the ACEP Open Call. ACEP partners in KwaZulu-



Deploying the ROV using the A-frame and hydraulic winch. Photo – Nick Riddin © NRF-SAIAB

Natal include ORI, Ezemvelo KZN Wildlife, the University of KwaZulu-Natal, the University of Zululand and the KZN Sharks Board, amongst others. ✂



ECOFISH

STOCK ASSESSMENT INTERPRETATION COURSE

- ◆ 18-21 April 2017, Cape Town. Apply by end of March.
- ◆ [Full details here.](#)

Data availability from the Agulhas System Climate Array (ASCA)

By

Tamaryn Morris

*South African Environmental
Observation Network*

In order to understand global change and the impacts on South Africa, the establishment of sustained measurements of key biomes are essential. Of focus here is a long-term time series within the offshore marine environment of the Agulhas Current, the strongest western boundary current in the Southern Hemisphere. The Agulhas Current directly impacts weather and climate both over Southern Africa and in to the Northern Hemisphere through the transport of heat and salt, and is also itself impacted by global change, and in turn propagates these altered dynamics, creating a feedback loop that is not fully understood.

The Agulhas System Climate Array (ASCA – Figure 1, <http://asca.dirisa.org/>), consisting of seven tall and two shelf moorings with Acoustic Doppler Current Profilers (ADCP), single-point current meters and MicroCats, and five Current and Pressure-Inverted Echo-Sounders (CPIES), has been established on the east

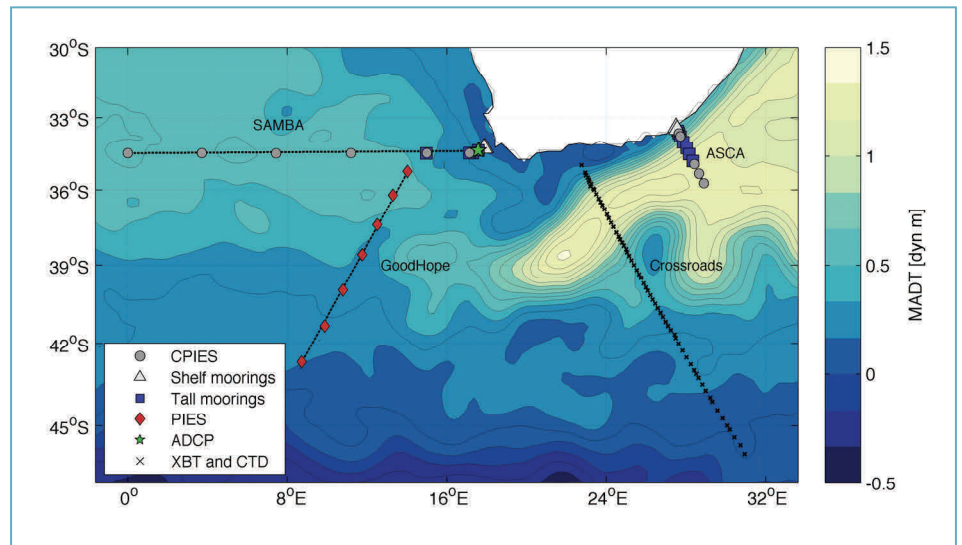


Figure 1: Schematic and instrument deployments for the large mooring arrays deployed around South Africa (Morris *et al.*, submitted). The ASCA moorings are a combination of shelf and tall moorings and CPIES deployments, and are shown as a transect across the Agulhas Current.

coast of South Africa (34.5° S) to monitor this heat and salt transport (Figure 2). The array was designed to capture the meandering and non-meandering state of the Agulhas Current, with moorings deployed 200 km offshore, with the additional CPIES deployments extending the array to 300 km offshore. The objective of the array is to determine heat, salt and volume transport along the Agulhas Current over time and to determine the regional and coastal impacts of this powerful western boundary current. The ASCA array enhances previous work (Beal *et al* 2015, Beal and Eliport 2016) by including additional

instrumentation such as MicroCat sensors to collect essential data on temperature and salinity changes over time. The array of moorings, along with surveys of Conductivity, Temperature and Depth (CTD) stations and ship-borne ADCP transects, has begun to provide a time-series of the Agulhas Current. This provides the baseline on which changes to flow dynamics, volume transport and mesoscale variability can be studied.

It has been suggested that monitoring the Agulhas Current is like “having your finger on the pulse of climate change” hence a comprehensive understanding

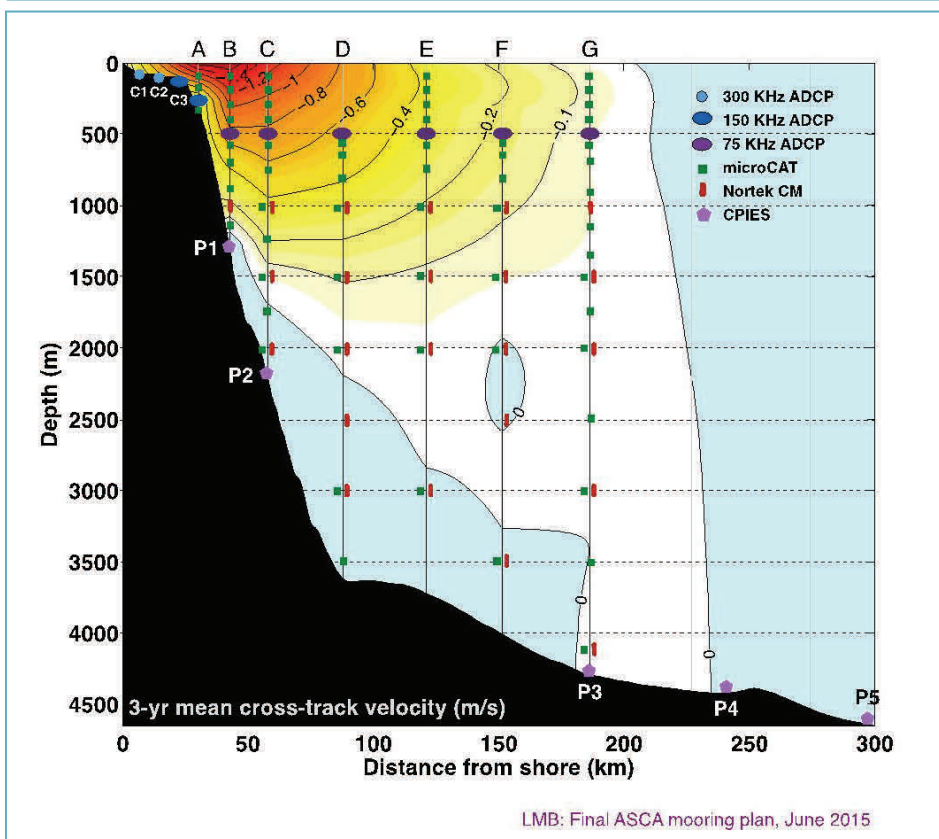


Figure 2: The full ASCA array of shelf and tall moorings, along with CRIES placements. The mooring design is overlaid on a composite three-year cross-track velocity vertical section illustrating the mean placement and strength of the Agulhas Current. Data and figure prepared by Prof. Lisa Beal, Rosenstiel School of Marine and Atmospheric Science, University of Miami.

through sustained detailed observations is a minimum requirement to developing knowledge of a changing planet. Ideally, ASCA would need to be successfully deployed for a minimum of ten years to begin addressing key questions, with the first five years for establishment, to build scientific and technical capacity within South Africa and produce results from the acquired data. ASCA is a multi-institutional program and provides a platform for South African researchers

and students keen to study global change within the Agulhas Current.

The data from three snap-shot CTD transects across the mooring line, associated underway ADCP data and the first year of moored instrument data is currently available for the marine science community to make use of. The moored instrument data consists of ADCP currents at 500 m, and

depth specific CTD and current measurements along the mooring line to the seafloor (depths were user defined). Access to the data at this stage is still through the ASCA project office hosted at the SAEON Egagasini Node, but will be made available through repository systems when they become available (i.e. Oceans and Coasts MIMS system).

For more information, access to the data already available or if you would like to become involved with the ASCA project as a student or collaborative researcher, please contact the ASCA Coordinator at tammy@saeon.ac.za

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Beal LM, Elipot S, Houk A, Leber GM. Capturing the Transport Variability of a Western Boundary Jet: Results from the Agulhas Current Time-Series Experiment (ACT). *J Phys Oceanography*. 2015; 45: 1302-1324. <http://dx.doi.org/10.1175/JPO-D-14-0119.1>

Beal LM, Elipot S. Broadening not strengthening of the Agulhas Current since the early 1990's. *Nature*. 2016; 540: 570-573. <http://dx.doi.org/10.1038/nature19853>

Ethical considerations for field research on fishes What are the ethical requirements of journals publishing primary research on fishes?

By
**Penny Haworth and
 Rhett Bennett**
*South African Institute for
 Aquatic Biodiversity*

In a recent Huffington Post [Blog](#) Marc Bekoff, Professor Emeritus of Ecology and Evolutionary Biology at the University of Colorado, reviews a set of essays concerning the question of whether or not fish feel pain. In the blog he links to an article written in 2007 in which he says, "Numerous aquatic animals are closely linked to the wholeness of many ecosystems, and how they fare is tightly associated with the integrity of communities and ecosystems. By paying close attention to what we do to them, why we do what we do, and where and when we do it, we can help maintain the health of individuals, species, populations, and ecosystems" ([Diseases of Aquatic Organisms, Vol 75:85-98, 2007](#). p 96).

NRF-SAIAB is committed to ethical conduct with regards to the treatment of animals and the environment, and conforms to The South African National Standard for the Care and Use of Animals

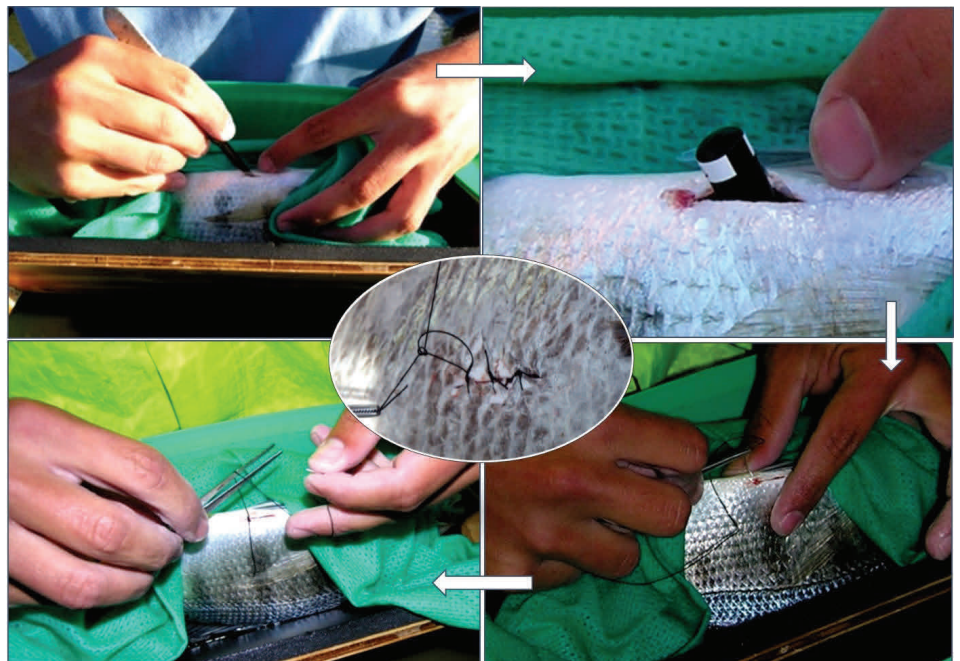
for Scientific Purpose (SANS 10386:2008), stakeholder norms and to international publishing requirements.

To unravel some of the complexities of these ethical considerations, especially with regard to field work in aquatic environments, and because of the apparent lack of consistency in the ethical requirements of scientific journals, in 2015 a group of postdoctoral fellows at SAIAB led by Dr Rhett Bennett, teamed up with Principal Scientist, Professor Olaf Weyl, to author a paper entitled [‘Ethical](#)

[considerations for field research on fishes’](#). This was published in the Journal [Koedoe](#) in December 2016.



A circle hook is carefully removed from the mouth of a white steenbras. (Photo - Gareth Grant © SAIAB)



Surgical implantation of a small transmitter for acoustic tracking of a juvenile white steenbras in the East Kleinemonde Estuary. This study formed the basis of Rhett Bennett’s PhD study. The insert shows a close up of sutures on an acoustic implant on a kob. (Photos Paul Cowley © SAIAB)

The authors undertook a review of the ethical requirements of 250 peer-reviewed, ISI-rated journals publishing primary research on fishes. Their analysis revealed that nearly half (46%) had no mention of ethics, treatment of animals or ethical requirements for publication in their author guidelines or publication policies. However, 18% of the journals reviewed did identify a specific set of ethical guidelines to be followed before publishing research involving animals.

The article, which consolidates the ethical considerations common to most animal care policies, legislation and guiding documents, is intended to assist researchers, managers, conservation practitioners and research organisations when designing field studies on fishes, applying for ethical clearance and developing institutional ethical guidelines. It also aims to provide a useful resource for journal editorial committees developing ethical guidelines for publication of research involving live fishes.

Owing to the diversity of research techniques, study species and aquatic environments in which scientists at NRF-SAIAB work, all research involving live animals requires clearance by an internal Animal Ethics Committee. The Institute also maintains an annually reviewed [Animal Ethics Policy](#) and all new research projects involving field studies on fishes

are submitted to the committee for prior approval.

According to the authors, ethical considerations for investigators undertaking field research on fishes, common to most animal care policies, legislation and guiding documents, include:

- adhering to relevant legislation,
- minimising sample sizes,
- reducing or mitigating pain and distress,
- employing the most appropriate and least invasive techniques and
- accurately reporting methods and findings. ✂

TRAINING PROGRAMME IN OCEAN GOVERNANCE FOR AFRICA

Offered by the IOI-SA
in collaboration with IOI Headquarters

4-29 September 2017

Cape Town

The course is designed to meet the need within Africa for awareness and training in ocean governance. It works towards building a sustainable core of experts on ocean governance on the continent. [Full details here.](#)

Application closing date

15 April 2017



International Ocean Institute
Southern Africa



POGO FELLOWSHIPS FOR ON-BOARD TRAINING ON AN AMT CRUISE

This initiative provides hands-on, sea-going experience to young scientists from developing countries, and the opportunity to be involved in an internationally renowned scientific programme. This fellowship programme is open to scientists, technicians, postgraduate students (PhD/MSc) and post-doctoral fellows involved in oceanographic work.

[Website](#)

Application closing date

31 March 2017

Spatial representation of marine alien species in South Africa

By

Siyasanga Miza

*South African National
Biodiversity Institute*

Around the world the invasion of the marine space by alien species is occurring at an increasing rate and coastal systems including rocky intertidal shores, sandy bays, estuaries and harbours, are becoming increasingly impacted and transformed by these species. The transfer of marine alien species involves a variety of vectors and pathways, such as live food and aquarium, ballast water discharge and hull fouling or biofouling of ships and aquaculture. In South Africa marine bio-invasions research has received quite a lot of attention over the past decade to date. This is evident in the amount of published research papers on the subject. As a result 89 alien species have been recorded in the marine

environment but only 12 of these have been recognised as invasive according to the National Biodiversity Assessment 2011. However, the National Environmental Management: Biodiversity Act (NEMBA) has listed 21 invasive and 9 prohibited alien and invasive species. Alien species are defined as species whose presence in a region is attributable to human actions that enabled them to overcome fundamental biogeographical barriers (i.e. human-mediated extra-range dispersal). While invasive species are defined as alien species that have self-replacing populations over several generations and that have spread from their point of introduction (Robinson *et al.*, 2016). Many of these alien and invasive species are found in artificial habitats (e.g harbours) where they are protected from the wave-exposed nature of the South African coastline.

Impacts of marine alien and invasive species: Ecological, Economic and Social

Biological invasions are one of the direct drivers of biodiversity loss and a major pressure on the functioning of ecosystems. In marine ecosystems, alien species may become invasive and displace native species; cause the loss of native genotypes; modify habitats; change community structure; affect food web properties and ecosystem processes; impede the provision of ecosystem services; impact human health and cause substantial economic losses. Some of these species are listed in the NEMBA.

The Mediterranean mussel (*Mytilus galloprovincialis*) forms dense, multi-layered beds that monopolise space on intertidal rocks. They displace indigenous mussels and large limpets, although smaller species flourish within their beds. The Pacific oyster (*Crassostrea gigas*) is



Mediterranean mussel (Photo by Siyasanga Miza)



Pacific oyster (Photo by Siyasanga Miza)

found in Saldanha Bay, Kleinsee and Algoa Bay. This is an aquaculture species here in South Africa but in other parts of the world it is invasive and therefore caution should be taken to prevent it from spreading outside aquaculture farms. It also plays a role in introducing associated alien species.

The Sea vase ascidian (*Ciona robusta*) occurs in harbours and mariculture facilities along the entire coast where it is an important fouling organism. Currently the ecological impacts of this species remain unknown. However, it has negative economic impacts in the mussel rearing industry due to its dominance of hard substrate communities particularly in harbours. In South Africa, the shell worm (*Boccardia proboscidea*) is a secondary borer of cultured abalone. Recently it has been recorded in Saldanha Bay outside of aquaculture facilities. This distribution can be detrimental to the aquaculture farms in the area in terms of reducing the condition of cultured abalone, thereby increasing production costs.

The European shore-crab *Carcinus maenas* was first detected in Table Bay Harbour and is thought to have arrived by attaching to international oil exploration vessels. This invasive crab supports extensive populations in Table Bay and Hout Bay Harbour. This crab

feeds on a wide range of shellfish and therefore it is feared that it could be disastrous for local biota of the West Coast National Park which has been predicted to be highly vulnerable to predation by *C. maenas* if it spreads to Saldanha Bay. Additionally, Saldanha Bay is one of the main areas that support shellfish mariculture in South Africa therefore this crab could potentially have significant economic implications for both mussel and oyster operations.

The sea anemones *Metridium dianthus* and *Sagartia ornata* were first recorded in Table Bay Harbour and Langebaan Lagoon respectively. However, in 2009 both these species were recorded on petroleum infrastructure on the Agulhas Bank and are now recognised as invasive. *S. ornata* still remains restricted at Langebaan lagoon but has exhibited a change in its distribution. *S. ornata* preys on indigenous sand-dwelling polychaetes and amphipods. The Pacific barnacle *Balanus glandula* occurs between Elands Bay and Misty Cliffs (Scarborough, Cape Point) on the west coast. *B. glandula* has reportedly displaced populations of the indigenous and formerly abundant *C. dentatus* species which is now very rare on South African west coast shores. It has altered rocky shore habitats on the West Coast and continues to spread.

The reef-forming polychaete *Ficopomatus enigmaticus*, is an estuarine tube-worm that forms extensive colonies of intertwined tubes. This species is easily transported on the hulls of recreational boats, buoys and anchors and can be a major pest, fouling boats and constricting pipes and channels. *F. enigmaticus* changes the physical environment by creating a network of tubes. This creates habitat complexity, which plays a major role in determining the abundance, diversity and distribution of associated organisms and alters the physical characteristics of the system. It also forms large colonies that foul the hulls of boats and are also reported to injure paddlers and swimmers as they are calcareous. The black coral worm, *Dodecacerea fewkesi*, is also a reef-building polychaete and it is restricted to Table Bay Harbour. This worm creates hard coral-like colonies that cover the harbour walls and are difficult to remove.

Help map the distribution of marine alien species!

The SANBI has developed a project on [iSpot](#) (a citizen science platform) the aim of which is to map the overall distribution and occurrence of marine alien and invasive invertebrate species along the South African coastline. This is also to determine the extent to which they have spread in order to understand their ecology and for monitoring and

reporting purposes. Additionally, we want to create a marine alien and invasive invertebrate species atlas. Members of the public can assist by uploading images of marine invertebrates on iSpot. For a better understanding of what we are looking for, the SANBI has a website that houses information in the form of [species pages](#) for marine species including alien and invasive species.

For more information and/or a comprehensive list of references related to the topic, please contact Siyasanga Miza at s.miza@sanbi.org.za

Reference

Robinson, T.B., Alexander, M.E., Simon, C.A., Griffiths, C.L., Peters, K., Sibanda, S., Miza, S., Groenewald, B., Majiedt, P., Sink, K., 2016. Lost in translation? Standardising the terminology used in marine invasion biology and updating South African alien species lists. *African Journal of Marine Science* Vol 38, Issue 1, pp 129-140. <http://dx.doi.org/10.2989/1814232X.2016.1163292> ✂

Inaugural meeting of the Alien Species Risk Analysis Review Panel



The South African National Biodiversity Institute (SANBI) hosted the first inaugural meeting of Alien Species Risk Analysis Review Panel (ASRARP) on 29 November 2016 in Kirstenbosch. The panel was established in terms of the agreement between SANBI and the Biosecurity Directorate of the Department of Environmental Affairs (DEA). The newly established Alien Species Risk Analysis Review Panel is comprised of about 22 members from around the country. The diverse representation on the panel ranges from scientific experts, government, private sector and provincial representatives. The panel is currently

chaired by Mr. Philip Ivey from SANBI and co-chaired by Ms Nomahlubi Sishuba from DEA. The panel members will serve from 2016- 2018, then new panel members will be recruited.

The role of the panel will be to (but not limited to) to review the risk analysis of regulated species, provide scientific guidance and ensure scientific quality on the risk assessments carried out under the auspices of the NEMBA regulation. The panel has no executive or decision-making powers but serves the advisory role to the Department of Environmental Affairs. The panel to meet twice a year.

See [page 31](#) of Government Gazette no. 40166 for an updated list of alien and invasive species. For more information the panel may be reached at: invasiveriskpanel@sanbi.org.za ✂

MARINE STEWARDSHIP COUNCIL

The MSC Scholarship Research Program 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 and other support. Application deadline: 3 April 2017. For more information, [click here](#).

First Ocean Acidification Coordination Meeting in Africa

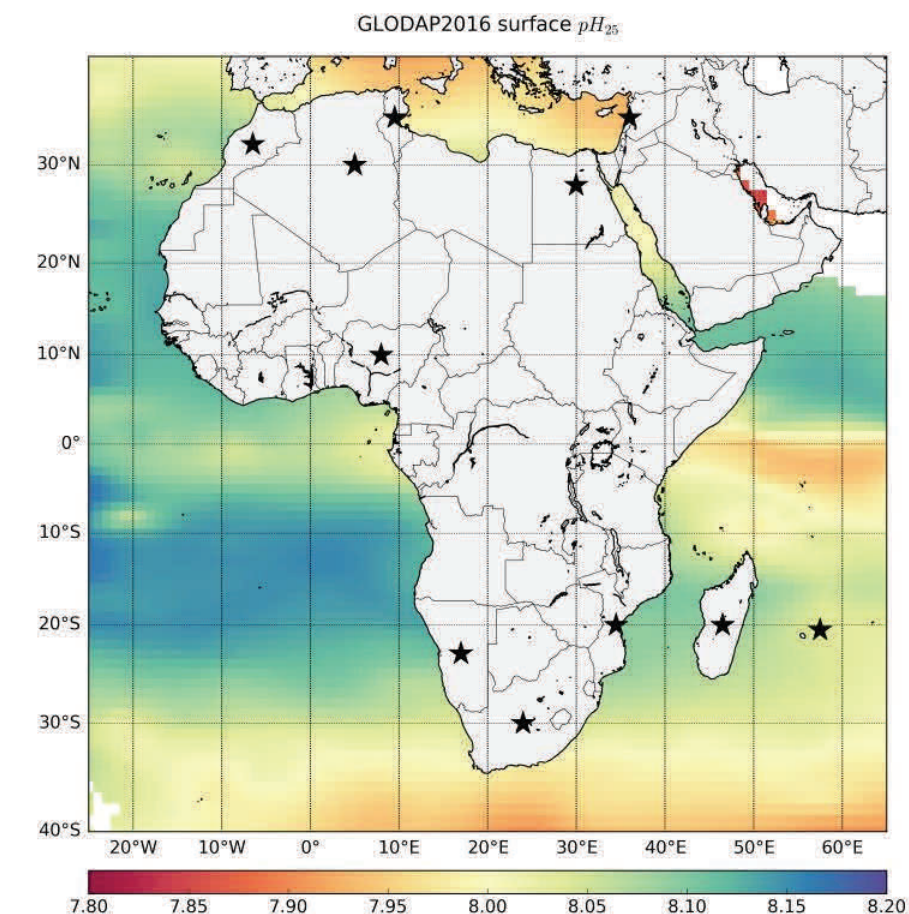
By

¹Warren Joubert,
²Chibo Chikwililwa and
³Sam Dupont

¹CSIR
²University of Namibia
³University of Gothenburg

In an effort towards coordinating an Ocean Acidification (OA) networking initiative in Africa, the first coordinating meeting hosted by Warren Joubert (CSIR, South Africa) and Chibo Chikwililwa (UNam, Namibia) and facilitated by the NOAA Ocean Acidification Program and the Ocean Foundation was held on 20 October 2016. The meeting comes on the back of recent training workshops held in Africa in 2015 (Cape Town) and 2016 (Mozambique and Mauritius) hosted by local and international partners. A short video of the Cape Town workshop can be found [here](#).

The meeting format comprised of an interactive webinar with roughly 40 participants, where a panel of OA researchers introduced the aim of an OA-Africa network facilitated a discussion based on inputs from the participants. The African countries represented



Participating countries in the inaugural Ocean Acidification Africa Network webmeeting, overlain on the GLODAP 1 degree climatology of surface ocean pH at standard temperature and pressure (Lauvset et al., 2016).

included Algeria, Egypt, Lebanon, Madagascar, Mauritius, Morocco, Mozambique, Namibia, Nigeria and South Africa.

The overall objective was to initiate an OA-Africa Network, in order to coordinate and advance OA

observations and research in Africa. Furthermore, the ambition of the OA-Africa Network, is to build an observation based network of OA research, identify and share current research activities and experiences, highlight potential training and funding opportunities, collaborate on research projects, expand OA observational and experimental capacity,

promote awareness of OA activities, improve coordination in the region and contribute to the Global Ocean Acidification Observation Network (GOA-ON, <http://www.goa-on.org/>) initiative. Moreover, the network aims to address policy requirements supported by robust scientific support to inform appropriate management action at national and international levels.

A presentation by Cristian Vargas of University of Concepcion, Chile, highlighted their recent experience in setting up the Latin America Ocean Acidification Network (LAOCA). Alex Harper of NOAA Ocean Acidification Program also introduced the scientific mentoring opportunities for emerging OA researchers provided through Pier2Peer initiative. Two such mentors (Jan Newton and Chris Sabine) were used as examples and they highlighted their scientific background as well as their current research interests and support for the OA-Africa initiative.

The interactive poll questions revealed that a steering committee should comprise of a representative from each participating country. The group showed particular interest in chemical observations and biological experimentation, along with facilitating policy development in respective countries. A questionnaire is currently

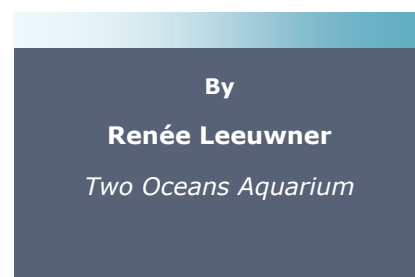
being finalised by Andrew Dickson (USA) and Sam Dupont (Sweden) under the umbrella of the IAEA INT7019 project to evaluate opportunities and challenges for OA research throughout Africa. It will be distributed to all participants to assess the current state of research and priorities in the respective countries. An overwhelming interest in professional networking and collaboration outweighed funding as a priority for participants. Training and access to infrastructure were also identified as a factor inhibiting progress in certain countries.

Going forward, OA-Africa aspires to foster observational and experimental networking opportunities to enhance collaboration internally and with international partners to advance ocean acidification research in Africa.

References:

Lauvset, S.K., R. M. Key, A. Olsen, S. van Heuven, A. Velo, X. Lin, C. Schirnick, A. Kozyr, T. Tanhua, M. Hoppema, S. Jutterström, R. Steinfeldt, E. Jeansson, M. Ishii, F. F. Perez, T. Suzuki, S. Watelet., (2016). A new global interior ocean mapped climatology: the 1°x1° GLODAP version 2, *Earth Syst. Sci. Data Discuss.*, doi:10.5194/essd-2015-43

Two Oceans Aquarium awarded prestigious Diamond status



The Two Oceans Aquarium has been awarded the prestigious Diamond status by the Heritage Environmental Rating Programme. This classification is awarded to participants in the Heritage Programme who have maintained Platinum status for 5 consecutive years and have shown continued improvement in their sustainability efforts. There are currently only two other Diamond status properties in South Africa – the Table Mountain Aerial Cableway (2015) and Tsogo Sun's Drakensberg Sun Resort (2013).

"I am extremely proud of the Two Oceans team which has made this a reality and in particular the handful of people who drive our sustainability programmes daily. We are on a sustainability journey and this award is

affirmation that we are on the right track, not that we have reached the end. We still have a long way to go! Our success so far is a result of dedicated staff, with an eagerness to reduce our footprint, and a partnership with Heritage, which requires constant improvements in all areas of our operation. Constant improvement is achieved through accurate measurement and reporting, goal setting, and planning – therein lies the benefit of external auditing and partnering with Heritage. There is just no time to sit back and polish our diamond,” said Michael Farquhar, CEO of the Two Oceans Aquarium.

The Two Oceans Aquarium aims to raise awareness of environmental issues and promote conservation. This is in line with its vision of abundant and healthy oceans and its mission to inspire support for their future wellbeing. It is therefore imperative that the Aquarium leads by example, and actively strives to reduce the impact of its operations on the environment. Through its environmental charter, which includes aspects of legislation, resource usage and communication, the Aquarium clearly outlines its sustainability goals. (Full charter [here: http://www.aquarium.co.za/content/page/sustainable-practices-landing](http://www.aquarium.co.za/content/page/sustainable-practices-landing))

“Sustainability in the Aquarium is a team effort and our achievements to date are as a result of an increasing awareness among our staff, volunteers, suppliers and partners as well as a commitment to environmentally-responsible practices as far reaching as possible. While we have much still to do on our journey it has been extremely gratifying and inspiring to see the shift in people’s attitudes and behaviour over the years and to see sustainability move from being on the fringe of the business to now being a core focus area,” said Helen Lockhart, Communications & Sustainability Manager.

The Aquarium joined the Heritage Environmental Rating Programme in 2007 on Silver status. Year-on-year improvements saw the Aquarium rise through the ranks and achieving Platinum status in 2011. The Aquarium has maintained this status since, and through continued efforts and improvement to its sustainability practices, has therefore qualified for Diamond status.

“Achieving Diamond Status in the Heritage Programme is validation of the continual efforts of the team at the Two Oceans Aquarium and their commitment to maintaining world-class standards of sustainability across their



operations. We are extremely proud of what has been achieved and we are confident that the team will continue to set high standards in the coming years,” said Greg McManus, Director of The Heritage Environmental Management Company.

The Heritage Environmental Management Company was first established in 2001 as an environmental rating initiative for the hospitality industry in South Africa. Since then, the company has expanded its certification categories and product range to provide certification solutions to all facets of the service industry including hotels and accommodation; game lodges and resorts; zoos and aquaria; meetings and events; golf courses; residential estates, banking, retail businesses and business services. Heritage is currently being applied by over 150 businesses across eight African countries and is recognised as the leading certification brand in Africa. ✂

Equipping young scientists to play a role in the management of ocean space

By

**Kaylee Smit &
Mandy Lombard**

*Marine Spatial Planning
Research Group, Nelson
Mandela Metropolitan
University*

“Ocean space is getting more and more crowded, and we are pushing the boundaries of extraction further and further. We need to learn how to manage our extractive ocean uses sensibly, while maintaining healthy ocean ecosystems. We need to equip young professionals to deal with science, policy and socio-economic aspects of managing ocean use, and for this we need trans-disciplinary research.” – Prof Mandy Lombard, DST/NRF SARCHI Chair, Nelson Mandela Metropolitan University (NMMU): Marine Spatial Planning (MSP).

South Africa has more ocean space than land, which calls for an effective and coordinated governance strategy to ensure that the ocean is utilised by all sectors in a productive and sustainable way. This is the overarching “umbrella” of the recent drive to unlock the ocean economy with sustainable ocean development at the forefront of



The MSP research group with other participants at the 13th National Biodiversity Planning Forum, hosted by SANBI at the Wilderness Hotel.

Operation Phakisa. Operation Phakisa is a South African government initiative established in July 2014 to address challenges of poverty, inequality and unemployment. “Phakisa” means “hurry up” in Sesotho, reminding us that this is a fast-tracked process to accelerate the economic growth of South Africa. The four main areas of growth in the ocean economy include offshore oil and gas exploration, marine transport and manufacturing, aquaculture and other marine and maritime sectors. Luckily for those of us in the business of trying to protect the ocean, the foundation of this includes

integrated marine governance and protection services. Operation Phakisa has established three main focus areas within this framework:

1. Integrated framework and governance;
2. Ocean protection;
3. Marine spatial planning. And that is where we come in.

With a need to incorporate social, economic and ecological objectives, the drafting of a National MSP framework was proposed to address challenges including a system to manage multiple

users, multiple information sources and to consolidate research, monitoring and ecological understanding. MSP is defined as “a process of analysing and allocating the spatial and temporal distribution of human activities in the marine environment to achieve ecological, economic and social objectives, usually specified by a political process.” It is an adaptive and systematic process that can be tailored to the specific objectives and needs of each country or region. In South Africa this complements single-sector policies and planning, and aims to provide an integrative overarching framework that can incorporate multiple stakeholders. A national MSP bill was drafted by the Department of Environmental Affairs (DEA) in 2016 which was open for public comment, with the aim to establish and implement this framework around the South African EEZ. In summary, this bill constitutes five main components, the first being an information base for ecological understanding, including any relevant social and economic information. The second constitutes a framework with a set of principles to establish a spatial plan for the marine environment, which underpins the third component of coordinating sector planning to implement, monitor and evaluate the spatial plan. The fourth component includes allocating the spatial and temporal distribution of human activities in achieving the overall goals of MSP.

Lastly, this will all rely on the effective implementation, monitoring and evaluation of the national marine spatial plan.

This opened a much-needed gap in South African marine research, where NMMU saw the need to develop MSP skills to address these policies. Within the Institute for Coastal and Marine Research (CMR), a SARChI chair in MSP joined the cross-disciplinary group whereby Professor Mandy Lombard was appointed to lead a group of young, aspiring scientists. With Mandy’s vision to establish a trans-disciplinary and multi-institutional network of students and collaborators, a virtual MSP lab was set-up with students based all over the country to address and answer important research questions and develop a valuable skill set.

The focus of this group is to inform current policies and plans, building on the considerable groundwork of spatial planning research in South Africa, in particular by the South African National Biodiversity Institute (SANBI), led by Dr Kerry Sink. This will be done by further understanding the environmental and ecological functioning of marine systems to inform an evidenced-based approach to decision-making and systematic plans to how we use the ocean. This is built

on an ecosystem-approach, realising the need to incorporate multiple disciplines, which underlines the current student projects. The MSP lab includes four Masters students, three PhD students and two Postdocs. Thuli Daweti (MSc) is investigating the value of Marine Protected Areas to biodiversity, as she uses baited remote underwater video (BRUV) techniques to understand deep-water fish assemblages and how they correspond to current bioregion classifications. Hannah Raven (MSc) is collecting baseline ecosystem information from Algoa Bay to monitor impacts of ocean use in the region, while Summer Newton (MSc) is looking at an eco-tourism approach to MSP, as she values the contribution of SCUBA Diving to marine ecosystem services. Summer and Thuli are also representatives of the Wildlands Ocean Stewards program. Tsaemelo Malebu, the (lucky) token male of the group is dedicated to mapping



Students in action collecting fish community data using stereo-baited remote underwater video systems (BRUVs).

marine ecosystem services, identifying strategic fisheries resource areas to support MSP. Economic trade-off analyses incorporates a novel, monetary approach to marine science, with Jodi Reed (PhD) analysing legal instruments to support spatial management of fisheries for ecosystem-based management. My (Kaylee Smit, PhD student) project broadly aims to measure ocean health, focusing on identifying indicators and developing indices to assess ecosystem condition of rocky reefs in the Natal bioregion. Our two post-doctoral research fellows are working towards understanding top predator movement patterns to inform marine planning and management. Gwenith Penry is assessing the abundance, spatio-temporal distribution and molecular identity of the resident South African Bryde's whale population, while Theoni Photopoulou is working on developing statistical models to better understand the movement ecology of marine top predators in response to environmental variables. This portrays the diversity of the MSP research group at NMMU, which underpins the overall multi-sectoral and cross-disciplinary approach of MSP in South Africa.

There is however a lot more to the post-graduate lifestyle than just fieldwork, data analysis and writing. Dr Angus Paterson, the Director of the South African Institute for Aquatic Biodiversity

(SAIAB), said to me earlier last year, "You are doing your PhD, remember you are trying to get a qualification, not a certificate," and that is how we kicked off our first year as the MSP student group at NMMU. We need to remember as postgraduate students that it's not just about the

science, producing a thesis and hopefully a few publications along the way. It's about learning, as much as we can, and trying to equip ourselves in the best way possible to be able to make a valid contribution to science, society and research in South Africa as we eventually take our final steps out of the ever-alluring student world. And we did this by attending a multitude of workshops, conferences, meetings and gatherings where we began to establish friendships, professional relationships and a network of people in the science community.

The first milestone was where we all got to showcase our projects, presenting at the 13th National Biodiversity Planning Forum, hosted by SANBI, at the Wilderness Hotel in June



Some of the MSP students enjoying their time at the writing workshop in Cape Saint Francis, with Dr. Rob Anderson and Prof. Richard Cowling (absent from photo).

last year. The following week, before we dispersed to our respective bases, some of us participated at the SANCOR Eastern Cape Student Meeting, hosted at NMMU, which preceded the Gilchrist Evening Lecture by Prof Coleen Moloney. We then found ourselves back at the Wilderness Hotel to attend a two-day Research Skills Workshop as part of the Congress of the Grassland Society of Southern Africa. Despite us being in the minority at a predominantly terrestrial-based conference, this was something I would highly recommend to any postgraduate students, young or old, working in the sea or on land. Topics ranged from sampling design and structuring research questions, to method types and statistics. We participated in interactive sessions regarding proposals, funding, presenting our research and communication, to

mention a few. The advice, skills and knowledge that we acquired over these two days was incredibly valuable, I only wished I had something like that to precede my Honours or Masters degree, a sentiment echoed by many at the workshop. Following this, three days in the beautiful Cape Saint Francis saw the anticipated writing skills workshop, hosted by Prof Richard Cowling and Dr. Rob Anderson, a skill that is imperative if we are to communicate our research and ideas to the scientific community and the general public. These were just some of the activities that put us in good stead for the remainder of our postgraduate journey, as we slowly acquire the necessary skills, knowledge and experience to achieve excellent results and become inspiring young marine scientists. I for one am looking forward to another year with the MSP research group as we embark on this adventure together, connected by the common goal of working towards protecting our captivating marine environment.

Thank you to all our collaborating institutions and organisations: Iziko museum, SANBI, SeaKeys, UWC, Centre for Dolphin Studies, NMMU, NRF, SAIAB, CMR, ORI, Ezemvelo KZN Wildlife, UKZN, CSIR, Wildlands, Grindrod, The Blue fund, CPUT, DAFF, DEA, ACEP, SAEON.



Net loss of endangered humpback dolphins: integrating residency, site fidelity, and bycatch in shark nets

By

Shanan Atkins

*University of the
Witwatersrand*



The Endangered humpback dolphin *Sousa plumbea*.

Dolphins, sharks, turtles and other large marine animals are caught in fishing nets that were intended for other marine creatures. This incidental catch, known as bycatch, is a pressing conservation problem which remains largely unresolved. One rather unusual use of fishing nets is to catch and kill sharks in order to reduce local populations of sharks which should reduce bathers' risk of shark attack. Besides killing the target sharks, these "shark nets" set by bather protection programmes in KwaZulu-Natal and Australia cause the unintentional deaths of a variety of other species, such as the humpback dolphin which is endangered.

Indian Ocean humpback dolphins have specialised habitat requirements: they occur only in shallow water less than 20m deep and are invariably found within 2km of the shore. This narrow distribution is further limited by a

preference for areas near estuaries. The already small population of humpback dolphins in South Africa is unlikely to cope with the annual average of seven deaths in KwaZulu-Natal's shark nets.

In order to design effective strategies to minimise these mortalities, it might help if we understand how and when humpback dolphins use the areas in which shark nets are set. Previous work found that, in KwaZulu-Natal, Richards Bay is a hotspot for Indian Ocean humpback dolphin bycatch and a sensible place to focus our dolphin research. So we spent 8 years identifying individual humpback dolphins, allowing us to assess their residency (the amount of time individuals spend in the area), site fidelity (their tendency to return), and movement patterns, and evaluate how emigration, immigration and mortality rates influence the use of Richards Bay at various time scales.

In a collaboration between various local and international universities, a local NGO and the KwaZulu-Natal Sharks Board, we built a photographic catalogue of 109 distinctive humpback dolphins using nicks and notches on the dorsal fins to identify individuals. A few individuals were photographed often though most were photographed infrequently and a clustering analysis deciphered natural groupings. The majority (80%) clustered into a group of brief visitors we called transients, mostly seen just once or twice though some visited once or twice a year in up to 6 years. Another, very small, cluster was of regularly seen residents, all photographed >4 times per year, every year. Lastly, there was a cluster of 15 dolphins that did not fit neatly into either category that we called intermediates.

We discovered that, overall, individual humpback dolphins did not spend much time at Richards Bay (residency was low) but they did tend to return quite often (site fidelity was high) which resulted in high population turnover in the short-term but low turnover over 6 months and longer. There was clear indication that individuals varied in their visiting patterns but there was no evidence that their visits were seasonal. Scrutinising these movement patterns showed that there is a net loss of dolphins from the Richards Bay area. While dolphins

naturally emigrate from the area, we identified several individuals from our photographic catalogue that had died in the shark nets, which indicated that mortality in the shark nets contributes to the permanent loss of humpback dolphins in Richards Bay. The high site fidelity suggests that dolphins perceived the area as ecologically attractive, but the high mortality rate due to shark nets makes it risky for them.

We suspect that Richards Bay represents an ecological trap (animals choose a habitat that seems more promising than other habitats but human-induced mortality risks in the area mean the habitat is not as good as the others) which could drive the local population to extinction. To prevent this unacceptable outcome, we need to reduce the humpback dolphin bycatch at Richards Bay. Over the years, the KwaZulu-Natal Sharks Board has made many changes to the shark control programme to reduce the impacts on marine biodiversity but more changes appear necessary.

The shark control programme is not a conventional fishery but it can be considered in fishery terms since it sets out to catch sharks. So we used a fishery framework to explore ways to mitigate bycatch which can be classified



Nicks and notches on dorsal fins allow us to identify distinctive individuals such as these 5 humpback dolphins that are resident in Richards Bay, KwaZulu-Natal.

into 4 types of strategies: 1) reduce the number of nets, permanently or temporarily; 2) relocate the nets; 3) use technology, such as acoustic warning devices or metal-oxide stiffened nets; and 4) change the fishing gear, for example from nets to baited hooks. We also considered other ways to prevent shark attacks besides killing sharks: 1) deterring sharks; and 2) detecting them.

We concluded that there are options but no easy solutions. This is a complicated issue and ultimately not just about dolphins: the risks, costs and benefits to bathers and sharks must be considered too. Most successful conservation action comes about when stakeholders work together to find solutions and so we recommend that a Mitigation Team be formed to consider the options from all perspectives to find a way to reduce the impact of the shark nets on marine animals without compromising bather safety.

Read the full article: Atkins S, Cantor M, Pillay N, Cliff G, Keith M, Parra G (2016) Net loss of endangered humpback dolphins: integrating residency, site fidelity, and bycatch in shark nets. *Marine Ecology Progress Series* 555:249–260



Juvenile African penguins stuck in ecological trap

By

Katrin Ludynia

*Southern African Foundation
for the Conservation of
Coastal Birds*



Juvenile African penguins struggle to survive their first year at sea because of reduced fish stocks.

weeks of their lives out at sea.

The study revealed that the juvenile penguins used three main areas for finding food: Swakopmund in central Namibia, an area north of St Helena Bay along the West Coast of South Africa and a third area around Cape Agulhas on South Africa's south coast. Only birds from the Eastern Cape foraged east of Cape Agulhas whilst birds from the West Coast foraged north of Cape Town and into Namibian waters.

All three areas were historically rich in fish availability, including sardine and pilchards. Dr Katrin Ludynia, Research Manager at SANCCOB and co-author of the study explains, "Young penguins mistakenly select poor quality habitat because once useful cues, cold water and high primary production, remain intact in the face of underlying environmental change. One would expect to find

New research indicates that juvenile African penguins are continuously foraging in areas of low food availability due to climate change and overfishing. The research conducted by an international group of scientists over the span of three years, highlights alarming results for the already endangered African penguin species, the only penguin endemic to the African continent.

The study was conducted between 2011 and 2013 by Dr Richard Sherley from the University of Exeter and a team of scientists from South Africa, Namibia and the United Kingdom. The research looked at the initial journey of 54 African penguin fledglings, including 14 rescued chicks that were hand-reared by the Southern African Foundation for the Conservation of Coastal Birds (SANCCOB). Penguins were tracked using satellite transmitters and researchers followed their movements for the first few

abundant fish stocks in these areas but due to the combination of climate change and high fishing pressure over the past decade, fish is scarce along the West Coast." As a result, foraging penguins fall into, what is called, an ecological trap. The fact that there is not enough food available for juvenile penguins explains the low chances of surviving their first year at sea, observed previously in other studies.

Due to the rapid decline in population numbers, the African penguin was reclassified as endangered in 2010 and today, it is estimated that less than 2% of its historic population remain in the wild (less than 23 000 breeding pairs). Modelling exercises, presented in the current study, showed that with sufficient food in these areas, the African penguin population on the West Coast of South Africa would be twice the size as it is now.

Through the Chick Bolstering Project (CBP), SANCCOB and its project partners rescue ill, injured and abandoned African penguin chicks and rehabilitate the birds at their two centres in Table View (Western Cape) and Cape St Francis (Eastern Cape). The project is recognised globally as one of the most successful conservation initiatives to reverse the decline of the endangered species. Since the project's inception in 2006, SANCCOB and its partners have successfully hand-reared and released more than 4 000 chicks back into the wild.

"This study shows that chicks hand-reared at SANCCOB behave in the same way as their counterparts in the wild", says Dr Katrin Ludynia. "Unfortunately, that also means that they face the same challenges in the wild once they are released. We are therefore working together with government and other

conservation organisations to ensure the long term survival of the species."

The study highlights that various conservation measures need to be implemented at different levels in order to save the endangered African penguin species. Apart from protecting critical breeding colonies and hand-rearing abandoned African penguin chicks, fish stocks have to be better protected in order for these birds to actually survive their first years at sea.

The research article was first published in *Current Biology* on 9 Feb 2017. Authors include: Richard B. Sherley, Katrin Ludynia, Bruce M. Dyer, Tarron Lamont, Azwianewi B. Makhado, Jean-Paul Roux, Kylie L. Scales, Les G. Underhill and Stephen C. Votier. [Click here](#) for the full article. ✂

POGO-SCOR VISITING FELLOWSHIPS

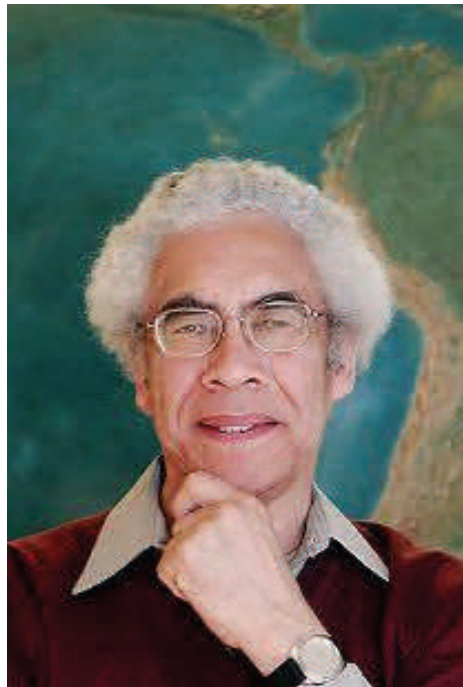
[This fellowship programme](#) offers young scientists from developing countries the opportunity to visit other oceanographic centres for a short period (1 to 3 months) for training on aspects of oceanographic observations, analyses, and interpretation.

Application closing date: 7 April 2017

Prof George Philander wins Vetlesen Prize

In January 2017, Prof George Philander, Princeton University's Knox Taylor Professor of Geosciences, shared the 2017 Vetlesen Prize for his work in uncovering the global scale of El Niño, the world's most powerful weather cycle.

Established in 1959, the biennial prize is presented by Columbia University's Lamont-Doherty Earth Observatory. Philander shares the 2017 prize with Mark Cane of the Lamont-Doherty Observatory. Because of Philander and Cane's work since the 1970s, El Niño — once thought to be an unusually wet season in Peru — is now known to periodically influence global weather, affecting agriculture, disease control and flooding or droughts. Philander and Cane discovered that permanent weather instability in the tropical Pacific Ocean creates the complex interaction of winds, shallow currents and surface temperatures that create El Niño's irregular swings in temperature and rainfall.



Philander also popularized the term "La Niña," the opposite of El Niño, in which winds pick up to cause less rain in the Americas and more in Asia. Philander, who earned his Ph.D. in applied mathematics from Harvard

University in 1970, joined Princeton's faculty in 1990.

Source: Princeton University

SCIENCE COMMUNICATION MASTERCLASS

On Friday 31 March 2017, Marina Joubert (researcher at CREST, Stellenbosch University) will be joining forces with environmental scientist and master storyteller Dave Pepler to present a science communication masterclass in Stellenbosch. Delegates can look forward to a combination of concepts, challenges and creativity in the field. The event is organised by SARIMA (Southern African Research and Innovation Management Association).

Please [click here](#) to see the day's programme and for information on how to register.

Trip to Monterey Bay, California: Lessons and sentiments

By

Fannie W. Shabangu

*Fisheries Management,
Department of Agriculture,
Forestry and Fisheries*

*Mammal Research Institute
Whale Unit, University of
Pretoria*

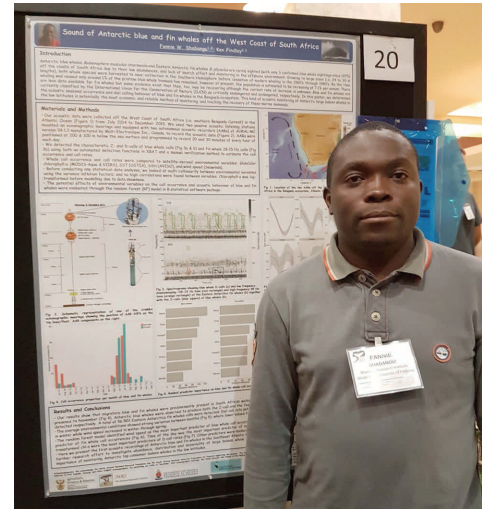
I was fortunate enough to be granted a once-in-a-lifetime opportunity by SANCOR to attend the 15th International Conference of the American Cetacean Society (ACS) held at Monterey Bay, Seaside, California, USA, 11-13 November 2016.

Monterey Bay is very productive due to the upwelling of nutrient-rich waters and a deep Submarine Canyon, making it a preferred habitat for most marine fauna. The bay was once rich in Pacific sardine

Sardinops sagax but since the collapse of the stock all the bay's old fish-packing factories have now been converted into shops/restaurants/bars.

The ACS's conference activities included scientific sessions with world-renowned experts giving oral presentations, a poster session including a student research poster contest, a silent auction, book signings and an art show.

The conference theme was "Reflections and Innovations", which focused on technological innovations to improve and enhance knowledge and understanding of marine mammal ecology. At this conference, I presented a research poster on the "Sounds of Antarctic blue and fin whales off the West Coast of South Africa". This well-received poster presented my results on the first seasonal acoustic recordings of the presence and behavior of these



Fannie Shabangu, winner of the 2016 SANCOR International Travel Student Award, presenting his poster that was awarded 3rd place in the ACS student research poster contest.



One of the fish-packing factories converted into a restaurant after the collapse of the Pacific sardine.

AMERICAN CETACEAN SOCIETY



Fifty Years of Whale Conservation
Reflections and Innovations

15th International Conference
Monterey, CA
November 11-13, 2016
www.acsonline.org



whales in South African waters. This research highlighted that these whales are present in South African waters between four to seven months of the year despite rarely seeing them. After receiving positive comments, a paper based on this poster has been submitted to an international journal.

To fulfill the SANCOR travel grant requirements, I arrived in Monterey Bay three days prior to the conference. The first day, I visited the Monterey Bay Aquarium where I was introduced to the species diversity of the region. I also learnt more about animal behavior in captivity, feeding of fish, penguins, sea otters, and sea turtles; these events gave me perspective on the intricacies of ecosystem functioning in the bay. The next day I visited the University of Stanford's prestigious Hopkins Marine Station and learnt more about *in situ* genetic and tagging methods on marine mammals. Here I met researchers, Dr Jeremy Goldbogen and David Cade, who specialize in cetacean feeding behavior using suction cup tags. I then visited the Fisherman's Wharf Monterey where I acquired detailed history of the fishing industry around Monterey and tasted some delicious seafood. On the 10th of November; I visited the National Oceanic and Atmospheric Administration (NOAA) Environmental Research Division (Climate ecosystems program) to learn

more about how oceanographic environmental data are collected from the satellite observations. Experts from this institution showed me some of the super computers they use for processing and archiving data. I also learnt how they process and interpret the collected data. Finally, I visited the Naval Postgraduate School to learn about different naval equipment used in underwater acoustic research.

On the 11th of November, while waiting on the jetty for our boat to take us out to the open water for the ACS's all-day whale watch with Monterey Bay Whale Watch (MBWW), I heard a loud cracking sound and when I looked to my left there was a California sea otter

Enhydra lutris cracking open a crab shell using one of the poles in the jetty. This was a wonderful experience to witness one of the few marine mammals to use tools. Once our boat "Sea Wolf II" arrived at the jetty where California sea lions *Zalophus californianus* were resting, I excitedly took the front position at the bow of the boat; a prime position (in my opinion) to spot marine fauna. Shortly after leaving, we encountered two humpback whales *Megaptera novaeangliae* feeding on Pacific herring *Clupea pallasione*. Moments later, we came across a large pod of excited and breaching Risso's dolphin *Grampus griseus*, which exposed their bodies covered in linear scars mostly from social interactions (pictured below). Then we



Marine mammals observed during the Monterey Bay whale watch cruise: (top left) Risso's dolphins, (top right) Pacific white-sided dolphins, (bottom left) humpback whale and (bottom right) California sea lion. Photos by Elizabeth Zwamborn.

saw a pod of Pacific white-sided dolphins *Lagenorhynchus obliquidens*, famously known for bow riding.

The group on the sister boat "Blackfin" spotted a male California transient killer whale *Orcinus orca* but by the time we arrived he was nowhere to be found. The day carried on with sightings of more seabirds and humpback whales, with a few groups of humpback whales surface lunge-feeding on herring and some seabirds getting easy meals from escaping fish. California sea lions were also breaching before a dive to feed on sub-surface fish. We started steaming back to the jetty at sunset, and half way there, we briefly sighted five harbor porpoises *Phocoena phocoena*, which completed this memorable day on a high note. A fellow student and enthusiastic whale watcher, Elizabeth Zwamborn, sighted the split-second surfacing of a juvenile sunfish *Mola mola* and shark that I missed as they dived down quickly to avoid the oncoming boat. I have celebrated so many of my birthdays at sea; however, this day is definitely one of my best birthdays to date.

The conference registration and opening took place in the evening of the 11th after the all-day whale watch. Firstly Diane Alps, president of ACS, welcomed the delegates and Nancy Black, a biologist and owner of MBWW, gave a talk and shared some breathtaking whale images

from previous trips - explaining how their efforts have contributed towards the conservation and management of marine mammals in the bay. The conference was attended by about 200 participants consisting of scientists, educators, conservationists, students and hobbyists and ran between the 12th and 13th of November. Around 30 student posters were presented and a silent auction raised about \$3,600 for future Antarctic expeditions. I found this a creative way of raising funds for research and I think that South African researchers should explore similar ideas.

The trailer showing Dr Ari Friedlander's work televised towards the end of 2016 as part of a documentary series "Continent 7: Antarctica" by the National Geographic Channel, emphasized the importance of ACS's related projects. Some impressive talks did an excellent job of highlighting innovative technology for marine mammal science included pregnancy and stress tests, animal-borne suction-cup with synchronized video and 3D inertial movement sensors, drones, gliders, autonomous underwater vehicles and echosounders. The "Happywhale" project by Dr Ted Cheeseman allows citizen scientists to submit their photos for scientific photo-identification and the photo matching results are shared with them, was a

another conservation success story. A proud moment for me during the conference was when a 3D video of humpback whales feeding on krill off the West Coast of South Africa was shown- a rare observation.

During the conference, I got to interact and meet authors of papers and books that I have read from world-renowned experts on marine mammals such as John Calambokis, Alisson Stimpert, Thomas Jefferson and Pieter Folkens. The ACS's Student Workshop enabled students to have personal conversations with the experts; and such interactions empowered us with the knowledge and courage to continue our research. I also interacted with whale watching companies who are involved in expeditions to different areas including the Antarctica. Doug and Gail Cheeseman of Cheeseman's Ecology Safaris, who had just returned from an Antarctic expedition, were very happy to share their experiences on the ice but sadly they didn't see any blue whales. Zack Klyver of FLUKES International Whale Tours shared his vivid experience of seeing southern right whales *Eubalaena australis* from ashore in Hermanus during the 2007 Society of Marine Mammalogy's Biennial Conference hosted by the University of Pretoria's Whale Unit.

As my first international conference, I found the experience empowering and I formed new contacts that will be useful in future projects. Perhaps most importantly, I learnt that teams (i.e. collaborations) are necessary for conservation efforts to succeed. For example, five research institutes around Monterey Bay collaboratively study marine mammals and their environment, making this area of the world not only one of the richest in terms of biodiversity, but also regarding the amount of scientific information collected. I also learnt that perseverance is key as solutions take time to materialize, to balance optimism and realism, to improve communication about my research, and to transfer responsibility to the community to assist with conservation. Conservation successes need to be shared and celebrated; and citizen scientists can provide resources and knowledge that cannot be produced from short term or limited scientific field trips. I also realized that past conservation failures can be rectified through mutual cohesion and mutually agreed upon concepts.

I would like to express my heartfelt gratitude to SANCOR for funding this trip; I gained invaluable experience from this conference. This opportunity allowed me as the only South African attending to showcase my research to an international audience. I hope to

collaborate and transfer such knowledge to other South African researchers and to acoustically study other marine mammals in South Africa. I am incredibly grateful to Carmen

Visser and Karin Fischer for their outstanding assistance with this trip planning. I thank Dr Carl van der Lingen for pivotal comments on my draft poster.

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ABSTRACT DEADLINE EXTENDED TO 15 MARCH 2017

Abstracts close: 15 March 2017

Notification of results: 10 April 2017

View information and submit online at www.samss2017.co.za

INTERNATIONAL SPEAKERS

Robert Costanza (AUSTRALIA)

Costanza's transdisciplinary research integrates the study of humans and nature to address research, policy and management issues. His area of specialisation is ecosystem goods and services and ecological economics.

Omar Defeo (URUGUAY)

Defeo's specialisations are small scale and traditional fisheries and coastal ecology. He has made substantial contributions to sandy beach ecology, understanding human impacts in coastal marine systems, fisheries stock assessment and management, and population dynamics of exploited marine stocks.

Callum Roberts (UK)

Roberts' specialisations include marine conservation biology, fisheries management, marine protected areas, marine reserves, biodiversity and coral reefs. His work examines the impact of human activity on marine ecosystems, particularly coral reefs.

SOUTH AFRICAN SPEAKERS

Craig Smith

Mr Smith is from DAFF – Department of Agriculture, Forestry and Fisheries. Directorate: Small Scale Fisheries. To administer the provisions of the Marine Living Resources Act (MLRA), manage, promote, and support the small-scale fisheries sector.

Mandy Lombard

Prof Lombard is from Nelson Mandela Metropolitan University. She specialises in conservation planning and is the Research Chair for Marine Spatial Planning (MSP) NMMU. Lombard's work focuses on marine conservation assessments and plans, and she conducts applied research that can be implemented for effective conservation outcomes.

Coleen Vogel

Prof Vogel is from the University of the Witwatersrand. She is a climatologist by training but has increasingly worked in the social dimensions of climate change, focusing particularly on climate change adaptation.

SAVE THE DATE

Contact: Eastern Sun Events
Tel: +27 41 374 5654
Email: tanya@easternsun.co.za
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4 - 7 July 2017

Boardwalk Convention Centre • Port Elizabeth • South Africa



Theme: Embracing the blue / Unlocking the Ocean's economic potential whilst maintaining social and ecological resilience

SAMSS is hosted by NMMU, CMR and supported by SANCOR

Letter from the SANCOR Chair

By
Louis Celliers
Chair of the SANCOR Steering Committee

So, 2016 was a humdinger! No doubt. Globally,



CO₂ levels exceed 400

ppm at the time of year normally associated with minimum levels. A 400 ppm level is believed to be higher than anything experienced in human history. The United Kingdom votes in a referendum to leave the European Union giving us the shock of Brexit. The final videocassette recorder is manufactured by the Japanese company Funai. The 2016 Summer Olympics are held in Rio de Janeiro, Brazil. The US and China, together responsible for 40% of the world's carbon emissions, both ratify the Paris global climate agreement. And last, but not least, Donald Trump is elected as the President of the USA. It was, quite frankly, not a year I would personally remember as the best example of the combined effort of humanity to improve their lot.

Locally, we had the excitement of the local elections, quite a number of political scandals, and of course, the #feesmustfall protests. Not a single South African citizen was unaffected by what happened in our society, and no-one was without an opinion.

Maybe, though, with the scars of 2016 starting to fade, it is appropriate that the [UN Sustainable Development Goals](#) (SDGs) are increasingly becoming recognised. This year, 2017, is an important year for SDG14 “Life Below Water” with a high-level political forum on sustainable development convened

in New York in June 2017 under the auspices of the Economic and Social Council. The outcomes of these meetings will of course also influence the South African government response to the challenge of the SDGs.

Closer to home, the [Second International Indian Ocean Expedition](#) (IIOE-2 2015-2020) is set to kick into high gear. The objective of IIOE2 is to advance our understanding of the Indian Ocean and its role in the Earth System in order to enable informed decisions in support of sustainable development and the well-being of humankind. The efforts of DEA



and its partners, are the driving force behind the South African contribution to this large international project.

Other interesting developments you should keep an eye out for this year is the ongoing efforts relating to the formalisation of Marine Spatial Planning, the National Biodiversity Assessment, the Oceans and Coastal Information Management System coming online and many more.

Of particular interest to SANCOR, is the growth in stature of the Marine and Antarctic Research Strategy (MARS). This strategy plans to encompass all research that is performed in the estuaries, coasts, oceans, islands and Antarctica. The mission of MARS is to establish a national marine and Antarctic research system that produces maximum human capital, innovation, economic growth, and increased international profile and influence.

SANCOR as an organisation is evaluating its own role in relation to the MARS and has already started to negotiate with NRF and DST on how we can make a contribution to the implementation of this ambitious strategy. The SANCOR Steering Committee has already met to discuss the implication of MARS and will continue to work with NRF and DST to formalise our role going forward. We are

also looking forward to the 2017 instalment of the Southern African Marine Science Symposium. This is the premier event on the SA academic calendar show-casing and promoting marine science, enhancing networks and strengthening collaborations (see announcement in this newsletter). SAMSS 2017 will be held 4-7 July 2017 and is hosted by SANCOR and Nelson Mandela Metropolitan University. The theme of the conference is 'Embracing the Blue - Unlocking the ocean's economic potential whilst maintaining social and ecological resilience'. I look forward meeting you there!

As the year 2016 is slowly fading in our collective memories, allow me to welcome you to 2017 one more time. SANCOR is hoping to grow and learn in this year. We want to understand what it is to engage with authentic human capital development and transformation. Fair, directed, and apolitical, with the interest of our community and our society at heart. Late in 2016, the Oxford dictionary declared the word of the year to be "post-truth". While mostly associated with politics, we believe that encouraging increased engagement from scientists, and continued advocacy for evidence-based decision-making, to be the way forward for 2017. We hope that the work of SANCOR can be an example to others.

We also want to invest in guiding and promoting knowledge generation and the development of research capability relevant to the SA society. The development of this capacity begins in our schools and around our dinner tables: encouraging young people, and especially girls, to consider a career in the sciences. There is no more important goal than to know more, and to know better. We want to connect with people and create opportunity for people to converse and critically and meaningfully discuss issues that affect us all. Also, listen with patience, understand, have empathy and create opportunity to "network", coordinate community events and actions, and to make sure we spread the word to raise awareness and educate. Finally, can we hope to start thinking of our science differently? How we produce it, for whom, and how? As scientists, it is clear that we share the burden of listening to the society we serve by providing knowledge and solutions. Listen, and understand!

Allow me finish with a quote of one of my favourite authors: "The trouble with having an open mind, of course, is that people will insist on coming along and trying to put things in it" (Terry Pratchett). Let 2017 be a year in which only the most positive thoughts invade our open minds. ✍

New SANCOR Steering Committee Members

The SANCOR Steering Committee is pleased to announce the appointment of two new members: Ms Tracy Klarenbeek and Prof AJ Smit.

Ms Tracy Klarenbeek has been appointed as the new National Research Foundation (NRF) Representative and is Acting Programme



Tracy Klarenbeek

Director at KFD at the NRF and manages all marine related programmes such as the South African National Antarctic Programme, the African Coelacanth Ecosystem Programme and the Marine and Antarctic Research Strategy. She also oversees the Development Grants and African Origin Platform funding instruments.

AJ Smit has been appointed as the Western Cape Representative and is a Professor at the University of the Western Cape in the Department of Biodiversity and Conservation Biology. AJ has held a diverse range of positions within marine science both nationally and internationally. His interest include the ecology and 'function' of kelp bed ecosystems, the environmental drivers of

seaweed distribution across scales and under the influence of climate change.

He is currently the manager of the South African Coastal Temperature Network.



AJ Smit

We welcome both AJ and Tracy to the SANCOR Steering Committee and wish them all the best in their new roles.

We bid a fond farewell to Jonathan Diederiks (former NRF Representative) and Deena Pillay (former Western Cape Representative) and thank them for their commitment, time and input that they put aside for SANCOR's activities.

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Global Change Conference 2016

The University of KwaZulu-Natal hosted the 3rd Global Change Conference held during 5-8 December 2016 in Durban, under the auspices of the Department of Science and Technology and the National Research Foundation. This biennial conference showcased the latest innovative and multidisciplinary Global Change Research and aimed at providing holistic solutions to very complex problems arising from changes in various earth systems. Coastal and marine research on global change was well-represented on the programme with 4 dedicated sessions, 23 orals and 11 posters by seasoned and early-career scientists, including a talk by: Prof Alan Whitfield who demonstrated the [movement of pioneer species](#) as a result of global change. Click here for information on the [programme](#) and [here](#) for the social media commentary. ✂

Science to policy – Reflections on the South African reality

The 2016 SANCOR Forum theme was entitled "Mind the gap" – challenges in crossing the boundaries of research, policy and management". A summary of the discussion has been published as a commentary in the November 2016 issue of the *South African Journal of Science*.

[Click here to download the full article.](#)

Citation:

Von der Heyden S, Lukey P, Celliers L, Prochazka K, Lombard AT. Science to policy – Reflections on the South African reality. *S Afr J Sci.* 2016;112(11/12), Art.#0183, 6 pages.<http://dx.doi.org/10.17159/sajs.2016/a0183>

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Abstracts extended to 12 March 2017

TENTH WIOMSA SCIENTIFIC SYMPOSIUM

Monday, 30th October – Saturday, 4th November 2017

Dar es Salaam, Tanzania

[Click here for the call for abstracts.](#)



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