



# Remarkable Rowley Shoals

Because of their isolation, the large and spectacular reefs that make up the Rowley Shoals Marine Park provide one of the best chances to preserve a pristine coral reef system anywhere in the world. The reefs also offer some of Australia's best and most spectacular diving. A new management plan and proposals to extend the marine park aim to secure the future of these amazing 'aquariums' in the middle of the ocean.



by Carolyn Thomson-Dans, Andrew Hill, Keiran McNamara and Allen Grosse



Lying some 260 kilometres west of Broome or about a day's boat ride from the Kimberley coast, the three reefs that make up the Rowley Shoals rise almost vertically from depths of 230 to 500 metres above the sea floor.

Clerke and Imperieuse reefs form the Rowley Shoals Marine Park, declared in 1990 and managed by the Western Australian Department of Conservation and Land Management (CALM). The nearby Mermaid Reef Marine National Nature Reserve is managed by the Commonwealth Department of the Environment and Heritage with the assistance of CALM. The WA Department of Fisheries manages fishing activities in the State and Commonwealth waters around the Rowley Shoals, while both Coastwatch and tourism operators also assist with management.

The Rowley Shoals are considered to be the most perfect examples of shelf edge platform reefs in Australian waters, and offer some of the most spectacular underwater scenery found anywhere in Australia. When you consider that most coral reefs throughout the world are being severely degraded by human activities, the Rowley Shoals—because of their isolation—provide one of the best



chances to preserve a pristine coral reef system anywhere in the world.

Before Europeans ventured near the Rowley Shoals they were no doubt visited by Indonesian fishermen seeking beche-de-mer (sea cucumber), trochus shells, clam meat and scale fish. The Indonesian name for the Rowley Shoals is *Pulo Pulo Dhoah*, which means 'Far Off Islands'.

The shoals were named in 1818 by Captain Philip Parker King, who first described their relative positions and named Mermaid Reef after his ship. He named Clerke Reef after Captain

Clerke, who had reported it from a whaler some time between 1800 and 1809, and named Imperieuse Reef after the vessel from which it was sighted by Captain Rowley in 1800.

### Grand isolation

The relatively close proximity of the shoals to the so-called 'coral triangle' in Indonesia, and their isolation from large coastal populations, has contributed to their high scientific and conservation values. The marine environment of the Rowley Shoals Marine Park is characterised by high water quality, abundant and diverse aquatic fauna and coral reefs that are in pristine condition. This, coupled with exceptionally low visitation, especially to the two shoals that make up the marine park (during the 2002 season five commercial vessels

*Previous page*

**Main** Bedwell Island at Clerke Reef in the Rowley Shoals.

**Insets from top** Sea star; corals and other invertebrate life cling to the outer walls of Mermaid Reef.

**Left** The incredible species diversity of the Rowley Shoals makes them a diver's paradise.

*Photos – Ann Storrie*

**Above** Divers on the charter vessel *True North* about to take the plunge at the Rowley Shoals.

*Photo – Courtesy of North Star Cruises*







**Right** Gorgonian corals grow in the low light on the outer walls, or 'drop-offs'.  
 Photo – Ann Storrie

made a total of 23 trips carrying only 230 passengers), means that they are virtually pristine marine wilderness areas. In fact, Imperieuse Reef had even less visitation because of limited access to the lagoon for overnight anchoring. The shoals host an impressive array of marine tropical wildlife, unsurpassed in WA in terms of diversity or spectacle. The wildlife of the Rowley Shoals has similarities to that found in Indonesian waters, and a large number of the species recorded here are not found anywhere else in the State's waters. For instance, of the 688 species of fish recorded by scientists at the shoals, 220 species are not recorded elsewhere off WA. The Rowley Shoals are famed for the huge potato cods (*Epinephelus tukula*), which have been fished out from most other parts of the world. Taking their name from the potato-shaped markings on their bodies, these fish can weigh up to 100 kilograms and reach more than two metres long. They are often



curious and may even approach divers for a closer look. They are protected in WA waters and may not be taken.

Because they lie at the edge of one of the widest continental shelves in the world, the oceanic waters surrounding these atolls are crystal clear and ideal for luxuriant coral growth.

The Rowley Shoals are remarkably similar in shape and physical features, but appear to be in slightly different stages of development. All three atolls

are north-south orientated and slightly teardrop-shaped, with their narrower ends towards the north. Clerke and Imperieuse reefs both have small sandy islands at high tide in similar positions (Mermaid Reef has a sandy cay in a similar position that is only exposed during low water spring tides). The enclosing reef of all three shoals is broken (by one or more narrow passages) in the same place, about two-thirds of the way up the eastern side.





### Left on the shelf

The Rowley Shoals are amazing structures—the remarkable story behind their origin extends back many millions of years. They lie at the very edge of Australia's continental shelf. Around 15 million years ago, the shelf formed the shore of the mainland, which was fringed by a reef. It is believed that the three shoals were once reefs surrounding former headlands. As a result of changes in sea level and other momentous geological processes (probably related to the northward drift of Australia towards Asia), these subsided into the sea, slowly enough for the fringing coral reefs to be maintained. As a result, the three reefs gradually built up from the sea floor like high turrets, each enclosing a shallow lagoon.

The growth of similar reefs along the shelf was not sufficient to keep pace with subsidence, and there is a 'graveyard' of drowned reefs along the shelf, including one south of Imperieuse Reef. Further north, similar processes have formed the Scott and Seringpatam reefs.

It is astonishing to think that—although they cradle shallow shoals crammed with gardens of corals and tropical fish—their western sides plummet to unimaginable depths.

The shoals have an unusually high tidal range for oceanic islands. When the tide is low, their reef flats stand like dam walls enclosing huge lakes, several metres above the surrounding sea. Water gushes from the narrow channels



**Top left** Under a new park plan, about 95 per cent of the existing Rowley Shoals Marine Park will become a sanctuary area.

*Photo – Peter and Margy Nicholas/Lochman Transparencies*

**Centre left** Three-spot damselfish (*Dascyllus trimaculatus*) guard their host anemone.

*Photo – Eva Boogaard/Lochman Transparencies*

**Left** Biodiversity in a lagoon at the Rowley Shoals.

*Photo – Clay Bryce/Lochman Transparencies*





in the atolls in powerful torrents, like fast-flowing rivers. At high tide, the reefs disappear beneath the sea, with only the sandy islands of Clerke and Imperieuse visible.

### Park plan

The pristine and unspoilt condition of the Rowley Shoals is one of the main reasons that divers and other visitors continue to be attracted to them. However, because of the unique nature of the shoals, they are similar to 'aquariums' in the middle of the ocean. If they were overfished, replenishment of wild fish stocks could take many years. To ensure that these fragile areas are carefully managed, a draft management plan for the marine park was released in January 2004.

The plans aim to ensure that:

"In the year 2024, the marine plants and animals, habitats and water quality of the Rowley Shoals Marine Park will be in the same or better condition than in the year 2004. The area will support ecologically sustainable recreation and nature-based tourism and the marine park will be considered to be an important ecological and social asset by the local, national and international community. It will be a highly valued reference area to compare the health of intensively used reefs in the Indo-West Pacific Region."



**Above** Massive, but approachable, potato cod have largely disappeared from most other parts of the world but can still be seen at the Rowley Shoals. Photo – Peter & Margy Nicholas/Lochman Transparencies

**Left** Red-tailed tropicbirds (*Phaethon rubricauda*) nesting on Bedwell Island. Photo – Ann Storrie

The Rowley Shoals Marine Park currently extends over 21,912 hectares. The draft management plan proposes that 20,802 hectares, or 95 per cent of the existing park, will be a sanctuary ('look-but-don't-take') zone, with the remainder zoned for recreation.

### Proposed extension

Importantly, the plan also incorporates an indicative management plan for proposed extensions to the existing Rowley Shoals Marine Park. The current park boundary (100 metres from the reef edge) does not fully encompass the area of human use of the shoals. To ensure that all of the marine park's ecological and social

values are managed in a consistent manner, it is proposed that the park boundary be extended to the three-nautical-mile limit of State waters, to include the areas around the lagoons that are popular for game fishing. This would increase the area of the park to more than four times its present size, to just more than 87,500 hectares. Of the total area, 26 per cent is proposed as sanctuary zone, 17 per cent would be zoned for recreation and 57 per cent would be available for general use.

The recreation zone will provide priority areas for tourism and recreational activities, including diving and recreational fishing. It is proposed that most of the outer waters of the reefs will be zoned for general use. These areas will accommodate a range of sustainable commercial and recreational uses, including game fishing.





The proposal to extend the Rowley Shoals Marine Park is part of the State Government's program to expand the existing system of marine parks and reserves (see 'Vision Splendid', *LANDSCOPE*, Winter 2003) to achieve a world-class multiple-use marine conservation reserve system. The Jurien Bay Marine Park, the State's seventh marine park (there is also one marine nature reserve in Shark Bay), was declared in August 2003, but the 1994 Report of the Marine Parks and Reserves Working Group identified about 70 areas as candidate marine conservation reserves.

Several new marine conservation reserves are in the pipeline, at Montebello-Barrow islands, Dampier Archipelago-Cape Preston, the Geographe Bay-Cape Naturaliste-Cape Leeuwin-Hardy Inlet area and the Walpole-Nornalup inlets. Extensions to the Ningaloo, Shark Bay and Shoalwater Islands marine parks are also planned.



**Above** An anemonefish (*Amphiprion* sp.) in its home.

**Top left** Ribbon sweetlips (*Plectorhinchus polytaenia*) beneath a plate coral.  
Photos - Ann Storrie

**Centre left** The shallow lagoons enclosed by the Rowley Shoals provide perfect conditions for gardens of corals.  
Photo - Alex Steffe/Lochman  
Transparencies

**Left** The shells of living egg cowries are almost hidden by their equally striking black mantle.  
Photo - Ann Storrie



**Right** Diving the 'drop-offs' on the outer edge of Mermaid Reef is an unforgettable experience.  
Photo – Ann Starrie

### Visiting the shoals

Why do people visit the Rowley Shoals Marine Park? According to Chris Tucker of Kimberley Escape, who is one of seven tourism operators currently licensed by CALM to conduct trips to the Rowley Shoals Marine Park:

"The main reason that people visit the shoals is the diving 'exclusivity'. It is pristine diving, there is amazing fish life and you don't see anybody else out there. There are lots and lots of small tropical fish and the coral gardens are some of the best you'll see. We take out some very experienced divers to the shoals, many of them from overseas, and they rate it as having some of the best diving in the world. A group of Germans did one trip. They came back to Broome for four days, then they booked their next visit to the shoals and went straight back out. We get a lot of return visits."

Craig Howson, another licensed operator who skippers the vessel *True North*, made similar comments:

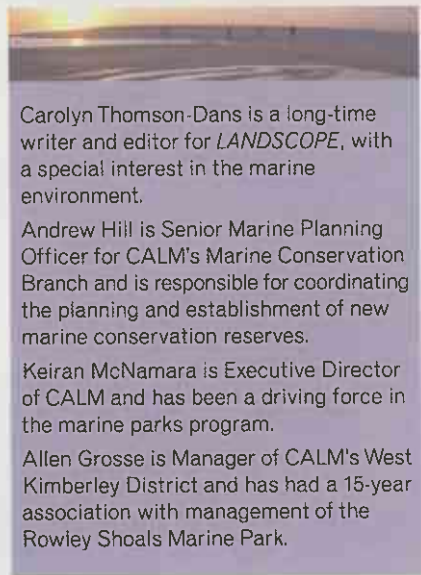
"People come to the Rowley Shoals because it is a pristine coral environment with wilderness qualities. There is great megafauna, with lots of different types of sharks and other large fish, and corals. There is really good diving off the outer walls and great snorkelling as well. Visitors also enjoy spending time on Bedwell Island at Clerke Reef."

The big challenge at the Rowley Shoals is to preserve the main attractions that people come to see at this unique and incredibly fragile area, without those very attractions being spoilt by human visitation. Because of the remoteness of the Rowley Shoals, managers cannot always be present to make sure that visitors are doing the



right thing. Conditions are attached to the licences of tourism operators, to ensure that the activities of the operators do not impact on the values of the marine park. However, having obtained a licence, it is very much in the interests of these operators to look after the area, to preserve their own livelihoods.

It is just as important to provide high-quality information to visitors to increase awareness and understanding of conservation and management issues in the Rowley Shoals Marine Park. Every single person who visits the park can do their bit to ensure the park is just as pristine in 2024—and beyond!



Carolyn Thomson-Dans is a long-time writer and editor for *LANDSCOPE*, with a special interest in the marine environment.

Andrew Hill is Senior Marine Planning Officer for CALM's Marine Conservation Branch and is responsible for coordinating the planning and establishment of new marine conservation reserves.

Keiran McNamara is Executive Director of CALM and has been a driving force in the marine parks program.

Allen Grosse is Manager of CALM's West Kimberley District and has had a 15-year association with management of the Rowley Shoals Marine Park.



- 56 Keeping our forests in check  
Scientists look for changes and trends in our forests.

## Regulars

- 3 Contributors and Editor's letter
- 9 Bookmarks  
Introduced mammals of the world.  
The world's first shell collection guide from 1821.  
Fire in ecosystems of south-west Western Australia: impacts and management.
- 18 Feature park  
Kalbarri National Park
- 55 Endangered  
The hairy (Margaret River) marron.
- 62 Urban antics  
Who dunnit?

### Publishing credits

**Executive editor** Ron Kawalilak.

**Editor** David Gough.

**Assistant editor** Carolyn Thomson-Dans.

**Contributing editors** Rhianna Mooney,  
Verna Costello.

### Scientific/technical advice

Kevin Kenneally, Paul Jones, Chris Simpson, Keith Morris.

**Design and production** Tiffany Aberin,  
Maria Duthie, Natalie Jolajoski,  
Gooitzen van der Meer.

**Illustration** Gooitzen van der Meer.

**Cartography** Promaco Geodraft

**Marketing** Estelle de San Miguel

Phone (08) 9334 0296 Fax (08) 9334 0432.

### Subscription enquiries

Phone (08) 9334 0481 or (08) 9334 0437.

**Prepress** Colourbox Digital.

**Printing** Advance Press, Western Australia

© ISSN 0815-4465

*All material copyright. No part of the contents of the publication may be reproduced without the consent of the publishers.*

Please do not send unsolicited material, but feel free to contact the Editor.

Visit NatureBase at [www.naturebase.net](http://www.naturebase.net)

Published by the Department of Conservation and Land Management,  
17 Dick Perry Avenue, Kensington,  
Western Australia

