

# Benguela

## current news



THE NEWSLETTER OF THE BENGUELA CURRENT LARGE MARINE ECOSYSTEM PROGRAMME

## First moves towards a Benguela Current Commission

by Dr Mick O'Toole

With a total of 11 projects completed and another 49 projects in various stages of implementation, the BCLME Programme is generating a wealth of information about the Benguela Current Large Marine Ecosystem and how the transboundary management problems associated with fishing, mining, oil exploration, coastal development, biodiversity and pollution may best be managed across the entire Benguela region.

At the same time, the first steps are being taken towards the establishment of a Benguela Current Commission (BCC).

In August, a small team of consultants will embark on a project to identify the needs and requirements for establishing a regional marine resources commission or Intergovernmental Organisation (IGO) for the Benguela region. The team will investigate some of the key legal, management and economic issues surrounding the establishment of the BCC, as well as the mandate and functions of such an organisation.

The training and capacity building component of the BCLME Programme has moved up the agenda over the past five months. A two day consultative meeting was held in Namibia in March, during which 50 stakeholders from Angola, Namibia and South Africa identified priority management and scientific requirements for the

region to effectively manage the BCLME. Other outputs included the development of the key terms of reference for the planned Advisory Group on Training and Capacity Building.

Training and capacity building is a cornerstone of the BCLME Programme. It underpins virtually all activities and has been incorporated into each of the 60 projects that have received support from the BCLME Programme. One of the key tasks of the Advisory Group on Training and Capacity Building will be to develop a comprehensive Strategic and Implementation Plan which will be formulated at a regional planning workshop to be held in Johannesburg in July. This will help to ensure that, whenever the BCC is formally established, training and capacity building will be addressed in each of the participating countries so that transboundary issues may be professionally managed.

On both sides of the BCLME, processes are underway to establish similar LME programmes. To the north of Angola, the Guinea Current LME has secured a US\$20 million (R140 million) grant from the Global Environment Facility (GEF) to finance its next phase of development. And four separate programmes under the banner of the Agulhas-Somali LMEs have been designed to address the environmental problems that occur in the Western Indian Ocean.

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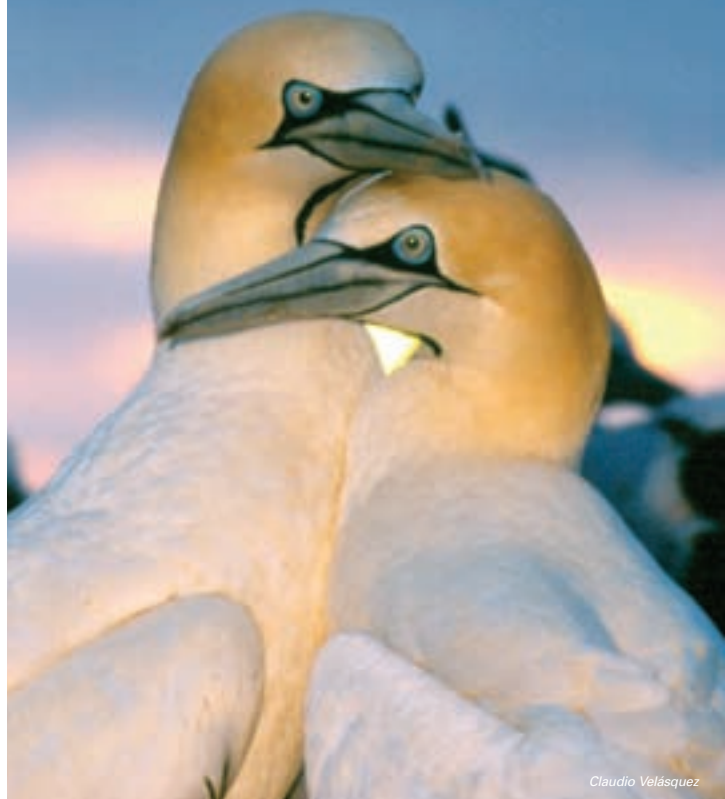
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## Current of Plenty

A 25-minute documentary, *Current of Plenty*, was produced by the BCLME Programme and released on CD this month. Turn to p.23 to find out how to order your copy of *Current of Plenty*.



Claudio Velásquez



*The Fisheries Economics Research Unit at the University of British Columbia (UBC) is leading a team of local and international researchers in an endeavour to determine the optimal way of sharing the hake total allowable catch (TAC) between the trawl and longline fisheries in Namibia and South Africa.*

*Pictured at the signing of the contract between UBC and the BCLME Programme are Dr Hashali Hamukuaya, director of the Activity Centre for Marine Living Resources, Dr Mick O'Toole, chief technical advisor, Professor Rashid Sumaila of the University of British Columbia and Kevin Stephanus of the University of Namibia.*

assessment and environmental monitoring cruises.

In many ways the BCLME Programme has become a showcase for what may be achieved in Africa through goodwill and cooperation between nations. I believe that the BCLME Programme's constructive interaction with neighbouring LME programmes can only strengthen and enhance the management of Africa's marine environment.

It gives me great pleasure to circulate, with this 2nd edition of the BCLME Programme newsletter, a copy of a 25 minute documentary film produced off the coasts of Angola, Namibia and South Africa. The documentary, which was produced on behalf of the BCLME Programme by Francois Odendaal Productions, provides a vivid reminder of the biological treasures that are supported by the chill waters of the Benguela. It highlights the importance of working together to deal with the environmental problems that threaten the integrity of this unique and fascinating ecosystem.

*BCLME Chief Technical Advisor  
(Programme Coordinator)*

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The issues that face the LME programmes on both sides of the BCLME differ substantially, but the BCLME Programme is well placed to contribute to each of these processes. Indeed, representatives of the BCLME Programme played a constructive role in a meeting that was held in May to discuss progress with the Agulhas-Somali

LMEs. Furthermore, the BCLME Programme has been interacting with the Guinea Current Large Marine Ecosystem (GCLME). The BCLME Programme has provided funding for representatives from the GCLME to attend meetings of the BCLME Programme and a number of their scientists have taken part in transboundary stock

## Primeiros passos para a criação de uma Comissão para a Corrente de Benguela

**Por Dr. Mick O'Toole**

*Com um total de 11 projectos terminados e de outros 49 em vários estágios de implementação, o Programa BCLME está a produzir informação muito preciosa à cerca do Grande Ecossistema Marinho da Corrente de Benguela e como poderão ser melhor geridos os problemas transfronteiriços de gestão associados à pesca, exploração mineira, exploração petrolífera, desenvolvimento litoral, biodiversidade e poluição em toda a região de Benguela.*

*Ao mesmo tempo, estão a ser dados os primeiros passos para se criar uma Comissão para a Corrente de Benguela (BCC).*

*Em Agosto, uma pequena equipa de consultores embarcou num projecto para identificar as necessidades e requisitos para a criação de uma comissão regional para os recursos marinhos ou uma Organização Intergovernamental (IGO) para a região de Benguela. A equipa investigará algumas questões-chave sobre aspectos de ordem legal, económica e de gestão que se relacionem com a criação da BCC assim como com o mandato e as funções de uma tal organização.*

*A componente de formação e de criação de capacidade humana do Programa BCLME subiu nos cinco meses passados. Uma reunião consultiva de dois dias foi realizada na Namíbia em Março, durante a*

*qual 50 parceiros interessados de Angola, Namíbia e África do Sul identificaram as prioridades de gestão e as necessidades e requisitos científicos para que a região gira eficazmente o BCLME. Outros outputs incluíram a elaboração dos termos de referência cruciais para o Grupo Consultivo de Planeamento sobre Criação de Capacidade e Formação.*

*A formação e a criação de capacidade humana é uma pedra basilar do Programa BCLME. Isto está virtualmente subjacente em todas as actividades e foi incorporado em cada um dos 60 projectos que receberam o apoio do Programa BCLME. Uma das tarefas-chave do Grupo Consultivo de Planeamento sobre Criação*

# Task team to investigate BCC

**F**ormer Norwegian fisheries minister, Svein Munkejord, is part of a small task team which will conduct an investigation into whether there is a need to establish an intergovernmental organisation, or regional marine resources commission, for the Benguela region.

Mr Munkejord, a senior advisor in the Norwegian Directorate of Fisheries, has worked periodically as an advisor to the South African Department of Environmental Affairs and Tourism since 1996.

He explains that the study will be aimed at assessing the merits of establishing a regional fisheries management organisation such as a Benguela Current Commission (BCC).

Initial investigations have shown that there are already a range of regional fisheries management organisations in place in the Benguela region. These include the Southeast Atlantic Fisheries Organisation (SEAFO), the International Commission for the Conservation of Atlantic Tunas (ICCAT), and a number of voluntary

undertakings by member states of the United Nations' Food and Agriculture Organisation (FAO).

"We will be looking at SEAFO and asking how the proposed Benguela Current Commission would fit in. And, if there is a case for the joint management of fisheries, could it take place through SEAFO?" He asks.

The cooperative management of shared fish stocks is likely to be a key issue for the proposed Benguela Current Commission, says Mr Munkejord. Therefore, the teams' investigation will be focused on identifying the stocks that are shared by two or more countries in the Benguela region, and debating whether cooperative management would help to improve the management of those stocks.

The team is also tasked with identifying whether a regional legal framework – a convention – would be a necessary first step in the establishment of a permanent commission. They will assess what the value of a commission would be, both economically and in terms of contributing to the effective management of fisheries in the Benguela region.

Mr Munkejord says that the team has been asked to provide a number of models for a commission and to outline the coordination and implementation of each model. They will also estimate the costs of establishing a commission and suggest ways in which it could be financed over a medium- to long-term period.



**Svein Munkejord**

*de Capacidade e Formação será desenvolver um Plano Estratégico e de Implementação detalhado que seja formulado num workshop de planeamento regional a ter lugar em Joanesburgo em Julho. Isto ajudará a assegurar que, quando o BCC for criado formalmente, a criação de capacidade e a formação em cada um dos países participantes sejam tratadas de tal forma que permitam que as questões transfronteiriças sejam geridas com profissionalismo.*

*Em ambos os lados do Grande Ecossistema Marinho da Corrente de Benguela, os processos estão a caminho de criar programas semelhantes de LMEs. A norte de Angola, o LME da Corrente da Guiné assegurou uma concessão de US\$ 20 milhões (R140 milhões) da Global Environmental Facility (GEF) para financiar a sua fase de desenvolvimento seguinte. E quatro programas separados sob a bandeira do LME das Agulhas-Somália foram projectados para tratar dos problemas ambientais que ocorrem no Oceano Índico ocidental, desde a fronteira sul africana do BCLME até aos recifes de corais do Quênia e das Seicheles.*

*As questões e problemas que os programas dos LMEs enfrentam em ambos os lados do BCLME diferem substancialmente, mas o Programa BCLME está bem posicionado para contribuir para cada um desses processos. De facto, os representantes do Programa BCLME jogaram um papel construtivo numa reunião consultativa de especialistas que foi realizada em Maio para discutir o progresso com o LME das Agulhas-Somália. Além disso, o Programa BCLME tem interagido com o Grande Ecossistema Marinho da Corrente da Guiné (GCLME), particularmente no contexto da abordagem de problemas partilhados nas águas Angolanas sobre as pescarias e questões ambientais. O Programa BCLME forneceu também financiamento para representantes do GCLME assistirem às reuniões consultivas do Programa BCLME e tem convidado alguns dos seus cientistas para participarem em cruzeiros de avaliação de stocks transfronteiriços e monitoração ambiental.*

*Em muitos aspectos o Programa BCLME transformou-se numa "demonstração" do que pode ser*

*conseguido em África com boa-vontade e cooperação entre as nações. Eu acredito que a interação construtiva do Programa BCLME com os programas de LMEs vizinhos pode somente reforçar e realçar a gestão do ambiente marinho de África.*

*É com imenso prazer que ponho a circular esta segunda edição do boletim de notícias do Programa BCLME, uma cópia de um filme documental de 25 minutos produzido ao largo das costas de Angola, Namíbia e África do Sul. O documentário, que foi produzido em nome do Programa BCLME pela Francois Odendaal Productions, apresenta imagens estonteantes das interações entre plantas, animais e seres humanos no Grande Ecossistema Marinho da Corrente de Benguela. Isto proporciona-nos uma chamada de atenção muito forte sobre os tesouros biológicos que são suportados pelas águas frias de Benguela, e destaca a importância de se trabalhar em conjunto para cuidar dos problemas ambientais que ameaçam a integridade deste fascinante e único ecossistema.*

# O Projecto sobre Ecosistemas obtém Apoio da FAO



Dr Kevern Cochrane

**S**erá possível apresentar um sistema mais holístico de gestão pesqueira para o Grande Ecossistema Marinho da Corrente de Benguela?

Esta é a pergunta que está a ser feita por uma equipa de peritos regionais e internacionais que investigam a viabilidade de implementação de um conceito de proposta de ecossistema para a gestão pesqueira (EAF) na região de Benguela.

O estudo de viabilidade é financiado pelo Programa BCLME e gerido pela Gestão Marinha e Litoral (MCM), uma filial do Departamento Nacional da África do Sul para as Questões Ambientais e Turismo. A equipa de investigadores é liderada pelo Dr. Kevern Cochrane da divisão de recursos marinhos da FAO e pelo Dr. Johann Augustyn, chefe da divisão científica da MCM.

O Dr. Cochrane explica que Angola, Namíbia e África do Sul abraçaram todos o conceito de gestão integrada do ecossistema aplicado às pescas, através da ratificação de uma série de convenções e de acordos. Isso inclui a Cimeira da Terra sobre o Desenvolvimento Sustentável

(2002), a Declaração de Reykjavik sobre Pescarias Responsáveis no Ecossistema Marinho (2001) e a Declaração de Kyoto de 1995. Além disso, o Código de Conduta para Pescarias Responsáveis, que foi aceite pelos estados membros da FAO em 1995, inclui uma série de princípios de ecossistema, preocupações e diretrizes de políticas para a EAF.

Apesar do compromisso dos três países em prol de uma proposta de ecossistema, na realidade a gestão pesqueira na região de Benguela - bem como na maior parte do mundo - continua a concentrar-se nas espécies-alvo.

Esta gestão integrada do ecossistema aplicado às pescas, é inevitável, diz o Dr. Cochrane, porque a indústria pesqueira gere-se pelo lucro e identifica facilmente as espécies que valem a pena pescar. Os gestores das pescarias, e mesmo os conservadores, reagem introduzindo um sistema de gestão que vise assegurar a pesca sustentável das espécies-

alvo, ou a protecção de espécies individuais.

O Dr. Cochrane chama a este sistema de gestão pesqueira "a proposta orientada para o recurso alvo" ou TROM. Ele diz que enquanto isto puder ser inevitável, está longe de ser ideal:

"Há uma crescente evidência que permite sugerir que a pesca e os métodos de pesca têm um impacto muito grande sobre os ecossistemas marinhos. Estes impactos, no fim, afectam a produtividade do ecossistema e como resultado a pesca está a ser feita a níveis cada vez mais baixos da cadeia trófica," explica ele.

A FAO jogou um papel primordial na promoção da gestão integrada do ecossistema aplicado às pescas em todo o mundo. A organização define a gestão integrada do ecossistema aplicado às pescas como:

"Uma abordagem para a gestão e o desenvolvimento das pescarias,



Department of Environmental Affairs & Tourism

## Ecosystems project wins support of FAO

*Is it possible to introduce a more holistic system of fisheries management in the Benguela Current Large Marine Ecosystem?*

*This is the question that is being addressed by a team of regional and international experts who are investigating the feasibility of implementing the ecosystem approach to fisheries management (EAF) in the Benguela region.*

*The feasibility study is funded by the BCLME Programme and managed by Marine and Coastal Management (MCM), a branch of South Africa's national Department of Environmental Affairs and Tourism. The team of researchers is led by Dr Kevern Cochrane of the FAO's Marine Resources Service and Dr Johann Augustyn,*

*head of MCM's scientific division.*

*Dr Cochrane explains that Angola, Namibia and South Africa have all embraced the concept of an ecosystems approach to fisheries management through their ratification of a number of conventions and agreements. These include the World Summit on Sustainable Development (2002), the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem (2001) and the Kyoto Declaration of 1995. Moreover, the Code of Conduct for Responsible Fisheries, which was accepted by FAO member states in 1995, incorporates a number of ecosystem principles, concerns and policy guidelines for EAF.*

*In spite of the commitment by the three countries to an ecosystem approach, in reality fisheries management in the Benguela region – as well as in most other parts of the world – continues to be focused on target species.*

*This approach to fisheries management is inevitable, says Dr Cochrane, because the fishing industry is driven mainly by profit and easily identifies the species that are worth catching. Fisheries managers, and even conservationists, respond by introducing management systems that aim to ensure the sustainable fishing of target species, or the protection of individual species.*

*Dr Cochrane calls this system of fisheries management the "target*

que se esforça por contrabalançar diversos objectivos sociais, tendo em consideração o conhecimento e as incertezas sobre as componentes bióticas, abióticas e humanas dos ecossistemas e suas interações e aplicando uma proposta integrada para as pescarias dentro de limites ecológicamente aceitáveis.”

A definição da FAO é pouco intimidatória, mas posta dessa forma, a finalidade de uma gestão integrada do ecossistema aplicado às pescas é planificar, desenvolver e gerir as pescarias de maneira que não prejudique o seu potencial, para que as gerações futuras possam beneficiar de todos os bens e serviços proporcionados pelos ecossistemas marinhos.

Um exemplo simples de tal proposta seria gerir os recursos de pequenos pelágicos da África do Sul de tal maneira que as aves marinhas não fossem afectadas adversamente pela captura anual da indústria pesqueira da anchova e da sardinha. O objectivo de tal proposta seria o de assegurar a prosperidade económica, enquanto ao mesmo tempo protegeria a biodiversidade e

garantiria um futuro sustentável para a indústria do eco-turismo que se desenvolveu em torno dos pinguins e das outras aves marinhas.

O objectivo do projecto financiado pelo BCLME é investigar a viabilidade da introdução de uma gestão integrada do ecossistema aplicado às pescas em toda a região de Benguela. Isto será conseguido através do exame dos sistemas de gestão pesqueira existentes em Angola, na Namíbia e na África do Sul e das recomendações sobre as formas como estes sistemas poderão ser melhorados com a adopção de uma gestão integrada do ecossistema.

Um dos resultados-chave do projecto será um relatório que será submetido aos políticos responsáveis pelas decisões na região. O relatório recomendará as formas para introdução de gestão integrada do ecossistema aplicado às pescas a nível nacional e regional.

O Dr. Cochrane enfatiza que este é um estudo de viabilidade que visa identificar os custos, benefícios e necessidades associadas à

execução da gestão integrada do ecossistema aplicado às pescas. Ele adianta que uma das áreas-chave de enfoque do projecto será a identificação das formas em que as propostas de ecossistema possam ser usadas para resolução da gestão de stocks de peixes comerciais que são compartilhados por dois ou mais países na região de Benguela.

Outras das áreas-chave de enfoque do projecto será o bycatch das pescarias comerciais na região.

O projecto usará os dados disponíveis e reunirá os gestores e modeladores das pescarias.

Entretanto, o Dr. Cochrane sublinha que o projecto é muito mais do que um mero exercício de modelação informática:

“Existe já um mal entendido de que este projecto é todo sobre modelação. De facto é tudo uma questão de pôr os sistemas de gestão no lugar, para se minimizarem os impactos sobre as espécies alvo, as espécies do by-catch e sobre o ambiente. A nossa proposta é usar a melhor

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*resource orientated approach” or TROM. He says that while it may have been inevitable, it is far from ideal:*

*“There is a growing body of evidence to suggest that fishing and fishing methods have far reaching impacts on marine ecosystems. These impacts may ultimately affect the productivity of the whole ecosystem, including the target resources, and may also lead to changes in the species composition and habitats of the ecosystem. The net result can be a foreclosing of opportunities and a fall in the potential value of the ecosystem,” he explains.*

*The FAO has played a leading role in promoting the ecosystem approach to fisheries manage-*

*ment around the world. The Organisation defines the ecosystem approach as:*

*“An approach to fisheries management and development that strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries.”*

*The FAO’s definition is a little intimidating, but simply put, the purpose of an ecosystem approach to fisheries is to plan, develop and manage fisheries in a way that doesn’t jeopardise the potential for future generations*

*to benefit from the full range of goods and services provided by marine ecosystems.*

*A simple example of such an approach would be managing*

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## News

A paper entitled "The source of Benguela Niños in the South Atlantic Ocean" which was written by Dr Pierre Florenchie, Professor Johann Lutjeharms, Professor Chris Reason, Dr Sebastien Masson and Dr Mathieu Rouault, received the Stanley Jackson Award for best published paper contributing to the atmospheric and oceanic sciences in South Africa in 2003. The award was made at the annual conference of the South African Society for Atmospheric Sciences which was held in Cape Town in May.

Seven papers published in 2003 were nominated for the prize. The six independent evaluators noted the importance of the paper by Florenchie et al., the succinct and well-written form of the paper and the potential for using the results in predicting the incidence of Benguela Niños.

Dr Hashali Hamukuaya, director of the Activity Centre for Marine Living Resources, participated in the Global Environment Facility's International Waters exchange programme when he visited the Pacific in April.

During his visit, Dr Hamukuaya gained first hand experience of the regional agency provides advice on fishery management to 15 small island states. He also observed the processes leading to the establishment of the Western and Central Pacific Fisheries Commission (WCPFC) which came into operation in June 2004. Dr Hamukuaya's report on his visit to the Pacific is available at [www.bclme.org](http://www.bclme.org).

## 5/...continuação

ciência disponível; se isso incluir bons modelos, deixem-nos usá-los," diz.

As três instituições de pesquisa, incluindo o MCM na África do Sul, o Centro Nacional de Investigação e Informação Marinha da Namíbia (NATMIRC), na Namíbia, e o Instituto de Investigação Marinha (IIM) em Angola, estão a custear os projectos da EAF de alta prioridade, diz o Dr. Cochrane. Isto é, em parte em consequência do

reconhecimento dos países de que os ecossistemas marinhos estão sob pressão e a proposta do ecossistema apresenta uma oportunidade valiosa para restabelecer o balanço ecológico e incentivar a pesca a níveis mais altos da cadeia trófica.

A FAO vê o projecto de Benguela como um importante teste global, diz o Dr. Cochrane:

"À excepção da Austrália, que obteve bons resultados na implementação do EAF, houve muito poucas tentativas visando explorar a implementação de uma propos-

ta de ecossistemas para gestão pesqueira," explica ele.

A FAO deve partilhar alguns dos custos associados com US\$100 000 (R700 000) do projecto EAF que se espera estar concluído em dezembro de 2006. Um projecto de acompanhamento dois anos poderá ser recomendado, dependendo dos resultados do projecto inicial.

Durante o projecto de acompanhamento, deverão ser feitas tentativas para implementação das estratégias identificadas no primeiro projecto.

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*South Africa's small pelagic resources in such a way that neither the target species nor the important predators, such as other fish species and seabirds, are adversely affected by the fishing industry's annual harvest of anchovies and sardines. The goal of such an approach might be to maintain the economic and social contributions of fisheries to the country, while at the same time safeguarding biodiversity and ensuring a sustainable future for the ecotourism industry that has developed, for example, around penguins and other seabirds.*

*The objective of the BCLME-funded project is to investigate the feasibility of introducing an ecosystem approach to fisheries management across the Benguela region. This will be achieved by examining the existing systems of fisheries management in Angola, Namibia and South Africa and recommending ways in which these systems may be improved through the adoption of an ecosystem approach.*

*One of the key outcomes of the project will be a report that will be submitted to political decision-makers in the region. The report will recommend ways of introducing an ecosystem approach to fisheries management at a national and regional level.*

*Dr Cochrane stresses that this is a feasibility study which aims to identify the costs, benefits and needs associated with the implementation of an ecosystem approach to fisheries management. He anticipates that one of the project's key focus areas will be to identify ways in which ecosystem approaches may be used to address the management of commercial fish stocks that are shared by two or more countries in the Benguela region.*

*Another of the project's key focus areas will be the often neglected bycatch of the commercial fisheries in the region, and the impact of these bycatches on the affected species and the ecosystem.*

*The project will use available data and bring together fisheries managers and modellers from across the region.*

*However, Dr Cochrane emphasises that the project is far more than an exercise in computer modelling:*

*"There is already a misconception that this project is all about modelling. In fact it is all about putting into place management systems that minimise impacts on target species, bycatch species and the environment. Our approach is to use the best science available; if that includes good mathematical models, let's use them, but if not, then we will need to look at other sources of reliable and validated information".*

*The three national research institutions, including MCM in South Africa, the National Marine Research and Information Centre (NATMIRC) in Namibia and the Instituto de Investigação Marinha (IIM) in Angola, are affording the EAF project high priority, says Dr Cochrane. This is largely as a result of the countries' recognition that marine ecosystems are under pressure and the ecosystem approach presents a valuable opportunity to restore ecological balance and optimise the uses of the ecosystem.*

*The FAO sees the Benguela project as an important global test case, says Dr Cochrane:*

*"With the exception of Australia, which has made good progress with implementing EAF, there have been very few focused attempts to explore the implementation of an ecosystem approach to fisheries management," he explains.*

*The FAO is to share some of the costs associated with the project which is expected to be completed by December 2006. A follow-up, two-year project may be recommended, depending on the results of the initial project.*

*During the follow-up project, attempts would be made to implement the strategies that are identified in the first project.*

# Positive sentiments from Namibian industry

Namibia's hake fishing industry, which is widely recognised as an important earner of foreign exchange and a vital provider of employment, is positive about the impact that the BCLME Programme will have on the management of the Benguela region's fish stocks.

The chairman of the Namibian hake fishing industry association, Sylvanus Kathindi, says that the sustainable utilisation of the hake resource is an industry priority; as a result, the industry is supportive of the BCLME Programme's objective of facilitating the sustainable and integrated management of resources across the Benguela region.

Namibia's hake fishing industry earned N\$2.9 billion (\$414 million) in 2003, but it has been hard hit by the strengthening of the Namibian dollar against the US dollar, as well as the high number of juvenile fish that have been landed by the fishing industry in the past three seasons. Both of these factors have caused profits to plunge and pushed many smaller fishing companies to the brink of bankruptcy.

In spite of these difficulties, scientists are positive about the prospects for the Namibian hake resource. Catch per unit effort increased in 2003, even though the fishing industry was obliged to fit selectivity devices to their trawl nets in a bid to curb landings of juvenile hake. In April, the total allowable catch (TAC) for Namibia's hake fishery was increased by 15 000 tons to 195 000 tons.

According to Mr Kathindi, the Namibian hake industry is mindful of the fact that there is a growing body of evidence to suggest that Namibia and South Africa share a single stock of deep-water hake, *Merluccius paradoxus*.

Scientists have always believed that there are separate stocks of shallow water hake *Merluccius capensis* on the west and south coasts of South Africa, and that the Namibian and South African stocks of deep-water hake, *Merluccius paradoxus*, are separated by the Orange River. However, scientists who attended the BENEFIT-BCLME-NRF stock assessment workshop that took place in Cape Town in January agreed that there may be greater overlaps in the deep-water hake stocks than was originally thought. They also agreed that it is likely that there is a single stock of shallow water hake and a single stock of deep-water hake off South Africa.

Mr Kathindi says that the fishing industry has not yet discussed the possibility of sharing arrangements between South Africa and Namibia, but he says that this topic is likely to feature on the fishing industry's agenda in time.

"At the end of the day it is in the interests of both countries to start talking about these things," he says.

As the managing director of Etale Fishing – a medium-sized Namibian fishing company – Mr Kathindi is all too aware of the difficulties facing the fishing industry at present.

Etale Fishing comprises four quota holders, three of which have benefited from the Namibian government's policy of Namibianisation. Through this policy, the government has encouraged Namibian involvement in fisheries and created opportunities for black Namibians who were disadvantaged prior to independence in 1990.

"We have to make things work at Etale Fishing because we don't have a 'big brother' to bail us out," says Mr Kathindi.

With trading conditions difficult and catches poor, Mr Kathindi says that his company is focusing on improving efficiencies and cutting costs. The company has already introduced different catch strategies by investing in vessels that make it possible to fish deeper and on rougher ground.



Sylvanus Kathindi

## Fact File:

The Namibian fishing industry is the country's second largest earner of foreign currency after mining. It is the third largest economic sector in Namibia and contributes an estimated 10 percent to Gross Domestic Product (GDP).

The Namibian hake fishery, which targets the Cape hakes, *Merluccius paradoxus* and *M. capensis*, forms the backbone of the fishing industry. The value of hake products produced in 2003 was around N\$2.9 billion, according to figures supplied by the Ministry of Fisheries and Marine Resources. At least 80 percent of the country's

hake catch is exported to southern Europe, most notably Spain.

Namibia's hake industry employs 6 334 people at onshore factories and a further 3 159 seagoing workers.

From an operational perspective, Namibia's hake fishing industry has changed dramatically since 1989. Whereas all processing of hake took place offshore at independence, today approximately 60% of the hake catch is landed and processed in Namibia.

Source: Namibian Economist and [www.nfi.com.na](http://www.nfi.com.na)



# Shellfish monitoring programme for the Benguela region



Bronwen Currie

In the mid-1990s, the European Union placed a ban on the export of molluscs from the Benguela region because an EU-approved monitoring system was not in place. Today, Angola, Namibia and South Africa are working together through the BCLME Programme to establish a comprehensive shellfish safety programme for the entire region.

The BCLME Programme's initiative is poised to ensure that the high quality shellfish products that are produced in the Benguela region will be safety-tested in line with international standards.

The project has the potential to open up new markets for South African, Namibian and Angolan shellfish producers and contribute to the growth of the aquaculture industry in the region.

South Africa has a well established aquaculture industry that produces mussels and oysters for the local market, as well as a variety of abalone products for markets in the Far East.

In Namibia, aquaculture is currently limited to the production of oysters for the South African market. However, the Namibian

government has identified the aquaculture industry as a focal point for development and is encouraging investors to experiment with the culture of a wide range of high value species, including abalone, scallops, mussels and finfish.

In Angola, molluscs are largely eaten by coastal residents who are not protected from the dangerous, and occasionally fatal, consequences of harvesting toxic seafood.

The shellfish safety programme that is being developed by the BCLME Programme is likely to be modeled on the food safety regimes that have been adopted by other shellfish producing nations, such as the EU, New Zealand and the United States.

The project is being implemented by Bronwen Currie and Deon Louw of Namibia's National Marine Research and Information Centre (NATMIRC). They are working with a team of international scientists, including Dr. Don Anderson from Woods Hole Oceanographic Institute in the USA, and shellfish sanitation expert Paul Anderson who runs the Maine Sea Grant programme, also in the USA.

The planned shellfish safety programme will comply with a number of international food safety systems and provide a regulatory environment that will enable the aquaculture industry to pursue international trading partnerships.

"We are trying to lay the groundwork for the development of aquaculture across the entire region," says Bronwen Currie who



Deon Louw

## Programa de monitoração de marisco de Angola, Namíbia e África do Sul

*O estabelecimento de um programa detalhado de segurança do marisco para os países da região de Benguela tem o potencial para abrir novos mercados de marisco aos produtores sul africanos, namibianos e angolanos.*

*Em meados dos anos 90, a União Europeia proibiu a exportação de moluscos da região de Benguela porque não se utilizava um sistema de monitoração aprovado pela EU. Entretanto, Angola, Namíbia e África do Sul estão a trabalhar agora em conjunto para estabelecer um regime de sanidade do marisco para toda a região.*

*Este movimento, rumo a uma maior cooperação entre os três países da região de Benguela, resulta da criação do Programa do Grande Ecossistema Marinho*

*da Corrente de Benguela (BCLME).*

*O Programa BCLME é uma iniciativa regional que visa melhorar as potencialidades de Angola, Namíbia e África do Sul para gerir os recursos marinhos e resolver os problemas ambientais trans-fronteiriços. Ele é apoiado pela Global Environmental Facility (GEF) e gerido pelo Programa das Nações Unidas para o Desenvolvimento (UNDP).*

*O enfoque actual do Programa BCLME com relação à segurança do marisco advem da constatação de que o crescimento da indústria da aquacultura em Angola, na Namíbia e na África do Sul se articula em grande medida com a capacidade dos três países em satisfazer as exigências de segurança alimen-*

*tar dos potenciais parceiros comerciais.*

*A África do Sul tem uma indústria de aquacultura bem desenvolvida que produz mexilhões e ostras para o mercado local, bem como uma variedade de produtos derivados do molusco da Califórnia para mercados no Extremo Oriente.*

*Na Namíbia, a aquacultura limita-se actualmente à produção de ostras para o mercado sul africano. Entretanto, o governo Namibiano identificou a indústria de aquacultura como um ponto fulcral para o desenvolvimento e está a incentivar os investidores a experimentar a cultura de uma série de espécies de elevado valor comercial, incluindo o molusco da Califórnia, escalopes, mexilhões e peixes.*





emphasises that the growth of the aquaculture industry hinges to a large extent on the three countries' ability to meet the food safety requirements of potential trading partners.

The programme will be designed to include a number of different features, including the monitoring of water quality and the evaluation of shellfish growing areas. Regulations and guidelines for handling, tagging, storing, processing and shipping live shellfish will also be developed, with a view to facilitating the traceability of shellfish that are grown and exported from the Benguela region.

One of the key features of the proposed shellfish safety programme is the monitoring of blooms of toxic algae (harmful

algal blooms or HABs). These are a relatively common occurrence in the coastal waters of the Benguela region, particularly in late summer and early winter when the wind regimes and upwelling trigger the growth of large plankton blooms. The blooms may give seawater a brown or reddish tint and they are known to have caused mortalities of wild and farmed fish and shellfish.

HABs are a serious threat to shellfish producers in Namibia and South Africa because mussels and oysters filter algae out of the water and if a particular algal species is toxic, the biotoxins concentrate in the shellfish tissues. When eaten by humans, contaminated shellfish may cause illness and even death.

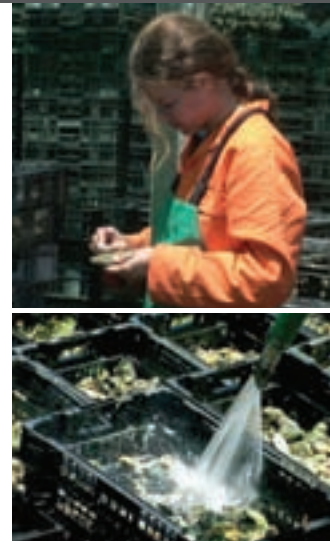
One of the goals of the shellfish safety programme is to establish the capacity to monitor the

occurrence of HABs in the coastal waters of the BCLME and to ensure that farmed shellfish are regularly tested for contamination.

Although there are well established laboratory facilities in South Africa which enable shellfish farmers to regularly test their products for contamination, no such facility exists in Namibia. As a result, farmers incur high costs because they have to transport their samples to South African laboratories.

"We are aiming to establish an accredited laboratory in Namibia," says Bronwen Currie.

The proposed laboratory would carry out a range of tests on farmed shellfish, with a view to meeting the food safety requirements of the EU and other potential trading partners.



*Em Angola, os moluscos são comidos maioritariamente pelos residentes no litoral que não estão protegidos das perigosas, e ocasionalmente fatais, consequências da captura de marisco tóxico.*

*O programa de segurança do marisco que se propõe para a região de Benguela é provável que seja modelado a partir de regimes de segurança alimentar que foram adoptados por outras nações produtoras de marisco, tais como a EU, a Nova Zelândia e os Estados Unidos. A sua criação está a ser dirigida por Bronwen Currie e Deon Louw do Centro Nacional de Investigação e Informação Marinha da Namíbia (NATMIRC). Eles estão a trabalhar com uma equipa de cientistas internacionais, incluindo o*

*Dr. Don Anderson do Instituto Oceanográfico de Woods Hole nos EUA, e o perito em sanidade do marisco Paul Anderson que dirige o Programa de Maine Sea Grant, também nos EUA.*

*A iniciativa do Programa BCLME está preparado para garantir que o marisco de alta qualidade produzido na região de Benguela seja testado com segurança em conformidade com os padrões internacionais, diz Bronwen Currie.*

*O programa obedecerá a uma série de sistemas internacionais de segurança alimentar e fornecerá um ambiente regulamentar que permita à indústria de aquacultura buscar parceiros comerciais internacionais.*

*"Nós estamos a tentar criar as*

*bases para o desenvolvimento da aquacultura em toda a região" diz Bronwen Currie.*

continuação.../11



# Last journey of the Humboldt



*Professor Bodo von Bodungen of the Baltic Sea Research Institute who was one of the key organisers of the Humboldt's Benguela expedition.*

The voyage to the Benguela region by the German research ship, *Alexander von Humboldt*, provided an opportunity for over 100 scientists from Germany, Angola, Namibia and South Africa, to conduct an intensive study of the Benguela Current Large Marine Ecosystem.

The seven-month, €2.1 million (R16 million) voyage was funded by a number of German educational institutions, the regional scientific programme, BENEFIT, and the Benguela Current Large Marine Ecosystem (BCLME) Programme. The German sponsors were the German ministry of education for the state of Mecklenburg Vorpommern, the federal ministry of Science and Technology in Germany, the Max Planck Institute for Marine Microbiology, the University of Hamburg and the Baltic Sea Research Institute.

The "Alexander von Humboldt Angola-Benguela Expedition" (AHAB) had four focus areas. These included an investigation of the role of oceanographic zones (such as the Angola Front and the Lüderitz cell) on the reproduction of important fish species; the causes of hydrogen sulphide and sulphur eruptions and their impacts on living

marine resources; predicting the possible impacts of global climate change on the Benguela Current Large Marine Ecosystem; and providing technical training and opportunities for the gathering of data.

The mud belt off the Namibian coast - where sulphur eruptions are a common but poorly understood phenomenon - was the subject of a particularly intensive study.

Large areas of the Namibian shelf are covered with unconsolidated organic-rich ooze which forms a near-shore mud belt. The ooze is very fine - almost liquid - and is covered by bacterial muds. These very porous, low density sediments are considered to be a main source of methane, carbon dioxide and toxic hydrogen sulphide.

Four legs of the AHAB voyage were devoted to obtaining samples of this ooze and testing the quality and characteristics of the water column above the mud belt.

It is hoped that this research will reveal clues as to the environmental conditions that trigger sulphur eruptions, events that can have a devastating effect on marine resources in the area.

"We have brought together a number of experts from Germany and the Benguela region to conduct the first thorough and in depth study of these events," said Professor Bodo von Bodungen of the Baltic Sea Research Institute, one of the main organisers of the AHAB cruise. Professor Von Bodungen explained that one of the scientists' goals is to identify the trigger for the sulphur eruptions, with a view to forecasting these events in the future.

A scientific workshop is planned to analyse and share the results of the AHAB voyage.

According to Professor von Bodungen, the AHAB expedition provided a valuable opportunity for young German

## International Scientists Focus on Hake



*Back row: Dr Hashali Hamakuaya, BCLME Programme; Dr Jean Paul Roux of Lüderitz Marine Research; Dr Johann Augustyn of Marine and Coastal Management (MCM); Prof. Doug Butterworth of the University of Cape Town.*

*Centre: Dr Moses Maurilungirire, Ministry of Fisheries and Marine Resources, Namibia (MFMR); Paul Nichols of MFMR; Phakamani Buthelezi of MCM; Horst Kleinschmidt of MCM; Dr Ndako Mukapuli of Lüderitz Marine Research; Dr Andre Punt (USA).*

*Front: International scientists, Prof. Robin Cook (UK), Dr Jim Ianelli (USA), Dr Tore Strømme (Norway), Dr Tony Smith (Australia), Dr Joe Powers (USA) and Dr John Pope (UK).*

Seven of the world's leading stock assessment scientists spent a week in Cape Town in January. Their task was to review the science behind the management of Namibian and South African hake stocks.

A number of scientists from the region, as well as senior fisheries managers from Namibia and South Africa, attended the week-long stock assessment workshop which was sponsored by BENEFIT, the BCLME Programme and the South African National Research Foundation (NRF).

The invited scientists were Drs James Ianelli, Joseph Powers and Andre Punt from the USA, Professor Robin Cook and Dr John Pope from the UK, Dr Tore Strømme from Norway and Dr Tony Smith from Australia. The meeting was chaired

by Tony Smith and organised by South African stock assessment expert, Professor Doug Butterworth. The primary purpose of the workshop was to critically review every step of the stock assessment process, from the data inputs through to the models and management procedures that are used to manage the hake fisheries in Namibia and South Africa. The workshop was also tasked with reviewing the Operational Management Procedure (OMP) for Namibia's harvest of Cape fur seals.

The BENEFIT-BCLME-NRF workshop provided an invaluable forum for fisheries scientists in the region to broaden their knowledge of the stock assessment process and present their work for critical review by an international panel of experts.

scientists to conduct research into environmental variability. And it provided an opportunity for German researchers to forge strong links with the Benguela region:

“Marine science knows no borders, therefore we are interested in having good and reliable scientific institutes all over the world that we can cooperate with,” said Professor von Bodungen.

Training and capacity building played an important role in the cruise and a one-day demonstration cruise was conducted off Cape Town, Walvis Bay and Luanda. These cruises provided an opportunity for aspiring scientists to gain first hand experience of ship-based research.

Two journalists, one from the German media and another from The Namibian, were invited to sail with the Humboldt on leg seven of the AHAB cruise. This was a three-day journey from Cape Town to Walvis Bay. The experience provided Maggi Barnard, who regularly writes about environmental matters for The Namibian, with valuable insight into the type of research that is conducted at sea.

According to Professor von Bodungen, the AHAB cruise was very successful.



Maggi Barnard

*The Alexander von Humboldt berthed in Cape Town.*

“The ship has done good work,” he said. “Every scientist on board got their samples, even though we had really bad weather for part of the cruise and difficulties in deploying equipment. This is testament to the very well trained crew and their sensitivity to scientific research.”

Sadly, the *Alexander von Humboldt* is to be decommissioned in September, following the completion of the AHAB cruise and two short cruises in the North Atlantic Ocean and the Baltic Sea.

The ship, that was named after the 19<sup>th</sup> Century German naturalist and explorer who also gave his name to

the extremely productive Humboldt Current which flows off the coast of Chile and Peru, has reached the end of its working life.

The crew of the *Alexander von Humboldt* are highly experienced and play an important role in ensuring that equipment is deployed correctly and efficiently. Some members of the crew have sailed with the Humboldt for over 30 years and are understandably emotional about her impending decommission:

“We are happy that she is ending her life with this long cruise,” said chief engineer, Klaus Beckman who first sailed with the Humboldt 31 years ago.



*Claire Attwood, media consultant to the BCLME Programme and Maggi Barnard, a journalist with The Namibian, don survival suits during a safety drill on board the Alexander von Humboldt.*

## 9/ ...continuação

mortalidade em peixes e marisco selvagens e cultivados.

As HABs são uma ameaça séria para os produtores de marisco na região de Benguela porque os mexilhões e as ostras filtram algas fora de água e se alguma espécie particular de alga for tóxica as biotoxinas concentram-se nos tecidos do marisco. Quando comido por seres humanos, o marisco contaminado pode causar doenças e mesmo a morte.

Um dos objetivos do programa de segurança do marisco é criar capacidade para se fazer a monitoração da ocorrência de HABs em toda a região de Benguela e assegurar que o marisco cultivado seja testado regularmente contra a contaminação.

Embora haja boas instalações laboratoriais na África do Sul que permitem aos produtores de marisco testar regularmente a contaminação dos seus produtos, tais instalações não existem na Namíbia. Consequentemente, os

produtores incorrem em custos elevados porque têm que transportar as suas amostras para os laboratórios sul africanos.

“Nós pretendemos fazer um laboratório credenciado na Namíbia,” diz Bronwen Currie.

O laboratório proposto realizaria uma série de exames ao marisco cultivado, com vista a satisfazer-se as exigências de segurança alimentar da EU e de outros parceiros comerciais.

# Information sharing and distance learning in the BCLME

## News

The Namibian Minister of Fisheries and Marine Resources, Dr Abraham Iyambo, announced in April that the total allowable catch (TAC) for hake would increase by 15 000 tons to 195 000 tons for the 2004 fishing season. The monk TAC is down 500 tons to 12 000 tons, while the orange roughy TAC decreased from 2 650 tons to 2 600 tons.

Namibia's new fisheries patrol ship, *Anna Kakurukaze*, arrested six vessels in Angolan waters on her first patrol.

The Spanish built patrol ship, which is named after a Namibian heroine, was deployed by the Monitoring, Control and Surveillance Programme (MCS), a project that is supported and funded by the Southern African Development Community (SADC) and the European Union.

The arrests come only a month after 18 vessels were fined in US\$600 000 for fishing illegally in Angola. The vessels were spotted by fisheries inspectors who were conducting aerial surveillance off the coast of Angola.

The BCLME Programme has supported environmental consultants, EcoAfrica to design a website for the Angolan Institute for the Development of Artisanal Fisheries (IPA). Visit [www.ipa.org](http://www.ipa.org)

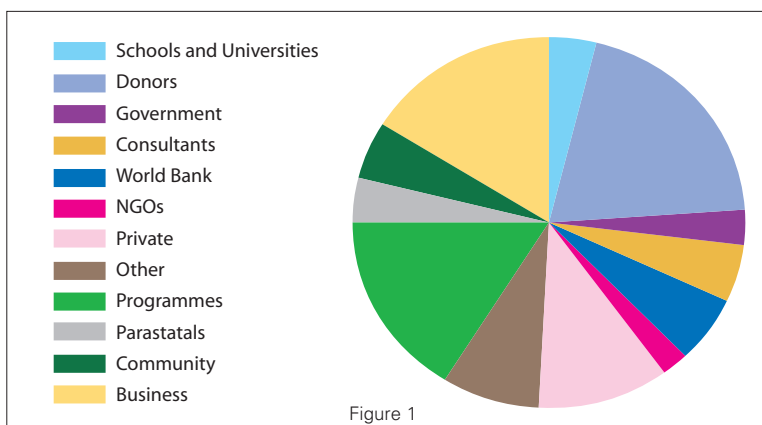
**D**LIST is an online platform for discussion and learning that was designed to test the feasibility of using information and communications technology (ICT) to advance sustainable development in the BCLME region.

DLIST has two components: information sharing and distance learning. The information sharing component focuses on various means of gathering information, organising it and making it more accessible. It consists of a library, a message board, discussion forums and kiosks which are established and maintained by a range of partners. The information sharing part of DLIST has been extraordinarily successful, with a large number of people registering as users and taking part in discussion forums.

What is especially encouraging is that DLIST involves a wide range of people who fall into a number of different categories, as is illustrated in *Figure 1*.

The popularity of DLIST continues to rise - there have been well over 300 000 visitors to the site - and new participants register almost daily.

The distance learning part of DLIST has been equally successful. It has been established as a



fully accredited tertiary institution course at Peninsula Technikon in Cape Town, South Africa.

In 2004, a record 56 students took the course, representing a good spread of industry and government and including participants from as far away as Tanzania.

Launched as a global pilot of the Global Environment Facility (GEF) through a UNDP-led project known as IW:Learn, DLIST was designed and implemented by

EcoAfrica ([www.ecoafrika.co.za](http://www.ecoafrika.co.za)).

With further support from the GEF, DLIST will soon enter its second phase, aimed at improving the platform and expanding it into areas of South Africa and Namibia that have not yet been covered, as well as into Angola.

The BCLME Programme maintains a kiosk on the DLIST website. Visit [www.dlist.org](http://www.dlist.org).

by Francois Odendaal

## BCLME profiled at Fish Africa

*Hashali Hamukuaya, director of the Activity Centre for Marine Living Resources, Cristina Cicognani, administrative assistant to the Activity Centre for Environmental Variability and Dr Mick O'Toole, chief technical advisor of the BCLME Programme are pictured at the Fish Africa Exhibition which took place in Cape Town.*

*The BCLME Programme erected a display at Fish Africa and showcased the Programme to the international fishing industry. In total, 3 271 visitors from 42 countries visited the Fish Africa Expo. Many showed a keen interest in the BCLME Programme and took away copies of the newsletter, LME map and a specially designed sticker.*



# Guinea Current Large Marine Ecosystem

The Guinea Current Large Marine Ecosystem (GCLME) Programme (GCLME) was recently awarded a US\$20 million (R140 million) grant from the Global Environment Facility (GEF).

The grant will finance the next phase in the development of the GCLME which is focused on "combating living resources depletion and coastal area degradation through ecosystem based regional actions".

The programme will be executed by the United Nations Industrial Development Organisation (UNIDO) and co-implemented by the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP).

The GCLME comprises 16 West African countries, including Angola, Benin, Cameroon, Congo, Democratic Republic of Congo, Cote d'Ivoire, Gabon, Ghana, Equatorial Guinea, Guinea Bissau, Liberia, Nigeria, Sao Tome and Principe, Sierra Leone and Togo.

The GCLME Programme will assist the participating nations to manage coastal and marine resources and restore ecosystem health and productivity,

thereby fulfilling their obligations to regional and global conventions. Specific development goals include the recovery of depleted fish stocks; the restoration of degraded habitats; the reduction of land- and ship-based pollution; and the creation of an ecosystem wide assessment and management framework for sustainable use of living marine resources in the GCLME.

The GCLME Programme is an extension of a pilot project which was entitled "Water pollution control and biodiversity conservation in the Gulf of Guinea Large Marine Ecosystem". This four-year project was funded by the GEF and involved Benin, Cote d'Ivoire, Ghana, Togo, Nigeria and Cameroon. It was completed in 1999.

The Benguela Current LME Programme has been working closely with the GCLME, particularly in the context of addressing shared problems in Angolan waters. The BCLME Programme



has provided funding for representatives from the GCLME to attend consultative meetings of the BCLME Programme and afforded a number of scientists who are affiliated to the GCLME the opportunity to take part in transboundary research cruises. For instance, scientists from countries in the GCLME participated in the recent voyage of the German research ship, *Alexander von Humboldt* and will also take part in a BCLME transboundary survey of sardinella stocks off the coasts of Angola and Gabon aboard the *Dr Fridtjof Nansen* in July this year.

## Fact File:

The Guinea Current Large Marine Ecosystem is characterised by its tropical climate. It owes its unity to the Guinea Current, an eastward flow that is fed by the North Equatorial Counter Current (NECC) off the Liberian coast.

The physical system of the Guinea Current is variable in both space and time and its dynamics are complex. Upwelling off the coasts of Ghana and Cote d'Ivoire occurs seasonally, with a weak upwelling around January to March, and intense upwelling from July to September.

The cold, nutrient rich water of the upwelling system drives the biology of the area extending from Liberia to Benin, and can be subject to strong seasonal, inter-annual and annual change, linked to the migration of the Intertropical

Convergence Zone (ITCZ), the equatorial area at which the trade winds converge.

The Guinea Current Large Marine Ecosystem is considered a Class I, highly productive (>300 gC/m<sup>2</sup>-yr), ecosystem based on SeaWiFS global primary productivity estimates.

The FAO 10-year trend (1990-1999) shows a catch of 950 000 tons in 1990 and 900 000 tons in 1999, with a marked decline to 700 000 tons in 1994. The LME is very rich in living marine resources and commercially valuable fish, both marine and coastal. More than 50% of the catch is composed of small pelagic clupeoids. There are major fluctuations of commercially valuable species and several demersal and pelagic fish species are over-exploited.

Source: [www.ed.uri.edu/lme](http://www.ed.uri.edu/lme)



# BENEFIT focuses on the future



Dr Neville Sweijd

The process of developing a new set of scientific, training and development plans and activities for BENEFIT has gained momentum in the past few months.

In April, the Management Action Committee (MAC) met in Namibia with the purpose of developing a new framework for the future development of the Programme. The MAC's deliberations form part of a process that was initiated in 2003, when the BENEFIT community was consulted on their views and recommendations for the Programme's future.

The process of consultation was initiated in response to changes in BENEFIT's operating environment, including changes in leadership in several of the participating institutes, anticipated changes in the Programme's funding base, and the expansion of the BCLME Programme.

At the April workshop, the MAC - which comprises the top officials from the region's three fisheries science institutes - recognised that BENEFIT was designed and originally promoted by the scientific community in the region. While it commended and endorsed this initiative, by the close of the workshop the MAC had delivered a fresh new mandate and a management-determined operating framework for the BENEFIT programme. The new framework is a "top down" directive in the form of renovated goals and outputs. It is expected to steer BENEFIT into a phase of intensive strategic planning which will assist the Programme to develop a new set of scientific, training and development plans and activities.

## A New Science Plan

The BENEFIT programme has been mandated to renew its science plan. This places the programme at a fundamental juncture in its development and the process will have to be very carefully thought through. This would be closely co-ordinated with developments in the BCLME. A

framework workshop was held in Swakopmund in mid-June and the results of this deliberation will be put through several hoops in the next weeks.

The MAC has also decided that an annual research report should be produced by BENEFIT. We have decided to take this idea a bit further and we aim to produce a professionally produced publication that records the outputs of the BENEFIT programme in a succinct and accessible way.

The MAC's new mandate and other developments, such as the acquisition of a new research vessel in Angola and the launch of the BCLME capacity building initiatives, represent a significant shift towards regional integration and regional marine ecosystem management. Over the coming months, BENEFIT and its partners plan to exemplify this approach by attempting to establish a regionally owned remote sensing and GIS facility. There are also proposals for a regional fish-aging centre, as well as a regional plankton-processing centre. These are very promising and exciting developments that we look forward to implementing in the immediate future.

Although BENEFIT's funding base is secure, changes are expected in the medium term. There are signs that the Norwegian research vessel, *Dr Fridtjof Nansen*, might not be available to the region after 2005, but the German Society for Technical Cooperation (GTZ) has signalled that a third and final phase of funding is likely, pending the results of a review that took place in April.

We have already seen increases in the country contributions to BENEFIT and these will have to be accessed to a greater degree to maintain the Programme infrastructure in the future. Our Angolan partners have made

a substantial contribution to BENEFIT - almost double the usual amount - and have fully engaged BENEFIT in planning the expenditure on capacity building interventions. Moreover, the BENEFIT secretariat has been mandated to assist the *Instituto de Investigação Marinha* (IIM) to develop a marine Science Plan.

A further development has been the initiative of the BCLME to establish an Advisory Group on Capacity Building. A stakeholder's workshop was held in March where input from BENEFIT was given. What is likely to emerge is a new training initiative that will incorporate BENEFIT's training plan and which will be jointly resourced with BCLME training initiatives. Further consultation is planned for July 2004.

Another significant development in the region has been the implementation by BENEFIT of the BCLME project activities. Several projects are now underway via direct contracts to consultants and the regional marine science institutes. Some have even been completed. This has been a challenging experience and BENEFIT has been required to devise mechanisms for dealing with new procedures and circumstances. Despite this, strong leadership and clear heads have assisted us in this process and I would argue that the programme is running very well on the whole and we are seeing some exciting new ideas and results emerging from it already.

It would be true to say that BENEFIT's relationship with the BCLME Programme has expanded significantly over the past six months and is extending beyond the projects and developing into a true partnership.

by Neville Sweijd



# Projects supported by the BCLME Programme

The BCLME Programme has allocated more than US\$4.7 million (R33 million) in support of 60 projects. The projects are being implemented by a wide variety of clients, including government institutes, universities, private consultancy companies and the regional marine science and training programme, BENEFIT. Each project has been designed to address transboundary environmental problems and contribute to the integrated and sustainable management of the Benguela Current Large Marine Ecosystem.



## Biodiversity, Ecosystem Health & Pollution Projects

### BEHP/IA/03/03

**Harmonisation of national environmental policies and legislation for marine mining, dredging and offshore petroleum exploration and production activities in the BCLME region**

Project value: US\$39 697  
Contracted to: Southern African Institute for Environmental Assessment (SAIEA)  
Completion date: October 2004

### BEHP/LBMP/03/01

**Baseline assessment of sources and management of land-based marine pollution in the BCLME**

Project value: US\$85 000  
Contracted to: Council for Scientific and Industrial Research (CSIR)  
Completion date: September 2005

### BEHP/LBMP/03/04

**The development of a common set of water and sediment quality guidelines for the coastal zone in the BCLME region**

Project value: US\$80 000  
Contracted to: Council for Scientific and Industrial Research (CSIR)  
Completion date: September 2005

### BEHP/CEA/03/01

**Data gathering and gap analysis for modeling the cumulative effects of offshore petroleum exploration and production activities on the marine environment of the BCLME region**

Project value: US\$100 000  
Contracted to: Council for Scientific and Industrial Research (CSIR)  
Completion date: September 2005

### BEHP/CEA/03/02

**Data gathering and gap analysis for assessment of the cumulative effects of marine diamond mining activities on the BCLME**

Project value: US\$76 000  
Contracted to: Pisces Environmental Services  
Completion date: September 2006

### BEHP/CEA/03/03

**Assessment of the cumulative effects of sediment discharge from on shore and near shore diamond mining activities on the BCLME**

Project value: US\$140 000  
Contracted to: Council for Scientific and Industrial Research (CSIR)  
Completion date: March 2006

### BEHP/CEA/03/04

**Assessment of the cumulative impacts of scouring of sub-tidal areas and kelp cutting by diamond divers in near-shore areas of the BCLME**

Project value: US\$66 400  
Contracted to: Pisces Environmental Services  
Completion date: March 2007

### BEHP/OSCP/03/01

**Regional Oil Spill Contingency Planning in the BCLME region**

Project value: US\$150 000  
Contracted to: Council for Scientific and Industrial Research (CSIR)  
Completion date: March 2005

### BEHP/EEF/03/01 - 02

**Bycatch of threatened seabirds, sharks and turtles in longline fisheries of the BCLME: An integrated approach**

Project value: US\$113 299  
Contracted to: World Wildlife Fund (WWF South Africa)  
Completion date: April 2006

### BEHP/BAC/WORKSHOP/04/01

**Ecosystem mapping and biodiversity consultative workshop 26-27 April, Swakopmund**

Project value: US\$47 095  
Contracted to: BENEFIT  
Completion date: May 2004

### PROJECTS YET TO BE FINALISED AND AWARDED:

#### BEHP/BAC/03/01

**Marine biodiversity status assessment and conservation planning for the BCLME**

Project value: US\$182 000  
Awarded to: BENEFIT  
Completion date: December 2007

#### BEP/BAC/03/02

**Mapping of the BCLME shoreline, shallow water and estuarine habitats**

Project value: US\$100 000  
Awarded to: BENEFIT  
Completion date: April 2005

#### BEHP/BAC/03/03

**Identification of communities, biotopes and species along the BCLME shoreline and in the shallow subtidal zone**

Project value: US\$120 000  
Awarded to: BENEFIT  
Completion date: December 2006

#### BEHP/BAC/03/04

**Baseline surveying of species and biodiversity in estuarine habitats**

Project value: US\$100 000  
Awarded to: BENEFIT  
Completion date: December 2006

#### BEHP/BAC/03/05

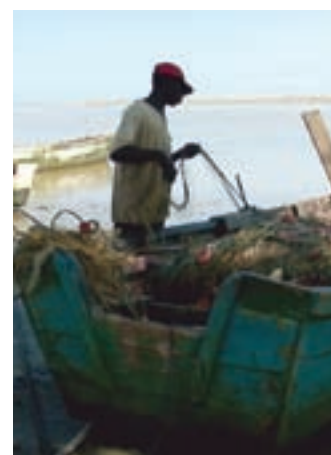
**Mapping the offshore habitats of the BCLME region**

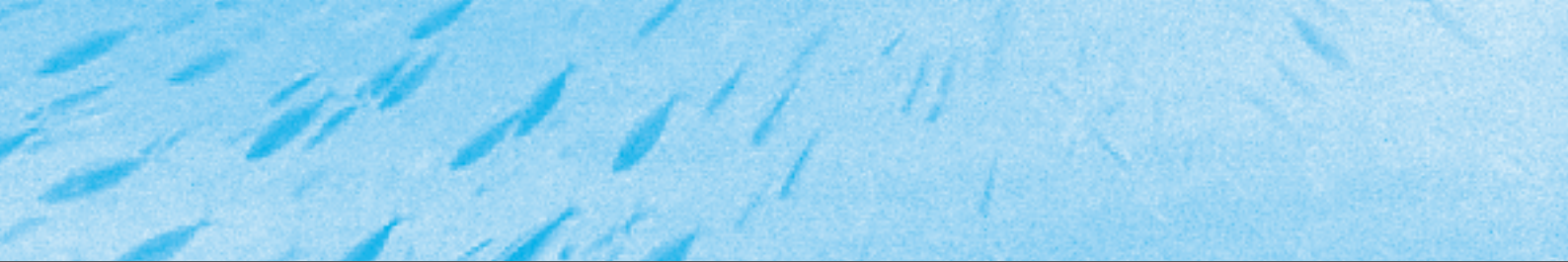
Project value: US\$40 000  
Awarded to: BENEFIT  
Completion date: September 2005

#### BEHP/BAC/03/06

**Assessment of offshore biodiversity in the BCLME region**

Project value: US\$40 000  
Awarded to: BENEFIT  
Completion date: September 2004





# Living Marine Resources Projects

**LMR/COM/03/02**  
**Introducing the BCLME Programme to the wider audience within the coastal communities**  
Project value: US\$16 000  
Contracted to: Eco-Africa  
Completion date: June 2004

**LMR/AFSE/03/01**  
**Review of institutional arrangements and provision of baseline information in respect of artisanal fisheries, including socio-economic surveys of coastal communities (a suite of three projects)**  
Project value: US\$194 120  
Contracted to: Environmental Evaluation Unit, University of Cape Town  
Completion date: March 2006

**LMR/CF/03/16**  
**Development of a management plan for bronze whaler shark resources in the BCLME region**  
Project value: US\$77 869  
Contracted to: BENEFIT  
Completion date: July 2006

**LMR/CF/03/07**  
**Determination of optimal harvesting strategies for the hake trawl and longline fisheries in Namibia and South Africa**  
Project value: US\$98 100  
Contracted to: Fisheries Economics Research Unit, University of British Columbia  
Completion date: October 2005

**LMR/SE/03/02**  
**An economic and legal study to assess the policy prospects for formulating a balanced development of trade in fish and fish products from the BCLME region**  
Project value: US\$133 260  
Contracted to: Enviro-Fish Africa, Rhodes University  
Completion date: December 2006

**LMR/SE/03/03**  
**An analysis of right-based micro-economic systems and governance of the important commercial fisheries in the BCLME countries**  
Project value: US\$229 914  
Contracted to: Enviro-Fish Africa, Rhodes University  
Completion date: December 2006.

**LMR/SE/03/04**  
**Harmonisation of socio-economic policies and legal provisions for effective implementation of the BCLME Programme**  
Project value: US\$135 000  
Contracted to: Enviro-Fish Africa, Rhodes University  
Completion date: March 2007

**LMR/SE/03/05**  
**An analysis of revenue raising instruments of the important commercial fisheries in the BCLME countries**  
Project value: US\$91 228  
Contracted to: Enviro-Fish Africa, Rhodes University  
Completion date: December 2005

**LMR/MC/03/01**  
**Development of a responsible aquaculture policy for the BCLME region**  
Project value: US\$92 734  
Contracted to: Enviro-Fish Africa, Rhodes University  
Completion date: May 2005

**LMR/EAF/03/01**  
**Ecosystem Approach to Fisheries (EAF) management in the BCLME region**  
Project value: US\$257 270 + US\$79 031  
Contracted to: Marine and Coastal Management and Food and Agriculture Organisation of the United Nations (FAO)  
Completion date: December 2006

**LMR/EAF/03/02**  
**A regional ecosystem monitoring programme: Top predators as biological indicators of ecosystem change in the BCLME**  
Project value: US\$217 994  
Contracted to: Marine and Coastal Management  
Completion date: December 2006

## Sponsorship of Key Events

- International Workshop on Forecasting and Data Assimilation in the Benguela and Comparable Systems  
Cape Town, 8 ~ 11th November 2004  
Project value: \$80 000 (book publishing costs included)  
For details visit [www.bclme.org](http://www.bclme.org)

A key policy action of the BCLME Programme is the assessment of environmental variability, ecosystem impacts and improvement of predictability. Two cornerstones of this policy action are the development of an early warning system and the improvement of predictability of extreme events and their impacts in the BCLME.

The 2004 Benguela Forecasting Workshop, which is being sponsored by the BCLME Programme, the Ocean Observing System (GOOS) of the Intergovernmental Oceanographic Commission, the International Association for the Physical Sciences of the Oceans (IAPSO) and other organisations, will be a crucial step in the development of a viable observing and forecasting system for the Benguela.

- 11th International Conference on Harmful Algal Blooms  
Cape Town, 15 ~ 19th November 2004  
Project value: \$8 000



# Environmental Variability Projects

## EV/LS/02/03

**Analysis of Benguela dynamical variability and assessment of predictability of warm and cold events in the BCLME**

Project value: US\$150 000  
Contracted to: University of Cape Town  
Completion date: February 2006  
• Preliminary report available at [www.bclme.org](http://www.bclme.org)

## EV/HAB/02/01

**Harmonisation of regulations for microalgal toxins for application in countries bordering the BCLME**

Project value: US\$69 323  
Contracted to: Ministry of Fisheries and Marine Resources, Namibia  
Completion date: April 2005  
• Review report available at [www.bclme.org](http://www.bclme.org)

## EV/HAB/02/02a

**Development of an operational capacity for monitoring of Harmful Algal Blooms (HABs) in countries bordering the northern part of the BCLME**

Project value: US\$36 260  
Contracted to: Ministry of Fisheries and Marine Resources, Namibia.  
Completion date: April 2005  
• Review report available at [www.bclme.org](http://www.bclme.org)

## EV/HAB/04/Shellsan

**Development of a shellfish sanitation programme model for application in consort with the microalgal toxins component**

Project value: US\$27 925  
Contracted to: Ministry of Fisheries and Marine Resources, Namibia  
Completion date: April 2005

## EV/HAB/02/03

**Investigation into the diversity and distribution of cysts of Harmful Algal Blooms (HABs) within the BCLME region**

Project value: US\$25 420  
Contracted to: University of Cape Town  
Completion date: January 2005

## EV/HAB/02/05

**Development of an operational capacity for real-time observation and forecasting of Harmful Algal Blooms (HABs) in the BCLME: detection of HABs through the deployment of bio-optical moorings. Phase 1: Demonstration project in Namibia and South Africa.**

Project value: US\$107 645  
Contracted to: University of Cape Town  
Completion date: July 2005

## EV/HAB/02/06

**Development of an operational capacity for real-time observation and forecasting of Harmful Algal Blooms (HABs) in the BCLME: utility of models in forecasting HABs**

Project value: US\$30 700  
Contracted to: University of Cape Town and the Council for Scientific and Industrial Research (CSIR)  
Completion date: September 2004

## EV/LOW/02/01

**Critical review of the biophysical processes and variability that characterise the low oxygen water (LOW) variability and an improved monthly State of the Environment (SOE) reporting on low oxygen water in the BCLME**

Project value: US\$46 250  
Contracted to: University of Cape Town and the Council for Scientific and Industrial Research (CSIR)  
Completion date: July 2004

## EV/LOW/02/03

**Assessment of key transboundary processes and measurement scales in respect of low oxygen water (LOW) variability: preliminary implementation and examination of the role of large scale and transboundary hydrodynamic control of LOW variability.**

Project value: US\$57 712  
Contracted to: University of Cape Town and the Council for Scientific and Industrial Research (CSIR)  
Completion date: May 2005

## EV/LOW/02/04

**Assessment of key transboundary processes and measurement scales in respect of low oxygen water variability: implementation of the LOW generation areas simulation that provide inputs to transboundary models in LOW project**

EV/LOW/02/03  
Project value: US\$121 500  
Contracted to: University of Cape Town and the Council for Scientific and Industrial Research (CSIR)  
Completion date: March 2005

## EV/ANGOLA/03/01

**Compilation of inventory and acquisition of oceanographic environmental data in the Angola sector of the BCLME. Phase one (inventory)**

Project value: US\$20 000  
Contracted to: *Instituto de Investigação Marinha* (IIM)  
Completion date: October 2004

## EV/ANGOLA/03/02

**Comprehensive review and re-interpretation of oceanographic information on the Angola sector of the BCLME**

Project value: US\$20 000  
Contracted to: *Instituto de Investigação Marinha* (IIM)  
Completion date: January 2005

## EV/ANGOLA/03/03

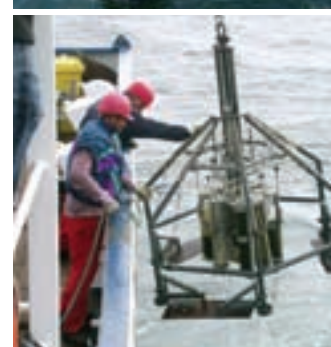
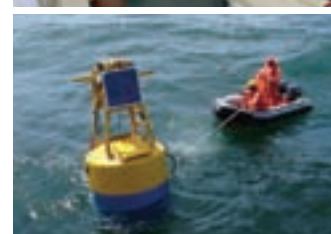
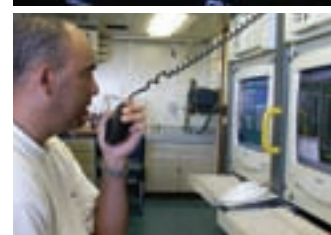
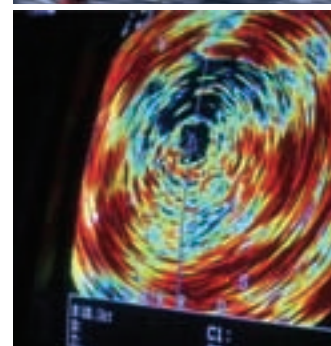
**Assessment of the present state of oceanographic environmental monitoring in the Angolan sector of the BCLME region**

Project value: US\$10 000  
Contracted to: *Instituto de Investigação Marinha* (IIM)  
Completion date: June 2004

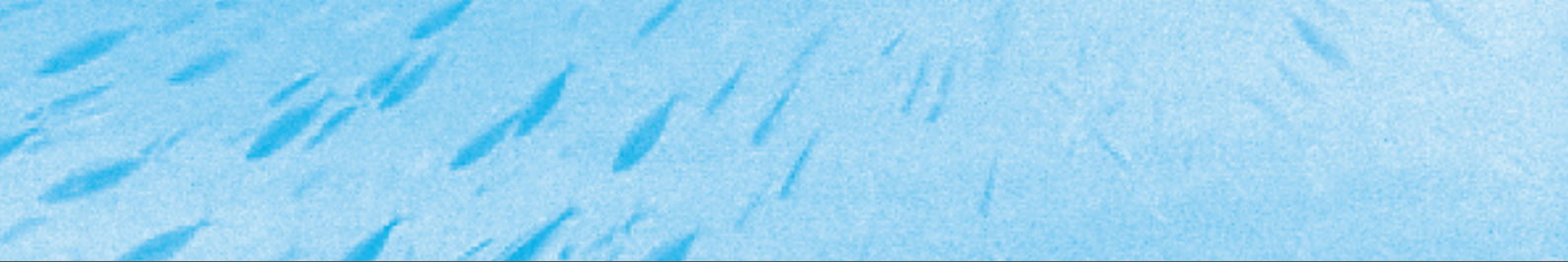
## EV/ANGOLA/03/05

**Build capacity for Angola**

Project value: US\$7 000  
Contracted to: *Instituto de Investigação Marinha* (IIM)  
Completion date: July 2004



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## Environmental Variability Projects continued...

### EV/ANGOLA/03/06

Upgrade communication systems for Angolan BCLME core partner institutions.

Project value: US\$8 000

Contracted to: *Instituto de Investigaçao Marinha* (IIM)

Completion date: June 2004

### EV/PROVARE/02/05

Retrospective analysis of plankton community structure in the BCLME to provide an index of long-term changes in the ecosystem

Project value: US\$111 985

Contracted to: BENEFIT

Completion date: December 2006

### EV/LS/02/06

Diagnosis of large scale South Atlantic modes that impact on the transboundary BCLME: investigating the potential for improved predictability and sustainable management

Project value: US\$87 959

Contracted to: University of Cape Town

Completion date: January 2007

- Preliminary report available at [www.bclme.org](http://www.bclme.org)

## Completed Projects

### PCU/TCB/03/01

Training and capacity building needs assessment for the BCLME region

Project value: US\$26 230

Contracted to: Anchor Environmental Consultants

Completed: February 2004

- Final report available at [www.bclme.org](http://www.bclme.org)

### LMR/CF/03/04

Feasibility study into the application of genetic techniques for determining fish stock identity of transboundary populations in the BCLME region

Project value: US\$7 819

Contracted to: BENEFIT

Completed: November 2003

- Final report available at [www.bclme.org](http://www.bclme.org)

### EV/SADCO/03/01

SADCO holdings of Namibian data: Assessment of historical oceanographic data available from SADCO

Project value: US\$2 400

Contracted to: Ms Fiona Duncan, through UNDP-SA

Completed: October 2003

- Final report available at [www.bclme.org](http://www.bclme.org)

### PCU/AVM/03/01

Publicising the BCLME Programme through audio visual media

Project value: US\$16 000

Contracted to: Francois Odendaal Film Productions

Completed: May 2004

Documentary circulated on CD in July  
Film released in September 2004

### LMR/CF/03/01

Feasibility study into the establishment of a permanent regional fish ageing centre in one of the BCLME countries

Project value: US\$11 520

Contracted to: BENEFIT

Completed: November 2003

- Final report available at [www.bclme.org](http://www.bclme.org)

### EV/PROVARE/02/01

Feasibility assessment for the use of a towed undulating oceanographic recorder (TUOR) in the BCLME

Project value: US\$5 850

Contracted to: Philip Reid

Completed: November 2003

- Executive summary available at [www.bclme.org](http://www.bclme.org)

### LMR/CF/NANSEN/04/01

Survey of transboundary demersal fish stocks in Namibia with special reference to hake

Project value: US\$110 500

Contracted to: Institute of Marine Research, Bergen, Norway

Completed: July 2004

### EV/LS/02/04

Participation in the Climate Variability Programme (CLIVAR/OOPC) Workshop on South Atlantic Climate Observing System in Angra dos Reis, Brazil

Project value: US\$3 160

The BCLME Programme provided co-sponsorship for Mr Quilanda Fidel of Angola and Ms Aina Iita of Namibia to attend the CLIVAR workshop in Brazil between 6 and 8 February 2003.

### EV/HUMBOLDT/04/01

Ichthyoplankton distribution, monitoring and training, northern Namibia/southern Angola; oceanographic, hydrological and benthic monitoring in Angolan waters (AHAB leg 9).

Project value: US\$130 000

Completed: July 2004

### LMR/COM/02/01

Henties Bay Community project

Project value: US\$4 051

Contracted to: Henties Bay Community

Project terminated

### EV/LS/02/02

Feasibility study of the south-east extension of PIRATA (Pilot Moored Array in the Tropical Atlantic)

Project value: US\$29 900

Contracted to: University of Cape Town

Completed: November 2003

- Final report available at [www.bclme.org](http://www.bclme.org)

### LMR/CF/03/02

An assessment of the state of commercial fisheries catch data in the BCLME region

Project value: US\$11 240

Contracted to: BENEFIT

Completion date: May 2004

- Final report available at [www.bclme.org](http://www.bclme.org)

### LMR/COM/03/01

An assessment of means of involving coastal communities in the BCLME Programme

Project value: US\$30 000

Contracted to: Eco-Africa

Completed: March 2004

- Final report available at [www.bclme.org](http://www.bclme.org)

# Finding practical solutions to bycatch problems

South African longline fisheries could kill as many as 20 000 seabirds every year, despite the fact that simple and inexpensive bycatch mitigation measures could reduce that number by at least two thirds.

Nobody knows how many seabirds, sharks and turtles are killed in Namibia and Angola's longline fisheries.

Addressing the incidental bycatch of longline fishing operations in the Benguela region is the focus of a BCLME-funded project that is being implemented by WWF South Africa and Birdlife South Africa.

Regional project coordinator, Dr Deon Nel, who is marine programme manager for WWF South Africa, explains that the project has two important thrusts: getting to grips with the scale of the bycatch problem and introducing simple and appropriate mitigation measures to try and avoid the senseless killing of seabirds, turtles and sharks.

Longline fishing vessels operating in the Benguela region target hake, tuna, swordfish and sharks. But they also catch seabirds, especially albatrosses and petrels. These birds dive onto baited hooks in a quest for food, and are dragged underwater to their deaths.

Turtles are also killed when they feed on baited hooks.

Some sharks are targeted by longline vessels, but at least 25 species of shark are caught by longliners that are fishing for tuna and swordfish. Many are discarded, sometimes after their fins have been removed.

The bycatch problems that are associated with longline fisheries are different for the three countries of the Benguela region.

For instance, in South Africa there is a fairly good understanding about the seabird bycatch problem. Mitigation measures have been designed and tested, but there is a lot of work to be done to ensure that the fishing industry understands the importance of implementing the mitigation measures.

"If you speak to skippers, they say that they kill very few seabirds," says Dr Nel.

"But they don't realise that if every boat kills the odd bird now-and-then, the numbers eventually add up."

South African longliners set approximately 34 million hooks per year. The use of seabird bycatch mitigation measures, such as bird scaring devices and weighting of lines, is prescribed by permit conditions, but compliance is poor.

In Namibia, about 45 longline vessels fish for hake, tuna, billfish and sharks. Although an observer scheme is in place in Namibia, the scale and nature of seabird bycatch is unknown.

Initial reports of shark landings indicate that pelagic sharks are caught in large numbers off Namibia, especially when tuna species are unavailable to the longline fishery.

Although tunas are caught in Angolan waters, the exact size and scope of the longline fishery in that country is not known. Similarly, very little is known about the threatened seabirds that occur off the coast of Angola which might be threatened by longline fisheries. And, it is quite likely that leatherback and olive ridley turtles, that are relatively abundant off the coast of Angola, are caught in significant numbers.

The seabird, shark and turtle species that are most severely threatened by longline fishing operations share a common life history. They are generally long lived, but breed slowly or have low recruitment into the breeding population. This makes them especially vulnerable to the unintended effects of longline fishing operations.

According to Dr Nel, the BCLME-funded project will take a slightly

different shape in each of the three countries of the Benguela region.

The focus of the project in South Africa will be on raising awareness of the seabird bycatch problem and encouraging fishing companies to test and implement mitigation devices.

In Namibia, the project will focus on assessment and training. There is very little information available about the bycatch of seabirds and pelagic sharks off Namibia, but the well established fisheries observer programme has the potential to increase knowledge and improve awareness about bycatch problems.

"We plan to build the capacity of observers to collect more detailed and reliable data on the scale and nature of the problem," says Dr Nel, explaining that improved knowledge will allow for informed decision-making.

"We also plan to educate fisheries observers about the biology and conservation status of affected species, as well as the mechanics and practical use of mitigation measures."

In Angola the project will focus on gathering information about the longline fisheries and their potential for catching seabirds, sharks and turtles. This task is



Dr Deon Nel



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Peter Ryan

## News

19/...continued

South African scientists say that their efforts to rebuild small pelagic fish stocks over the past 20 years have been "spectacularly successful". The total allowable catch (TAC) for pilchards is to jump by 58 percent to 450 000 tons, while the anchovy TAC will increase by 65 percent to 300 000 tons. An additional 50 000 tons will be fished as pilchard bycatch in the anchovy fishery.

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An international workshop on forecasting and data assimilation in the Benguela and comparable systems will be held in Cape Town in November.

The workshop will address a broad range of subjects of importance for the development of a predictive capability for the greater Benguela Current region and comparable systems. Topics of relevance to forecasting on time scales ranging from hours to months, and possibly even years and decades, will be addressed. For more information visit [www.bclme.org](http://www.bclme.org)

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Marthinus van Schalkwyk has been appointed Minister of Environmental Affairs and Tourism in South Africa. Mr van Schalkwyk replaces Mohammed Valli Moosa, who served two terms as a Cabinet minister before announcing late in 2003 that he would not make himself available for appointment to the Cabinet.

Mr van Schalkwyk is leader of the New National Party and former premier of the Western Cape Province.

likely to be complicated by the fact that foreign fishing boats operate in Angolan waters, together with large numbers of artisanal fishers.

Although the artisanal fishers are unlikely to catch seabirds as bycatch, there is anecdotal evidence to suggest that they do catch substantial numbers of turtles and may even catch seabirds for food. The Angolan portion of the project will be

managed by a representative of the Angolan Institute of Artisanal Fishers.

Dr Nel stresses the importance of cooperation with the fishing industry, especially in South Africa and Namibia where longline operators are generally well organised and represented.

"In the South African fleet, we can hope for 20 percent observer coverage at the very best. This means that 80 percent of fishing operations are conducted without

an independent observer; the implementation of mitigation measures rests with the fishermen themselves," says Dr Nel.

"Impractical mitigation measures that are forced upon the industry without consultation will receive little support. We have to work with the fishing industry to find practical solutions that will work for them."

The two-year BCLME-funded project complements a smaller project that has received funding

## Pescas de Longline ~ encontrando soluções práticas para os problemas do bycatch

*As pescas com longline (pesca à linha) da África do Sul poderiam matar cerca de 20 000 aves marinhas anualmente, apesar do facto de se poder reduzir esse número para menos de dois terços com medidas simples e baratas para mitigação do bycatch (captura adicional).*

*Ninguém sabe quantas aves marinhas, tubarões e tartarugas são mortos nas pescas com longline na Namíbia e em Angola.*

*Debruçar-se sobre o bycatch accidental das operações de pesca com longline na região de Benguela é o enfoque de um projecto financiado pelo BCLME que está a ser executado pelo WWF da África do Sul e pela Birdlife da África do Sul.*

*O coordenador regional do projecto, o Dr. Deon Nel, gestor do programa marinho da WWF da África do Sul, explica que o projecto tem dois enfoques importantes: começando por determinar escala do problema do bycatch e introduzindo medidas de mitigação simples e apropriadas para tentar evitar a matança descabida de aves marinhas, tartarugas e tubarões.*

*As embarcações de pesca com longline visam a captura de pescada, atum, peixes de bico e*

*tubarões na região de Benguela. Mas elas capturam também aves marinhas, principalmente albatrozes e petréis. Estes pássaros mergulham nos anzóis com isca em busca de alimento, e são arrastados para debaixo d'água para a sua morte.*

*As tartarugas são mortas também quando se alimentam nos anzóis com isca.*

*Alguns tubarões são procurados pelas embarcações de longline, mas pelo menos 25 espécies de tubarões são capturadas pelos longliners que pescam atum e peixes de bico. Muitos são atirados ao mar, às vezes depois de lhes terem sido removidas as barbatanas.*

*Os problemas do bycatch que estão associados com as pescas com longline são diferentes nos três países da região de Benguela.*

*Por exemplo, na África do Sul há uma compreensão razoavelmente boa sobre o problema do bycatch sobre as aves marinhas. As medidas de mitigação foram projectadas e testadas, mas há muito trabalho a ser feito para garantir que a indústria pesqueira compreenda a importância da implementação das medidas de mitigação.*

*Na Namíbia, aproximadamente 45 embarcações de longline capturam pescada, atum, peixes de bico e tubarões. Embora exista um esquema de observação na Namíbia, a escala e a natureza do bycatch de aves marinhas são desconhecidas.*

*Os relatórios iniciais sobre descargas de tubarões mostram que os tubarões pelágicos são capturados em grandes quantidades fora da Namíbia, especialmente quando a pesca com longline não consegue capturar as espécies de atum. Embora em águas angolanas os tunídeos se capturem tunídeos, não se conhece a quantidade exacta e o âmbito da pescaria com longline no país. Iguamente, muito pouco se sabe sobre as aves marinhas ameaçadas que ocorrem ao largo da costa de Angola que pode estar ameaçada pela pesca com longline. E, é plenamente provável que as tartarugas verde e de bico de falcão, relativamente abundantes ao largo da costa de Angola, sejam capturadas em números significativos.*

*As espécies de aves marinhas, tubarões e tartarugas que estão mais severamente ameaçadas pelas operações de pesca com longline compartilham de uma história de vida comum.*

from IAATO, WWF- New Zealand, WWF – South Africa and Southern Seabird Solutions (SSS).

The IAATO project aims to maximise a transfer of knowledge between the New Zealand pelagic longline industry and its South African counterpart. New Zealand has had considerable experience in dealing with seabird bycatch, and is at the forefront of setting up multi-stakeholder fora where fishers and conservationists work together to seek solutions to the problem.

BirdLife South Africa, which will implement the project in South Africa, currently undertakes some training of fisheries observers, but the BCLME project will greatly enhance these efforts through the provision of much needed resources such as sturdy training manuals.

The project will have access to ten Time Depth Recorders, valued at over \$10 000 (R70 000) that will be used to measure the rate of line sinking under various line

weighting regimes. Four of these devices are the property of BirdLife International and a further six will be borrowed from the Australian Antarctic Division.

The BCLME project will also network closely with BirdLife International's Save the Albatross campaign, which is addressing seabird bycatch at a global scale and has developed a number of resources that may be utilised in the Benguela region.



Richard Cuthbert



*Geralmente têm uma grande longevidade, mas reproduzem-se lentamente ou têm um baixo recrutamento na população reprodutora. Isto fá-los especialmente vulneráveis aos efeitos não propositados das operações de pesca com longline.*

*De acordo com o Dr. Nel, o projecto financiado pelo BCLME será ligeiramente diferente em cada um dos três países da região de Benguela.*

*Na Namíbia, o projecto visará a avaliação e a formação. O programa de observação das pescarias bem estabelecido na Namíbia tem o potencial de aumentar o conhecimento e melhorar a sen-*

*sibilização sobre os problemas do bycatch.*

*Em Angola o projecto visará a recolha de informação sobre as pescarias com longline e o seu potencial em capturar aves marinhas, tubarões e tartarugas. Esta tarefa é provavelmente muito complicada pelo facto de os barcos de pesca estrangeiros operarem em águas angolanas juntamente com um grande número de pescadores artesanais.*

*A porção angolana do projecto será controlada por um representante do Instituto de Pesca Artesanal de Angola.*

*O projecto de dois anos financiado pelo BCLME complementa*

*um projecto menor que contou com financiamento da IAATO, da WWF- Nova Zelândia, da WWF - África do Sul e da Southern Seabird Solutions (SSS).*

*O projecto de IAATO tem como objectivo maximizar a transferência de conhecimentos entre a indústria pelágica de longline da Nova Zelândia e as suas contrapartes da África Austral.*

*O projecto do BCLME também interagirá de perto com a campanha Salvar o Albatroz da BirdLife International, que visa o bycatch de aves marinhas numa escala global e desenvolveu uma série de recursos que poderão ser utilizados na região de Benguela.*

## Fact File:

### Seabirds, sharks and turtles

The productive waters of the Benguela ecosystem are an important foraging area for thirteen species of seabirds that are killed in significant numbers by longline fisheries. Twelve of these species are threatened with extinction, while the remaining species is classified as near-threatened. Tristan albatrosses *D. dabbenena* have a total breeding population of about 5 000 individuals restricted almost entirely to a single breeding island. Spectacled petrels *Procellaria conspicillata* have a breeding population of 3 000 to 4 000 pairs restricted to a single island. Both these species are killed by longline fishing vessels operating in the Benguela ecosystem.

The oceanic and inshore waters of the South East Atlantic are utilised by 36 species of sharks that are classified as threatened, near-threatened or data-deficient by the IUCN. Longline fishing operations pose a threat to at least eight of these species, including the thresher shark *Alopias vulpinus*, great hammerhead *Sphyrna mokarran*, scalloped

hammerhead *S. lewini*, smooth hammerhead *S. zygaena*, shortfin mako *Isurus oxyrinchus*, blue shark *Prionace glauca*, porbeagle shark *Lamna nasus* and crocodile shark *Pseudocarcharias kamoharai*.

Five species of threatened turtles occur in the waters of the South East Atlantic, particularly off the coast of Angola. These are green turtle *Chelonia mydas* (endangered), loggerhead turtle *Caretta caretta* (endangered), leatherback turtle *Dermochelys coriacea*, olive ridley *Lepidochelys olivacea*, and hawksbill turtle *Eretmochelys imbricata*. Although little is known about the bycatch of turtles in the BCLME, it is thought that populations of olive ridley and leatherbacks would be at particular risk from longline fishing operations because of their pelagic habits and relative abundance along the Angolan coastline.



Source: WWF – South Africa

# The Agulhas~Somali Current LME

A specialist consultative meeting was held in May to discuss progress with the Agulhas -Somali Current Large Marine Ecosystem in preparation for a PDF Block B project document.

David La Roche, senior technical advisor for the UNDP-GEF International Waters programme in southern Africa, organised and chaired the meeting which was held near Cape Town.

A programmatic approach to the Western Indian Ocean region is to be adopted. This will include a South West Indian Ocean Fisheries Programme (SWIOFP), a separately planned LME for the coastal zone and for wildlife conservation in the South West Indian Ocean, and an approved UNEP Project to investigate land-based sources of pollution, consistent with the Global Programme of Action (GPA).

A fourth project will comprise a set of coastal zone demonstration projects in areas such as community based fisheries regimes, coral reef protection and endangered species. Mangroves may also be considered for coastal zone demonstration projects.

Transboundary fisheries and pollution issues will be addressed, as well as mapping of oceanographic features, fisheries resources and areas of productivity.

The boundary zone between the Benguela Current Large Marine Ecosystem (BCLME) and the Agulhas – Somali Current Large Marine Ecosystem will also be

investigated. This investigation will include an analysis of the impacts of variability and warm water rings of the Agulhas Current on the fisheries resources of the west coast.

The countries involved in the establishment of the Agulhas – Somali Current LME are the Comores, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa, Tanzania and France.

It is expected that the PDF Block B phase will be completed in July 2005 and implementation of the LME programme will start in late 2005 or early 2006.



(Back) Ana Paula Baloi, Southwest Indian Ocean Fisheries Project; Dr Brad Brown, NOAA; Dr Larry Hutchings, MCM; Professor Vere Shannon, UCT; David LaRoche, UNDP-GEF International Waters in Southern Africa; Professor Andrew Bakun, University of Miami; Dr Mick O'Toole, BCLME Programme; Dr Francis Marsac, Unite de Recherche, Centre IRD, Reunion; Professor Dixon Waruinge, UNEP; Raymond Roman, UCT; Andrew Cooke, consultant (Madagascar); Andrew Menz, UNOPS; Tony Ribbink, SA Institute for Aquatic Biodiversity; Professor Johann Lutjeharms, UCT; Lesley Staegemann, BCLME Programme. (Front) Dr Johan Groeneveld, MCM; Selby Remie, Ministry of Environment & Natural Resources Seychelles; Mike Roberts, MCM; Ross Shotton, FAO.

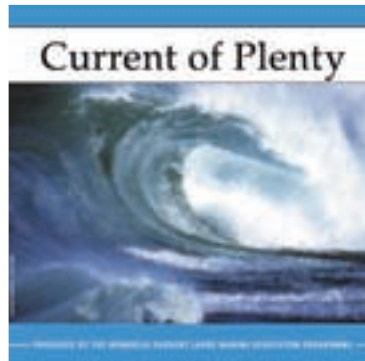
## Fact File:

The western Indian Ocean is the site of some of the most dynamically varying large marine ecosystems in the world. To the north is the Somali LME that develops during the southwest monsoon to become one of the most intense coastal upwelling systems in the world, bringing rich nutrients to the surface of tropical waters. Similarly, the Agulhas LME to the south represents a region of dynamic nutrient cycling and associated fisheries potential. The Agulhas and Mozambique currents link these two major LMEs of the western Indian Ocean.

The region is considered a distinct biogeographic province of the Indo-West Pacific with high levels of regional endemism. It has a high diversity of cetaceans (at least 20 species), five species of marine turtles, numerous seabirds and an important remnant population of the threatened dugong. The region is also home to the coelacanth, a unique marine fish that evolved some 400 million years ago and miraculously survived the mass extinction that marked the demise of the dinosaurs.

Source: [www.ed.uri.edu/lme](http://www.ed.uri.edu/lme)

# Public Relations



The powerful waves that lash the shores of the Benguela Current Large Marine Ecosystem provide a dramatic opening for a 25-minute documentary, **Current of Plenty**, which was produced for the BCLME Programme by *Francois Odendaal Productions*.

*Current of Plenty* was released on CD in June.

The documentary describes the abundance of life that occurs in the coastal regions of the Benguela. It captures the fascinating natural biodiversity of the Benguela region - both on land and at sea - and shows how humans are utilising the resources of the Benguela on a small- and industrial-scale.

For instance, *Current of Plenty* documents the activity on a hake trawler and features images of diamond mining and oil drilling. De Beers Marine donated dramatic underwater footage which was taken from the submersible, *Jago*. Cameraman, Claudio Velásquez, recorded the excitement of fishing

for albacore tuna on the *Malgas II*, and filmed a purse seiner landing its pilchard catch off Cape Town. Fishing companies, I&J and NovaNam also supplied footage for the documentary.

*Current of Plenty* will entertain and educate anyone who has an interest in the Benguela region. It is likely to become a well-used resource in the classrooms of the region and will also stand as a showcase for the Benguela Current Large Marine Ecosystem for many years to come.

Limited copies of *Current of Plenty* are available. To order yours, please contact Cristina Cicognani at [bclmeevs@deat.gov.za](mailto:bclmeevs@deat.gov.za)



The BCLME Programme website has grown from strength to strength over the past six months. It now features an up-to-date list of all the projects that are being implemented by the BCLME Programme. Web browsers are able to download reports for the projects that have been completed.

Also available on the site are progress reports for some of the longer running projects.

The website now features profiles on Angola, Namibia and South Africa, providing web browsers with a snapshot of the three countries of the Benguela region. The country

profiles include information on the geography, demographics, economy, infrastructure, marine environment, fisheries and mining sectors in each of the three countries. The profiles are available online in both English and Portuguese.

Copies of two very topical papers on the Benguela Current Large Marine Ecosystem may be downloaded from the site. These are:

**Sustainability of the Benguela: ex Africa simper aliquid novi**  
*LV Shannon and MJ O'Toole:*

Published in Large Marine Ecosystems of the World: Trends in Exploitation, Protection and

Research, G. Hempel and K. Sherman, eds. 2003.

**Integrated Management of the Benguela Current Region – A Framework for Future Development**

*MJ O'Toole, LV Shannon, V de Barros Neto and DE Malan*

Published in Science and Integrated Coastal Management, Dahlem University Press.

Visit [www.bclme.org](http://www.bclme.org)



The BCLME Programme has been well represented in the fishing press over the past six months. Articles on the Programme and some of its activities have appeared regularly in *Maritime Southern Africa* and *Fishing Industry News*, as well as in the international fishing journals, *Fishing News International* and *World Fishing*.

Scientific and academic newsletters, such as South Africa's Research Highlights and the SANCOR newsletter have also featured updates on the BCLME Programme.

In June, the BCLME Programme was featured in the newsletter of the World Conservation Union, IUCN.

The voyage of the *Alexander von Humboldt* was well documented in the Namibian press, especially by journalist, Maggi Barnard, who accompanied the *Humboldt* on a three-day transfer between Cape Town and Walvis Bay. Ms Barnard's articles, which make for entertaining and informative reading, are posted to the BCLME Programme's website.



# Tubarões de Bronze



Dr Hannes  
Holtzhausen

**A** migração dos tubarões de bronze entre a Namíbia e Angola apresenta desafios difíceis para a gestão pesqueira; mas um projecto que conseguiu o apoio do Programa do BCLME esforçar-se-á por fornecer aos governos de ambos os países um ante-projecto para a futura gestão desta espécie litoral de grande valor.

Os tubarões de bronze *Carcharhinus brachyurus*, são geralmente conhecidos na Namíbia como tubarões de cobre ou “bronzeados” e em Angola como tubarões de cobre. A espécie ocorre em todo o mundo e é conhecida como sendo uma das que têm o crescimento mais lento de todas as espécies de tubarões, um factor que a torna extremamente vulnerável à sobre-exploração.

Os cientistas acreditam que na África Austral ocorram duas populações separadas de tubarões de bronze: uma distribui-se desde a zona ocidental da Província do Cabo na direcção Leste e a outra desde Walvis Bay, na Namíbia, movendo-se para Norte, até ao sul de Angola. Os estudos de marcação e soltura sugerem que a Namíbia e Angola partilham uma única população de tubarões de bronze.

Por exemplo, dois tubarões que foram marcados na Baía

dos Tigres, no sul de Angola em 2003, foram recapturados três meses mais tarde perto de Swakopmund, na Namíbia, 715 km a sul.

Presume-se que a Baía dos Tigres seja uma área de reprodução e crescimento muito importante dos tubarões de bronze, mas os cientistas acreditam que a espécie migre para as águas Namibianas para ter as suas crias. Esta teoria é suportada pelo facto de que muitos dos tubarões que são capturados e marcados na Namíbia são fêmeas grávidas.

A localização exacta das zonas de crescimento das espécies permanece um mistério, e este é um dos segredos que os cientistas têm esperança de desvendar quando os quatro tubarões de bronze com marcação acompanhada via satélite forem recuperados mais tarde este ano.

O programa do BCLME está a dar apoio ao projecto de telemetria por satélite porque o tubarão de bronze representa um exemplo clássico de problemas ambientais transfronteiriços, uma das áreas-chave em foco no Programa.

Na Namíbia, os tubarões de bronze são o ponto focal de uma indústria de turismo efervescente. Os pescadores de pesca à linha valorizam muito o tubarão de bronze pela sua legendária habilidade de combate e pescadores de todo o mundo viajam para a Namíbia na esperança de medir forças com um tubarão de bronze a partir da praia, usando cana e carreto. A pesca recreativa de tubarões de bronze gera uns 2,1 milhões de dólares (R15 milhões) de rendimento do turismo anualmente e quase todos os tubarões de bronze que são capturados pelos pescadores na Namíbia são libertados. No sul

## Bronze Whaler Sharks

*The migration of bronze whaler sharks between Namibia and Angola presents tough challenges for fisheries management; but a project that has won the support of the BCLME Programme will endeavour to provide the governments of both countries with a blueprint for the future management of this highly prized coastal species.*

*Bronze whaler sharks Carcharhinus brachyurus, are commonly known in Namibia as the copper shark or “bronzey” and in Angola as tiburòn cobrizo. The species occurs all over the world and is known to be one of the slowest growing of all shark species, a factor that makes it extremely vulnerable to over-exploitation.*

*Scientists believe that two separate populations of bronze whaler sharks occur in southern Africa: one is distributed from the Western Cape eastwards and the other from Walvis Bay in Namibia, northwards into southern Angola. Tag and release studies suggest that Namibia and Angola share a single population of bronze whaler sharks.*

*For instance, two sharks that were tagged at Baía dos Tigres in southern Angola in 2003, were recaptured three months later near Swakopmund in Namibia, 715km to the south.*

*Baía dos Tigres is thought to be an important breeding ground and nursery area for bronze whaler sharks, but scientists believe that the species migrates to*

*Namibian waters to bear its pups. This theory is supported by the fact that many of the sharks that are caught and tagged in Namibia are pregnant females.*

*The exact location of the species’ pupping grounds remains a mystery, and this is one of the secrets that scientists hope will be revealed when four satellite tags which have been attached to bronze whaler sharks are retrieved later this year.*

*The BCLME Programme is supporting the satellite telemetry project because the bronze whaler shark presents a classic example of transboundary environmental problems, one of the key focus areas of the Programme.*

*In Namibia, bronze whaler sharks are the focal point of a vibrant*



e centro de Angola entretanto, os tubarões de bronze e outras espécies pelágicas, tais como o tubarão-raposo, tubarão azul, anequim de barbatana curta e o cação, são capturados por “longliners” pelágicos pelas suas carne e barbatanas. Durante 2001 e 2002, desenvolveu-se uma pesca orientada para os tubarões de bronze no sul de Angola, especificamente na Baía dos Tigres. Os níveis exactos de captura e o impacto desta pescaria são desconhecidos, mas os cientistas e a indústria do turismo da Namíbia estão receosos que tenham um efeito devastador na pesca recreativa de tubarões de bronze no seu país.

Um dos alvos do projecto de telemetria por satélite é determinar em que extensão os tubarões de bronze migram sazonalmente entre a Namíbia e Angola. O projecto testará também se os tubarões de bronze podem ser

capturados de forma sustentada no sul de Angola e que impacto a captura está a ter na pesca recreativa da Namíbia.

“Nós esperamos poder avaliar a população e formular um plano conjunto de gestão dos tubarões de bronze de modo que a sua pesca possa sobreviver na Namíbia”, diz o líder do projecto, Hannes Holtzhausen, chefe de pesquisa de grandes peixes pelágicos no Centro Nacional de Investigação e Informação Marinha (NATMIRC) da Namíbia.

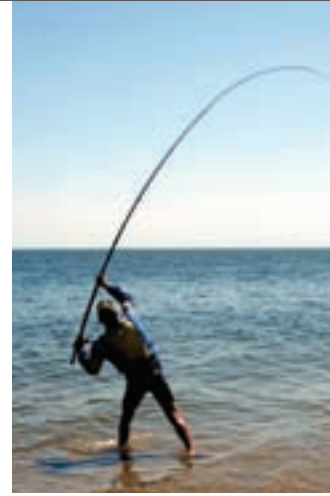
As etiquetas-satélite foram postas em dois tubarões machos e em duas fêmeas que foram capturadas na Namíbia entre Fevereiro e Abril deste ano. As etiquetas de arquivo Argos PTT-100 são programadas para se soltarem dos tubarões sozinhas no fim do ano. Assim que as etiquetas se soltem dos tubarões, a informação sobre a rota da sua migração é carregada automati-

camente, via satélite, num “site” da Internet, oferecendo desse modo aos cientistas uma janela para o mundo destas criaturas fascinantes.

Ao longo dos dois anos passados, foi marcado um total de 952 tubarões de bronze com etiquetas ordinárias do tipo dardo, por investigadores na Namíbia e em Angola. Foram recolhidos dados biológicos de 261 espécimes e até à data, foram recapturados 17 tubarões marcados. Os dados produzidos pelos estudos de marcação-soltura estão a ajudar aos cientistas a recolher informação sobre a grandeza da distribuição e do ratio entre os sexos dos tubarões de bronze e a identificar mudanças sazonais nos índices de captura.

Espera-se que os números das fêmeas grávidas e dos tubarões recém-nascidos que são captur-

continuação.../26



*tourism industry. Shore anglers prize the bronze whaler for its legendary fighting ability and anglers from all over the world travel to Namibia in the hope of catching a bronze whaler from the beach, using rod and reel. The recreational fishery for bronze whaler sharks generates an estimated US\$2.1 million (R15 million) in tourism revenue annually and almost all of the bronze whaler sharks that are caught by anglers in Namibia are released.*

*In southern and central Angola however, bronze whalers and other pelagic shark species, such as thresher, blue, shortfin mako and soupfin sharks are harvested by pelagic longliners for their meat and fins. During 2001 and 2002, a targeted fishery for bronze whaler sharks developed*

*in southern Angola, specifically at Baía dos Tigres. The exact levels of harvesting and the impact of this fishery are unknown, but scientists and the tourism industry in Namibia are concerned that it will have a devastating effect on the recreational fishery for bronze whaler sharks in their country.*

*One of the aims of the satellite telemetry project is to determine the extent to which bronze whaler sharks migrate seasonally between Namibia and Angola. The project will also test whether bronze whaler sharks may be sustainably harvested in southern Angola and what impact the harvest is having on Namibia's recreational fishery.*

continued.../26



*A recreational angler lands a bronze whaler shark in Namibia. The bronze whaler project has received substantial support from the recreational angling sector in South Africa and Namibia, both through sponsorship and the involvement of anglers in tagging studies.*

## 25/ ...continuação

ados nos cruzeiros de marcação-e-soltura ajudem a identificar as áreas de reprodução e crescimento de modo a que estas áreas possam ser objecto de protecção no futuro.

Uma vez recolhidos todos os necessários parâmetros biológicos e dados sobre as capturas, será usado um modelo de pescas apropriado para avaliar o stock de tubarão de bronze na Namíbia e em Angola. Baseado nos resulta-

dos deste exercício, deverá ser possível fazer recomendações sobre o nível de capturas para o recurso na sua globalidade. Tais recomendações teriam em consideração a necessidade de ter uma captura comercial sustentável em Angola sem afectar o uso "sem-consumo" dos tubarões de bronze na Namíbia.

Também incluído no estudo financiado pelo BCLME há uma componente de pesquisa genética que vai ajudar a determinar a identidade do stock do recurso

de tubarão-bronze na região de BCLME. Isto deverá revelar se a população de tubarões de bronze da África Austral é de facto separada da população da Namíbia/Angola e ajudará aos cientistas a verificarem a informação que é recolhida nos estudos de marcação-e-soltura.

No fim do projecto, será apresentado aos governos da Namíbia e de Angola um plano para a gestão futura do stock compartilhado de tubarão de bronze.

## 25/ ...continued

*"We hope to be able to assess the population and formulate a joint management plan for bronze whaler sharks so that the Namibian fishery can survive," says project leader, Dr Hannes Holtzhausen, the head of research into large pelagic fish at the National Marine Research and Information Centre (NATMIRC) in Namibia.*

*Satellite tags have been attached to two male and two female sharks that were caught in Namibia between February and April this year.*

*The Argos PTT-100 archival pop-up tags are programmed to detach themselves from the sharks at year-end. Once the tags pop off the sharks, informa-*

*tion about their migration route is automatically downloaded, via satellite, to an internet site, thereby offering scientists a window onto the world of these fascinating creatures.*

*Over the past two years, a total of 952 bronze whaler sharks have been tagged with ordinary dart tags by researchers in Namibia and Angola. Biological data has been collected for 261 specimens and to date, 17 tagged sharks have been recaptured. The data that is generated by the tag-and-release studies is helping scientists to gather information about the size distribution and sex ratios of bronze whaler sharks and to identify seasonal changes in catch rates.*

*It is hoped that the numbers of*

*pregnant females and new born sharks that are caught in tag-and-release surveys will help to identify breeding and pupping areas so that these areas might be afforded protection in the future.*

*Once all the necessary biological parameters and catch data have been collected, an appropriate fisheries model will be used to assess the bronze whaler stock in Namibia and Angola. Based on the results of this exercise, it should be possible to recommend a harvesting level for the resource as a whole. Such recommendations would take into account the need to have a sustainable commercial harvest in Angola without affecting the non-consumptive use of bronze whaler sharks in Namibia.*



## Research support good cause

One ton of frozen fish was donated to the Erongo House of Safety in Swakopmund recently.

The BCLME Programme, BENEFIT Programme and the Norwegian Nansen Programme, made the donation to the home for abandoned, abused, neglected and destitute children.

The fish, consisting of hake, kingklip, anglefish and sole, were caught on a research cruise which was conducted on board the Norwegian vessel, Dr Fritjof Nansen.

"The fish are in good condition and were frozen at sea after they were measured, weighed

and assessed by scientists from South Africa and Namibia who took part in the cruise," said Dr Neville Sweijd, director of BENEFIT.

According to Dr Hashali Hamukuaya, director of the Marine Living Resources Activity Centre of the BCLME, work carried out by the Ministry's scientists and the regional programmes is an important part of ensuring the sustainable utilisation of marine resources. However, it is not often that there is an opportunity for these research programmes to make a direct contribution to the community, he said.

Manager of the Erongo House of Safety, Alfrieda Thomas, expressed her gratitude on behalf of the children's home.

*Paulus Kalenga, volunteer at the Erongo House of Safety; Dr Ben van Zyl, head of the national Marine Information and Research Centre; Alfrieda Thomas, House of Safety manager; and Dr Hashali Hamukuaya, director of the Marine Living Resources Activity Centre of the BCLME Programme.*

# New studies will assess impacts of marine mining

**T**he Benguela Current Large Marine Ecosystem (BCLME) Programme has allocated approximately US\$382 400 (R2.7 million) to examine the cumulative effects that offshore petroleum extraction and diamond mining have on the marine environment of the Benguela region.

Marine diamond mining is undertaken along the west coasts of South Africa and Namibia, and all three countries in the Benguela region are involved in petroleum exploration and production.

Although a number of impact assessment studies have been conducted, little is known about the collective effect that marine mining operations have on the marine environment over a long period of time.

Similarly, insufficient knowledge exists with respect to the cumulative impacts of petroleum exploration and production activities in the BCLME, particularly in Angolan waters.

Extensive offshore petroleum production activities take place in Angola's northern provinces of Cabinda and Zaire, and intensive drilling is taking place on the continental slope between Cabinda and Luanda.

It is not unrealistic to expect that several hundred wells will be drilled off Angola in the next decade.

There are two consequences of these activities that are of concern to the management of the BCLME. These are: the effect that the discharge of drilling mud and cuttings has on benthic organisms such as crabs, shrimps and marine worms; and the effect that the discharge of toxic production water from offshore platforms has on plankton, fish eggs and larvae.

A third, indirect effect, is that of restricted fishing around oil rigs and pipelines. This could be beneficial for fish populations, provided that pollution or disturbance effects are small.

A project that has been contracted to the South African Council for Scientific and Industrial Research (CSIR) is to focus on the compilation of available information relating to offshore drilling activities. This

project will determine what data are available from the petroleum industry and whether they are useful for assessing the state of the marine environment.

Once this assessment is completed, the BCLME Programme will turn its attention towards establishing a baseline for environmental data and setting up monitoring studies in the vicinity of drilling activities.

A similar project has been designed to access environmental data collected by marine diamond mining companies over the years. This project has been contracted to Pisces Environmental Services.

Two other studies have been designed to test the cumulative impacts of marine diamond mining. The first of these, which has been contracted to the CSIR, is an assessment of the cumulative effects of sediment discharges from on-shore and near-shore diamond mining activities.

The second study, which has been undertaken by Pisces Environmental Services, is an assessment of the cumulative impacts of scouring sub-tidal areas and kelp cutting by divers, with particular reference to rock lobster populations.

Off the South African and Namibian coasts, major discharges of fine sediment from shore-based diamond processing plants and diver operations within the near-shore zone (from the shore to a depth of approximately 40m) occur as a by-product of mining operations. There is concern, particularly from the fishing industry, that these turbid waters may impact negatively on the ecosystems and fisheries resources in the vicinity of mining operations.

In the Northern Cape Province and southern Namibia there is on-going conflict between mining operators and the rock lobster fishing industry.

Previous studies have documented the negative effects that shore-based and near shore mining have on rock lobster. These include a reduction of food availability or the degradation of rock lobster habitat through the smothering of reefs or the reduction of kelp cover.

Most studies have found these impacts to be localised, short term and minor, however, questions remain about the cumulative effects of reef smothering and the cumulative degradation of kelp cover. Added to these problems is the issue of periodic incursions of low oxygen water which is characteristic of the productive west coast.

Both of the BCLME-funded studies have been designed to examine the repetitive impacts of a range of mining activities. The issues of greatest concern, and those that are currently least understood, relate to the impact on near-shore reefs of sediment discharges from continual or expanding mining operations, and the repeated cutting of kelp in shallow reef areas.



*A small boat that is used for extracting diamonds in the nearshore environment is pictured at Alexander Bay in South Africa. A BCLME-funded project is to study the cumulative effects of diamond mining on the marine environment.*

# The BCLME Programme



**T**he BCLME Programme is a joint initiative by the governments of Angola, Namibia and South Africa to manage and utilise the resources of the Benguela Current Large Marine Ecosystem in a sustainable and integrated manner.

The Programme is designed to improve the structures and capacities of Namibia, Angola and South Africa to deal with the environmental problems that occur across the national boundaries, in order that the ecosystem may be managed as a whole.

These transboundary issues include the migration or straddling of valuable fish stocks across national boundaries, the introduction of invasive alien species

via the ballast water of ships moving through the region, and pollutants or harmful algal blooms that can be advected by winds and currents from the waters of one country into another.

The Programme is funded by the Global Environment Facility (GEF) which has contributed US\$15.2 million through the United Nations Development Programme (UNDP) for the regional initiative. The GEF's funding complements an investment of US\$16 million by the three countries, and over US\$7 million from other sources such as the Benguela Environment Fisheries Training Interactions Programme, BENEFIT.

The BCLME Programme is administered by a Programme Co-ordinating Unit.

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