



**Australian Government**

**Department of the Environment and Heritage**

# Oceans Action Bulletin

**An Update from the Marine Division of the  
Department of the Environment and Heritage**

**9 December 2005**

This Bulletin updates you on Australian Government activities in the marine environment. Please forward to any interested parties. For further information or to unsubscribe from this Bulletin, please email [samantha.meyer@oceans.gov.au](mailto:samantha.meyer@oceans.gov.au)

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This is the final edition of the Oceans Action Bulletin for 2005. Staff of the Marine Division of the Department of the Environment and Heritage wish readers of the Oceans Action Bulletin a happy and safe Christmas and New Year. The next edition of the Bulletin will be published in mid-January.

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## **WA Marine Debris Campaign Wins Minister's Award**

A grassroots volunteer effort to clear marine debris from the wild coastline around Western Australia's Margaret River has been recognised through the Minister's Award for Coastal Custodians.

The Minister for the Environment and Heritage, Senator Ian Campbell, said the initiative of local marine conservationist Heidi Palmer and her group of 100 volunteers and corporate supporters deserved national recognition for their Cape to Cape Beach Clean Up.

"Heidi and her volunteers have shown what can be achieved with a well-organised community campaign, clearing more than 8 000 individual pieces of debris in a single day from the coastline between Cape Naturaliste and Cape Leeuwin in Western Australia's beautiful south-west," Senator Campbell said.

"Heidi is a true coastal custodian, a steward for our precious coastline and I hope this award will help her and the Tangaroa Blue team to mount another Cape to Cape Beach Clean Up in 2006.



*Heidi Palmer*

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“Marine debris is one of the biggest environmental problems in our oceans and the Cape to Cape Beach Clean Up is a demonstration of how we can turn the tide.

“Debris is adding to the pressure on our coastal and marine environment and is now estimated to kill about one million sea birds and 300 000 marine mammals and turtles each year.”

The Cape to Cape Beach Clean Up was held on 1 October and enlisted volunteers from all over Western Australia’s south-west as well as dive clubs, Land Care associations, Rotary clubs, environment centres, progress associations, the Western Australian Department of Conservation and Land Management (CALM), Shire Councils, Bag Smart and a number of businesses.

More than a tonne of rubbish was recovered, 90 per cent of which was lightweight plastic, such as drink bottles, food wrapping, fishing waste and lost gear. Ms Palmer provided training to all volunteers on recording of the waste, which has now been categorised. The waste has been sourced back to the commercial fishing and shipping industries, recreational fishermen, beach users, illegal dumpers and stormwater run-off. Follow-up workshops will analyse the reasons commonly found items become marine debris and then identify changes in design and practice to reduce the problem.

The \$5000 Minister’s Award for Coastal Custodians is made annually during Coastcare Week, recognising the efforts of individuals and organisations around Australia for devising practical solutions to marine or coastal environmental problems.

In 2005, nominations from each State and the Northern Territory were received. A high standard of entries impressed, with examples of innovation in environmental remediation, school and community-based awareness campaigns, campaigns to change environmentally damaging practices and behaviours, monitoring work leading to remediation action and cooperation between organisations, institutions, industry, business and government.

In recognition of the high standard of nominations received for the 2005 award, two High Commendation awards were presented.

In Victoria, the Swan Bay Integrated Catchment Management Committee received a High Commendation for its efforts to improve the coastal and marine environments around the Bellarine Peninsula on the western side of Port Phillip Bay.

Since 1997, this group has restored remnant vegetation, raised community awareness of environment issues and worked to improved waterways and water quality in the area.

Swan Bay is one of the few areas around Port Phillip Bay with intact wetland and marine ecosystems and is part of the Port Phillip Heads Marine National Park. It is also listed on the Register of the National Estate and as a Ramsar wetland. The area boasts a rich variety of habitats including marine, seagrass meadows, mudflats, saltmarsh, foreshore dunes and remnant woodland.

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In Queensland, the Coolum District Coast Care Group was also commended by Senator Campbell for its work to to conserve the natural values of the coastal fringe between South Peregian and Mudjimba.

The group has put in more than 17,000 volunteer hours since it was formed in 1998 and has established important links with industry, governments at all levels, educational institutions and the local community.

### **DVD Documents Australia's Unique Ocean Environments**

Australia's rich and varied ocean features and marine life habitats have been documented for the first time on an interactive DVD.

The National Marine Bioregionalisation DVD brings together the results of a major scientific project that divides Australia's oceans into separate regions based on their marine life and specific ecosystems.



The \$3 million program is a partnership between the Australian Government's Department of Environment and Heritage (National Oceans Office), Geoscience Australia and CSIRO Marine and Atmospheric Research. All Australian States and Territories participated in its development and were represented on the project's working group.

***NMB working group and key science contributors at their final meeting on the Hobart waterfront***

The Minister for the Environment and Heritage, Senator Ian Campbell, said the National Marine Bioregionalisation was the vital science underpinning marine planning and the development of a national system of marine protected areas in Commonwealth waters.

"This program will help us better understand the distribution of marine life and habitats around our vast ocean territory so that we have the best information available for the development of our regional marine plans and the long-term protection of our oceans," Senator Campbell said.

"It uses information on the physical environment and distributions of fish to divide the ocean environment into unique regions. Each region has characteristic fish, depth range and/or underwater features, such as canyons and seamounts. In this way 'blocks' of our ocean have been defined according to these environmental characteristics.

"By mapping and dividing our ocean territory in this way, we can make far more informed decisions – based on the marine environments and their unique features - about managing and conserving what is a most precious resource."

He said the bioregionalisation program had added new research to existing data, collated the data and made it publicly available for the first time.

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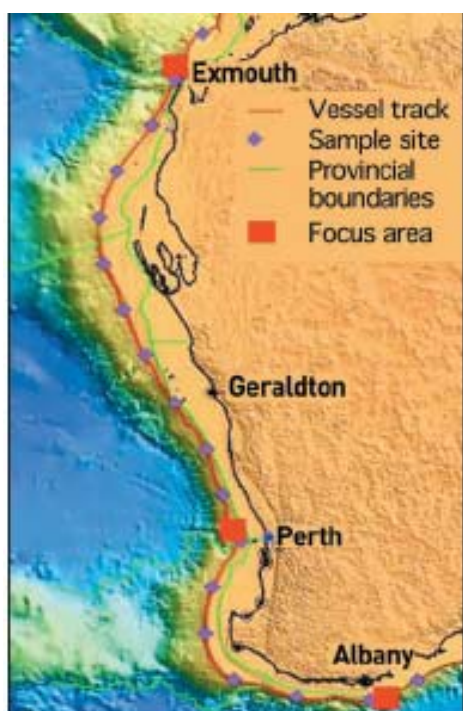
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“Until now, this information was locked away in a variety of databases in State and Australian Government departments, research institutions, industry bodies and businesses,” Senator Campbell said.

“By bringing this information together and undertaking new research we have created a unique tool for marine planners and managers that will help us protect our oceans for future generations.”

### **South-west Voyage of Discovery Targets Biodiversity in Unstudied Territory**



***The area targeted in the voyages***

A targeted biological study in areas along Australia’s west coast is currently being undertaken by the Marine National Facility research vessel, *Southern Surveyor*. This month-long voyage is taking place in two legs: the first began on 18 November and returned on 30 November. The second is currently underway; it departed on 1 December and will return to docks on 14 December.

The expedition, which is part of a major initiative by the CSIRO Wealth from Oceans Flagship and supported by the National Oceans Office, sees a team of specialist biologists collecting and identifying benthic invertebrates at target locations. These locations are in areas that were surveyed in an initial four-week voyage in July and August this year. This second voyage will also fill gaps in sediment and swathmapping data that was collected during the first voyage.

The first of the scientific voyages visited previously unstudied areas in a two-leg voyage from Dampier, on the north-west coast, south past Ningaloo Reef, all the way to Albany. It then returned to Fremantle. During the 28 days at sea, researchers mapped the seabed and surveyed the biodiversity in the region.

The seabed mapping involved the use of an acoustic multi-beam sonar and photographic survey with a towed camera platform. This was interspersed with sediment and water column sampling.

Initial results, in the form of maps, images and seabed profiles, have revealed a range of spectacular features, a great variety of animals, details of underlying geology, and immediate insights into their distributions and associations.

These findings offer an increased understanding of the physical structure of the deep ocean seabed and the composition and evolution of its rich fauna. They also offer information that can form the basis for development of national marine management plans that incorporate ecosystem-based principles.

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Alan Williams, one of the project leaders and Chief Scientist on Leg 1, said 'We need to understand ecosystem structure and processes, and impacts, at the fine scales seen by the cameras, but then be able to confidently expand this knowledge to landscape scales for management purposes. At the end of the day, we need a basis for characterising and subdividing the marine environment into natural units in a broadly similar way to what we do on land, and that's where these results have an impact.'

More information about the voyages can be found at  
<http://www.marine.csiro.au/nationalfacility/voyages/0705/ship2shore.html>

### **Great Barrier Reef Marine Conservation Project Wins United Nations Accolade**

The Great Barrier Reef Marine Park Authority (GBRMPA) has received its second international environmental accolade for the Representative Areas Program.

Minister for the Environment and Heritage, Senator Ian Campbell, announced that GBRMPA was the joint winner of the 2005 Sultan Qaboos Prize for Environmental Preservation from the United Nations Educational, Scientific and Cultural Organization's (UNESCO) *Man and the Biosphere Programme*.

Presented at the World Science Forum in Budapest, the prize acknowledges outstanding contributions to environmental management.

Senator Campbell said it was a great honour for Australia to receive commendation for marine conservation.

### **Queenfish Dynasty Exposed**

A year-long study of the life-cycle of one of northern Australia's most popular sport fish, the giant queenfish, will now be used to help manage the species over the longer term.

The study – co-funded by the Australian Department of Environment and Heritage (DEH) through the National Oceans Office (NOO) and the CSIRO – examined the age, growth and reproduction of queenfish which are mainly found in tropical estuarine and coastal habitats.

More than 300 queenfish specimens were collected from the Gulf of Carpentaria near Weipa with the help of charter, recreational and commercial fishers. Gonads were collected monthly from males and females of all sizes to determine their breeding season, and length and age at sexual maturity.

"Queenfish mature at about 72 centimetres and four to five years of age – later than expected given their close relatives often mature in less than two years," CSIRO fish biologist Dr Shane Griffiths says.

"Spawning occurs during the September–February 'wet' season, peaking in November, and females can release up to two million eggs in this period. It remains a mystery where queenfish actually reproduce, but we know some individuals spawn in offshore waters."

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One surprising finding was that queenfish grow slower than their closest relatives, the trevallies.

“Male and female queenfish have similar growth rates, reaching about 30 cm after one year and 80 cm after five years, but their growth then slows abruptly,” Dr Griffiths says. “The oldest fish we aged was 11 years and nine kilograms, but we believe they could live to at least 15 years.”

Dave Donald, of Dave Donald Sportfishing Charters at Weipa, says the research raises concerns that queenfish may need protection using minimum size and bag limits, if queenfish catches continue to escalate in recreational and commercial fisheries either as a target or bycatch species.



*Queenfish – photo courtesy of CSIRO*

“The reputation of queenfish as one of Australia’s top sporting fish has also enhanced its desirability with international anglers, particularly from Japan and the United States,” Mr Donald says. “Because they mature later in life than expected, they may not have the ability to recover quickly if populations decline.”

The NOO’s Director - North Planning, Rowan Wylie, says the queenfish study is contributing an understanding of the species and ecosystems of the Gulf of Carpentaria that is crucial to the development of Australia’s second regional marine plan, covering the gulf and Arafura Sea.

### **Micro-organism mapping mission in Australian waters concludes**

An ambitious mission to map the DNA of every microscopic organism in the ocean has recently concluded a one year program in Australian waters.

The Department of the Environment and Heritage provided assistance to the voyage, organising permits required to undertake research in Australia.

Micro-organisms are responsible for most of the chemical transformations that occur within the major biogeochemical cycles vital to life on earth. However, micro-organisms are the least understood groups of species on the planet, especially within the oceans. One fundamental question in microbial ecology is simply, how many ‘species’ exist? Bacteria lack morphologically distinct characteristics that allow species to be differentiated visually, and the vast majority (over 90%) cannot be grown in the laboratory.

The J. Craig Venter Institute, a U.S. based, not-for-profit, basic science research institute, modified techniques developed to analyse the human genome to allow for a ‘whole community’ analysis of marine water samples collected in the Sargasso Sea. The results from this research were published in the *Journal of Science* in collaboration with the Bermuda Biological Station for Research. This pilot study was

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the basis for initiating an around-the-world expedition to further evaluate marine microbial biodiversity and gene complement in order to contribute to ecological and basic science understanding and subsequent solution of environmental problems.

The specific goals of the expedition are to discover new microbial species; to better understand microbial biodiversity; to discover new genes of ecological importance; and to establish a freely shared, global environmental genomics database that can be used and added to by scientists around the world. All results of the genomic analysis will be provided to each country visited and released into the public domain through a new environmental genomics database at the U.S. National Institutes of Health.

To date, the waters of Bermuda, Canada, the United States, Mexico, Honduras, Costa Rica, Panama, Ecuador (the Galapagos Islands), French Polynesia, the Cook Islands, Tonga and Fiji, Vanuatu, New Caledonia, Australia, The Republic of the Seychelles, Madagascar, South Africa and every 200 miles in international waters have been sampled. (See the map below).



**Sorcerer II World route and sampling as of November 2005**

The dataset from Australia will be immense. Samples will be analysed as prioritised groups and the data will be transmitted to the Federal Government and to the appropriate collaborators as it is completed. It is anticipated that it will take two years to finish the sequencing. Updates will be provided to Australia next year, with a final report expected in November 2006.

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