

# THE ORICLE

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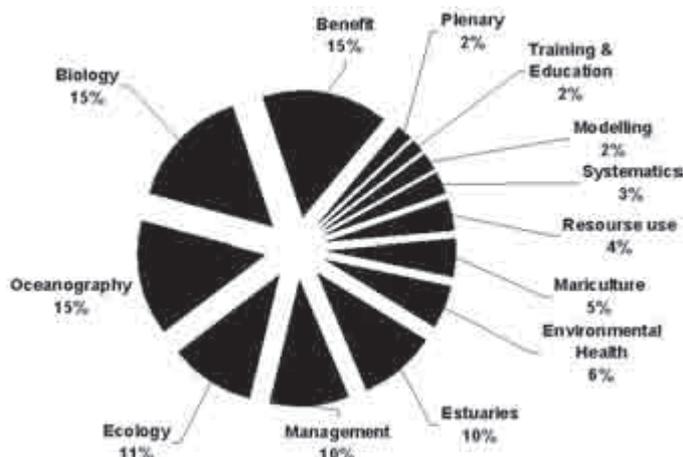
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## 12<sup>TH</sup> SOUTHERN AFRICAN MARINE SCIENCE SYMPOSIUM GREAT SUCCESS!

Every four years the Southern African marine science community holds a symposium to report on the latest achievements in coastal and marine science in the region. The honour to host this 12th Southern African Marine Science Symposium (SAMSS) was bestowed on ORI. While this reflects positively on ORI's capacity and commitment to marine science in South Africa, it also comes with considerable trepidation and a huge workload.

Well .... July has come and gone, so has SAMSS 12, and we are able to reflect on its achievements. By all accounts this was ranked as one of the best SAMSS ever with just over 390 delegates taking part. The spread of papers delivered was impressive and a wide range of topics was recorded as shown.



It can be confidently concluded that marine science in Southern Africa is in good shape. The strong input from oceanography as well as ecosystem approaches to resource management was encouraging. Somewhat disappointing was the low contribution to social and economic issues, a persistently under-studied area of coastal and marine science.

Participation by students at SAMSS continues to grow, notably supported by a grant from NRF. There were 147 student presentations and, after much deliberation by the student presentation committee, made up of Stephen Brouwer, Hannes Holthausen, Fiona MacKay and Toufiek Samaai, the top student prizes were awarded to Christo Whittle for his oral presentation entitled "Dipole eddy genesis at the Agulhas retroflexion" and to Adrian Fortuin for his poster "Composition, abundance and distribution of the larval fishes and zooplankton in selected south and west coast estuaries of South Africa." Both students received a year's subscription to Africa Geographic magazine courtesy of Black Eagle Publishing.

ORI staff featured well and every scientist and student made at least one presentation.

Symposiums are invariably expensive and financially risky. The SAMSS committee was determined to keep costs down and hence pursued a range of funding options. The budget totalled half a million Rand, of which the delegates' fees contributed just over 60%. Thanks to some sustained promotion, the shortfall was made up by generous sponsorship from the National Research Foundation, SAPPI, De Beers Marine Namibia, Siemens Ltd, I & J, Adcan Marine Suppliers (PTY) Ltd, South African Breweries and Lwandle Technologies.



**Chris Wilke (left) reads the citation before handing the Derek Krige award to colleague, Mike Meyer. Appropriately, both are popular collaborators with ORI scientists.**

SAMSS was not only about scientific excellence – it also provided an opportunity for encounters of the social kind. These were in the form of a cocktail dinner in the Sea World aquarium on the Sunday of registration and a banquet held in a marquee at Rayz on final evening. These events provided a great opportunity to show-case our new home at uShaka and delegates were able to meet up with old friends and acquaintances in a relaxed "marine" environment. While the banquet was a "let your hair down" party, traditionally this event sees the presentation of the Gilchrist and Derek Krige awards. The Gilchrist medal is awarded in recognition of a recipient's contribution to marine science and this year was awarded to well-known marine mammal expert Dr Peter Best of Pretoria University's Mammal Research Institute. The Derek Krige award for outstanding achievements in the field of technical sup-

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# TOWARDS IMPROVING THE MANAGEMENT OF EDIBLE OYSTERS IN KWAZULU-NATAL

One of the many valuable resources to be found along the KwaZulu-Natal coast is the edible oyster, *Striostrea margaritacea*. Not only is this a fine gourmet food, but oysters provide job opportunity for artisanal fishers, are a popular recreational resource and occupy an important niche in the rocky shore ecosystem. However, despite being subjected to licensing and management, landings of oysters have progressively declined since the 1980s. This justified an updated assessment of stocks was needed, especially the subtidal populations.

Management of oysters historically includes limiting their harvest to certain rotational zones and confining fishers to the nearshore region. The project thus undertook a series of survey dives that included mapping subtidal oyster populations on reefs along the KZN coast between the Tugela and Umtamvuna rivers. The circumference of each of the 14 reef complexes surveyed was mapped using a handheld GPS in a waterproof casing attached to a diving buoy. During the operation scientist divers made an assessment of oyster percentage cover. Oysters were sampled from each reef to establish size and biological parameters. Based on the GPS readings imported into ARC View, the oyster population was quantified. Estimates of total mortality were then calculated using the Beverton & Holt equation. As there was technically no fishing mortality associated with these deeper reefs, the total mortality was assumed to be equal to natural mortality.

Only seven of the fourteen reefs sampled were found to support oyster populations, suggesting also that there is a greater abundance of oysters along the coast north of Durban than to the south. This is an important factor when considering harvesting effort in these regions.

It was also very clear from the sampled oysters, that the average size of the oysters in the south coast populations was larger than for the north coast. As neither sub-tidal population have been harvested historically, there may be a biotic or habitat factor that causes this discrepancy. Mortality estimates for populations on the south coast were lower than those for the north. This may be due to the denser clustering of oysters on the north coast reefs, resulting in many older oysters dying due to excessive juvenile settlement on their shells.

Unfortunately, little information is available on the dispersion and settlement of oyster spat in KwaZulu-Natal waters and the recruitment relationship between tidal and subtidal oyster populations is unknown. However, it would seem likely that there would be interaction between the two populations, probably resulting in restocking of heavily exploited inshore reef areas, making the protection of the offshore reefs as refugia of critical importance.

## ORI STUDENT UPDATE 2005

As a research institute of the School of Biological and Conservation Sciences, ORI has a long-standing relationship with the University of KwaZulu-Natal (UKZN) and, in terms of the memorandum of understanding with the University, ORI undertakes to provide post-graduate training of students. In this regard, 2005 has not been an exception. The fisheries science module for BSc (Hons.) and coursework MSc students is currently underway again, with several ORI staff contributing. This module provides students with a snapshot of the main marine resources in South Africa and guides them through the process of assessing stock status using real data. The students also undertake a class task (mini project), which entails analysing data from a local fishery.

The past year 2004/2005 has also been productive for MSc and PhD supervision. Paul de Bruyn, an ORI staff member, registered for a PhD on operational management plans for invertebrate fisheries in KZN under the supervision of Mike Schleyer. Sean Fennessy and Rudy van der Elst co-supervised Bernadine Everett, also an ORI staff member, who successfully completed her thesis on the estuarine fisheries of Richards Bay. Angus Macdonald completed his MSc on coral genetics under the supervision of Mike Schleyer and Michael Meusel from UKZN. Rudy and Sean also co-supervised Sureka Jairam's thesis on offshore fisheries of Richards Bay, which is currently being corrected following examiners' comments and will be completed in August. Risha Persad and Mbali Mkhize undertook coursework MSc projects on the bycatch of the KZN prawn trawl fishery and both have recently submitted their theses for examination. On the strength of this, Risha has been employed at MCM as an environmental officer, and Mbali commenced work at ORI as a research assistant. Rudy continued his supervision of Ana Paula Baloi's MSc on small pelagic fishes of Mozambique – Ana Paula

is deputy director of the Fisheries Research Institute in Maputo. Jennifer Brash is due to complete her MSc on the biodiversity of Aliwal Shoal at the end of 2005 under the supervision of Mike Schleyer.

Several students who have undergone post-graduate training at ORI now play meaningful roles at other institutions in the marine field. These institutions include Marine and Coastal Management, CSIR, Ezemvelo KZN Wildlife, the Natal Sharks Board and the African Coelacanth Ecosystem Programme. Some students have gone on to work beyond South Africa's borders in the Fisheries Ministry and Fisheries Research Institute in Mozambique. ORI intends continuing to provide this valuable capacity-building role in the future.



*Bernadine Everett and Angus Macdonald pictured at their graduation ceremony. Both were awarded their MSc degrees.*

# WHAT IS THE STATE OF OUR COASTAL AND MARINE ENVIRONMENT?

The South African constitution entrenches the citizen's right to a healthy environment, while the National Environmental Management Act (NEMA) provides for all persons to have access to information about the state of their environment. The globally acknowledged way of doing this is to publish a 'state of the environment' report, or SoE report, which documents the status of the natural and built environments, and threats to them. Although some South African SoE reports have been produced in the past, these were rather preliminary in nature. A new series of SoE reports has now been commissioned by local, provincial and national levels of government. These include a national SoE report, the eThekweni Metropolitan Council SoE report and a KwaZulu-Natal Provincial SoE. ORI has been invited to contribute to these and specifically to develop the marine and coastal section for the KZN report.

The SoE report normally adheres to a framework known as the DPSIR, an acronym for Drivers, Pressures, State, Impact and Response. Drivers and pressures are the human activities that cause changes in the environment – such as population growth and development. As a result of these, the 'state' of the environment changes, which has impacts on society – lost income, health problems due to pollution, fewer fish to catch, etc. We then respond to these impacts in various ways, for example, by passing (and hopefully enforcing) laws or creating protected areas. Since it is clearly not possible to report on each and every aspect of the environment, a number of specific features are identified and indicators so as to provide insight into each of DPSIR categories for the chosen feature.

Selecting the indicators proved to be a challenge that appeared to grow exponentially with each indicator that was added. The original idea was to have one indicator for each of four features selected, for the five DPSIR categories and (initially) for seven different marine environments. This would have resulted not in a report, but rather in an "information toll-road" covering the entire coast. Finally, after much deliberation and refinement, ORI selected 22 indicators, covering four major features namely, resource exploitation, ecological functioning, environmental protection and biodiversity. Although data did not yet exist for three of the indicators, the other 19 were researched, ranging from the state of our knowledge of biodiversity, the state of fish stocks and the condition of estuaries, to the amount of litter collected during annual coastal clean-ups.

Although the project is still underway, it is disturbing how little information has been gathered on some of the vital parameters that describe the state of our coastal and marine environment. Unknown is the proportion of the coastline that has not altered by development, the extent of estuarine environments that remain ecologically viable and the extent to which coastal processes, such as littoral drift has been impacted. Despite considerable information on economically important species, our knowledge of the province's overall marine biodiversity remains poor.

So ... what is the state of our coastal and marine environment? Be sure to obtain your own copy of the final report.

## ORI TRAINS PONDOLAND MARINE PROTECTED AREA MANAGERS

The recently proclaimed 80km Pondoland Marine Protected Area (MPA) has made a huge contribution towards achieving South Africa's MPA targets and is in line with Millennium Development Goals. But proclamation on its own is not enough. Management plans, staff training, infrastructure development and a monitoring strategy are essential components of a successful MPA.

ORI is playing its role. Besides our biodiversity assessment studies in the Pondoland MPA, a three-day training course was recently held at the Mkambati Nature Reserve by ORI staff. The course was primarily directed at the seven newly-appointed MCM Fisheries Inspectors who are largely responsible for the management of the Pondoland MPA and the enforcement of fisheries regulations in the area. Eleven staff from the Eastern Cape Parks Board based at Mkambati also attended the course.

The overall objective of the course was to equip conservation staff with skills to implement fisheries-related monitoring programmes. Trends in marine biodiversity, especially trends in fisheries of the region were presented. Time was devoted to species identification of the most important shore and ski-boat linefish found in the area, using both photographs and dead specimens. The underlying scientific rationale for the new linefish regulations was also explained. The course further included a basic introduction to MPAs and their functions, reasons behind the establishment of the Pondoland MPA and the need for implementation of monitoring as part of the overall management plan.

Considerable time was spent on the practical aspects of conducting shore patrols, creel censuses and boat inspections within the Pondoland MPA. Specially prepared shore patrol and ski-boat inspection forms were developed and made available to staff at key locations within the park. These catch and effort data will in future be captured onto the National Marine Linefish System database from which analysis and reporting will be undertaken by ORI.

By all accounts, the course was well received and excellent interest was displayed by the managers. This bodes well for the effective management of this prime conservation site in South Africa.



*Bruce Mann demonstrates identification of fish species.*

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port to marine science in South Africa, was awarded to another marine mammal expert, Mike Meyer of Marine and Coastal Management. Congratulations to both!

Organising a symposium of this scale is only possible with the assistance of many people. With this in mind we thank the organising committee, the Scientific Advisory Panel for wading through all the abstracts, the Holiday Inn Elangeni for their excellent venue and support and all the session chairs for running the sessions so smoothly. Many ORI and SAAMBR also contributed in a range of chores. A final thank you goes to all the delegates who attended SAMSS making it interesting and informative.

The SAMSS torch now passes onto another institution for hosting and the University of Cape Town has indicated that they will most likely be putting in a bid to the SAN-COR committee to host SAMSS 2008 in Cape Town.



## DAVID HLATSWAYO 1950 - 2005

It was with great regret that we learnt of David Hlatswayo's death on 7 July 2005. David had been ill for some time, having suffered a stroke, and his quality of life had recently deteriorated. He was at home in Empangeni with his wife and sons.

David considered himself a true Zulu citizen of KZN, although he was born on the island of Inhaca in Mozambique and was always reluctant to advertise this fact. Rudy van der Elst established contact with some of his family in Inhaca a little while ago and learnt that David was part of chief Nhaca's community, which originally stretched from Inhaca Island to Richards Bay. This was before political borders were established.

David formally applied to live in South Africa and was naturalised. He joined the Natal Parks Board at Richards Bay in the early 1970s, where he operated the prawn fishery and was acknowledged to be an outstanding net maker. ORI staff, who were working there at the time, were impressed with his skill and gladly took him on when he approached them for a job.

David was a valuable member of the field team and worked on many projects, especially the studies at Richards Bay. He maintained the boats, repaired the nets and learned additional skills when working on specimens. He almost succumbed when a dingy sank at Richards Bay some years ago, killing his colleagues, Vince Pillay and Bhenkosi Ndlovu. Remarkably, David managed to reach the shore during this awful tragedy.

David was very friendly but was inclined to keep to himself. At times he had quite a strong opinion about a particular task ... and would say so. David was a staunch member of the SAAMBR team and we acknowledge the contribution he made to our overall success.



**The late David Hlatswayo and Derek Arthur (ex-ORI field officer) checking a gill net catch from the Mhlatuze estuary at Richards Bay.**

## RECENT PUBLICATIONS

OBURA, D.O., SCHLEYER, M.H. & MUTHIGA, N.A. eds. 2005. Editorial: Science for management in the western Indian Ocean. *Estuarine, Coastal and Shelf Science* **63**(3): 351-352.

SCHLEYER, M.H. & CELLIERS, L. 2005. Modelling reef zonation in the Greater St Lucia Wetland Park, South Africa. *Estuarine, Coastal and Shelf Science* **63**(3): 373-384.

VAN DER ELST, R.P., EVERETT, B.I., JIDDAWI, N., MWATHA, G., AFONSO, P.S. & BOULLE, D. 2005. Fish, fishers and fisheries of the western Indian Ocean: their diversity and status, a preliminary assessment. *Philosophical Transactions of the Royal Society of London* **363**: 263-284.