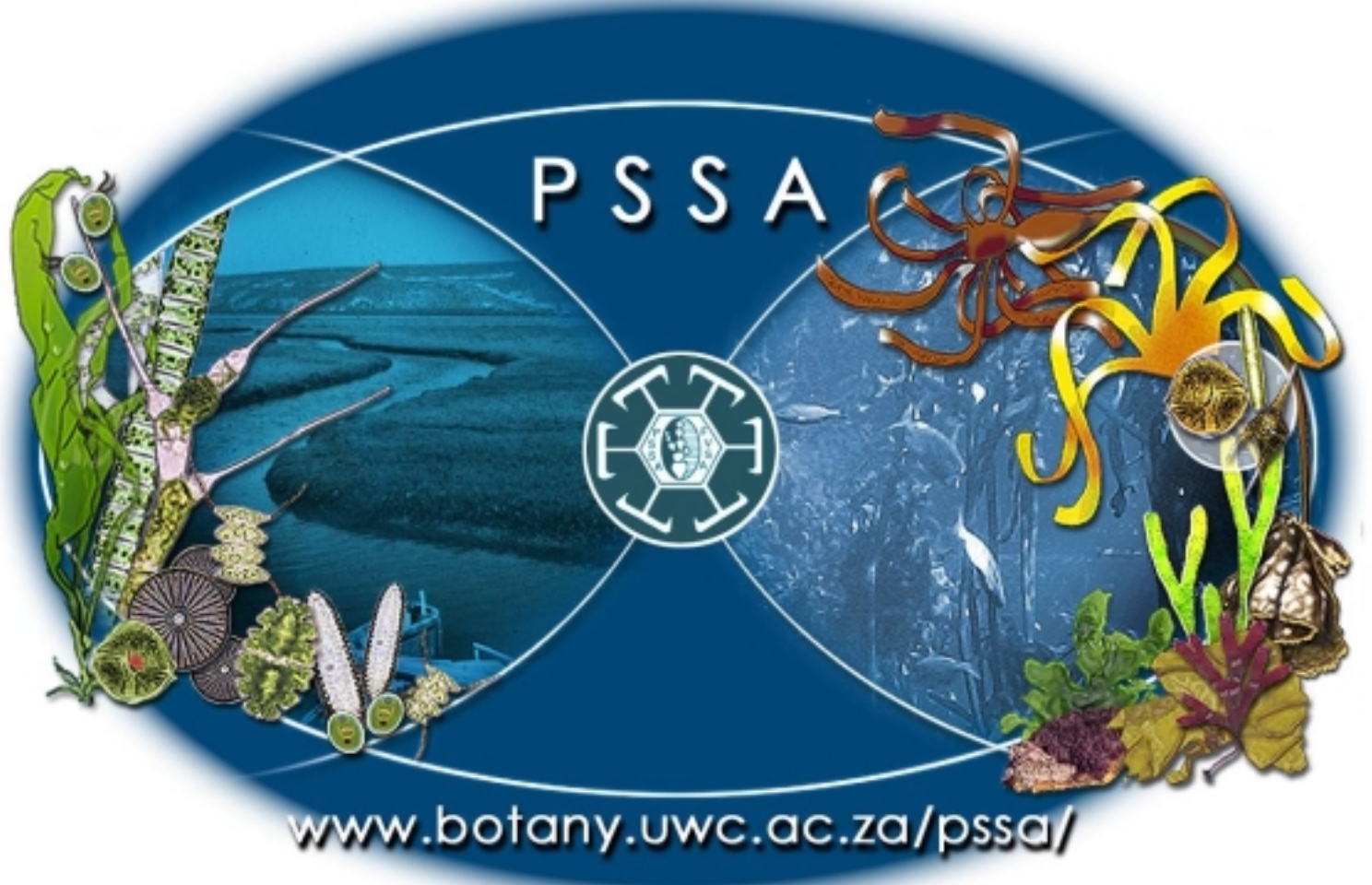


# Phycological Society of Southern Africa



**Newsletter  
No. 56  
June/July 2004**



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## From the Editor

The year is coming and going so very quickly! Was it not just the other day that many of us met at the annual PSSA conference? A few of us were once again fortunate enough to meet up in Bergen, Norway for the 18<sup>th</sup> International Seaweed Symposium (ISS). Of the eight attending PSSA members, seven are still based in South Africa. I won't say too much about the 18<sup>th</sup> ISS since John Bolton will be giving us a review of the PSSA participation in Bergen in the December issue of the newsletter. What I will tell you all though, is that Enrico Tronchin won the fourth prize for the best student oral presentation. Congratulations Enrico! I hope you didn't wait too long to spend that money.

Please remember to send any and all information you think may be of interest to the society on to your regional collators (details below).

### *Northern Areas*

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### *Southern Areas*

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Sincerely  
Gavin



*Synarthrophyton patena*  
epiphytic on *Gelidium capense*

## Attention All

### 1. Student Submissions and Prizes

To promote written submissions for the newsletter, R400 is awarded annually for the best popular student article. This is a great way to improve your writing skills. Supervisors, please encourage your students to submit articles.

**Guidelines:** See the website! Just follow the *Featured Articles* navigational link. Remember, there is R400 up for grabs. As of January 2004, judging of the student articles will be by the invited speaker for the annual conference. The annual prize award will be announced at the conference banquet. Articles should be simple, yet informative. Try to avoid jargon wherever possible.

### 2. Contact Details and Research Areas

Please check all your membership details on the website. A number of members still have very little information pertaining to their areas of interest. We all know you have phycological interests, let us know what your areas of expertise are!

### 3. Members' Corner/Announcements

#### 3.1. South African scientists attend GEOHAB Open Science Meeting: HABs in Upwelling Systems

The Global Ecology and Oceanography of Harmful Algal Blooms (GEOHAB) programme was initiated in 1999 by the Scientific Committee on Oceanic Research (SCOR) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO to develop a research program on the ecological and oceanographic mechanisms underlying the population dynamics of harmful algal blooms (HABs). The end goal of this research is to allow the development of observation systems and models that will enable prediction of HABs, thereby reducing their impacts on the health of humans and marine





# GEOHAB

## Global Ecology and Oceanography of Harmful Algal Blooms

organisms, as well as their economic and social impacts on societies.

The GEOHAB *Implementation Plan* (GEOHAB, 2003) specifies the formation of Core Research Projects (CRPs) related to four ecosystem types—upwelling systems, fjords and coastal embayments, eutrophic systems, and stratified systems. These CRPs are to be initiated through small, focused open science meetings. The first of these open science meetings was hosted at the Instituto Nacional de Investigação Agrária e das Pescas (INIAP-IPIMAR), in Lisbon, Portugal from 17-20 November 2003, and focused on HABs in upwelling systems. The meeting served to identify interested participants and research regions and to bring together the international community to design core research. Meeting participants included several South Africans: Stewart Bernard, Anel Kemp, Claudio Marangoni, Pedro Monteiro, Grant Pitcher, Trevor Probyn and Carlos Ruiz Sebastian. A wide variety of research topics related to HABs in upwelling systems were discussed, which the meeting planning committee [co-chaired by Grant Pitcher – South Africa and Teresa Moita – Portugal, and including Francisco Figueiras – Spain, Raphael Kudela – USA, Trevor Probyn – South Africa, and Vera Trainer – USA] distilled into 8 high priority research activities:

- 1 An ecologically based classification of the different harmful species based on their adaptation to the multiple sub-habitats characteristic of upwelling ecosystems. Included in this classification of HAB species in upwelling systems will be the functional role of morphological, physiological, behavioural and life-history characteristics, at the cellular level.
- 2 Identification of the seed strategies employed by HAB species within upwelling systems. Establishment of the sites of HAB initiation and characterisation of environmental influences on the life history stages of HAB species in upwelling systems is considered a priority in developing a predictive capability.
- 3 Determination of the influence of small-scale physical processes on the growth and dispersion of HAB species. Turbulent mixing determines much high-frequency environmental fluctuation and in so doing can control nutrient, irradiance, and phytoplankton patchiness, and is also known to affect plankton growth rates. Varying responses in terms of the succession of species within and among upwelling systems will allow inferences of the properties of the upper water column regulating species succession and the development of HABs.
- 4 An investigation of the nutritional physiology of target species as related to the natural variation in nutrient signals. Although time-series field measurements of nutrient concentrations can provide valuable insight to nutrient dynamics, provided that trans-boundary fluxes are quantified, direct measurements of regeneration and assimilation rates need also to be performed using isotope tracer methodology. These measurements will serve to provide meaningful input to biogeochemical models that can be employed in a predictive manner when coupled with the primary hydrodynamic forcing typical of upwelling ecosystems.



- 5 An assessment of genetic predisposition versus environmental conditions in the toxin production of target species in different upwelling systems. Variability in toxin production is likely caused by a combination of genotype and environmental conditions and elucidation of these respective roles in toxigenicity is critical in developing a predictive capability. Differences in the absolute toxicity of a given species in separate upwelling regions may be exploited to allow characterization of genes important in toxin synthesis.
- 6 Determination of the importance of coastal morphology and bathymetry on the dynamics of HABs in upwelling systems. These influences are responsible for creating alternating patterns of active and passive upwelling circulations along the coast which may serve in creating sites favouring bloom initiation, retention, dispersion, etc. Characterisation of these sites will assist in understanding their role in the dynamics of HABs.
- 7 Field-based observations incorporating measurements of cross-shelf and along-shore advection and their role in the initiation, transport, accumulation and dispersion of HABs. These observations should be made with reference to both vegetative and resting stages of HAB species.
- 8 Identification of climate indicators as predictors of HAB events in upwelling systems. Evidence exists to suggest that variations in upwelling intensities and locations have occurred in concert with warming of the Earth's climate, affecting marine ecosystems. Research is required to relate the effects of climate change, and associated variation in the predominant physical and chemical forcing mechanisms, on HAB species and communities that typify coastal upwelling environments.

Our understanding of and ability to predict HABs in upwelling systems over the next 5-10 years will reflect the extent to which the GEOHAB CRP can answer these questions. The CRP – HABs in Upwelling Systems is built on the premise that understanding the ecology and oceanography of

HABs in upwelling systems will benefit from a comparative approach, which is the method of choice when controlled experimentation is not practical. To the extent that experimental control in the study of marine ecosystems is problematic, comparison presents a potentially powerful alternative for drawing scientific inference. Comparisons with respect to HABs will incorporate the grouping of species from upwelling systems. Assessment of the extent to which these HAB species respond in a similar way within these systems will allow the oceanographic processes that influence HAB population dynamics and community interactions to be established. Equally important will be identification of upwelling systems that have dissimilar HAB species or groupings. In addition, understanding the response of harmful algae to perturbations within upwelling systems will assist in prediction, and identification of divergences from predicted responses will also be informative.

The GEOHAB Scientific Steering Committee (SSC) will help provide international coordination for the CRP – HABs in Upwelling Systems, through the establishment of a GEOHAB CRP Subcommittee. This Subcommittee will commit to the promotion of comparative research and the involvement of individuals from the Californian, Iberian and Benguela upwelling regions, and from other major upwelling systems. The subcommittee will be responsible for working with scientists involved in the CRP to ensure that they coordinate their research, using the same measurement protocols, sharing data, and contributing to observation and model development. The GEOHAB SSC encourages individual scientists and national/regional HAB research activities planning research related to this CRP to participate in multinational GEOHAB research and to submit their projects for affiliation with GEOHAB (see website at <http://ioc.unesco.org/hab/GEOHAB.htm> for the application for endorsement). One or two members of the CRP Subcommittee will be members of the international GEOHAB SSC, to ensure a strong linkage between the Subcommittee and the SSC.



The research plan for the CRP – HABs in Upwelling Systems will be available as a published document and on the GEOHAB website by September/October 2004.

**Reference**

GEOHAB. 2003. *Global Ecology and Oceanography of Harmful Algal Blooms, Implementation Plan*. P. Gentien, G. Pitcher, A. Cembella and P. Glibert (eds.), SCOR and IOC, Baltimore and Paris, 36 pp.

**Grant C. Pitcher**  
Marine & Coastal Management



**Featured Article**

**New Marine Protected Areas**

The then Minister of Environmental Affairs and Tourism, Mohammed Valli Moosa announced on Monday 16 February 2004, his intention to designate five new marine protected areas (MPA's) to complement and consolidate South Africa's existing marine and coastal conservation areas.

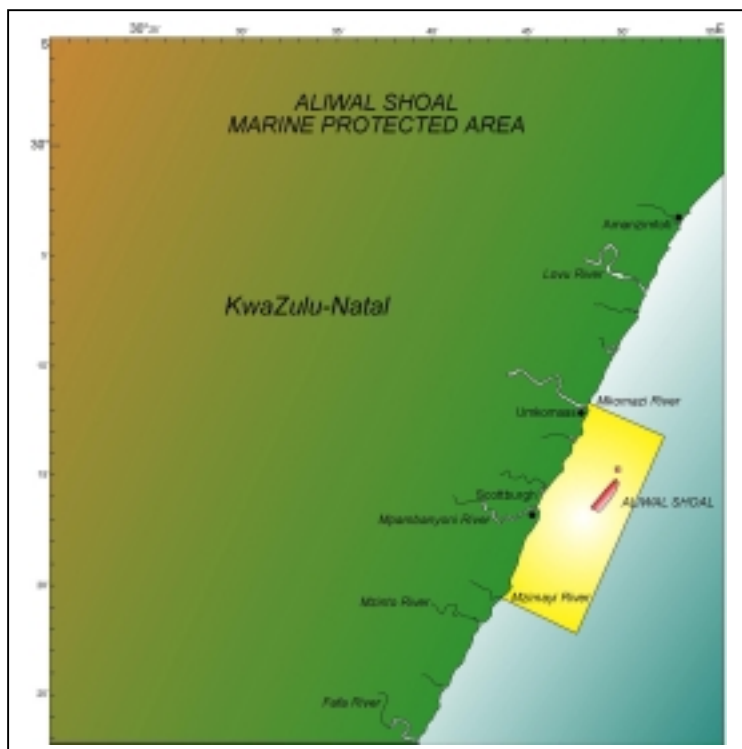
Addressing a press briefing at the Johannesburg International Airport upon his departure for Malaysia, to attend the Seventh Meeting of the Conference of Parties (COP 7) to the Convention on Biological Diversity, Minister Moosa said the proposed MPA's aim to conserve a diversity of marine and coastal habitats and will ensure further conservation of biodiversity as is required by the current Biodiversity Bill. The MPA's are also designed to boost South Africa's fisheries through protecting important steps in the lifecycle of major fisheries.

They will encompass the Aliwal Shoal (adjacent to Umkomaas, KwaZulu-Natal), the coastal and marine environment adjacent to the Pondoland (Eastern Cape), Bird Island (Algoa Bay), Cape Peninsula (Western Cape) and Namaqualand (Northern Cape).

Considered with South Africa's current MPA's, the five proposed MPA's will result in 19% of South Africa's coastline falling within protected areas. The international target as pronounced in the World Parks Congress recommendations is 20%.

Minister Moosa said the five intended marine protected areas will further complement the management of South Africa's fisheries. "In addition, the proposed MPA along the Pondoland coast, for example, has been specifically designed to ensure that traditional fishing will continue in a regulated manner to ensure the sustainability of these resources," he said.

As far as tourism operators such as sport diving operations are concerned, the proposed MPA's do not intend to prohibit such activities but rather aim

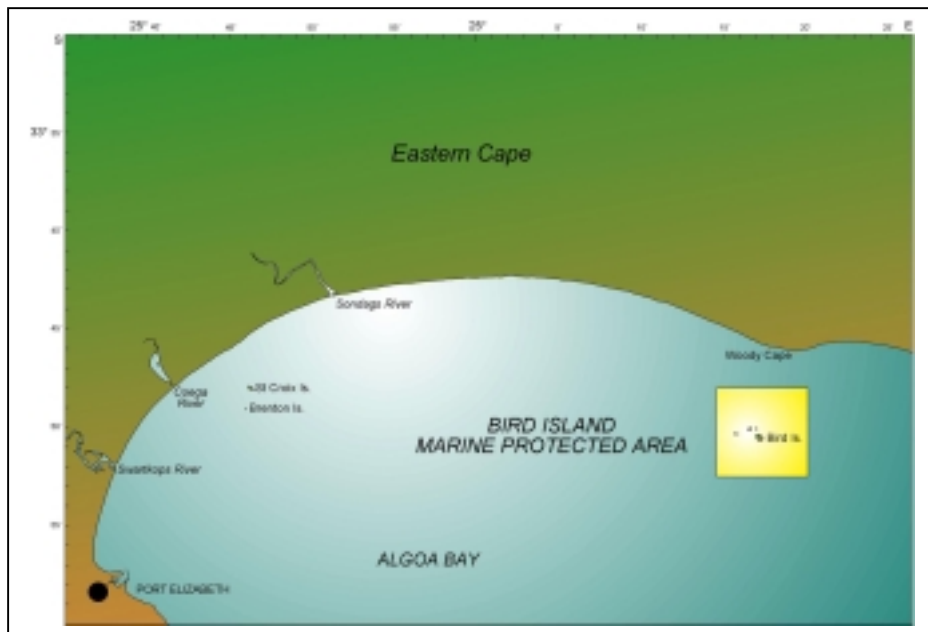








The development of tourism in this impoverished region is a priority, and the MPA is the first step in realising the potential of this scenic coastline.



### BIRD ISLAND

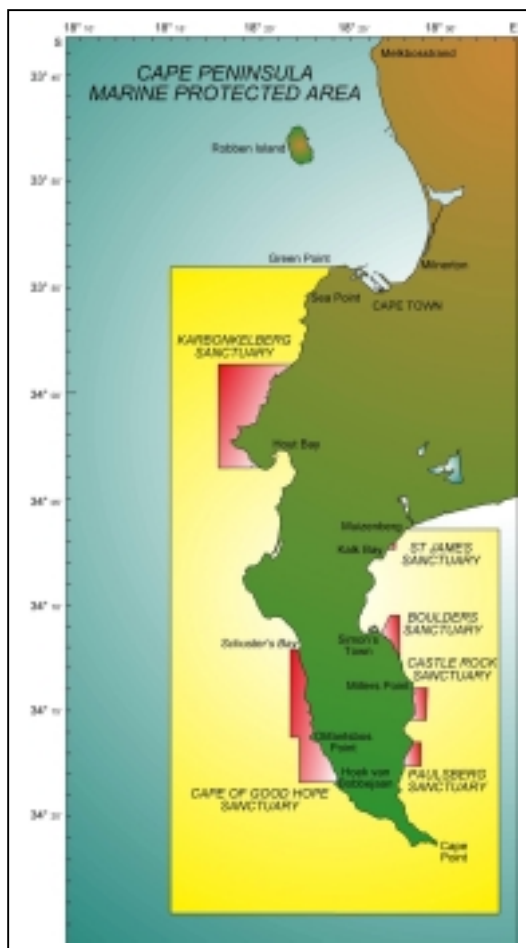
The protection of the Bird Island Group (Bird, Seal and Stag Islands) in Algoa Bay is the first step in the seaward extension of the Greater Addo Elephant National Park. Bird Island is home to several species of red-data listed seabirds (Cape gannett, roseate tern, African penguin), while the reefs around the islands are important for abalone and linefish, many of which are threatened. Bird Island unfortunately has been the target of abalone poachers, and the immediate protection of the islands is regarded as a priority.

### CAPE PENINSULA

The Cape Peninsula MPA includes all of the coastal waters around the Cape Peninsula from Mouille Point in the west to

Muizenberg in the east. It is situated in the transition zone between two biogeographic provinces - the cool temperate Namaqua province lies to the west and the warm temperate south coast province to the east. This is one of the most diverse and productive stretches of coastline in South Africa. The Cape Peninsula is also rich in marine species endemic to southern Africa some of which are even endemic to this change-over region. It is also the area that has the longest history of commercial fishing in South Africa.

The proximity of a large metropolitan area provides great challenges and opportunities for marine conservation. The exploitation of natural resources along the Cape Peninsula coastline is an important source of



recreation, employment and food. Unfortunately, the intensity of harvesting on the peninsula has exceeded the capacity of many of the fish species to replace themselves, and many are severely overexploited. It is clear that the marine and coastal ecosystems surrounding the Cape Peninsula need to be protected from further degradation, and given the chance to recover. The exploitation of over-fished species must be reduced.

The shores of the Cape Peninsula are one of the great tourist attractions of Cape Town. To swim among penguins at Boulders is a world-class attraction while Coral Gardens offers some of the most spectacular temperate-water SCUBA





diving.

The MPA will be an extension of the Cape Peninsula National Park and will include six areas that are closed to fishing, whereas the majority of the MPA will still be open to fishing. The closed areas have been located for the protection of abalone, rock lobster, linefish, penguins and SCUBA diving sites.

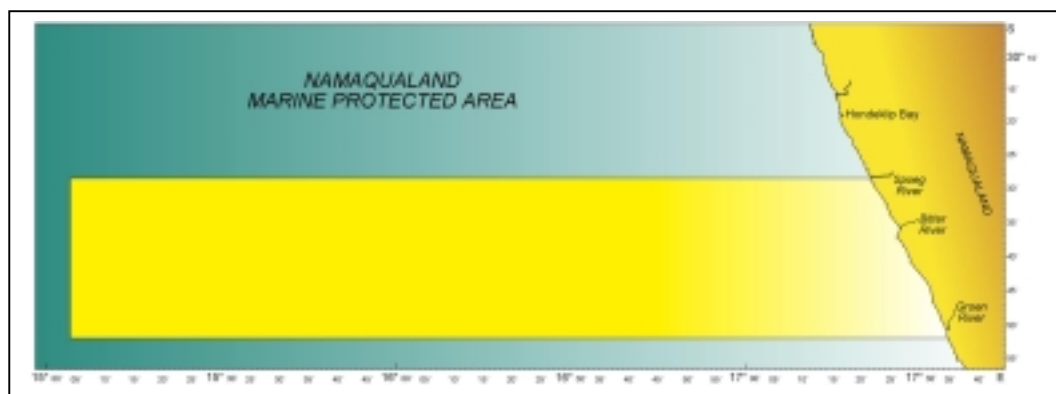
## NAMAQUALAND

The marine habitats of the west coast of South Africa are poorly represented in protected areas. (The existing West Coast National Park protects primarily the Langebaan Lagoon, which is atypical of the West Coast). We have selected a biologically rich and representative area of the little known and understated west coast. The MPA will extend from the inter-tidal area between the Groen and Spoeg River, and extending out to sea to include Child's Bank and the 1000-m isobath. It will be SA's largest MPA at 9700 km<sup>2</sup>. Although most of this area is too deep to dive (and too cold), the habitat supports economically important species such as hake (shallow and deep water species), kingklip, monkfish, rock lobster and tuna. Namaqualand MPA will include habitat that may be threatened by trawling and mining activities, and will therefore provide valuable reference sites for research.

**Phindile Makwakwa**, Spokesperson  
Ministry of Environmental Affairs and Tourism

The recently appointed Minister of Environmental Affairs and Tourism, Marthinus van Schalkwyk, speaking at Kalk Bay harbour, on Thursday 3 June 2004, made the following announcement regarding the proclamation of Marine Protected Areas. This is what he had to say.

The international theme for World Environment Day this year (June 5th) is “Wanted! Seas and Oceans Dead or Alive”. Today South Africa answers that question in no uncertain terms – our oceans and marine resources are global treasures and we will act, in partnership with our coastal communities, to ensure that they thrive, expand, and teem with life.



It is my great pleasure today to complete one of the most important processes yet undertaken in South African conservation and natural resource management – the official announcement of four major new Marine Protected Areas (MPA's): Aliwal Shoal, Pondoland, the Bird Island Group, and Table Mountain National Park – which will be gazetted tomorrow in celebration of World Environment Day on 5 June. We are still negotiating the protection of a large area of continental shelf off Namaqualand to potentially be declared as an MPA at a later date.

MPA's combine conservation with the development of tourism, and in this respect they are the marine equivalent of national parks. They are not a new concept in South Africa – we have 19 such areas already, with Tsitsikamma proclaimed as far back as 1964.

The difference is that these new MPA's are modelled on the success of the Greater St Lucia Wetland Park – with strict zoning of both marine and coastal protected areas. This will create ‘**Controlled zones**’, which allow for limited fishing, ‘**Restricted zones**’, which allow for the controlled development of tourism, while protecting fish, as well as ‘**Sanctuary zones**’ in which complete protection will be applied.



I would like to take this opportunity to pay tribute to the communities of South Africa, who have shown in this process the value of public comment. Since the proposed MPA's were announced in February, our Department has received many good ideas and a number of valid concerns. We have worked to incorporate these ideas, and accommodate people's concerns as far as possible, without compromising the conservation objectives of the areas. As a result the original proposals have been altered – showing again how the interests of the environment and those of our people coincide.

One example of such changes here in the Table Mountain National Park MPA is that we have changed the boundaries of the Cape of Good Hope Sanctuary area to accommodate **small-scale rock lobster fishermen** in a way that will still protect rock lobsters and other elements of the ecosystem. A concession was also made for **snoek fishermen** off Llundudno. We also received many comments and objections to the **permitting of SCUBA divers**. We have limited this requirement to the Restricted zones in the case of Table Mountain National Park. We believe that divers will benefit from the exclusion of fishermen from popular dive sites, and that, like fishermen, they too should contribute to the management of their activity. These permits will be inexpensive and obtainable at a number of accessible outlets around the peninsula.

Each of the four new MPA's will have significant benefits for the coast. **Aliwal Shoal** has long been in need of protection. The diving industry in particular will benefit, and KwaZulu Natal will add another well-managed natural resource to its already-impressive list of tourist destinations.

**Pondoland** is a massive MPA that strives to provide protection to the incredible biological diversity in that area. At the same time we will use the MPA as a catalyst to unlock the eco-tourism potential of this spectacular, but poverty-stricken area.

The objectives for **Bird Island** are primarily centred around protection of critical fish and shellfish resources, and to put a stop to poaching there, as well as securing the breeding sites of red

data-listed birds. In future this MPA will link up to the Addo Elephant National Park, to create an incredibly diverse National Park that can offer the tourist a wide variety of experiences.

The expansion of **Table Mountain National Park** to include the sea around the Cape Peninsula is an ambitious development aimed at protecting the rich marine life along these shores, and ensuring the continuation of the important fishing industries and associated lifestyles in the midst of a dense metropolitan area. Six areas have been set aside for the protection of all fish life, as part of our strategy to rebuild over-exploited linefish populations.

These new MPA's will bring SA much closer to achieving the targets set at the WSSD and World Parks Congress for the protection of coastal waters (20% of national water). In future our efforts will also be directed at conserving substantial components of the continental shelf, extending into our economic exclusion zone (EEZ).

One of the most important aspects of the MPA's will be compliance and enforcement. Naturally we prefer communities and industries to assist in conservation – in their own long-term interests – but we will also act swiftly against those who do not respect the new restrictions. As part of this enforcement we will, in October, take delivery of the first of four new environmental patrol vessels, purchased at a cost of R500 million. We will also expand our force of Fishing Control Officers, and we aim to engage another 200 Honorary Officers in the next 12 to 18 months. Another leg of our enforcement strategy will be to expand the work of our specialised Environmental Courts – with a new court planned for Gauteng in the near future. It has always been my personal belief that we will not begin to turn-around conservation and compliance until we upgrade and strengthen our environmental enforcement capacity. These steps are the start of that process.

In helping us to change attitudes towards the ocean, Marine Protected Areas represent one of our last, best hopes for ensuring the preservation of our marine and coastal riches.



Marthinus van Schalkwyk  
Minister of Environmental Affairs and Tourism

Current information on the new MPAs can be found on the Department of Environmental Affairs and Tourism's website at [www.environment.gov.za](http://www.environment.gov.za). Just follow the "News & Media" links.

### Conference Countdown

The Department of Botany at the University of Cape Town will be hosting the 21<sup>st</sup> annual PSSA conference in January 2005. We will keep you abreast of things as they unfold. Since the IPC8 will be held during August 2005 in Durban, the following PSSA conference will only be held in July 2006, with the conference thereafter being held in January 2008.

### Calendar of Events for 2004

#### Upcoming Conferences

1. The 3<sup>rd</sup> International Conference on Marine Waste Water Disposal and Marine Environment (MWWD 2004), 27 Sept.- 2 Oct. 2004. Website: <http://www.mwwd.org/>
2. The 11<sup>th</sup> Conference on Harmful Algae (HAB2004), 15-19 November 2004. Website: <http://www.botany.uwc.ac.za/pssa/hab2004/>
3. The biennial Ground Water Conference, 7-9 March 2005. Website: <http://www.gwd.org.za/>
4. The 12<sup>th</sup> Southern African Marine Science Symposium, 4-7 July 2005. Website: none as yet!
5. The 8<sup>th</sup> International Phycological Congress (IPC8), 13-19 August 2005. Website: <http://www.ipc8.org.za/>
6. The XIX International Seaweed Symposium, Kobe, Japan, 2007.

