

# SANCOR NEWSLETTER

## South African Network for Coastal and Oceanic Research

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## Where there's a will – there's a way: Pelagic fish survey jumps ship

*By Fannie Shabangu and  
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Regular monitoring and assessment of South Africa's marine living resources is pivotal to ensuring their sustainable exploitation and utilization within our exclusive economic zone. Such monitoring relies on the availability of reliable research platforms and equipment and comes at great cost. Sometimes, however, the resources needed to conduct research tasks are not available – and precious long-term time-series are threatened.

The abundance of short-lived fish species,

such as most small pelagic fish, fluctuates widely from year-to-year due to highly variable recruitment and natural mortality. Given this high variability, it is essential that their abundance is regularly monitored to ensure that scientifically defensible total allowable catches (TACs) are set each year. South Africa's main small pelagic fish species of commercial importance include anchovy (*Engraulis encrasicolus*), sardine (*Sardinops sagax*) and round herring (*Etrumeus whiteheadi*) all of which are also nutrient rich prey for many predators in our marine ecosystem.

Acoustic monitoring of pelagic fish abundance off the South African coast began in 1983 with the first reliable estimates obtained in 1984. Since then these surveys, conducted bi-



*Pelagic biomass time-series saved: Due to mechanical failures on the SAS Africana (left), scientists had to swiftly charter and equip an industry vessel, the MFV Compass Challenger (right), to conduct the bi-annual survey to monitor the abundance of anchovy and sardine stocks.*



annually each May and November, have been the basis for management of the anchovy and sardine stocks.

In November 2012, the normally trustworthy research vessel *SAS Africana* of the Fisheries Branch was unable to complete the summer pelagic biomass survey. Mechanical failure resulted in her having to be towed back to Simon’s Town after completing only one third of the survey and unfortunately all attempts to get her going again failed. After a delay of three weeks, a previously orchestrated plan to hire a suitable fishing vessel to complete the survey was set into action.

Hence, for the first time an industry vessel was chartered to help out. A frantic combined effort of scientists and managers of the branch and key industry representatives resulted in approval being granted by the Minister of DAFF at the eleventh hour to hire the *MFV Compass Challenger*. This deep sea trawler was equipped with an identical Simrad 38 kHz scientific transducer to that used on the *Africana*, and therefore an obvious choice.....but she was not equipped for biomass estimation!

Scientists and technicians from DAFF had

one day to prepare the ship. Fishing gear, sampling equipment and an acoustic system was moved from the *Africana* in Simon’s Town to the *Compass Challenger* and installed. A makeshift acoustic lab was set up in one corner of the bridge with cables from various computers, transceivers and the transducer jimmy rigged along the bulk head ceiling. Gone was the 42” LCD monitor, air-conditioned lab and easy chairs. The fish processing factory, usually awash with sea water and tonnes of demersal fish species, now had to accommodate a “contraption” with which we hoped to sample fish eggs, computers for data capture and equipment for biological sampling of fish that were smaller than the gaps between the rollers of the conveyor belts!

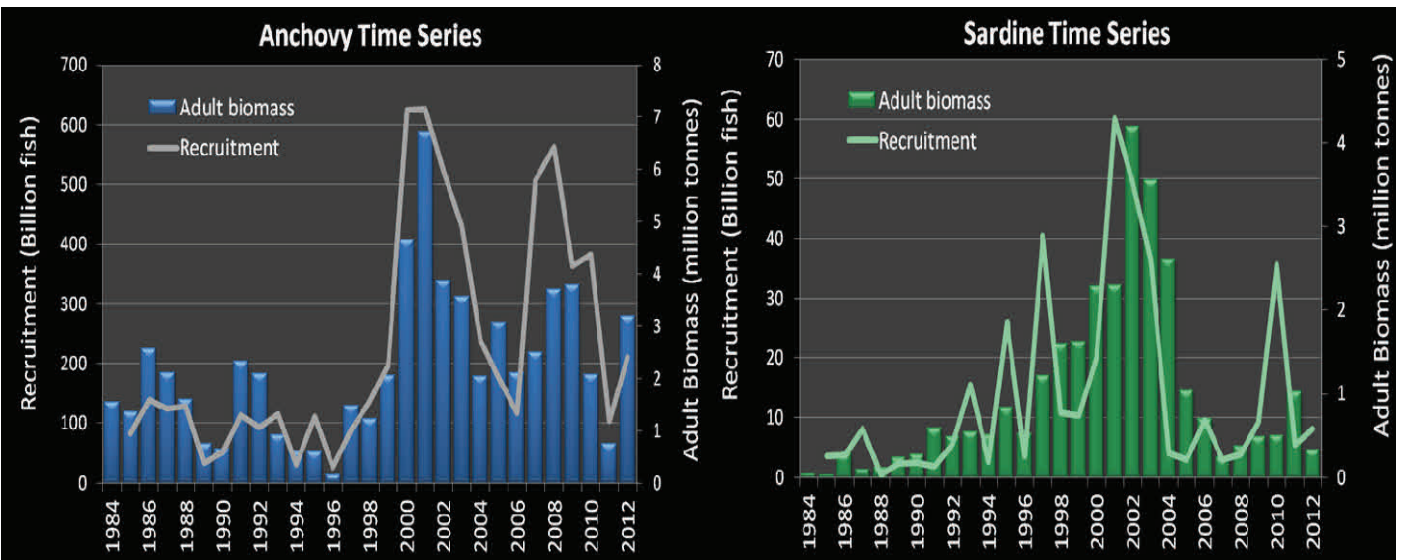
Now all we still needed was a calibration of the “echo sounder system”, a legal signed contract between the Department and the owners of the vessel and a research permit. Eventually the all clear was given and the *Compass Challenger* left port on a blustery Saturday afternoon with 10 DAFF scientific staff onboard, a handful of deckhands and a fishing master. All not knowing what to expect (after all the usual comforts enjoyed on the *Africana* were nowhere to be seen), but determined to make the survey a success.



A sample of small pelagic fish caught during a fish abundance monitoring survey.

Fighting off severe sea-sickness caused by the heavy seas and pitching and rolling unlike anything we were accustomed to, we settled into our work routines. The *Africana’s* trawl gear, which had been brought along for the trip was working well – the only difficulty was convincing the crew that small catches would be fine!

The survey progressed according to plan with randomly spaced survey tracks sampled across the entire Agulhas Bank between Cape Point and Port Alfred. The simply setup acoustic system proved to work well and eventually after almost 20 days on our new “home away from home” we sailed into Cape Town harbour with the all important fish biomass data neatly packaged and ready for final analyses - exhausted but also proud



Time-series of anchovy (left) and sardine (right) biomass and recruitment time-series between 1984 and 2012.



of our achievement against all odds. Our 29-year long biomass time-series, one of the longest such uninterrupted datasets in the world was alive and well, for now!

Countries like Norway, USA, New Zealand and even Namibia have long been using commercial fishing vessels as research platforms for collecting acoustic data and bottom trawl information on fish biomass and distribution. Of course, these vessels are normally custom fitted (well in advance) with the appropriate technology to meet scientific standards. For acoustics surveys, transducers need to be of the correct frequency and type and properly calibrated before a survey while vessel characteristics such as underwater noise levels and other sources of interference need to be measured and checked.

Echosounder inter-calibrations of the commercial vessel and any previously used research vessel are usually also conducted to validate and compare the acoustic results between vessels. Whereas this was attempted in False Bay after the survey, the experiment had to be called off when it quickly became apparent that the *Africana* had serious steering problems and was not fit for the task.

Incidentally, this procedure was previously followed in South Africa too. Several small pelagic fish abundance surveys were successfully completed by the government owned *FRS Algoa* during the late 1990s and early 2000s when the *FRS Africana* suffered a spate of engine troubles.

Mutual cooperation between commercial fishing fleets and research institutions does have many benefits that result in proper management of marine resources, and which may also be more cost effective for the parties involved.

However, the lack of sophisticated

environmental and other biological sampling equipment onboard this and other fishing vessels is a major concern and a serious limitation of using un-modified fishing vessels. This especially in light of recently observed changes in pelagic fish distribution and demersal catch rates on the Agulhas Bank, and the need to consider possible effects of climate change and variability.

Ultimately, the small pelagic biomass survey was a success and scientifically defensible TACs for the 2013 fishing season were recommended – based on a quickly devised short-term solution. Surely the current condition of the *Africana* and its future management must be addressed as a priority - so too the possible replacement of this 30 year old vessel. We believe this is already happening.

The International Council for the Exploration of the Seas (ICES) recommends that research facilities such as DAFF should start working hand-in-hand with fishing industries to improve the design and construction of modern fishing vessels that can be used as both fishing and research vessels. Should South Africa follow suit? A question well worth considering.

#### *Acknowledgements:*

- *The authors wish to thank everyone who had a part to play in ensuring that the survey was successfully completed, including the vessel operators, officers and crew who went out of their way to make us feel at home.*
- *All expenses related to chartering of the MFV Compass Challenger, including daily tariffs and fuel costs were fully covered by DAFF.*

## Marine research at UKZN

*By Nicola Carrasco and  
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While the marine discipline at UKZN (University of KwaZulu-Natal) has been running for some time, the option to study and major in marine science as part of an undergraduate degree since 2009 and the declaration of marine science as a strategic priority of UKZN have resulted in the expansion and advancement of the discipline. The main areas of research include estuarine and coral ecology.

#### **Estuarine ecology**

Lake St Lucia has been extensively researched by the estuarine research group at UKZN since 2005. The St Lucia Estuary is the largest estuarine lake system in Africa and forms part of the Isimangaliso (formerly Greater St Lucia) Wetland Park, South Africa's first UNESCO World Heritage Site, giving it high priority for conservation. Despite the ecological importance of this system, it has been subjected to a number of anthropogenic stresses in the past which have threatened its integrity. There is a lot of activity going on at the moment both in terms of research and management, because the system is experiencing an unprecedented crisis, in terms of freshwater deprivation and desiccation. The Global Environment Facility (GEF) through the World Bank is currently involved with a major project aimed at securing the sustainability of the system in the long term.

The St Lucia research group at UKZN, together with a number of international collaborators is currently doing, among other things, a biodiversity census for the estuarine complex. That involves looking very closely at the



fine taxonomic detail of the main groups of invertebrates, to start with. A number of new and possibly endemic species from a wide variety of invertebrate groups have been identified and some already described. Recent surveys of meiofauna have identified several species of gastrotrichs, one of which is new to science and the first records of gastrotrichs from South Africa (Todaro et al. 2011, Figure 1A). Similarly, Daly et al. (2012) have described a new species of burrowing anemone (*Edwardsia isimangaliso* sp. nov, Figure 1B) which is potentially endemic to the St Lucia Estuary and has probably been misidentified previously as a sipunculid. *E. isimangaliso* is novel as it combines hetero and autotrophic feeding. The harpacticoid copepod *Nitocra taylori* sp. nov. (Gomez et al. in press, Figure 1C) is limited to the lakes region of St Lucia, an area which is most severely affected by the current freshwater deprivation crisis. A survey of the bivalve fauna revealed two potentially undescribed species; *Tellina* cf. *rousii* and *Siliqua* cf. *polita* (Figure 1D and E). A new species of crab, belonging to the genus *Potamonautes* (Figure 1F) has also been found in one of the freshwater streams leading into the False Bay area. In addition to the above new species, a new genus of gastropod, previously misidentified as an Assimineids, has been discovered in the False Bay area and has

tentatively been named *Coriandria durbanensis* (Figure 1G) and is currently in the process of being formally described. Studies have also shown that these native gastropod populations are affected by the presence of the alien invasive *Tarebia granifera*, as this snail releases chemical cues that cause the native snails to orient and move away.

Although the increased research efforts have led to the discovery of a number of new and previously undescribed species, the freshwater deprivation crisis has resulted in an overall loss of biodiversity in the system, with species capable of tolerating extreme environmental conditions dominating the system. The Mozambique Tilapia *Oreochromis mossambicus* is overwhelmingly dominant throughout the system, and a study using stable isotope analysis has shown that its trophic plasticity may be one of the factors explaining their dominance (Dyer et al. in press).

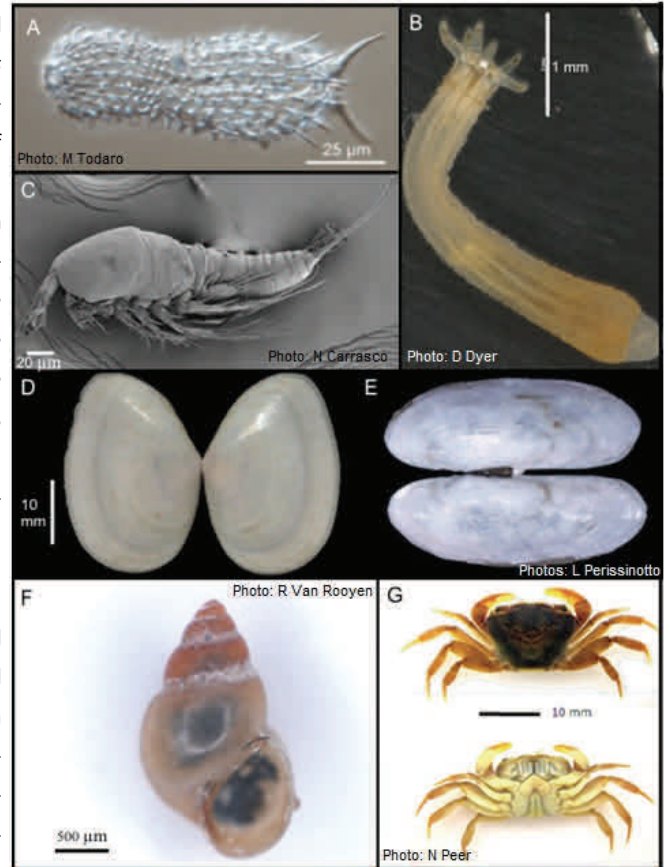


Figure 1: new species recorded in Lake St Lucia

The strategy to allow the Mfolozi and Lake St Lucia Estuary mouths to join to form a combined mouth has been successful in raising

water levels and decreasing salinity levels throughout the system. Model simulations have shown that with the re-joining of the Mfolozi River and the St Lucia Estuary, higher and more stable water levels are expected. A new integrated bio-physical model is also currently being developed together with engineers from UKZN in order to provide a basis for predictions on the behaviour of Lake St Lucia under various environmental conditions and management scenarios. The recent events are, however, positive and are part of the much broader long term strategy to restore estuarine function to this important nursery for fish and invertebrates.

Despite the extensive work done in the St Lucia estuarine system, the South African coast includes another 258 functional estuaries, 71% of which are characterised as temporarily open-closed systems (Perissinotto et al., 2010). Recent work has focused on the ecosystem functioning of these estuaries in KZN, with the develop-



Figure 2: Coral research along the KZN coast



ment of an environmental and biological baseline for two estuaries of contrasting mouth state. This uses existing information from two similar estuaries in the Eastern Cape, and is used to build ecosystem models through Ecological Network Analysis. This work will constitute a framework for future comparison and management of estuaries in South Africa.

### Coastal ecology

The subtropical climate of KwaZulu-Natal has provoked an interest in the coral reefs that occur along our shores (Figure 2). With some intertidal coral species extending as far south as Port Edward, a project has begun focussing on the survival, tolerance and adaptation of these species to different stresses in these environments. A recent study demonstrated the effects of zooplankton feeding on the tolerance of a common KZN coral species to thermal stress and bleaching at cellular, genetic and physiological levels. It concluded that feeding on zooplankton improves the overall health of corals, suggesting that habitats with a high concentration of zooplankton may have a higher resilience to coral bleaching. Alternatively, these populations could also recover quicker with the aid of artificial feeding. In relation to this, other research is currently investigating the population and physiological dynamics of common intertidal coral species such as *Pocillopora* sp. and *Anomastrea irregularis*, in relation to different temperature regimes

along the KZN coast. Some exciting and improved methods of X-ray and CAT scan technology (Figure 3) will be used to compare growth rates between species and between different regions of the coast. This research aims to provide insight into the adaptation and future of corals in a changing climate.

At Sodwana Bay, population dynamics of several indicator species are being described using stereo-photogrammetry, and the trophic links between reef and sandy substrata are also being investigated.

Exciting research is also being conducted in the northern reaches of Mozambique. The main focus of this is to document the mass spawning of corals on the eastern African coast, with the base of this project located on the beautiful tropical island of Vamizi. Recruitment dynamics of these corals in relation to mass spawning events will also be investigated. Collaborative work in neighbouring countries is always an exciting opportunity for a young scientist.

The KZN Bight ecosystem is also renowned for the ongoing work of the African Coelacanth Ecosystem Programme (ACEP). Current research is using ecosystem modelling and ecological network analysis to investigate the functioning of this system. Specifically, the effects of the shallow-water prawn trawl fishery and the closure of the St. Lucia prawn nursery on the Thukela Bank ecosys-

tem (central bight) has been investigated. Nutrient dynamics in the oligotrophic bight is important in the functioning of this system, along with the investigation of the behaviour of carbon, nitrogen and phosphorus and the importance of riverine nutrient sources in the bight.

The sardine run, a unique phenomenon to the shores of KZN has also received recent attention again, after the work of Sean O'Donoghue over the last couple of years. This falls under the umbrella of the genetics unit, where a lot coral genetics research is also conducted.

This highlights the diversity of the research in the marine discipline at UKZN, with some exciting and interesting opportunities in years to come.

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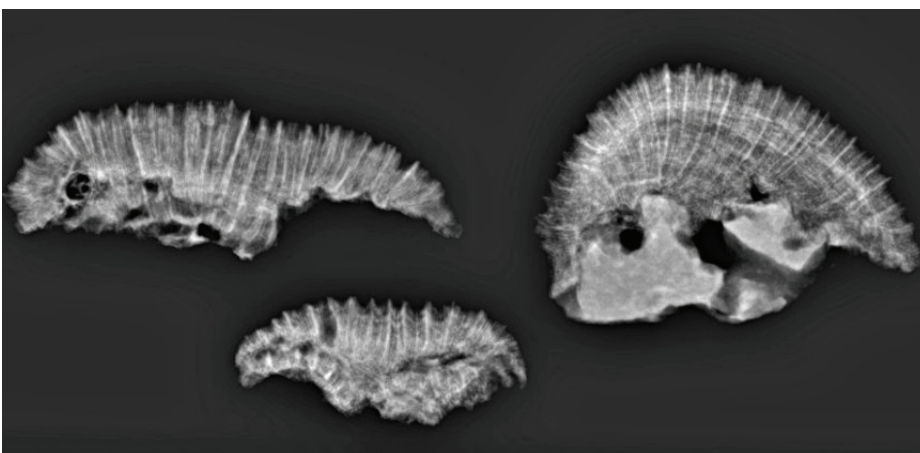


Figure 3: X-Ray image of the intertidal coral species, *Anomastrea irregularis* showing skeletal density bands.



## SA Agulhas II undertakes its first Relief and Scientific Voyage to Gough Island

By Mthuthuzeli Gulekana

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Since being welcomed to South Africa from STX Finland, a shipyard in Finland, the research and logistic vessel SA Agulhas II has undergone only three cruises. All these cruises were conducted as test cruises in the Baltic Sea; in the west coast of South Africa, as well as in the Southern Oceans. These voyages were geared at testing the ship's capability as well as to test the onboard scientific and mechanical equipment. These were declared adequate and optimum for use in conducting research at sea. However, during these voyages the logistical and relief capabilities of the ship were not tested. The Gough Relief voyage, that was to be the fourth (4) voyages, was thus a perfect opportunity to conduct these outstanding tests, logistics and relief abilities.

The Gough Island Relief cruise was undertaken from 06 September to 11 October 2012, with 100 passengers onboard comprising, passengers, scientists (land- and ship-based), support staff, pilots, etc. The main objectives were to (a) conduct logistics around relieving the Gough 57 (2011/12) team and replace it with the overwintering Gough 58 team (2012/12) and (b) conduct scientific research with the onboard equipment, as well as, to (c) deploy several oceanographic instruments during the cruise that will continue to collect data in the Southern Ocean after the ship has departed and the relief logistics completed.

Different people were involved from various disciplines including those from governmental departments, agencies, organisations and universities performing various activities during the relief voyage, including, conducting island-based research, collection of

meteorological data, renovating and maintaining of the research base, replenishment of supplies to the research base, training of the new overwintering team and providing logistical support for all the aforementioned activities.

Ship-based scientific activities were mainly oceanographic and meteorological in nature. Underway sampling (sampling without stopping the ship) was conducted every 2 hours for the whole duration of the cruise. In short, the ship-based oceanographic scientific team managed to (i) occupy several Conductivity-Temperature-Depth (CTD) stations and collected water samples for analysis (total of 24 CTD's) during the whole cruise, (ii) deploy (for the first time) sea gliders in the harsh environment of Southern Ocean, (iii) deploy 6 APEX (Argo) floats, (iv) deploy 8 weather surface drifters and (v) collect physical and bio-chemical data in 202 underway stations and (vi) the training of students and intern staff onboard.

The following scientific personnel were responsible for the collection of oceanographic

data and the deployment of scientific equipment:  
Mthuthuzeli Gulekana (Chief Scientist), Baxolele Mdokwana, Victoria Tshivhidzo, Lusanda Sidsziya, Bokamoso Lebepe, Gavin Tutt (all DEA); Thembelihle Mlokoti (SAEON),

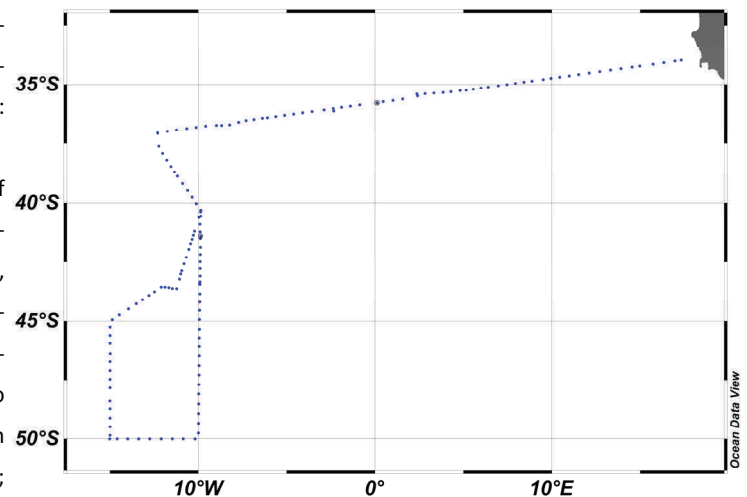


The ship's crew and officers helping to deploy a sea glider. The first deployment of its kind in the Southern Ocean.

Xolani Methu (DAFF), Lelethu Nohayi (CSIR), Kathrine Hutchinson, Kirrin Reid (both UCT), Tennielle Jacobs, Msindisi Gantsho, Donald Muller (all SAWS).

The relief voyage achieved all its objectives and was declared a success, and the SA Agulhas II was considered fit to conduct both research and logistics together.

Many thanks to the DEA's Coordinator and Assistant Coordinator (Chuma Phamoli and Godfrey Magagula, respectively); the ship's Captain (F. Ligthelm), ship's officers and crew; the Administrator of Tristan da Cunha and the Gough 57 and Gough 58 teams.



A map depicting all the occupied 202 under stations occupied during the voyage.



## SIBER reaches out to the African research community

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The Sustained Indian Ocean Biogeochemistry and Ecosystem Research (SIBER) program convened its 3<sup>rd</sup> Scientific Steering Committee meeting in Cape Town, South Africa on October 15-17, 2012. This meeting was held jointly with the CLIVAR/GOOS Indian Ocean Panel (IOP), the Indian Ocean GOOS (IOGOOS) alliance and the Indian Ocean Observing System Resources Forum (IRF) (Figure 1).

SIBER is a new basin-wide, international research initiative sponsored jointly by the Integrated Marine Biogeochemistry and Ecosystem Research (IMBER, see <http://www.imber.info/>) project and IOGOOS (see <http://www.incois.gov.in/Incois/iogoods/home.jsp>), with close ties to the IOP and the IRF (Hood *et al.* 2011). The long-term goal of SIBER is to understand the role of the Indian Ocean in global biogeochemical cycles and the interaction between these cycles and marine ecosystem dynamics.

SIBER has been motivated by Indian Ocean observing system deployments, accomplished under the auspices of the IOP, that have created new opportunities for carrying out biogeochemical and ecological research. For example, the IOP is coordinating the deployment of a basin-wide observing system in the Indian Ocean (the Indian Ocean Observing System, IndOOS, which includes the Research Moored Array for African-Asian-Australian Monsoon Analysis and Predic-

tion, RAMA, see McPhaden *et al.*, 2009). These deployments are accompanied by efforts to maintain the Argo float network and a variety of physical oceanographic survey and mooring support cruises. In addition, several nations in the Indian Ocean are deploying coastal observing systems. These observatories, which are focused primarily on physical measurements, provide foundational infrastructure that can support a wide variety of biogeochemical and ecological studies in both coastal waters and the open ocean. SIBER is a decade-long (Figure 2), multidisciplinary international programmatic effort formed to leverage these observing systems and other international programs in order to advance our understanding of biogeochemical cycles and ecosystem dynamics of the Indian Ocean in the context of climate and human-driven changes.

### The SIBER Science Plan and Implementation Strategy

The SIBER Science Plan and Implementation Strategy (Hood *et al.* 2011) emerged from concepts that were formulated and discussed at the first SIBER Conference convened in Goa, India in October 2006 (Hood *et al.* 2007, Hood *et al.* 2008) involving more than 200 participants, and significantly refined during a second SIBER Workshop convened in Goa, India in November 2007 (Hood *et al.* 2008) involving 30 participants. The inaugural Conference also served as the genesis for an AGU Monograph on the Indian Ocean that provides a benchmark against which SIBER's accomplishments can be gauged (Wiggert *et al.* 2009). Both meetings were interdisciplinary and included scientists from Indian Ocean rim nations, Asia, Europe and North America. The information and ideas from these meetings have been condensed into six major research themes and an implementation plan. For details see the SIBER Science Plan and Implementation Strategy at <http://www.incois.gov.in/Incois/siber/siber.jsp> or <http://www.imber.info/index.php/Science/Regional-Programmes/SIBER>. The timeline for SIBER meetings and

symposia that have been convened to date and that are planned for the future are detailed in Figure 2.

### The need for stronger ties to the southwestern Indian Ocean research community

Although several southwestern Indian Ocean rim nations were represented at the 2006 and 2007 Goa meetings, their representation on the committees that led to the development of the SIBER Science Plan and Implementation Strategy (Hood *et al.* 2011) was not as strong as it could have been. As a result, the engagement of the East African research community in SIBER has coalesced more slowly than for other Indian Ocean rim nations. For example, the SIBER International Program Office (IPO) has been established in India along with a national SIBER research program (SIBER India) with 15 funded research projects. Active promotion of SIBER in Australia has led to a high level of awareness there, with the establishment of a Regional Program Office in Western Australia under way. In contrast, for example, at a recent Chapman Conference on the Agulhas System (October 8-12, 2012) in South Africa there was little awareness of the SIBER Program and the synergy it has developed with the IOP, IOGOOS and IRF, or the guidance these organizations are providing in Indian Ocean Research. This is despite the fact that the Agulhas and Somali Current Large Marine Ecosystem (ASCLME) Project has been represented on the steering committees of SIBER and the IRF since they were formed! There is clearly a need for active promotion and increased awareness of SIBER in the East African research community.

### The SIBER, IOP, IOGOOS and IRF meeting in Cape Town

In an effort to address this deficiency SIBER, IOP, IOGOOS and IRF convened their joint meeting in Cape Town South Africa on October 15-20, 2012 at the Protea Sea Point Hotel. The theme of the SIBER meeting was "Reaching out to the South African Research Community". This joint meeting was hosted



by Perth Regional Program Office, which supports the UNESCO Intergovernmental Oceanographic Commission, with local support provided by the South African Weather Service and ASCLME. Invited experts (in the SIBER meeting) from African countries included Mike Roberts, Frank Shillington, Pedro Monteiro, Mika Odido (IOC Sub-Commission for Africa and the Adjacent Island States), Johan Stander, David Vousden and Moenieba Isaacs. The meeting was also attended by Santjie Du Toit, Jennifer Huggett and several other local participants.

The SIBER meeting agenda on the afternoon of October 16 focused exclusively on past and present research, capacity building and human dimensions in southwestern Indian Ocean rim nations. The talks included presentations by Mike Roberts (*Ecological research associated with the Mozambique Channel eddies*), Frank Shillington (*Operational oceanography in the southwest Indian Ocean*), Pedro Monteiro (*Understanding the role of river flows in determining coastal productivity in coastal waters in the Mozambique Channel through nitrogen fixation in mangroves*), Mika Odido (*The IOC Africa: Current activities and future plans*), and Moenieba Isaacs (*Human dimen-*

*sions: Understanding the social processes and politics of reforming fisheries policy in South Africa*). They were followed by a focused discussion on developing strategies for strengthening SIBER ties to the South African research community, and also developing human dimensions components and capacity building efforts.

This session was an unmitigated success with many ideas for collaborations and interactions emerging from the discussions, including the need for proactive representation of South Africa on the SIBER Scientific Steering Committee. The SIBER, IOP, IOGOOS communities emerged from these joint meetings with a strong new sense of understanding and connectivity to the South African research community.

**The joint SIBER – IOP session and IIOE 50<sup>th</sup> Anniversary Planning**

Some other important developments emerged during the joint SIBER-IOP session that was convened the following day on October 17<sup>th</sup>. An update presentation by David Vousden on the ASCLME led to the SIBER, IOP and IOGOOS participants formally recognizing a recommendation to establish a Western Indian Ocean Science Alliance to be

facilitated by the Agulhas and Somali Current Large Marine Ecosystem Project and to work in close synergy with existing regional ocean related coordinating initiatives. This was another significant step forward in developing stronger ties with the southwestern Indian Ocean research community.

This was followed by presentations and discussions focusing on the eastern Indian Ocean, and specifically on planning for a 50<sup>th</sup> anniversary celebration of the International Indian Ocean Expedition (IIOE). The activities proposed include performing repeat IIOE lines and related research activities in the Indian Ocean, with the latter including a proposal for “An International, Interdisciplinary Eastern Equatorial Upwelling Research Initiative” by Yukio Masumoto and Weidong Yu of the IOP. Plans to convene an open science conference at India’s National Institute of Oceanography in Goa were also discussed. Lynnath Beckley and colleagues have already submitted a ship time request to carryout a repeat line effort along 110° E using an Australian vessel, and there have been discussions about engaging the ASCLME to do repeat line work in the western Indian Ocean. The need for securing additional international participation in repeat

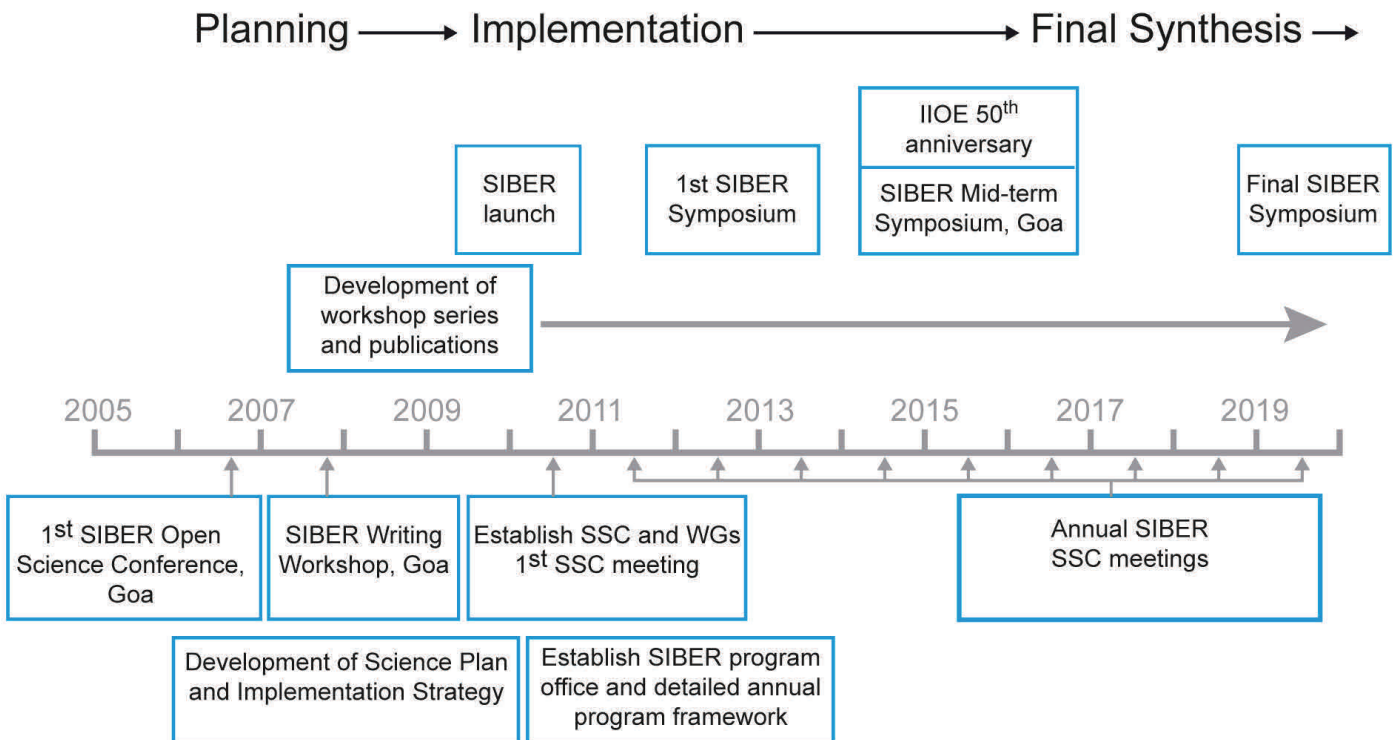


Figure 2: SIBER Program timeline from Hood et al. (2011).





*Participants in the joint SIBER-IOP session on October 17, 2011 at the Protea Sea Point Hotel in Cape Town, South Africa.*

line work, particularly involving India and South Africa was stressed.

The IIOE-2 is envisioned as a 5-year expedition and effort beginning in approximately 2015 and continuing through to 2020, culminating with a second Open Science Conference. This second conference would be convened in the same spirit as the conference that was convened at the end of the IIOE, which was aimed at building research capacity in India and led to the establishment of the NIO.

#### **Conclusions and legacy**

SIBER and its partners, the IOP, IOGOOS and IRF, offer a unique opportunity to mobilize the multidisciplinary, international research effort that will be required to develop a new level of understanding of the physical, biogeochemical and ecological dynamics of the Indian Ocean. They also provide an important new model for carrying out basin-scale interdisciplinary research that can lead to the long-term collaborations needed to achieve this goal. But in order for this collaboration to be successful, the southwestern Indian Ocean research community needs to be fully engaged. The joint SIBER/IOP/IOGOOS/IRF meetings in South Africa represent a huge step forward in this regard.

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## Changes in the SADC Steering Committee

The Steering Committee (SC) of SADC (Southern African Data Centre for Oceanography) oversees and guides the activities of the data centre. The members of the SC include representatives of the 5 sponsor organisations (Oceans and Coast of DEA, S A Navy, CSIR, NRF/SAEON and the Namibian Ministry for Fisheries and Marine Resources), while additional members are co-opted for their insight and experience in specific sectors of marine data management and Southern African and international oceanographic affairs.

The SADC Steering Committee underwent some significant changes at its meeting in May 2012.

After more than 20 years the Steering Committee said good bye to Marten Gründlingh who retired from his role as Manager of the Data Centre. The more than 2 decades since 1990 saw significant changes to the Data Centre: In the early 1990's SADC needed to adapt to its new format after the CSIR had previously funded and operated the data centre since 1977. The "new format" included a new financial model, reduction in funding and staff, interacting with the Steering Committee, etc.

By the turn of the century SADC was web-enabled (providing on-line access to sponsors), while data holdings and data types expanded continuously. Towards the end of Marten's involvement with SADC, the access was made universal (<http://sadco.csir.co.za>) and the data centre is being accessed from all over the world. In this way,



SADCO managed to keep up with global trends as far as its budget allowed. The support of people like Ursula von St Ange (Programmer Analyst) and Louise Watt (processor, data loading, and extracting) played an equally important part in the success of the data centre, and will continue to do so going forward.

Roy van Ballegooyen paid tribute to the enormous effort Marten had put into SADCO over the past 22 years, and expressed the hope that he would remain very much involved in SADCO. Other members of the Steering Committee also expressed their appreciation to Marten for his contribution to the management of marine data in the country and the region. Roy presented Marten with a copy of the beautiful book *The earth from the Air*, by Yann Arthus Bertrand, as a token of appreciation.

At the same meeting, Roy van Ballegooyen relinquished his role as Chairperson of the SC

and formally assumed his new role as Manager of SADCO. Roy is an accomplished oceanographer, with extensive experience in marine data collection, handling and analysis, numerical modelling, and liaison with clients in the environmental, mineral exploration and other marine domains.

With Roy now the SADCO Manager and having vacated the SC Chair Juliet Hermes now became the first woman to take the Chair of the Steering Committee. Juliet is also the Manager of the SAEON Egagasini Node.

With the changes precipitated by the changing role of Roy van Ballegooyen, the CSIR has nominated a new representative (Pedro Monteiro) and an alternate (Marius Rossouw).

Erich Koch is the person now bringing issues from the Maritime Community to the meetings.



Members of the SADCO Steering Committee, May 2012. From left: Marten Gründlingh, Carl Wainman (IMT), Marielle Kritzinger (SAEON), Geoff Brundrit, Ursula von St Ange (SADCO), Juliet Hermes (SAEON, Chairperson), Rob Cooper (DAFF), Erich Koch (Maritime Industry), Sanette Gildenhuys (IMT), Charles Griffiths (UCT), Wayne Goschen (SAEON), Santjie du Toit (SAWS), Dave Phelp (CSIR), Roy van Ballegooyen (Manager, SADCO), Raymond Roman (UCT), Marius Rossouw (CSIR). Representatives from DEA (Oceans and Coast), the Namibian Ministry for Fisheries and Marine Resources and the SA Navy were not available for the photograph.

## PICES Summer School on “Ocean observing systems and ecosystem monitoring”

Dates: August 19-23, 2013

Location: Newport, Oregon, USA

Application Deadline: March 15, 2013

This 2013 PICES (North Pacific Marine Science Organization) summer school offers up to 40 students an opportunity for an introduction to hi-tech ocean observing. The week-long school will feature a mix of classroom lectures, laboratory demonstrations of inter-disciplinary ocean sensors, an introduction to ocean observing platforms (moorings, coastal stations, sea-floor landers, autonomous underwater vehicles), and field work on a research vessel to deploy ocean observing equipment at sea. The school will cover a range of sensors and sampling equipment used to measure physical, biological and chemical properties of the ocean. The utility of time-series datasets generated by moored monitoring stations to estimate net ecosystem metabolism for estuarine and coastal habitats will also be demonstrated.

More information about applying can be found on the [PICES website](#).



# Exploring the underwater realm of False Bay

*Lauren De Vos*

UCT Marine Research Institute

With an inshore fishery that has been exploited for over 200 years, many species in South African waters, from sharks and rays to bony fish, are in serious decline. Sufficient understanding of the conservation status of these species is essential if we are to address this situation. However, very few species are actually adequately monitored because the costs and logistics of doing so impede the sustainability of these efforts. South Africa's marine protected area (MPA) network relies on fish surveys as a means to understand how effective our protected areas are in achieving biodiversity conservation goals. Developing a more cost-effective, time- and labour-efficient method of surveying fish species is integral to ensuring that monitoring is sustainable along the South African coastline, in the long-term.

The reasons behind MPA monitoring are varied and extensive, not least because sustainable assessments enable us to address certain fundamental questions. Is our network properly designed and situated, and adequately enforced? Monitoring also helps us look to future design and network expansion. South Africa's coastline presents a series of challenges that impede the sustainability of current monitoring techniques, making annual monitoring logistically difficult for both MPA managers and scientists.

Our conservation arsenal comprises a variety of well-used and accepted traditional monitoring techniques. However, it is the logistical challenges they present that hampers their use in regular, sustained monitoring, rather than the scientific bias that may be inherent to each specific technique. A challenging coastline makes finding suitable dive-days to achieve regular SCUBA surveys diffi-



*Baited remote underwater video (BRUV) survey of False Bay's ichthyofauna. A Blue and Cape Hottentot is pictured here. Photo by Steve Benjamin.*

cult. Divers are limited by the depths they can safely access, the time available for underwater data collection and by stringent safety and labour regulations. Additionally, we rely on divers to have the requisite scientific SCUBA qualifications and fish identification skills. For MPAs, certainly, finding non-extractive techniques to sample fish may be considered preferable to controlled angling surveys, where the post-release mortality rates of certain species may not be known.

Baited remote underwater video (BRUV) surveys were developed in Australia, and are now used around the world for a variety of projects. By attracting fish into the field of view of a remotely-controlled camera, the technique records diversity, abundance and behaviour of species. As a non-extractive technique, it offers a low environmental impact way of understanding changes in fish numbers and diversity over time. For South Africa, the practicality of BRUVs extends beyond pure scientific interest to addressing the need for affordable, efficient monitoring of fish populations.

Monitoring solutions that can best be incor-

porated into annual budgets, are less reliant on the availability of skilled labour and can be used into the future are what will perhaps make sustainable monitoring a more practical, long-term and standardised reality. In an extension of the work started in Tsitsikamma and Stilbaai, our research this year introduced BRUV surveys to a region with a long history of human utilisation and an interesting marine community. The False Bay BRUV project introduced simple steel rigs with GoPro HD cameras attached to them, buoyed off at the surface and left to film independent of the boat for one hour on the seafloor. Reducing the manpower required for fieldwork, as well as the cost and complexity of the equipment and maximising the amount of data collected on any given day, hopefully means that the methodology can be replicated by conservationists along the coastline and utilised in standardised monitoring.

As our largest true bay in South Africa, and with over 400 years of commercial fishing activity in the region, False Bay presents an interesting and iconic site for an underwater



camera survey. A host of fishers claim their stake in False Bay, whether they be considered recreational, commercial, subsistence or artisanal. Moreover, False Bay is surrounded by a growing human population and so the functioning of the marine environment is strongly impacted by such pressures as coastal development and pollution.

The project has set out to survey the bay over winter and summer, and also includes a recently-launched component that is comparing the abundance and diversity of species inside and outside MPAs on the Western side of the bay. Two months of rain-soaked misery on the boat and big winter swells resulted in 100 hours of footage across the region. This translates into some solid video-watching for the researchers on the project! We're now gearing up for a further 100 hours as a summer comparison.

Beyond its implications for science and management, there is something to be said for conducting this type of work in a region that is regularly accessed by a variety of ocean-users and is a source of much interest to the citizens who live, work and holiday around False Bay. The video footage, which to scientists essentially represents raw data, gives the South African public an "underwater eye" that, quite literally, allows us to bring our marine heritage ashore.

Bringing our data to land is an important step: archived video footage can be used for long-term ecosystem comparisons and the data can be independently re-analysed at any time. However, perhaps the most gratifying part of all this is the realisation that, to an audience outside the scientific community who might never otherwise access our underwater realm, the tenacious defence of the bait canister by a roman, the ponderous progression of a sevengill or the ethereal whirring of a pipefish's fins in front of the camera conveys perhaps more convincingly than graphs and statistical formulae exactly

what lies beneath the waves.

For that reason, we're trying to make the most of the beautiful videos we're bringing to land, using them in school talks, public lectures and making them available online via the Save our Seas Foundation's research blog. In a climate that favours news of politics and entertainment, sometime perhaps to the detriment of our wilderness heritage, it's encouraging to note the favourable reaction to interesting footage and findings from our oceans. Some underwater creatures (and their antics) have proved immensely popular, with a wily octopus that made off with one of our trial bait canisters garnering over 600 000 views on our Vimeo video channel and making news around the world via social media platforms and online news networks (you can see this clever little cephalopod for yourself by searching "Foiled by an Octopus" on our SOSF blog).

More importantly, translating this footage to a broader audience allows for a certain extension of conservation messaging. A juvenile red steenbras swimming in clear water, the determined antics of the shyshark and catshark species and the regal fly-past of a St. Joseph's shark make for good viewing, certainly, but also uncover that ocean heritage which is ultimately ours to protect.

Dive in! Follow the research on <http://saveourseas.com/projects/bruv false bay> and look out for regularly posted videos and stories from False Bay.

#### *Acknowledgements*

- Principal investigator: Associate Professor Colin Attwood (UCT)
- Co-workers: Lauren De Vos (UCT) and Dr. Albrecht Götz (SAEON)
- Funded by: The Save our Seas Foundation and the South African Environmental Observation Network (SAEON)

## 2nd SOUTHERN AFRICAN SHARK & RAY SYMPOSIUM

### DATES:

Monday 22nd April – Wednesday 24th April 2013

### VENUE:

Oceans Hotel and Campus, Mossel Bay, South Africa

The Southern African Shark and Ray Symposium is a biannual meeting of the academic community of Southern Africa who are currently conducting research on these taxa. The inaugural symposium was conceptualized and hosted by the KwaZulu-Natal Sharks Board in 2011.

Oceans Research provides and facilitates innovative and dynamic marine research relevant to the management and conservation of Southern Africa's marine life. Oceans Research specialises in investigating the biology of marine mega-fauna, including sharks and marine mammals, and advises governmental, non-governmental and industry on relevant conservation issues.

Deadline for registration

**18th March 2013**

More details are available on the [website](#).



## 2013 Marine and Coastal Educators Conference

SANCOR's Marine and Coastal Educators Network (MCEN) once again hosted a successful (and 13<sup>th</sup>) national conference in Hartenbos, Mossel Bay in January 2013. MCEN is an informal network which aims to assist marine educators in their activities. The conference was themed "Food Security for All" and was efficiently organised by Arno Munro from the Department of Agriculture, Forestry and Fisheries (DAFF). Lectures and hands-on activities were presented by marine scientists, educators and representatives from (amongst others) DAFF, Department of Environmental Affairs (DEA), South African Environmental Observation Network, Two Oceans Aquarium, Sea World and the Wildlife and Environment Society of South Africa.

A few highlights from the conference included a presentation from Anton Fortuin (Centre for Conservation Education) outlining recent changes to the curriculum as indicated in CAPS (Curriculum and Assessment Policy Statements). He described ways to incorporate the new requirements into marine lesson plans and activities. Anton also extracted all environmental lessons from the prescribed document for each grade, providing a valuable resource for educators. A guided tour of a sardine cannery in Mossel Bay revealed the high standards maintained at the plant and gave insight into the role of DAFF stock assessment scientists and inspectors in the factory's operations. Nazeera Hargey of the DEA presented basic concepts of oceanography and provided useful material for learners. Staff from the South African Marine Rehabilitation and Education Centre demonstrated an activity to illustrate the complexity of the marine food web. Participants were dressed to represent various marine organisms. Different colours of wool were connected to each 'organism' within each trophic level.

This conference was successful in bridging the gap between marine scientists and educators. If you would like to join MCEN or receive a copy of the conference presentations, please e-mail Carmen Visser ([sancor@daff.gov.za](mailto:sancor@daff.gov.za)).

## SANCCOB celebrates African Penguin Awareness Day

*By Francois Louw*

SANCCOB

SANCCOB (the Southern African Foundation for the Conservation of Coastal Birds) and numerous other local and international organisations, zoos and aquariums celebrated African Penguin Awareness Day (APAD) on 13 October. APAD is a day dedicated to raising worldwide awareness about the plight of the endangered African penguin. SANCCOB, together with SANParks and Boulders Beach Lodge and Restaurant, hosted the 12<sup>th</sup> annual Simon's Town Penguin Festival to commemorate APAD.

The festival kicked off with the release of 41 African penguins rehabilitated at SANCCOB, back into the wild at Seaforth Beach (Simon's Town). The group was part of the 254 seabirds that were admitted to SANCCOB due to the SELI 1 oil slick that occurred off Table Bay on 1 September 2012. Amongst the large group of spectators was a school group from the Dominican School for the Deaf in Wynberg who had the special honours of tipping the penguin boxes over for the release. The moving event was broadcasted live to a jam-packed crowd at Iziko Museum as part of Iziko's Marine Week exhibition with SANCCOB.

After the release, members of the public found their way to the two large marquee tents in front of Boulders Beach Lodge and Restaurant for the festival. This year's festival featured a cooking demonstration by a ce-

lebrity SASSI chef, an African penguin poem read by Michaela Strachan (international wildlife presenter), a snake and reptile show, a birds of prey demonstration, live spider exhibit, food stalls and loads of 'edutainment' for the kids. Visitors also had the opportunity to meet and take pictures with SANCCOB's famous ambassador penguin. All proceeds of the festival were donated to SANCCOB and their conservation work with African penguins.

One of 17 penguin species, the African penguin is the only penguin species to occur naturally on the African continent. At the start of the 20<sup>th</sup> Century, there were an estimated 4 million individual African penguins in the wild. In the last 100 years, these numbers have decreased by 90% to approximately 24 000 breeding pairs in the wild in 2012. In 2010, due to the rapid decline, the species was reclassified from vulnerable to endangered on the IUCN Red Data List. Currently, the biggest threats to the African penguin species include habitat destruction through expanding human settlements along the coastline, commercial over-fishing, pollution and oil spills. As an indicator species, the decline of the African penguin signifies the alarming state of our ocean and our marine environment.



*SANCCOB releases 41 rehabilitated African penguins at Seaforth Beach. Photo by Francois Louw.*



## Two Oceans welcomes the world of public aquariums to Cape Town

*By Alice Ashwell*

EnviroEds

Shortly after London hosted the Olympic Games, the Two Oceans Aquarium in Cape Town hosted what Director Dr Patrick Garratt has dubbed “the Olympics of the global aquarium community”. The International Aquarium Congress is the only global meeting of public aquariums. It takes place once every four years, and the bidding process moves around the world – from the Americas, to the Far East and Australia, and finally, every twelve years, to Europe, the Middle East and Africa. Bringing the congress to Cape Town was not only a ‘first’ for the continent of Africa – it was also the first time the congress had been held in the southern hemisphere.

### Deep down we’re all one

Setting the scene for a congress that would focus to a large extent on how people relate to the sea and its creatures, Francois le Roux – otherwise known as the Ha! Man – conducted a moving performance entitled *Deep down, we’re all one*, which integrated marine images, music and poetry [for a short video clip, see [http://iac2012.co.za/blog/entry/deep\\_down\\_we\\_are\\_all\\_one/](http://iac2012.co.za/blog/entry/deep_down_we_are_all_one/)]. Beginning with the origins of life’s abundance in the oceans, the performance next represented the tension between nature and culture that humans have created through our competitive and conquering ways. Reaching a cacophonous crescendo, the performance took a reflective turn, reminding us of our connectedness to all life on earth, and suggesting that it is in appreciating the oneness of all life that our hope and healing lie. Lara Kirsten performed a poem she had written for the occasion. As if heralded by this performance, hope and resilience in the face of our challenges emerged as a strong theme of the congress.



*IAC opening ceremony – Welcome performance “Deep down we’re all one”. Photo by Ingrid Sinclair*

### Keynote messages

The three main keynote addresses of the congress were delivered as part of the opening function. Camille Parmesan, a professor at both the University of Texas in the USA and the University of Plymouth in the UK, presented hot-off-the-press information on the impact of climate change on the distribution, breeding behaviour and sex ratios of both terrestrial and marine species around the world. Using the example of coral reefs, she emphasised that that conventional conservation efforts are as important as ever, as healthy ecosystems are significantly more resilient to the effects of climate change (e.g. coral bleaching events) than over-exploited and degraded systems.

Already we are starting to witness biological communities changing in response to climate change. Species are on the move, as regions in which they have lived for thousands of years become unsuitable for their survival. For some species, shifts in distribution of up to 1 000 kilometres have been recorded in the last 40 years. Unexpectedly, in some marine environments changes in species distributions have been even greater than on land. Furthermore, climate change is creating new types of habitats that have not existed on Earth during recent evolutionary

times. We have no idea what mix of species will colonise these regions.

In the face of these rapid and unpredictable changes, Dr Parmesan made a provocative suggestion – certainly in the context of South Africa where so much effort has been spent in trying to address the issue of invasive alien species. As habitats change, many species will be unable to move naturally into suitable climatic regions. We may have to consider a process of ‘assisted colonisation’, moving species from their original environments to new ones, which may even include continents where they have never existed before. Clearly desperate times call for desperate measures – and aquariums, with their experience in the culturing, care and release of marine species, and the restoration of marine habitats, have an important role to play.

In his keynote address on the ‘Two Oceans’, Professor George Branch, who has made a life-long contribution to marine biological research and education at the University of Cape Town, confirmed that South Africa is witnessing significant changes in the distribution of marine species, such as pelagic fish and rock lobsters. This is having enormous impacts on both marine ecology and local communities. For instance, as shoals of an-



chovies and pilchards move eastwards, they move beyond the reach of the communities and fish processing factories that once benefited from their bounty – not to mention the many seabirds like African penguins and Cape gannets that depend upon them for food. Similarly, changes in the distribution of rock lobsters is having a profound effect on the populations of sea urchins and abalone around the Cape.

Author and researcher, Dr Elin Kelsey, has been conducting an empowerment evaluation for 40 aquariums in the USA that are involved in communicating about climate change and the oceans. She is passionate about exploring how conservation biologists, environmental educators and the public relate to hope and the environment. In her keynote address, *Torrents of hope: Why emotions matter to aquariums*, she warned that the tendency of environmentalists to communicate ‘doom and gloom’ makes people despondent, and fuels a culture of hopelessness. She challenged the congress to radically rethink the ways in which we relate to the planet, and to consider narratives of hope and resiliency as alternatives to ‘doom and gloom’.

She reminded the congress that aquariums have a special ability to enable people to connect emotionally with animals and environments, and encouraged delegates not to contribute to a growing sense of environmental grief, despair and overwhelm, but to move ‘beyond the (environmental) obituaries’ and gather and share positive stories of conservation and environmental care. Dr Kelsey encouraged aquariums to play a role not just as ‘purveyors’ of environmental information, but as ‘hosts’ - enabling people to get together and be part of positive conversations and initiatives. Already many aquariums are encouraging involvement in sustainable seafood initiatives, citizen science projects, and environmental advocacy and action programmes for youth.

#### **Voices of the Youth**

Unusually for an international environmental

congress, the session on education was given pride of place on the programme just after the keynote addresses on the first day. And in this session, it was the youth who stole the show. Prior to the congress, Russell Stevens, Head of Education at the Two Oceans Aquarium, had coordinated an international video conference, *Voices of the Future of the Oceans*, involving youth via aquariums around the world. These young people discussed their concerns about the oceans, their hopes for the future, and their requests for the congress delegates. Two of the South African participants, both active members of the Two Oceans Aquarium’s Young Biologists programme, presented their feedback, including a declaration the youth had prepared. It was fitting that this youth declaration set the agenda for the congress.

Their recommendations are a valuable guide to all organisations involved in caring for the Earth:

- Emphasise education, conservation and human attachment;
- Motivate and inspire aquarium visitors;
- Use technology intentionally and sparingly;
- Continue a dialogue with the public after their aquarium visits;
- Enable the youth to undertake simple, achievable and gratifying actions; and
- Identify and nurture future leaders and innovators.

By hosting the Eighth International Aquarium Congress, the Two Oceans Aquarium created a unique opportunity, as the congress theme put it, for ‘the global aquarium community to share experiences and collectively inspire change’. A moving opening ceremony, challenging and inspiring presentations, café conversation sessions that stimulated meaningful conversations, and opportunities to get (literally) immersed in the nature (think Gansbaai) and culture of the Cape – all these experiences energised the aquarium community to continue their vital work of inspiring humanity to love and care for this Blue Planet.

### **CALL ANNOUNCEMENT**

#### **Foundational Biodiversity Knowledge and Information Research Funding Programme**

The primary focus of the programme is to generate, co-ordinate and make accessible foundational biodiversity knowledge in line with the needs of society, the Department of Science & Technology (DST) Global Change Programme and the bioeconomy. The priority knowledge needs relate to species occurrence, species identity, population abundance, and phylogenetic / DNA information, including barcoding. This type of information is often referred to as “fundamental” or “foundational” because it forms the basis of so many other aspects of biodiversity research and decision-making.

Concept documents for large, integrated team projects, that fall within the following focus areas and that meet the criteria outlined below are invited.

Focus areas:

1. Resolution of taxonomic problems, and documenting distribution and abundance of plant and animal species used for medicinal purposes in South Africa.
2. Biological control: identification of potential biocontrol agents through being able to identify the pest / pathogen / alien and its origin, the identification of natural predators / pathogens of it, and close relatives of the host and potential agents.
3. Marine biodiversity: co-ordination and dissemination of existing data on species and genetic data for harvested taxa and/ or those of importance in biosecurity, as indicators of habitat condition or as invasives, or important in ecosystems. Resolution of taxonomic problems and the development of identification guides for priority taxa are also covered.
4. Coordinated surveys for soil organisms and identification of functional roles in agroecosystems and natural areas and the co-ordination of existing information on soil organisms in South Africa.
5. Biodiversity functionality. Better understanding of key functional attributes of different species in ecosystems, and the key interactions between them, focusing on terrestrial regulatory services systems (developing an understanding of the system using a functional approach). Regulatory services include invasion resistance, pollination, climate regulation, carbon sequestration, pest and disease control in agricultural systems).

*CONCEPT DOCUMENT CALL CLOSES:*

**18 March 2013**

Click [here](#) for details.



# Tribute to Phil Hockey

*By George Branch*

University of Cape Town

On the 24<sup>th</sup> of January 2013, South Africa lost one of its leading biologists when Phil Hockey passed away after a battle with cancer. Phil arrived from England in 1976, drawn to South Africa by his ornithological passions, to work on White-fronted Plovers in Langebaan Lagoon. Hooked by the ornithological riches, he turned to research African Black Oystercatchers, for which he was awarded his PhD degree from the University of Cape Town in 1983. His association with 'oyks' became life long, and he and his students made seminal contributions to understanding their biology and contributing to their conservation. Joining the Percy FitzPatrick Institute of African Ornithology as a contract researcher, Phil was appointed to a permanent position as a lecturer in 1986, and rapidly rose through successive promotions, culminating with his appointment as Director of the 'Fitztitute' in 2008.

Phil's contributions to science were enormous: over 120 scientific papers, 12 books or chapters, 18 PhD and 33 MSc graduates, 8 Postdoctoral Fellows. His real legacy is, however, but feebly communicated by this shroud of facts. His knowledge reached multitudes because he was active in communicating his science to the public. In addition to over 150 popular articles, public lectures, radio and TV interviews he made major contributions via his books, including his monograph *Waders of Southern Africa*, his field guide together with Ian Sinclair and Warwick Tarboton *Sasol Birds of Southern Africa*, and – arguably his most important contribution – his role as lead editor and author of large portions of the magnificent seventh revision of *Robert's Birds of Southern Africa*. The combination of his cutting-edge science and his passionate dissemination of this

knowledge reaped fitting accolades, including being named 'Marine and Coastal Communicator of the Year' in 2000 by the South African Network for Coastal and Oceanic Research, and awarded the Stevenson-Hamilton Medal by the Zoological Society of Southern Africa in 2008 for contributions to public awareness of science.

But let's turn to Phil the man. He was someone to whom people regularly turned when they really wanted to chew the cud, whether it was over deep scientific matters or life at large, because of his incisive lateral thinking, breadth of knowledge and larger-than-life open enthusiasm.

My time working with him on Marcus Island carries special memories, as it will for many others, from his family to his students. His research there transformed understanding of the keystone role of oystercatchers on rocky shores, demonstrating that on islands where they are abundant, they deplete limpets, thus promoting algal growth, increasing associated infauna consumed by other birds that forage in the intertidal. Phil also went on to show that guano on bird islands greatly increases productivity in the intertidal zone, so that seaweeds grow more prolifically and abundantly, limpets reach larger sizes, but their shell proportions and habitats they occupy are shaped by oystercatcher predation. In probing these interactions among multiple species, Phil spanned the big issues of ecology and evolution – as did much of his other research. Phil and I were also the first to detect the arrival of the alien mussel *Mytilus* on Marcus Island, long before the geneticists claimed it as a scalp in their publication record. We were feasting on a potjie of mus-



*Phil at peace in the mountains, 'bins' around neck as always. Photo by Sam Hockey.*

sels when we became aware of their weird flesh colour – quite unlike that of the indigenous mussels. Gastronomy to the cause of science!

Phil was famous as a raconteur of stories, especially around a fire and armed with a beer, as illustrated by his real-life story of how the headman of Malgas Island discovered two rock-lobster poachers bobbing in the sea in a bakkie, tossing out kreef hoops into the reserve. He shouted a warning from the shore...but they gesticulated that they couldn't hear. Wielding a bullhorn, he repeated his message, but the poachers, figuring that they were safely isolated, responded with a vigorous elevation of middle fingers. The headman retreated, only to emerge with a 303. Bam! One poacher drilled between the eyes. End of poaching. In court, the headman got off on the grounds that he was firing a warning shot, "but the waves came up"! Ah yes, the stories that flowed from Phil were multiple, edifying and told with the generosity of spirit and exuberance for life that characterised him.

Phil's death leaves his wife Samantha and his family bereft, but their loss is shared by a many, and his extraordinary contributions, insightful mind, generosity in sharing ideas and nurturing of students leave lasting legacies. Hambani kahle, my friend.





## Most outstanding thesis



Andrea Ross-Gillespie (nee Muller) has been awarded the South African Association for the Advancement of Science's medal for the most outstanding thesis ("Humpback Whales, Rock Lobsters and Mathematics: Exploration of Assessment Models Incorporating Stock – Structure") submitted for an MSc degree in the Science and Engineering Faculties in 2012 at the University of Cape Town.

She thus follows in the footsteps of Andre Punt and Rebecca Rademeyer, whose fisheries assessment related MSc's also received this award, i.e. MARAM (MARine Resource Assessment and Management) Group members in the Mathematics and Applied Mathematics Department have won this effectively University-wide award for three of the last 25 years.

## BOOK FEATURE

### *SOUTHERN AFRICAN SEA LIFE*

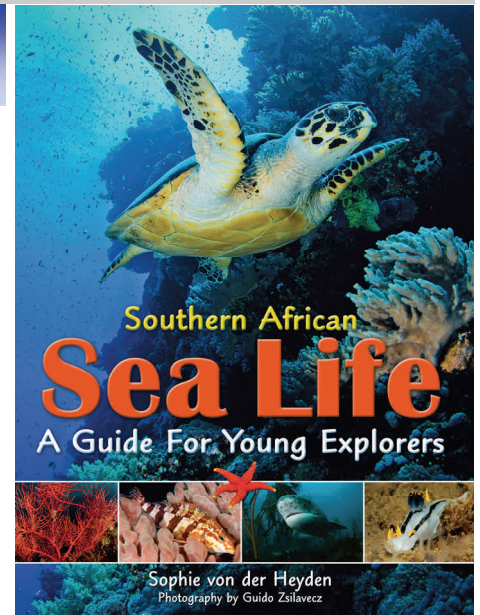
#### *A Guide for Young Explorers*

SOPHIE VON DER HEYDEN &  
GUIDO ZSILAVECZ

This guide for young explorers combines scientific fact, fascinating tidbits, brilliant full-colour photography and sensitive illustrations to bring a wonderful variety of ocean creatures vibrantly to life.

Children will enjoy pouring over the colourful pages as they:

- read about marine habitats like sandy beaches, rocky shores, estuaries, coral reefs and kelp forests
- discover plant and animal groups, including molluscs, crustaceans, coastal birds, mammals and reptiles, among others
- learn to identify important species from each group, using picture field-guides
- study the helpful holiday guides to find out what sea life to look out for along the shore – from Walvis Bay to Mozambique
- find out why the ocean is vital to us, how it may be harmed by human activities and some of the ways in which we can help, and
- learn about the valuable work that marine scientists do.



This introduction to the habitats, plants and creatures of the southern African shores is a celebration of ocean life that is sure to become a favourite with beachcombers of all ages.

Sophie von der Heyden has a PhD from Oxford, lectures in marine biology and genetics at Stellenbosch University and has published widely on marine biodiversity and conservation.

Guido Zsilavec started diving in 1989. He took up underwater photography early in his diving career and has published identification guides on fishes and on seaslugs. He has also contributed to many other publications.

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