



SANCOR NEWSLETTER

South African Network for Coastal and Oceanic Research

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SA hosts first national Ocean Acidification workshop

By Alan Aldrin Meyer



CSIR Coastal Systems Research Group

Anthropogenic induced Ocean Acidification was the topic of a recently held workshop at the Marine Research Aquarium in Cape Town. The workshop was the initiative of the CSIR's Natural Resource and the Environment (NRE) directorate, with co-sponsorship received from the national Department of Agriculture, Forestry and Fisheries and the Department of Environmental Affairs.

The workshop presented a platform for the first national interaction between scientists and management on the climate change related issue of Ocean Acidification and the possible implications of Ocean Acidification to the sustainability of the Living Marine Resource of South Africa's continental shelf ecosystems.

The aims of the workshop were primarily to:

- Ascertain the current status of the Ocean Acidification knowledge base and research activities in South Africa; and to
- Provide preliminary input to the development of key research and management questions, which may shape the future national agenda on Ocean Acidification.

The workshop was attended by 26 invited delegates from the Council for Scientific and Industrial Research (CSIR), Department of Agriculture, Forestry and Fisheries (DAFF), Department of Environmental Affairs (DEA), South African Environmental Observation Network (SAEON), Applied Centre for Climate and Earth System Sciences (ACCESS), World Wildlife Fund – South Africa (WWF-SA),



Calcareous shells and skeletons of marine organisms are vulnerable to the effects of Ocean Acidification.



Oceanographic Research Institute (ORI), University of Cape Town (UCT), University of Stellenbosch (US), University of KwaZulu Natal (UKZN), Research Africa, and the National Oceanic and Atmospheric Administration (NOAA) of the United States of America.

The workshop was held over two days, with day one focusing on information sharing in the form of scientific and management presentations. The second day afforded time for broad discussions around Ocean Acidification research and monitoring.

In brief, Ocean Acidification is associated with uncontrolled fossil fuel burning during the last two centuries which has created accelerated increases in atmospheric carbon dioxide (CO₂). The pollution of anthropogenic CO₂ in the atmosphere has led to accelerated uptake of CO₂ by the global ocean, which in turn is causing the rapid acidification of the ocean as dissolved CO₂ reacts with seawater to form carbonic acid. The increase in carbonic acid formation has led to a lowering of the global ocean's pH, forcing a concomitant decrease in the saturation states of aragonite and calcite, the primary molecular building blocks of calcareous shells and skeletons of marine organisms. Contemporary science concludes that the global ocean will experience a drop in pH of 0.4 units by the end of 2100 creating a global biogeochemical oceanic climate that will not be able to sustain today's rate of calcification. The consequence of this global climate change phenomena will be a rapid deterioration of global marine biodiversity which could see the collapse of commercially important continental shelf fisheries, as we know them today.

Global biogeochemical climate models and data analysis predict that South Africa's

largest marine protected area around the Prince Edward Islands in the Southern Ocean will experience Ocean Acidification by 2080 with irreversible biodiversity losses and cascading consequences to entire food webs and ecosystems. Furthermore, one of South Africa's most commercially viable marine commodities, the Benguela Upwelling System within its western and southern Exclusive Economic Zone, will experience the corrosive and irreversible consequences of Ocean Acidification within the 21st century.

Currently there appears to be no or limited, collective and concerted effort to develop a national research response to address the paucity of knowledge relating to the impacts of Ocean Acidification. Moreover, there is currently no long-term series of *in-situ* data available to evaluate the current status and trends of the oceanic pH for the continental shelf ecosystems of South Africa. The latter is necessary for the confirmation or rejection of the projections of the above mentioned global biogeochemical climate models. The workshop of 13-14 March 2012 was thus in part convened to address the latter shortcomings in knowledge, and *in-situ* data relevant to Ocean Acidification.

The science presentation presented at the workshop gave some preliminary results showing that certain of South Africa's commercially species could show some vulnerability to Ocean Acidification. The research results presented by Nina Lester from the University of Cape Town, who subjected the abalone *Haliotis midae* to pH environments expected later this century, show that juveniles exhibit shell pitting and shell fissures only after 5 days in low pH environments. Dr Lutz Auerwald, from DAFF's Inshore Resources Research Unit, showed results from experiments performed with both the west coast rock lobster *Jasus*

lalandii and the abalone *Haliotis midae* and found that rock lobsters compensate for low pH waters, whereas abalone shows impacts on growth in pH environments expected later this century.

Managers responsible for the stewardship of South Africa's marine environment, including those from the national Departments of Agriculture, Forestry and Fisheries and Environmental Affairs believe Ocean Acidification might be a particular threat for the sustainability of the continental shelf ecosystems of South Africa. All the delegates agree that Ocean Acidification should be taken cognisance of, and that Ocean Acidification Research and Monitoring should be part of the national Climate Change Adaptation and Mitigation agenda. The Department of Environmental Affairs indicated that they are already investigating in Ocean Acidification via the new Marine Vessel *SA Agulhas II* which will be equipped with instrumentation to measure carbonate chemistry on-the-way to the Prince Edward Islands and to Antarctica.

In general, the workshop was a success in that it captured the present national knowledge base concerning Ocean Acidification and created the first national engagement on this important climate change issue.

The workshop could only accommodate a limited number of delegates and therefore interested parties who could not attend the workshop but who are interested in this issue are invited to contact Dr Alan Meyer (ameyer@csir.co.za) so to place your names on a mailing list for a possible follow-up workshop on Ocean Acidification.



Swordfish, sharks and satellite tags: an account of a Large Pelagic voyage

By *Charlene da Silva, Wendy West and Chris Wilke*



agriculture, forestry & fisheries

Department: Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Fisheries Branch,

Department of Agriculture, Forestry and Fisheries,

The idea of large pelagic longline fishing operations conjures up “Deadliest catch” images of monstrously sized waves and boom or bust catch of oceanic migrants. In the world of marine science the idea most people have of what constitutes a research cruise is generally far from reality, with most tasks that appeared exciting in the beginning becoming menial and repetitive by the second day. Although this was the case for our Large Pelagic Longline Voyage during October on the *RV Ellen Khuzwayo* the activities were punctuated with breathtaking moments of excitement, surprises and fun, filling us with appreciation for what we do and the opportunities that we are provided with. The relatively recent establishment of a local Large Pelagic Tuna Longline fishery has represented an important milestone and progression in the development of South Africa’s commercial fishing capacity. However South African research aimed at answering important questions about the fishery and target species are in its infancy. To date there have only been 5 dedicated national research trips undertaken from the newly built fisheries research vessel *RV Ellen Khuzwayo*.

One of our primary national priorities is determining the degree of movement of large pelagic species between the Indian and the Atlantic Ocean. Currently there are two major Regional Management Forums or RFMO’s

responsible for managing these fish in our waters, the Indian Ocean Tuna Commission (IOTC) and the International Commission for the Conservation of Atlantic Tuna (ICCAT). The boundary between the areas of responsibility for these RFMOs is set at

20° longitude which passes through Cape Agulhas dividing the area to the west of this line to ICCAT and that to the east to the IOTC. South Africa contributes to each of these RFMO’s by providing catch data from our fleet for stock assessments completed by the IOTC and ICCAT, respectively.

However large pelagic fish are capable of moving over extended distances. These movements need to be determined in order to understand the distribution of these stocks, as fish are not inclined to recognize the boundaries as stipulated by man. Trans-boundary movements could have serious ramifications to existing stock assessments



The one that didn't get away!

undertaken by ICCAT and IOTC. South Africa’s involvement in the South West Indian Ocean Fisheries Programme (SWIOFP) through Component 4: Assessment and sustainable utilization of Large Pelagic resources has provided momentum to our research programme by providing us with leading experts and access to new technology.

Scientific staff from the Department of Agriculture, Forestry and Fisheries and other institutions disembarked from Cape Town on the 11th October 2011 on a three week cruise aboard the *RV Ellen Khuzwayo*. These included Sven Kerwath, Stephen Lamberth, Chris Wilke, Bruce Mann (ORI), Rob Cooper,

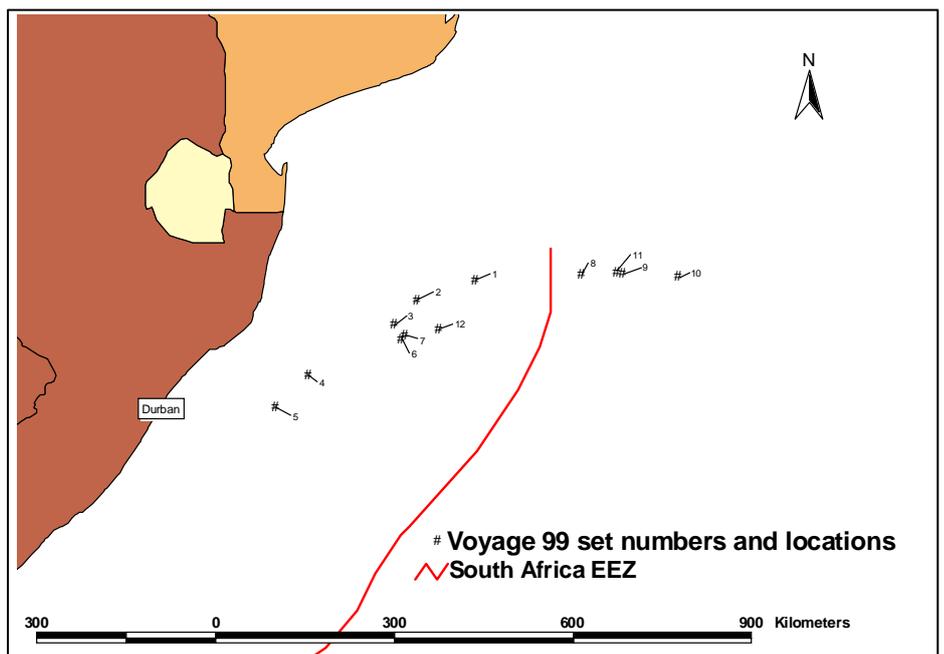


Figure 1. The location of lines set in the SWIO region within and outside of South Africa’s Exclusive Economic Zone (EEZ).



Melissa Goosen, Yolanda Snyders, Wendy West and Charlene da Silva. The focus of this study was to investigate the movement of swordfish, bigeye tuna, yellowfin tuna and blue sharks. South Africa had been provided with 12 pop-up satellite archival tags (PSATs) from SWIOFP to be placed on swordfish. This trip if successful would represent the first swordfish tagged in the South West Indian Ocean (SWIO) region. The PSAT tags provide information about location and depth of a tagged animal for a preprogrammed period of time. We had purchased a further two mini-PSAT tags and two Smart Position or Temperature Transmitting (SPOT) tags for bigeye tuna and blue sharks, respectively. This gave South Africa the opportunity to address national interests whilst contributing to the success of SWIOFP's Component 4. Most researchers would agree that one of the benefits of our profession is being able to embrace new technology and play with some very cool and expensive toys. This trip was no exception and in addition to the 12 tags we were also provided with hook timers that would give us a time stamp of the exact moment an animal was caught on a particular hook. We also had the use of Temperature Depth Recorders (TDRs) which measure temperature and depth continuously at the discrete position where they are placed on the longline.

Since one of the main aims of the cruise was to successfully tag swordfish in the SWIO

region, we travelled up the east coast towards Durban and fished in an area between Durban and the Mozambique border between 100 – 380 nautical miles offshore (Figure 1). The crepuscular movements of these species meant that the passengers of the *RV Ellen Khuzwayo* had to reset their biological clocks and switch to working from dusk till dawn. The results of the first set through analysis of the hook timers indicated that swordfish were taking the baits between 00h00 to 02h00. In an effort to maximize the opportunity for the successful release of swordfish, the fishing regime was refined to allow for deployment of the line for a soak time of five hours straddling the best catch period between midnight and 02h00. Each line was deployed from 22h00 with a total of 360 hooks and covered an average distance of 12 nautical miles. Retrieval of the gear started at 02h00 and was generally completed by 08h00. Oceanographic parameters were sampled at the start and end of each line during deployment and retrieval with a Sea Bird portable CTD to a depth of 200m.

The first few sets were completed in very rough weather with 6 meter swells and winds gusting up to 60 knots. However, rough weather was offset by good catches of some monstrous tunas and swordfish. These weather conditions meant that we were tagging swordfish and sharks in conditions where the ship was rolling side to side with

water running over the deck and washing our equipment all over the place. No easy task when faced with grumpy sleep deprived participants and some very angry sharks.

By the second set we had caught several swordfish, some tuna and a few blue sharks. We were made acutely aware of the tendency for swordfish to be negatively impacted by capture and to be in very poor condition or already dead on the line. We were however determined to attain the ultimate prize, a successful release of a tagged swordfish. The third set was a coconut! We finally caught a swordfish big enough and lively enough to tag. The first swordfish tagged with a satellite tag in southern Africa! The fishing regime of targeting the window of opportunity for swordfish strikes, and limiting the soak time was finally paying dividends.

A total of 12 longlines were set adjacent to the Kwa Zulu-Natal coastline for the duration of the cruise resulting in the tagging of 11 swordfish with PSAT tags. During the return to Cape Town a final longline was deployed on the last night off the central Agulhas Bank in favorable sea surface temperatures, in a last ditch attempt to tag a bigeye tuna, and to spaghetti tag some more blue sharks. Although several tuna pole boats were successfully catching a few yellowfin tuna in the same area, our catches were dominated by a good haul of blue sharks and one last swordfish. The swordfish was successfully tagged

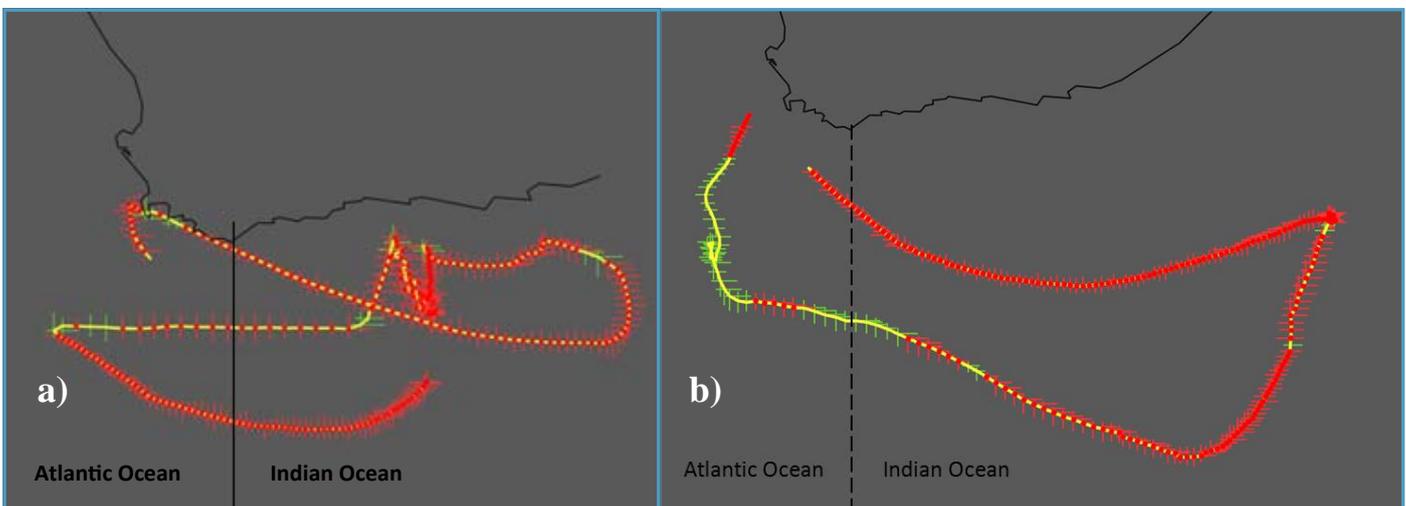


Figure 2: The movement of a) blue shark and b) swordfish indicating transboundary movement in 102 and 79 days, respectively.



with a PSAT tag and a number of blue sharks were OTC injected and spaghetti tagged.

So ended a very successful large pelagic cruise with a total of 11 swordfish released with satellite tags, two blue sharks were SPOT tagged and several sharks were spaghetti tagged. The instrumented longline with its array of hook timers and TDRs provided us with new insights into the world of large pelagic species. These data will be analyzed to provide further detail on the depth distribution of the various species, condition of the various species after elapsed time from capture and many other fascinating relationships. For example the incredible stamina of some species, such as the blue sharks, that were still very lively after an exposure of almost 8 hours on the line.

We waited patiently in the months after the trip for signs of data transmissions from the PSAT tag pop offs. We could only daydream about the incredible places and depths that these fish were visiting. Results from our past three trips had already provided some interesting information most exciting of which was a juvenile blue shark that swam all the way to South America after being tagged off Cape Point. This and other recaptured sharks lent weight to a hypothesis of a single blue shark population in the Southern Atlantic and a parturition and nursery area for blue sharks off South Africa. The SPOT tag technology ensures that every time the tag is exposed at the sea surface there is a constant relay of the geo-position of the tag via the satellite. Whilst waiting for our PSAT tags to detach, some preprogrammed for a sampling period of 3 months and others 6 months. We received constant transmissions from one of our SPOT tagged blue sharks. This shark was released in the southern Mozambique channel and swam north passing Bassas da India *en route* to northern Madagascar. Communication with this animal was finally lost after 137 days at liberty during a tropical cyclone.

Finally we got data from 6 of our swordfish after months of patiently waiting. These were analysed, along with data from 5 blue

sharks satellite tagged during previous trips. Results from the swordfish and blue sharks suggest that these species are moving across the current Indian and Atlantic Ocean management boundary (Figure 2). Animals are freely moving between oceans and appear to be associated with oceanic fronts but using bottom features to orientate themselves. These results are incredibly important to the successful and sustainable management of these highly commercially valuable species.

This large pelagic voyage was one of the most intense, tiring and tedious research cruise that many of us have ever experienced. However the moments remembered months after, include the joy we all felt after the first swordfish successfully swam off with one of our tags, the wonder of discovery and the sense of a job successfully completed.

We would like to take this opportunity to thank SWIOFP for its support and supply of the tags, instrumented longline equipment and the subsequent opportunity to receive training in the analysis of the PSAT tag data. Last, but not least, we wish to acknowledge the tireless and unfailing support provided by the Master and crew of the *RV Ellen Khuzwayo* and the substantive part that they played in ensuring the success of this epic voyage.



Seeking technologies for ocean current energy generation



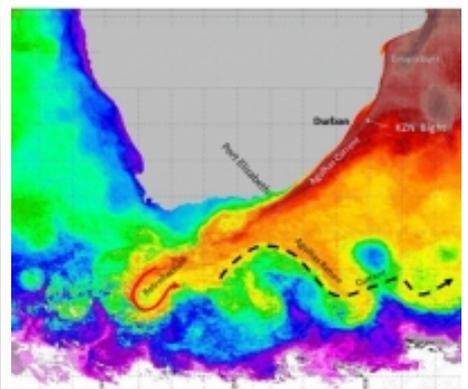
The Technology Innovation Agency (TIA) and Eskom are collaborating to explore technologies that can be developed to create and utilise ocean current energy, as an alternate source of renewable energy.

Submissions are invited from parties and innovators who have an interest in this kind of technology. Workshops will be held in various regions to further introduce and elaborate on the challenge. The closing date for submissions is Tuesday, 3 July.

TIA, in fulfilling its mandate of “Stimulating and intensifying technological innovation in order to improve economic growth and the quality of life of all South Africans”, is collaborating with Eskom in an open innovation initiative to encourage home-grown solutions to ocean current energy harvesting.

South Africa, with its long coastline and powerful currents, is in an ideal position to exploit renewable marine energy as an economically viable solution as part of its energy mix.

The Agulhas current along the Indian Ocean coast is among the strongest on the planet. According to Eskom’s research division, which has been studying the current for the past six years, it has the capacity to generate





42 GW of electricity.

Ocean current energy technologies like most renewable marine energy technologies has lagged behind other forms of renewable energy for a number of reasons, including the technical challenges posed by the marine environment and concerns about the impact of the infrastructure on vulnerable ecosystems.

But the growing demand for new, renewable sources of energy and South Africa's enviable marine capacity have stimulated interest in its potential to meet this need.

The open innovation challenge is calling for inventors, small and large enterprises, researchers, universities and NGOs to submit novel ideas for ocean current energy technology, with the prospect of funding most promising proposals. Therefore, TIA in collaboration with Eskom is looking for proven concept proposals that are environmentally and aesthetically sensitive, and have potential for technology development on a commercial and industrial scale.

Research Institute for Innovation and Sustainability (RIIS), a local innovation consultancy company and pioneer of open innovation practices in South Africa, has been appointed by TIA to project manage the challenge.

TIA will be holding public engagement workshops for interested parties in these four major centres:

- Cape Town : 19 June 2012
- Port Elizabeth : 22 June 2012
- Durban : 26 June 2012

The launch date for the challenge is the 1st June 2012 and the deadline for submissions is 3rd July 2012. More information about the challenge and the response template can be accessed through <http://openinnovation.tia.org.za/>. Send questions by email to openinnovation@tia.org.za or call Jonathan Muringani on (012) 844 0671.

"The Old Man and the Sea" with a twist

By Paus Pillay

Marine Research Institute (Ma-Re),
University of Cape Town

In 1952 when Ernest Hemmingway penned "The Old Man and the Sea", he told the story of a lone fisherman's fight against a massive marlin, a clash of patience, determination and strength. To this day the battle that Santiago endured with the marlin rings true as it did at the 2012 South African Tuna Nationals. Angler Frank Scholtz, after a 6 hour-long tug-of-war, hooked and caught a 106.8kg, ± 2m long yellow fin tuna (*Thunnus albacares*) off Cape Point. Much like Santiago, Frank Scholtz received the admiration of his fellow anglers along with his catch making the record books as a new South African, African and World record for a fish caught by reel and rod on a 10kg line.

An additional bonus was that Mr. Scholtz's prize catch has formed part of a research study being undertaken by Drs Colin Attwood (Marine Research Institute, Ma-Re & Zoology Dept., UCT) and Francis Marsac (IRD, France). The researchers capitalised on the competition by gathering biological data of the catches, performing on-site dissections, working long hours in a tent set up at the False Bay Yacht Club in Simonstown. The researchers were ably assisted by the 2012 Applied Marine Science Masters' students and other postgraduate students. The students benefitted from in-the-field and hands-on training.

The competition was initially scheduled for 5 days but due to bad weather conditions, boats

were able to go out for only 2 days. As a result, only 29 fish including the prized 106.8kg whopper were sampled.



Frank Scholtz and the 106.8kg, 2m long yellow fin tuna

These data will form part of a larger study on migratory, large pelagic fish assessing their biological characteristics, reproduction and trophic ecology.

The fervour created by the prized catch and the joint collaboration between marine researchers and the anglers spawned another golden opportunity for science. A local charter company that catches tuna regularly has offered to supply additional samples to the project. Researchers will sample the catches, thus increasing the sample size, and then return the fish to the charter company. Science and society working together!



Team Tuna – Laura Weston, Annerie Lamprecht, Beenesh Motah, Martin Emmanuel (kneeling), Colin Attwood, Francis Marsac, Jessica Le Roux and Kirsty McQuaid.



Improvement on NRF peer-review guidelines necessary to achieve integrity

by Ursula Scharler



School of Life Sciences,
University of KwaZulu-Natal

This article follows on from several conversations with the NRF and peers in the scientific community on reviewing grant proposals, which brought up questions regarding the ethics of peer-review as currently practised for NRF grants. Every researcher submitting a grant proposal should be able to trust the process that follows from submission to decision on funding, and in order to generate this trust, specific guidelines need to be in place that ensure objectivity and impartiality during the review and decision process. Although the impartiality of peer review is the topic of many articles, books, etc., and a ubiquitous challenge, the one I would like to discuss here is very specific. It deals with the ethical dilemma when reviewing grant proposals of competitors who applied for the same pool of funding. In particular, is it ethical to review your colleague's grant proposal if s/he applied to the same programme as you, either as applicant or co-investigator? I have recently declined the review of several SeaChange grant proposals for this very reason. The reactions from NRF and colleagues were partly surprising – it was seriously considered that my personality is flawed since I saw an ethical dilemma in this. Specifically, NRF's reply to my request on clarity on this issue brought me the following answer: "There is no conflict if you review any of the applications submitted to the SEACHange programme, the issue you are raising of competing for the same pot of money does not constitute a conflict. But if you think that you will not be objective on your assessment, please decline the request....". Should we treat this at the personal level at all, or

rather move the discussion to the institutional level?

NRF has, of course, guidelines on the ethics of peer review, which includes many situations that are very necessary and essential to include. However, the review by applicants to the same programme is not included. The question whether scientists approached for reviews can do so fairly and without prejudice is a commonly asked question when faced not only with the content of the proposal, but also with information on origin, gender, race, age, institution and last but not least, competition for the same funding at the same time. A dilemma that can arise for instance is a situation where I may give grant proposal XY a brilliant review, which it deserves, and so generate a possible negative impact on my chances of receiving funding for my proposal submitted to the same programme. The question is actually not whether a particular person can handle all situations that may potentially lead to a misjudgement, but rather how it can be avoided to put scientists into such situations in the first place. More importantly, the credibility of the peer review process needs to be upheld for scientists to be able to trust the system.

The most 'convincing' argument in favour of reviewing competitor's proposals that I heard from colleagues was the legacy of history – "We've always done it like that". However, as everyone will agree, sticking to the legacy of history is not always the best way forward. Why not improve, if we can? Other countries have dealt with this issue through defining the eligibility of a reviewer in a more constrained framework. Here are a few examples.

The European Research Council, for instance, explicitly states that "No Panel Member is permitted to contribute to a proposal (neither as a principal investigator nor as a team member) and at the same time to remain an active Panel Member for the same

call". Although this statement explicitly deals with panels rather than individual reviewers, NRF panels do include team members of applications to the same call. The European Science Foundation (ESF) has this view on conflict of interests: "The prevention and management of conflicts of interest (ColIs) are the most important ingredients for ensuring equity and integrity in peer review, and to preserve the credibility of the process and that of the responsible organisation." Furthermore, ESF recognises not only actual, but also apparent, perceived and potential misuses of trust during the peer review process. Conflicts of interests include, amongst others, "Whether he or she stands to gain should the proposal be funded (or not)".

As another example, the National Institute for Health (NIH) of the USA has an official conflict of interest rule for reviewers of Requests for Applications (RFAs), which state the following: "... ,an investigator who participates with a major professional role on an application submitted in response to an RFA, ..., may not serve as a reviewer of that application or other applications submitted in response to the same RFA." It clearly defines being an applicant or co-applicant to the same call as a conflict of interest.

The Australian Research Council (ARC) defines conflict of interest generally as follows: "A conflict of interest is a situation in which someone in a position of trust has competing professional or personal interests. Such competing interests could make it difficult for an individual to fulfil his or her duties impartially, and potentially could improperly influence the performance of their official duties and responsibilities." The important phrase here is "... , and potentially could improperly influence". Therefore, the focus is shifted from an individual to the peer review process itself. In addition, the ARC specifically states that a conflict of interest also arises if a panel member or reviewer is from the same university or any other organisation involved in the proposal under considera-



tion.

In order to deal with situations where the pool of experts is very small (a situation that is very applicable to South Africa for many fields of research), various levels of conflict of interest have been identified by the ARC with regards to the credibility of the review process. However, also in these situations, employment at the same institution as the applicants (full, adjunct, or honorary), has supervised the applicant within the past 5 years and in cases beyond 5 years, has published with any of the applicants, undertakes ongoing research with any of the applicants constitute the highest level of conflict of interest in addition to the general stipulations mentioned above.

An often cited dilemma the NRF faces is the limited number of reviewers that are available in South Africa. The question is whether there really is a limited number of able minds, or if scientists are reluctant to add reviews to their existing workload. South African researchers in general are not applicants or co-applicants for a proposal every year for all NRF programmes. There should therefore be space to review on other programmes and scientists should make themselves available to do so. Both the NRF avoiding to appoint grey area reviewers as well as the scientific community stepping up to review their share should make the grant proposal review process more credible, without having to dwell on the personality of the reviewer as to his/her fairness and impartiality.

Now – where to from here. Should we go on as we always have for the sake of historical legacy, or should we improve on the process to generate more trust in the system? Is it possible to rid ourselves of all probability of unfairness? No, of course it is not – we are humans. However, a clearer policy from the NRF has the potential to lend a higher degree of credibility and integrity to the funding process.

All information on the various Science Council's rules and regulations cited here can be found on their respective websites.

What is CLIVAR and what does CLIVAR for you?

By Mathieu Rouault



UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

Department of Oceanography,
University of Cape Town

CLIVAR (<http://www.clivar.org>) is the World Climate Research Programme (WCRP) project that addresses Climate Variability and Predictability since 1995, with a particular focus on the role of ocean-atmosphere interactions in climate.

The objectives of CLIVAR are to:

1. Understand the causes of climate variability on the intra-seasonal to centennial time scales through observation, analysis, and modelling;
2. Improve predictions of climate variability and change associated with both internal and external processes; and
3. Extend the observational climate record through assembly of quality-controlled paleoclimatic and instrumental data sets.

CLIVAR facilitate international coordination, cooperation and capacity building, organize and fund international workshop and their participants travels. They publish a newsletter and various report. CLIVAR does not fund projects but sometimes endorse international research projects, for instance the Tropical Atlantic Climate Experiment (<http://tace.ifm-geomar.de/index.html>), the African Monsoon Multidisciplinary Analysis (<http://www.amma-international.org/>), or the Climate of the 20th Century International Project (<http://www.iges.org/c20c/>). For instance, I was sponsored on many occasions to attend the Tropical Atlantic Climate Experiment workshop often held together with the PIRATA workshop (<http://www.pmel.noaa.gov/pirata/>) and over the years attending those meeting have shaped my professional skills. I have learned the unwritten books of good practise for international cooperation, I have now useful contacts all over the world, made new friends, met and discussed with world class scientists that specialised in topics similar to mine.

Most of the time, since I cannot attend all the workshops, I read the workshop report available in the CLIVAR newsletter or on their web site.

The director of CLIVAR is Bob Molinari and staff members are Catherine Beswick, Nico Caltabiano, Carlos Ereño Anna Pirani, Matthew Reynolds and Christina Thompson.

CLIVAR has set up international working groups and panels. Of relevance to us is CLIVAR Africa, CLIVAR Atlantic, CLIVAR Indian Ocean, the working Group on Seasonal to Interannual Prediction, the working Group on coupled modelling, the working group on ocean model development, the global synthesis and observation Panel, the PAGES/CLIVAR Working Group, CLIVAR Southern Ocean, the CLIVAR Expert Team on Climate Change Detection and Indices. Each of CLIVAR's Panels and Working Groups is made up of some dozen internationally respected scientists who serve, under the leadership of their respective chair or co-chairs, to develop the implementation of CLIVAR in their areas of science.

CLIVAR produces a newsletter entitled 'Exchanges' four times a year. Exchanges provides information on CLIVAR activities, achievements, issues and scientific results. The newsletter is available electronically or as hardcopy on request. I highly recommend subscribing to that newsletter. Please have it also delivered to your library or tea room and your students or collaborators. Various reports and documents are generated by the ICPO staff, including meeting reports, descriptions of CLIVAR projects and summaries of cooperative programmes with other WCRP undertakings.

To conclude, I highly recommend for all SANCOR members to subscribe to the newsletter 'Exchanges', to explore the CLIVAR web site, to participate to CLIVAR related panels, working groups and endorsed international projects, to read the various reports, to engage with panel members. We also need to make our sponsors and managers aware of CLIVAR. With CLIVAR the science agenda belong to the scientists.



SANCCOB gives back

By Rifqah Taliep



The Southern African Foundation for the
Conservation of Coastal Birds

SANCCOB has joined up with the Cape Town Multi Service Centre (CTMSC), a child and family care NGO in Salt River, in giving back to underprivileged communities in Cape Town. Established in 2004, CTMSC facilitates programmes and projects for street children, youth and their families affected by poverty. In 2008 and 2010 respectively, CTMSC opened two play schools in the Cape Flats, 'Kabouter Drome Speelskool' and 'Vrolike Groepie Speelskool' in two areas that CTMSC identified as areas from which most street children in Cape Town originate from. The play schools are for children between the ages of 4 and 5 whose parents or guardians

are unable to afford pre-school fees and prepare learners for the challenges of primary school. SANCCOB will be working closely with these two play schools for the duration of the year by meeting with the learners once every quarter. Educational themes will be around littering, healthy living and sea animals. In the last quarter, both the play schools will be treated to a special lesson at the SANCCOB rehabilitation centre and will have the opportunity to meet SANCCOB's ambassador birds.

Apart from the play schools, SANCCOB will be working with two senior groups in the Netreg and Clarke estate areas with which CMTSC have been closely involved with for the past few years. SANCCOB will be meeting with the senior groups on a quarterly basis to talk about current environmental issues, how these are likely to affect their community and teach them new skills like reusing waste to make arts and crafts.

SANCCOB is proud and excited to be working with these communities and educating them about conservation and environmental issues that affects all communities around the world.

SANCCOB training gets national stamp of approval

By Margaret Roestorf

17 April 2012 became a milestone date in SANCCOB's history as the organization was awarded CATHSSETA Accreditation for its training programmes. CATHSSETA, is the Culture, Art, Tourism, Hospitality and Sport Education and Training Authority.

The process, spearheaded by Carolé Olivier (Training and Education Manager), brings SANCCOB in line with other national trainers. Members from the environmental sector have welcomed the first accredited course to be offered 'Handling and Feeding Seabirds' as an asset which will contribute towards the development of the career-pathing of people within the Green sector. This course teaches participants how to identify different seabirds and how to work with them. It is the first of a number of short courses that will in time culminate in a National Certificate in Species Care in Controlled Environments (Level 2).

SANCCOB has trained thousands of volunteers, conservation officers, bird keepers, students, interns, learners, seabird monitors and employees starting as far back as 1968 - the difference is that now this training will count towards their studies.

According to Carolé, 'It was with this in mind that we started out on the journey of accreditation. Having walked many kilometres on this path, we are over the moon to have been approved by CATHSSETA. We took the long road, as our commitment to career-pathing people is at the core of our vision for the Eco-Skills Academy'.

'The first thing we realized is that the very people who will most benefit from undergoing this training, can't afford it, so together with our generous funders we set up a bursary scheme.'

The Handling and Feeding Seabirds skills programme has been made possible through the generous support of the Hans Hoheisen Charitable Trust.

For more information about the courses and the bursary scheme please contact Carolé Olivier, carole@sanccob.co.za / +27 21 557 6155.



Rifqah Taliep, SANCCOB's Education Officer, teaching learners how SANCCOB uses toothbrushes to wash oiled birds.



Developing a new marine research programme – Investors and scientists share their perspectives



The SANCOR Forum is held annually to provide a platform for interaction and discussion on issues affecting South Africa's marine science community. This year's theme was entitled "Beyond SEACChange – Towards developing a new marine research programme" and was held on the 16th of May 2012 at the Sea Point Marine Research Aquarium and chaired by Prof Ticky Forbes. The purpose of the event was to initiate discussion on the development of a new marine research programme, aided with the perspectives of the investors of the programme.

SANCOR's research programme, SEACChange (Society, Ecosystems and Change) is in its final phase and is managed under a joint venture formed by the National Research Foundation (NRF) – the implementation agency of the Department of Science and Technology (DST), the Department of Agriculture, Forestry and Fisheries (DAFF) and the Department of Environmental Affairs (DEA). After this event, the SANCOR community will be consulted and engaged in refining the content of the new research programme.

Governmental initiatives and priorities for marine and coastal research

Dr Gilbert Siko from the Department of Science and Technology outlined DST's initiatives towards advancing marine sciences. He highlighted the various funding instruments available to the marine science community to construct a strategic path that will generate human capacity and knowledge development in science areas where South Africa displays a geographic advantage. Marine science is considered as one of these areas. Dr Siko suggested that the new programme prioritises transformation and human capital and capacity development and aligns with national priorities and utilizes funding programmes such as the South African Research Chairs Initiative (SARChI) which aims to expand the scientific research base of the South African higher education sector. In addition, he recommended a close integration of the new research programme with

other initiatives such as the Global Change Grand Challenges as well as maximizing the use of common resources & data.

Dr Johann Augustyn represented the Fisheries Research Branch of DAFF and gave an overview of its historical role in national marine science initiatives. The Joint Venture Agreement was a highly successful and beneficial partnership. He said that although a memorandum of understanding had been signed between DAFF and DEA and a research forum has been arranged, the split of the former Marine and Coastal Management (MCM) has resulted in the division of fisheries and marine environmental research. Research areas that are exposed to risk are an Ecosystems Approach to Fisheries (EAF) and climate change research. DAFF priorities currently focus on job creation, poverty alleviation and transformation. There is also an emphasis on small scale fisheries monitoring and research. While a strong focus needs to remain on sustainable utilization and an EAF, other priorities include: rebuilding of over-exploited resources, aquaculture research and development of new fisheries (octopus, whelks).

Dr Augustyn said that South African marine science is strong because of partnerships formed and that integration and multidisciplinary research is critical to advance the field. Further areas that also need to be supported with appropriate research are societal challenges. Regional imbalances need to be addressed by supporting research in coastal provinces.

Dr Alan Boyd (DEA) presented the 15 year draft research plan for Oceans and Coastal Research. The strategic framework includes 5 flagship projects in Biodiversity, Ecosystem Health, Ecosystem Processes and Global Change as well as Observational / Operational Oceanography. Underpinning these projects would be the cross-cutting initiative of Continuing Higher Education and Training in Scientific and Technical Support Services. These projects will be driven through partnerships with tertiary institutions, government departments and other entities. New relationships are being forged to promote an

earth system science approach and to place new emphasis on inshore and coastal environment, coastal processes and vulnerability, predictive modelling, benthic biodiversity research, deep sea and Antarctic research and to fill research gaps (e.g. pollution, sediments and estuaries).

Dr Angus Paterson, from the South African Institute for Aquatic Biodiversity, suggested ways in which National Facilities can engage with the new research programme. The NRF's National Facilities are formed around critical pieces of equipment, networks or infrastructure not normally available in higher education institutions, non-governmental organisations and smaller research councils. It has the dual aim of undertaking research and the provision of research platforms to the national system of innovation. He emphasized that research platforms in the National Facilities are not for the exclusive use of its staff members, but should be integrated as far as possible into the national research framework. As was indicated in the recent science budget vote, integration and collaboration among departments are essential to effective utilization of existing facilities. Objectives of the new marine research programme should align with the DST Global Change Grand Challenges and the research needs of the other partner organisations such as DEA and DAFF. Researchers were encouraged to consider utilizing the available marine infrastructure at the national facilities through collaborative engagements.

Scientific perspectives on a new programme

Prof Mark Gibbons spoke to the natural science perspective having collated information and viewpoints from the community. He expressed these issues and concerns on behalf of the community:

- Decline in funding - funding allocated to scientists for general use for the majority of scientists, who are C-rated, is particularly low. In addition bursary values need to be increased.
- The vision of SEACChange to produce cutting edge research that will support management presents a compromise to some scientists. Most marine science applied by DAFF and DEA is applied and management in nature. The number of scientific outputs produced by government is less than universities. He said



that “whilst society may fund the science, our obligation to society is to do the best science”.

- Limited expertise in SA: Multi/trans/interdisciplinary research involves a large number of institutions based overseas, as the expertise in certain areas is not available locally.
- Review process: applications for funding are time-consuming and it is important that the review process be professional and transparent.
- Transdisciplinary research was considered by some scientists as a forced collaboration with social scientists.
- Balancing the focus of the new programme: if the scope of the programme is too focused – it will promote exclusivity and resource consolidation. On the other hand, if it is too broad – it dilutes resources.

Prof Gibbons encouraged the scientific community to get involved in the drafting of the new programme.

Prof Dianne Scott made the case for integrating the various components of social science. Social science includes a number of disciplines such as Sociology, Anthropology, Human Geography, Development Studies, Planning, Economics, Maritime Law and Humanities. Mandates for governmental departments DAFF, DEA and the NRF are driven by top-down requirements. The science community will then design the framework of the new programme, but how will social science fit into this programme? The uptake of social scientists in the marine environment has been slow. Instead of imposing collaboration, emphasis should be placed on attracting social scientists. She described how natural and social scientists operated on different paradigms in terms of knowledge production. Mutual respect and an exploratory ‘third space’ should be given to scientists to engage and start to understand each other.

A word from the audience

Dr Augustyn chaired the panel discussion which took place after the presentations. In the light of the various departmental mandates, the following issues and questions

were raised by members of the audience:

The top-down, bottom-up approach: Bearing in mind the limited availability of resources and that national priorities need to be addressed, the question arises as to whether scientists are restricted to conducting applied or problem-based research to the detriment and neglect of curiosity-driven research? Scientists need academic freedom to induce innovation. Dr Siko responded that there are programmes (for example, the Blue Skies Research Programme) which are dedicated to funding pure science research. He added that DST is moving away from enforced research silos and that it is ultimately the community that will drive the research strategy. He said that it was important to find a middle ground to address common priorities. Dr Boyd commented that whilst certain priorities of government would need to be led from the top in order to be focused, participation in research should be as open as possible. He also noted there was a wide variety of opportunities to fund research at various levels from national and international sources.

Dr Augustyn said that a reasonable balance can be maintained depending on the budget and government’s social agenda. This raised the question regarding separation of political issues from the science agenda. It was also suggested that ecosystem components and the knowledge of how such systems respond to change should dictate priorities. Formulation of (fisheries) policy should be based on a broad knowledge of the factors which mitigate the increased response to change.

Transformation and human capacity development: It was agreed that transformation needs to be addressed successfully. It was highlighted that although the appointment of Research Chairs boosts research productivity, the cost allocated per student in this setting is higher. If government wants to produce more postgraduates more economically, the funding given to what might be called average grant-holders should be increased.

Transdisciplinary research will play a critical role in addressing complex problems, but how should social sciences be integrated in

the programme? How do natural and social scientists bridge the divide and begin more effectively to collaborate?

Dr Augustyn added that the way forward is determined by the input of the entire spectrum of the community. Perhaps broader themes and scientific freedom will need specific attention.

What should the new programme achieve?

Based on the input from this forum, the new phase of SANCOR’s research programme will need to:

- Prioritise human capacity development and address transformation successfully.
- Strengthen collaborative multidisciplinary partnerships to meet national priorities and address societal challenges.
- Build a transformed knowledge based economy, so that common resources, data and infrastructure are maximally utilized.
- Align itself to national initiatives and programmes such as the Global Change Grand Challenges.
- Improve incentive and bursary funding to the average researcher to develop more postgraduate students.
- Balance programme content so that management needs are met while academic freedom is maintained.
- Provide an atmosphere that will lend itself to the development of a basic platform for engagement and cooperation between scientists from different paradigms of thinking and disciplinary expertise in order to build competency and innovation in transdisciplinary research.

SANCOR would like to thank the speakers and investors for their contribution and the marine science community for the discussion, debate and continued support as SANCOR embarks on a new phase of its research programme.

The above-mentioned presentations can be downloaded from <http://sancor.nrf.ac.za/reports/presentations-at-sancor-forum-2012>



Science, sardines and sustainability Ma-Re Researcher gets two publications in *Science*

By Paus Pillay



Marine Research Institute,
University of Cape Town

Getting two publications in the journal *Science* seems to be all in a day's work for Marine Research Institute's (Ma-Re) Dr Lynne Shannon, but as many researchers know attaining a single publication in this journal in one's career is a landmark. The journal *Science* is one of the most prestigious journals with an impact factor for 2010 of over 30, making it one of the highest in the world. The impact factor of a journal is defined as the average number of citations received per paper published in that journal during the two preceding years.

Dr Shannon's first *Science* publication was a paper in August 2011 titled "Impacts of Fishing Low-Trophic-Level Species on Marine Ecosystems", co-authored with 12 other researchers from around the world. This publication used two decades of data and investigations from five ecosystems (the Southern Benguela off South Africa, the northern Humboldt off Peru, the California Current on the west coast of the US, the North sea, and south east Australia) to illustrate common trends between the systems and the huge impact overfishing of low-trophic species will have on these systems. The data were robust and the methods used were rigorous enough to clearly demonstrate that by halving the exploitation rates, the negative impact on the ecosystem would be severely diminished and the fishing indus-



(L-R) Dr Yunne Jai-Shin (IRD, France), Dr Philippe Cury (IRD, France) and Dr Lynne Shannon (Ma-Re Institute – UCT & Zoology Dept.) were co-authors on the *Science* publications

tries would continue to persist – a rare win-win situation for all in a rather delicate system.

Then barely four months later, Dr Shannon once again was in the spotlight with the second publication "Global Seabird Response to Forage Fish Depletion – One-Third for the Birds". This time Dr Shannon was one of 14 other co-authors. This study assessed the impact of depleting forage fish stocks on seabirds. Reaching even further this paper looked at seven ecosystems in the Atlantic, Pacific and Southern oceans. The data and methods allowed for the researchers to identify a threshold in prey abundance below which the decline in breeding success of seabirds would be severe and the consequences dire. The "one-third for the birds", encapsulated in the article's title, gives a general guiding principle of how to manage our marine ecosystems sustainably to ensure that both forage fish and seabirds persist in our world's ecosystems.

When asked about these career defining publications and these ground-breaking findings, Dr Shannon puts it down to excellent collaborations and partnerships, hard work and solid science, which can now inform policy – clearly showing the value of science in this changing climate!

BELMONT FORUM

Belmont Forum Call

The Belmont Forum is a high level group of the world's major and emerging funders of global environmental change research and international science councils. The current International Opportunities Fund is aimed at supporting research in the areas of Coastal Vulnerability and Freshwater Security.

The official national call announcement for South Africa has been published on the National Research Foundation website (http://www.nrf.ac.za/funding_overview.php?fid=121). Details of the call and the application process are provided via the Belmont Forum website (www.belmontforum.org/iof). Applicants are advised to contact their National Contact Point before starting to prepare proposals for application. The National Contact Point for South African enquiries is:

Dr Achuo Enow
Knowledge Fields Development
Directorate
National Research Foundation
Telephone: (+27) 12 481 4143
E-mail: a.enow@nrf.ac.za

Important closing dates

Submission of pre-proposals:

20th July 2012

Notification for submission
of full proposals:

20th September 2012

Submission of full proposals:

20th December 2012



The Prince Edward Islands – A treasure trove of climate research!

By Paus Pillay



Marine Research Institute,
University of Cape Town

With an average winter temperature of 3.9 degrees Celsius, constant strong winds all year round and an annual rainfall of about 1900 mm, Prince Edward and Marion islands in the sub-Antarctic are described as “one of the gloomiest places in the world” – so then why would someone want to spend 14 months on these islands? The answer is simple – all in the name of science! Dr Anne Treasure did just that; she explored the islands gathering data for her PhD, which assessed the impacts of climate change and biological invasions on indigenous terrestrial invertebrates. She attained her PhD from the University of Stellenbosch under the supervision of Prof Steven Chown at the Centre for Invasion Biology.

Her PhD gave her a good understanding of the terrestrial environment and the outcomes of her research led her to wonder that if the terrestrial environments in this region are being highly impacted by climate change and invasive species, what are the impacts on the marine environment to which these oceanic islands are so closely linked. As a result she is currently undertaking postdoctoral research at the University

of Cape Town looking at marine food webs and ecosystems particularly the responses of marine ecosystems to the shifting sub-Antarctic Front (SAF) in the vicinity of the Prince Edward Islands.



Dr Anne Treasure receives prestigious POGO-SCOR Fellowship Award.

The primary aim of the study is to use an ecosystem approach and to link biological models to physical data to see if projections can be made regarding what changes might occur with the shifting of the SAF. It was these ambitious ideas that led to Dr Treasure receiving the prestigious POGO-SCOR visiting fellowship. This award is made to early to mid-career scientists who will benefit from learning new skills and techniques and making new contacts. The award will allow Dr Treasure to travel to Cambridge, UK, to spend six weeks working with Prof Eugene Murphy at the British Antarctic Survey (BAS). Prof Murphy is one of the leading experts in Southern Ocean ecosystem research. Even though the Islands' weather is icy and wet I don't think Dr Treasure would hesitate to be on board the next trip down to the ice!

Studentships for Southern Ocean Research

The Southern Ocean Carbon and Climate Observatory (SOCCO) is a CSIR-led, multi-institutional South African initiative aiming to understand the link between climate and the carbon cycle in the Southern Ocean. The programme comprises a number of focus areas that aim to develop an integrated physical and biogeochemical understanding of the coupled carbon-climate system in the Southern Ocean through measurement and modelling.

SOCCO is advertising a number of MSc and PhD studentships, in association with the University of Cape Town and Stellenbosch University, relating to various research areas within the multidisciplinary approach to understanding the Southern Ocean carbon – climate system.

For more information visit
<http://sancor.nrf.ac.za/students/SOCCO%20Studentships.pdf>



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