

The way ahead  
for Australia's

Northern Oceans



MARINE BIOREGIONAL PLANNING IN COMMONWEALTH WATERS



Australian Government

Department of the Environment and Water Resources

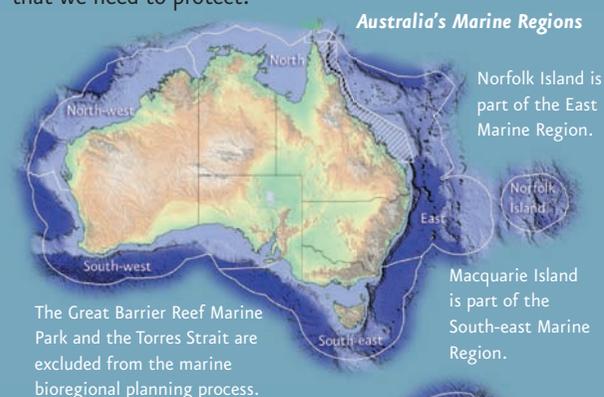
# Marine bioregional planning for the North Marine Region

## What are Marine Bioregional Plans?

The Australian Government is leading the world in sustainable ocean management. One important way in which it is demonstrating leadership is through the development of Marine Bioregional Plans for Australia's vast ocean territory.

Marine Bioregional Plans are being developed in five marine regions – the South-west, North, North-west, East and South-east – under the Environment Protection and Biodiversity Conservation (EPBC) Act 1999. The South-east Regional Marine Plan was completed in 2004 and will be updated to provide the basis for a new South-east Marine Bioregional Plan to be developed under the EPBC Act.

In order to effectively manage our marine environments, it is important to understand how marine ecosystems function, how our activities affect them and what the key values are that we need to protect.



Marine Bioregional Plans will consolidate available knowledge to provide Government with the best possible basis for making decisions about the marine environment in each region. Marine bioregional planning is also the process the Australian Government is using to identify new Marine Protected Areas (MPAs) to contribute to Australia's National Representative System of Marine Protected Areas.

**As an island nation, the historic wealth and future prosperity of Australia is closely tied to the ocean.**

If we manage our oceans sustainably, we can avoid the mistakes that are devastating marine industries and coastal communities in many parts of the world. Sound management is not only important for marine conservation - Australian jobs and livelihoods depend on healthy oceans.

The North Marine Region covers all Commonwealth waters from the western side of Cape York to the Northern Territory/Western Australian border. The Region includes about 700,000 square kilometres of waters in the Gulf of Carpentaria and the Arafura and Timor Seas.

The States and the Northern Territory have primary responsibility for waters within three nautical miles of their coasts. The Australian Government has responsibility for waters between the State limit and the 200 nautical mile limit of the Australian Exclusive Economic Zone (EEZ). Marine Bioregional Plans will apply in all waters within the Australian Government's jurisdiction.

The North Marine Region has been shaped by its geological history. About 10 - 15 million years ago the Australian continent collided with the Pacific Plate, causing tectonic uplift and volcanic activity that led to the creation of the island of New Guinea.

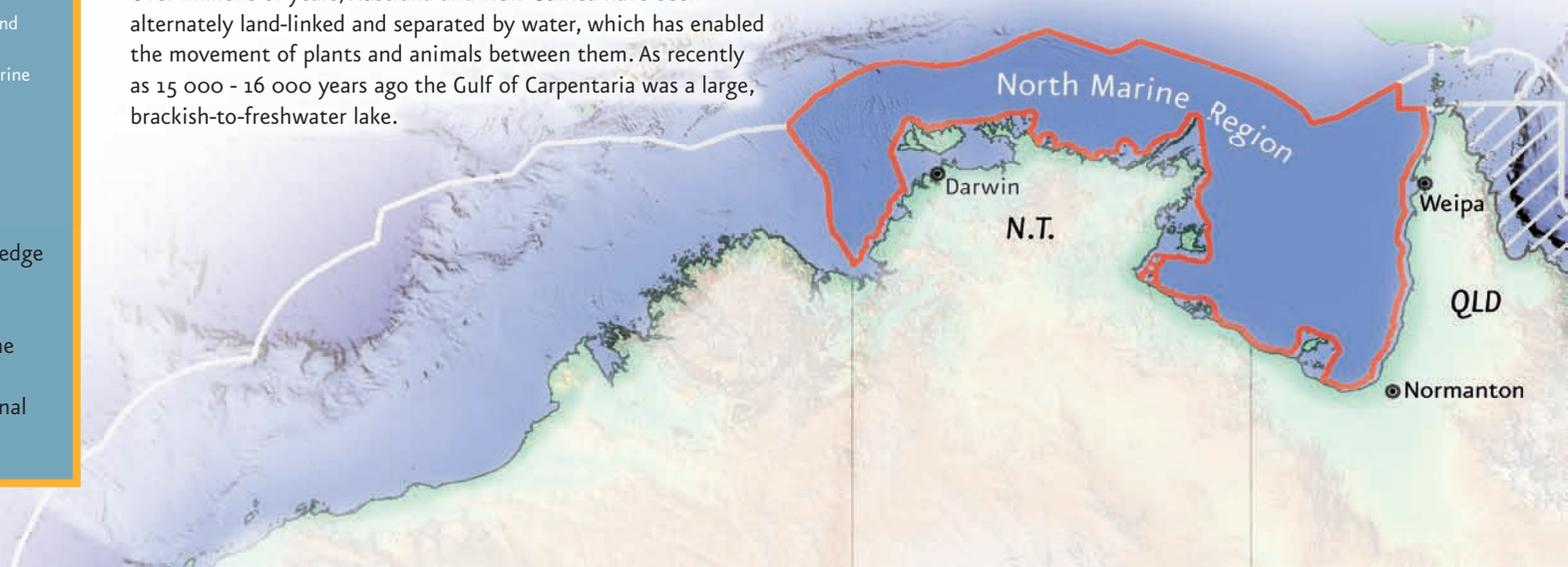
Over millions of years, Australia and New Guinea have been alternately land-linked and separated by water, which has enabled the movement of plants and animals between them. As recently as 15 000 - 16 000 years ago the Gulf of Carpentaria was a large, brackish-to-freshwater lake.

Today, the North Marine Region is generally shallow with an extensive continental shelf.

Ocean currents in the North Marine Region are heavily influenced by wind and tides, and parts of the Region are characterised by unusual tidal patterns. In some locations two high and two low tides occur daily, whilst in others a single tidal range or no tidal variation at all is the norm. Severe winds during cyclones have been known to produce storm surges that can increase tidal levels by more than five metres.

The shallow seas and tropical environment result in water temperatures among the hottest in Australia.

Life in the Region has adapted to a complex weather cycle where monsoonal rains and frequent tropical cyclones drench hinterlands for four months of the year. The monsoonal rains carry sediments and nutrients from over 30 major rivers into the marine environment, which is generally turbid and muddy as a result. The marine plants and animals of this Region have become uniquely adapted to these conditions and support highly productive fisheries within the area.



# An area of special conservation significance



The North Marine Region is a superb example of a shallow-water tropical ecosystem. It contains extensive and productive habitats both within its marine waters and in the adjacent coastal and estuarine areas. Many of the important species found within the Region are reliant on the coastal zone for parts of their life cycle, such as turtles and seabirds that use these areas for nesting.

The Region is an important biodiversity hotspot, particularly for sponges and corals, and is known to be the home of a number of endemic species (meaning species found nowhere else).



The shallow seafloor of the Region contains many types of sediment inhabited by a diversity of invertebrates. Bottom-dwelling communities of animals, plants and micro-organisms are crucial for the breakdown and cycling of nutrients within the Region and provide food and habitat for larger animals using it for feeding, breeding, travelling and resting. The beche-de-mer, or sea cucumber, in particular supports a valuable export fishery and jobs within the Region.

Across the Region there are pronounced differences in the abundance, community structure and mix of species. Within the Gulf of Carpentaria alone more than 300 species of fish have been recorded, the most commercially important of which include barramundi, Spanish mackerel and various species of snapper. The Region is an important place for stocks of a number of fish species that we share with our international neighbours.

While the waters of the Region are not typical of those associated with coral habitat, there are a number of coral reef systems within the Region – from fringing reefs adjacent to offshore islands, to

ancient reefs found in the turbid waters of the southern Gulf of Carpentaria. A number of the coral species found in the Region are endemic and may provide an important breeding stock for species of coral that are threatened on other reef systems around Australia.



The diversity of seagrass in the Region and adjoining coastal waters is highest of anywhere in the Indo-Pacific. The relatively sheltered and shallow waters provide extensive areas for seagrass to grow, in turn providing important habitat and nursery areas for many commercial species of fish and crustaceans, as well as food for dugong and green turtles.

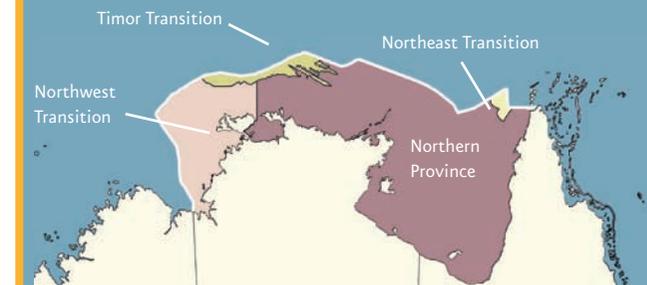
A number of seabird and wader-bird species make use of the North Marine Region, with areas adjacent to the Region providing critical staging points for 36 species that migrate from the northern hemisphere. More than two million migratory shorebirds cross the Region every year using the East Asian-Australasian Flyway.



## What are bioregions?

Each marine region has been divided into bioregions. A bioregion is an area that contains geographically distinct groupings of plants and animals. The North Marine Region contains three main bioregions and a very small portion of a fourth bioregion which runs through the Torres Strait.

These bioregions assist marine planners to describe and protect the ecological characteristics of the Region. For more information on each of these bioregions, see [www.environment.gov.au/coasts/mbp/north](http://www.environment.gov.au/coasts/mbp/north)



The North Marine Region is an internationally important refuge for many species that are threatened globally: for example, flatback, hawksbill and Olive Ridley turtles, dugong and four species of sawfish. The Region is believed to have the last viable populations of sawfish in the world.

The Region plays a significant role as a custodian of global seasnake diversity, with at least 28 of the 31 Australian seasnake species found within its waters.

While the Region has occasional sightings of large cetacean species such as the humpback whale, it plays a vital role in the survival of a number of smaller cetacean species such as Indo-pacific humpback, Irrawaddy river and spinner dolphins. Recognising the global and national conservation importance of many species in the North Marine Region, the Australian Government has listed a number of them under the EPBC Act, including the loggerhead turtle, blue-grey carpet shark, whale shark and freshwater sawfish.

# How we use the North Marine Region

Major marine industries within the Region include commercial fishing, shipping and tourism, while oil and gas exploration and development is a rapidly expanding industry in northern Australia.

Commercial fishing is a major economic activity in the Region. It includes the Australian Government-managed Northern Prawn Fishery, Southern Bluefin Tuna Fishery, and Western Tuna and Billfish Fishery, as well as major State and Territory fisheries such as Spanish mackerel, barramundi and mud crab. The total value of these fisheries was over \$120 million in 2004/05.

Ports play an integral role in the economy of northern Australia, providing the gateways for export of raw minerals and the importation of goods. They provide essential links between isolated small communities and the outside world, particularly in the wet season when access is greatly restricted and communities rely on barge services to and from the major ports. Major ports in the area around the Region used by fishing, tourism, naval and commercial trading vessels include Darwin, Karumba, Weipa and Melville Bay. Between 2004-05 and 2005-06 the value of commodities exported overseas from ports in the area increased significantly from around \$2.4 billion to \$3.5 billion.



Although there is no oil or gas exploration currently underway within the Region, there are three main offshore basins that potentially hold petroleum and gas reserves:

- the Carpentaria Basin;
- the Bamaga Basin underlying the Gulf of Carpentaria; and
- the Arafura Basin off the north coast of Arnhem Land.

There are significant mining operations on land around the Region. Bauxite is mined at Weipa (Comalco), zinc, lead and silver at McArthur River (Xstrata), bauxite, aluminium oxide and aluminium hydrate at Nhulunbuy (Alcan) and manganese at Groote Eylandt (GEMCO). The total production value of these mining operations for 1999-2000 was estimated to be over \$600 million.



Fishing is the major recreational pursuit and is a significant industry in its own right. It has been estimated that expenditure on recreational fishing within northern waters (which includes the Region and adjoining coastal waters and the eastern Queensland coast north of Townsville) is about \$40 million per year. Of the estimated 100 000 tourists who visit the southern Gulf region each year, 90 per cent list recreational fishing as the main, or one of the main, reasons for their visit. Barramundi, grunter and mud crabs are the most popular target species although reef fishing for species such as coral trout and red emperor is also popular.

## Marine Protected Areas

The Australian Government is committed to establishing and managing a comprehensive, adequate and representative system of Marine Protected Areas (MPAs). These MPAs will help to achieve the long-term ecological viability of marine systems, maintain ecological processes and systems, and to protect biological diversity at all levels. Networks of MPAs will be established in each Australian marine region, including the North Marine Region, under marine bioregional planning.

## Indigenous connections with the sea

This area of Australia differs from most other parts of the country in that Aboriginal people make up about one third of the population as a whole. Large parts of coastal land adjacent to the Region are managed by Aboriginal and Islander communities.

The Indigenous people of the coastal north have special links to the North Marine Region through occupation, resource use and cultural practice dating back over thousands of years. These links continue today. Aboriginal people understand the land and sea to be intimately connected: together they form Aboriginal people's 'country'. Aboriginal people refer to the oceans, estuarine and coastal environments, and the places of cultural significance they contain, as 'sea country'.

Indigenous cultural associations with the sea include sacred sites, physical artefacts such as fish traps (the largest fish trap complexes in Australia are around the Wellesley Islands and Southern Gulf of Carpentaria), and totemic relationships with plants, animals and environmental features like water currents and phases of the moon.



Many of the marine species of northern Australia including fish, crustaceans and molluscs, are staple food sources and have cultural significance for Aboriginal people. Most Indigenous fishing is at a subsistence level and contributes significantly to the domestic economies of isolated communities. Aboriginal and Torres Strait Islander peoples also harvest turtle and dugong for food and cultural purposes.

# Marine Bioregional Plans

It is important that all those who use and care for the ocean and rely on its ongoing health understand how Marine Bioregional Plans may affect the Australian community.

In 2005, the Australian Government brought its programme of regional marine planning (originally started in the South-east Marine Region under Australia's Oceans Policy in 2001) directly under the EPBC Act – one of the most comprehensive pieces of environmental legislation in operation anywhere in the world. Under this new approach, Marine Bioregional Plans will now be developed under section 176 of the EPBC Act.

Under the general description in Section 176 of the EPBC Act a marine plan may include:

- descriptions of the biodiversity, economic, social and heritage values of the Region;
- the objectives of the Plan relating to biodiversity and other values;
- priorities, strategies and actions to achieve the objectives;
- how the community can be involved in the Plan; and
- mechanisms for monitoring and reviewing the Plan over time.



## How will Marine Bioregional Plans be used?

The Minister for the Environment and Water Resources will have to consider the contents of Marine Bioregional Plans when making decisions under the EPBC Act that are relevant to a marine region. For example, in considering whether a fishery should be granted export approval, the Minister will take into account the way any potential impact by that fishery on the marine environment is managed.

The Marine Bioregional Plans will help marine industries by ensuring that decisions will be made more consistently and will give industry advance notice of the key conservation values and the Government's conservation priorities in each region.

**Did you know** that the Commonwealth marine environment is a "matter of national environmental significance" under the EPBC Act?

This means that anyone proposing to take an action that may have a significant impact on the marine environment should refer that action to the Minister, who will assess whether the action can take place.

## What does this mean for industry?

Marine industries will benefit from this new approach. Once a Marine Bioregional Plan is in place, marine industry proponents will have a comprehensive information system to draw on to help them understand the obligations they have under the EPBC Act for that marine region.

Industries have generally been supportive of the EPBC Act, because it focuses on achieving environmental outcomes rather than prescribing ways in which they must be achieved. This means that industry has more flexibility in how it meets obligations.

## When will the marine bioregional planning programme be completed?

Marine bioregional planning is underway and being led by the Marine and Biodiversity Division of the Department of the Environment and Water Resources. The plans will be progressively completed over the next four to six years.



## How do we engage with stakeholders?

The Government recognises the importance of all ocean users and coastal communities and will actively engage them in the planning process.

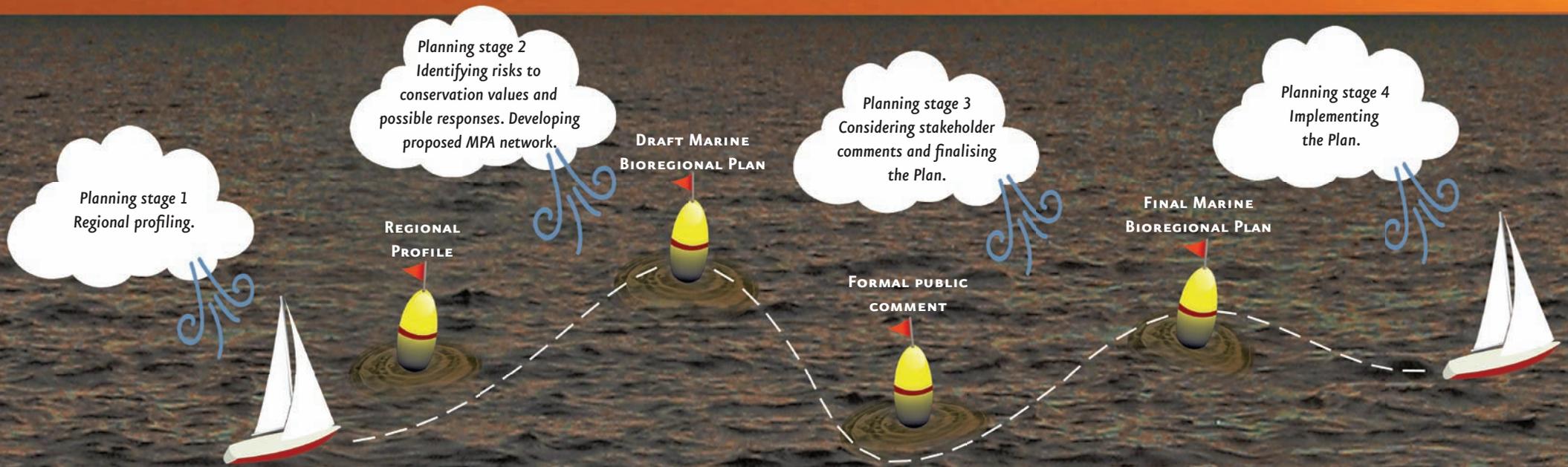
There will be consultation at key points in the planning process. There will also be formal consultation on each Draft Plan as required under the EPBC Act. There was a previous marine planning process begun in the waters of northern Australia and the substantial information base and network of stakeholders pulled together in that process will be used in developing the North Marine Bioregional Plan.

## How are the State Governments involved?

The States and the Northern Territory are responsible for the marine environment for the first three nautical miles from the shore. Many ecological processes work across both the State, Territory and Commonwealth waters. In the north, the Australian Government works cooperatively with the Queensland and the Northern Territory Governments in developing and implementing Marine Bioregional Plans.



# The way ahead - key stages in North Marine Bioregional Planning



## Stage 1 – The Regional Profile

The first step in the planning process is to gather information about the Region. The Department of the Environment and Water Resources has been working with major national and regional scientific institutions as well as with other organisations to bring together and evaluate information about the geology, oceanography and ecology of the Region.

This information will be published in the Regional Profile in a way that everyone can access and understand. The Profile will also contain economic and social information about the Region, particularly as it relates to the marine environment.

While the Profile will not contain specific proposals for policies or for MPAs, it will include details about the process for identifying MPAs. It will also identify the major habitat types or ecosystems that will be considered for representation in the MPA network. The MPA network will be developed over the next two stages of the planning process.

Development of the Profile is expected to take around 12 months. During this time the Department will contact stakeholder groups to brief them on the process and on the progress of the Profile, and to identify how best to engage with them during the rest of the planning process.

## Stage 2 – The Draft Plan

Stakeholders will have an opportunity to provide input to this next stage of the planning process, which focuses on identifying conservation priorities for the Region, threats to those priorities and the options to address them. The social and economic impacts of proposed conservation measures, including possible MPAs will be evaluated, in consultation with stakeholders.

Stakeholder engagement will build during this stage. It will take another 12 months to develop a Draft Marine Bioregional Plan. The Draft Marine Bioregional Plan will be published before a period of formal public comment, which is required under the EPBC Act.

## Stage 3 – The Final Plan

Once the public consultation period on the Draft Plan has finished, the Government will consider what has been said before concluding the final Plan. At this stage the final shape (location, size and zoning) of new MPAs is decided and any action necessary to give effect to the Plan is started. Any impacts on people (for example, on fishing enterprises displaced by MPAs) will be considered and resolved before the Marine Bioregional Plan is formally adopted.

## Stage 4 – Implementation and Review

Once the Marine Bioregional Plan is finalised, it will guide all future conservation priorities and activities in the Region. During that time the Minister will be guided by the Plan for all decisions affecting the Region that the Minister must make under the EPBC Act. An implementation strategy for the Plan will be developed and the formal legal processes to declare the MPA network will commence. The Plan will be regularly reviewed in light of new information and needs.

### Stakeholder and community consultation

The planning process provides a number of opportunities for stakeholders to have input and to raise issues. The Government regards this as an important part of the process and will be actively seeking the engagement of all interested groups.

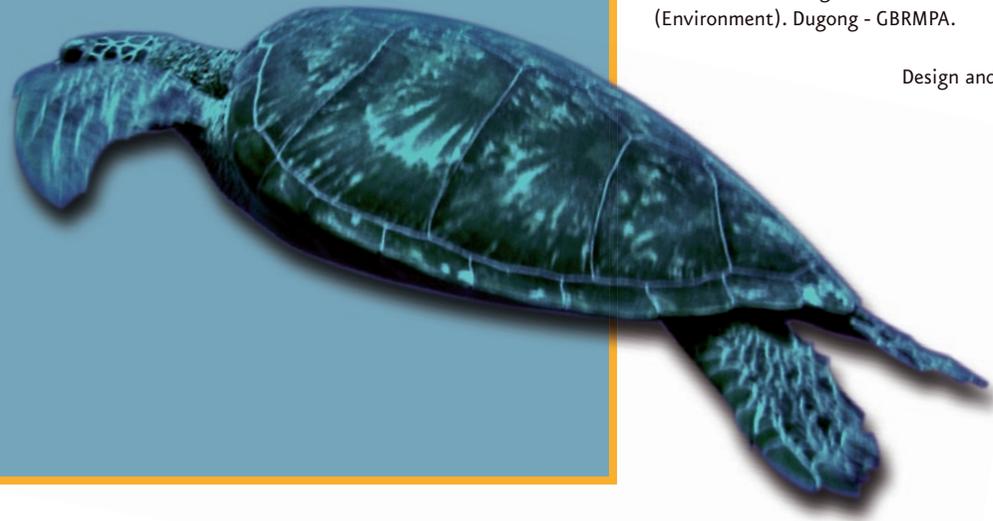
### Find out more

For more information about marine bioregional planning visit the Department of the Environment and Water Resources website [www.environment.gov.au/mbp](http://www.environment.gov.au/mbp)

For more information on the EPBC Act, visit [www.environment.gov.au/epbc](http://www.environment.gov.au/epbc)

For more information about MPA development and management, see [www.environment.gov.au/coasts/mpa](http://www.environment.gov.au/coasts/mpa)

If you have questions about marine bioregional planning in any of Australia's marine regions, email [oceans@environment.gov.au](mailto:oceans@environment.gov.au)



### Image information

Cover: Background image - Alicja Mosbauer and the Department of the Environment and Water Resources (Environment). Shells - Kerry Trapnell. Masked booby - Arthur Mostead (Environment). Crab - Ilse Kiessling (Environment).

Page 1: Maps of Australia's Marine Regions - Commonwealth of Australia.

Page 2: *Bohadschia argus* sea cucumber (beche de mer) - Tim Skewes, CSIRO. Dugong - Great Barrier Reef Marine Park Authority (GBRMPA). Masked booby - Arthur Mostead (Environment). Horned starfish - Ilse Kiessling (Environment). Map of Marine Bioregions in the North - Commonwealth of Australia.

Page 3: Perkins barge - Ilse Kiessling (Environment). Sportfishing charter boat - Ilse Kiessling (Environment). Yirralka sea rangers cleaning up ghost nets - Jane Dermer.

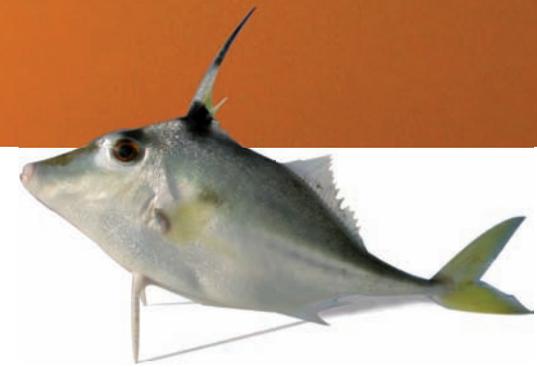
Page 4: Shells - Kerry Trapnell. Juvenile barramundi - Chloe Lucas. Fish collage - Ilse Kiessling (Environment).

Page 6: Green sea turtle - Robert Thorne (Environment). Tripodfish - Ilse Kiessling (Environment). Fisherman with trevally - Steve Jackson (Environment).

Back cover: Background image - Alicja Mosbauer (Environment). Fish detail - Ilse Kiessling (Environment). Fishing rods and lure - Ilse Kiessling (Environment). Dugong - GBRMPA.

Design and layout by Imagiноcean Productions  
[www.imaginoceanproductions.com.au](http://www.imaginoceanproductions.com.au)

 Printed on recycled paper.



© Commonwealth of Australia 2007

Information contained in this publication may be copied or reproduced for study, research, information or educational purposes, subject to inclusion of an acknowledgment of the source.

For more copies of this brochure please contact:

COMMUNITY INFORMATION UNIT  
Australian Government  
Department of the Environment and Water Resources  
Email: [ciu@environment.gov.au](mailto:ciu@environment.gov.au)  
Freecall: 1800 803 772





**Australian Government**

**Department of the Environment and Water Resources**