



Vision splendid

A comprehensive, adequate and
representative marine reserve
system for Western Australia



Now that a new marine park
has been declared to protect
the Jurien area, north of Perth,
it is timely to look at the overall
system of marine reserves in
Western Australia and what
needs to be done to ensure
it is comprehensive, adequate
and representative.

by Keiran McNamara, Carolyn Thomson-Dans and Chris Simpson

Western Australia is blessed with a long and varied coastline and an abundance of marine life, from majestic whale sharks to tiny corals. The mainland coast of Western Australia is about 13,500 kilometres long and there are 12.6 million hectares of waters under State management (compared with one million in New South Wales). The State also has a multitude of islands (there are 3,424 features above the high water mark on 1:100,000 maps).

Our marine areas are also significant in a global context. Western Australia is regarded as one of the world's biodiversity hotspots for coral reefs. A recent study placed our west coast second (behind southern Japan) in terms of its numbers of endemic species (the Gulf of Guinea, the Great Barrier Reef and the Hawaiian Islands were ranked



third, fourth and fifth respectively). Apart from the remote oceanic islands of Lord Howe Island, St Helena and the Easter Islands, Western Australia's coastal waters were also considered to be the most 'pristine' in the world.

The Western Australian coast boasts a big area of biogeographic overlap, between the tropical north (north of

North West Cape) and the temperate south (east of Cape Leeuwin), where tropical and temperate species coexist. The Indian Ocean is also the only ocean in the world that has an eastern boundary current (the Leeuwin Current) that transports warm waters from the equator to the southern coast of a continent. Hence, the Abrolhos Islands, off our central west coast, have extensive coral reefs at a latitude well outside the tropics—an astounding but fortunate anomaly.

Why have marine parks?

It is well established that it is vital to preserve outstanding examples of landscapes—together with their representative plants and animals—in our terrestrial areas, that is, in our national parks and nature reserves. It is also well documented that these parks provide major economic spin-offs by attracting visitors. People are now becoming increasingly aware that it is just as vital to protect such areas in the ocean—in marine parks and reserves.

Maritime recreation and tourism are very important in this State. The dive tour industry and recreational fishing both play important roles in regional and local economies. There is great potential for increased marine tourism and recreation along the WA coast, but increased use of our natural resources will require increased protection and management. And, of course, many

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Main Since the declaration of Ningaloo Marine Park in 1987, passive activities such as snorkelling with whale sharks have become more popular.

Photo – Alex Steffe|Lochman Transparencies

Insets from left Scuba diver at Rottnest Island Reserve

Photo – Peter and Margy Nicholas|Lochman Transparencies

The Department of Conservation and Land Management conducts regular scientific monitoring of areas in marine reserves.

Photo – Eva Boogaard|CALM

Left Fishing is permitted in appropriate zones within marine reserves.



Above Pink anemonefish at Ningaloo Marine Park.

Photo – Ann Storr

Left Marine park rangers make regular contact with boat users and other marine park users.

Photo – CALM Marine Conservation Branch



Above Leafy seadragon in the Recherche Archipelago. The Marine Parks and Reserves Authority has identified the archipelago as being of high priority for reservation.

Photo – Justin MacDonald

Right This exquisite garden of gorgonian corals, sponges and other invertebrates at Canal Rocks is within a proposed marine conservation reserve for the Leeuwin-Naturaliste coast.

Photo – Gerhardt Saueracker/Lochman Transparencies



people would also like to see such areas preserved for their intrinsic value.

Although a variety of activities are permitted in most areas within marine parks, sanctuary areas are set aside within their boundaries in which fishing is not permitted. Such marine protected areas play a vital role in preserving marine biodiversity and an important role in the long-term sustainable use of the living resources of the coastal zone. Scientists have demonstrated that marine areas where habitats have become degraded, or where living resources have become depleted through overuse, may be much more quickly repaired and replenished if there are protected, unexploited areas nearby. For instance, research at Sumilon Island in the Philippines has shown that closing 25 per cent of the reef habitat to fishing resulted in 54 per cent higher catches for the entire island than those obtained when the entire reef area was fished. Similar research in Ningaloo Marine Park, New Zealand and

Tasmania has shown that target fish species are significantly larger and more abundant in sanctuary areas than in adjacent fished areas.

Oceans of wonders

Western Australia already has several world-class marine reserves vested in the Marine Parks and Reserves Authority (a community-based statutory body under the Conservation and Land Management Act) and managed by the Department of Conservation and Land Management (CALM). Ningaloo Marine Park, the first to be declared in 1987, is perhaps the best known. The 260-kilometre-long park encompasses almost 90 per cent of Ningaloo Reef, Australia's largest fringing coral reef. It is also the only large reef found so close to a continental landmass—about 100 metres offshore at its closest point. Massive whale sharks appear in the area for an eight-week period between March and

May each year—a phenomenon that is not known to occur with such regularity anywhere else. Ningaloo rivals the famed Great Barrier Reef in terms of the numbers of coral and fish species, but unlike the Great Barrier Reef, the delightful coral gardens of Ningaloo and their resident tropical fish are readily accessible from the shore.

Marmion Marine Park (off Perth's northern coast) and Shoalwater Islands Marine Park (off the coast of Rockingham) are fantastic examples of temperate water reefs of great productivity and beauty, both on Perth's very doorstep. Shoalwater Islands Marine Park—with its colonies of sea lions and little penguins and easily reached islands with exceptional visitor facilities—offers wonderful opportunities for people without boats to experience its marine life. And Western Australians who scuba dive or snorkel are well-acquainted with the

String of pearls

To comply with and meet the obligations in national and international agreements and conventions, a National Representative System of Marine Protected Areas is being developed by the Commonwealth and all of the Australian States and the Northern Territory. Central to this work—and similar to that underpinning the terrestrial reserve system—is the idea of a COMPREHENSIVE, ADEQUATE and REPRESENTATIVE (CAR) reserve system.

A COMPREHENSIVE marine conservation reserve system is one in which all major bioregions have marine reserves within them. In WA, 18 major bioregions have been identified (see map) and the CAR system will eventually consist of a network of marine reserves throughout the State. ADEQUATE refers to the number, size, configuration and level of protection of the reserves within a bioregion—a few very small reserves are not truly sustainable in the long term, especially in the ocean where currents and other conditions create a high degree of connectivity between different areas. The reserves also need to be REPRESENTATIVE of the ecosystems within the bioregions. This means that all species of plants and animals found in Western Australian waters will be represented somewhere in our marine reserve system.

When the system is complete, WA's marine reserve system will be like a 'string of pearls' around our coast, with our marine jewels protected in marine parks and marine nature reserves.

Interim Marine and Coastal Regionalisation for Australia (IMCRA)



underwater wonders of Marmion—such as beautiful Boyinaboat Reef, which lies just 75 metres from the sea wall of Hillarys Boat Harbour. Also in Perth, but of an entirely different nature, is the Swan Estuary Marine Park, which was declared largely to protect the habitat of internationally protected migratory bird species.

Shark Bay Marine Park—an important part of the World Heritage Area—boasts the world's largest meadows of seagrass, a population of more than 10,000 dugongs, large marine creatures such as marine turtles, humpback and killer whales, and of course the famous bottlenose dolphins of Monkey Mia. Nearby Hamelin Pool Marine Nature Reserve protects dense populations of marine stromatolites, amazing structures built by organisms too small for the human eye to see—a community found in only one other place in the world (see *LANDSCOPE* 'Shark Bay Edition', Summer 1991–92).

The three reef platforms of the Rowley Shoals Marine Park and the Mermaid Reef Marine National Nature Reserve are famed for their almost untouched coral gardens, giant clams and other shellfish, and large and plentiful reef fish. About 260 kilometres west of Broome, the shoals rise almost vertically from depths of 230 to 500 metres. They 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.

The marine life and breathtaking underwater scenery of the Rottnest Island Reserve, which is managed by the Rottnest Island Authority, is protected by special legislation.

Left Hamelin Pool Marine Nature Reserve contains one of only two communities of marine stromatolites in the world.
Photo—Marta Lochman



Protection is also afforded by a number of Fish Habitat Protection Areas managed by the WA Department of Fisheries. Of particular conservation significance are the Abrolhos Islands, the southernmost coral reef ecosystem in the Indian Ocean and an important area for the lucrative western rock lobster fishery. Several other smaller Fish Habitat Protection Areas are scattered throughout the State.

Jurien jewel

Most recently, the State Government formally declared the Jurien Bay Marine Park. The park protects a section of coastal waters between Green Head and Wedge Island that encompasses a number of islands including Fishermen in the north, Boullanger and Whitlock in the Jurien Bay area and the Cervantes and Wedge islands further south.

As well as surrounding major sea lion and seabird breeding areas, the park contains beautiful temperate reefs populated with a unique mix of temperate and tropical plants and animals, as well as extensive seagrass meadows, which are vital nursery habitat for the local rock lobster industry.

The declaration of the Jurien Bay Marine Park in August 2003 was the culmination of an exhaustive process of consultation with local and wider community members and industries. This process has taken a number of years, but resulted in a high degree of support for the proposed park boundaries, sanctuary zones and management planning, despite early misgivings from some in the fishing industry.

Above left Chairman of the WA Fishing Industry Council Ian Finlay participated in the community consultation phase of establishing the Jurien Bay Marine Park.
Photo – Clifford Young

Above The new Jurien Bay Marine Park protects an area offshore from Green Head to Wedge Island.
Photo – Dennis Sarson/Lochman Transparencies

Right A Spanish dancer at Jurien Bay Marine Park.
Photo – Ann Storrie



Ian Finlay, a Jurien resident, former Deputy Chairman of the Marine Parks and Reserves Authority and the current Chairman of the Western Australian Fishing Industry Council, which represents commercial fishing interests in WA, experienced this process first-hand:

“Jurien Bay was the first marine park proposal to be considered after the establishment of the Marine Parks and Reserves Authority in 1997. An on-ground local advisory committee was formed that took into account the views of all stakeholders. The committee met for two-and-a-half years, and members of the commercial fishing industry tackled the proposal with the strong view that the park was going to be multiple use and that we had to get in and be a part of it, though some people in the initial stages didn’t want it. There were grizzles and groans in certain sectors that were most affected by scientific reference areas, but in the end it was almost unanimously accepted that the advisory committee recommendations were fair and equitable to all parties.”

Gary Snook, long-time Jurien resident and President of the Shire of Dandaragan, is also enthusiastic about the new marine park:

“First and foremost are the conservation benefits of preserving our unique marine environment. Over the 40 years that I have lived in Jurien, I have personally seen the impact that human settlement has had on the marine environment, and I believe it is vital to get planning in place early, before development really takes off, to ensure we use the marine environment in a sustainable way.

Furthermore, the declaration of the Jurien Bay Marine Park will provide international and national recognition to the Jurien area. It directly couples with the terrestrial environment and the adjacent Nambung National Park with its world-famous Pinnacles, and will enhance the attractiveness of the Jurien region to visitors. We already have some commercial tourist charters just starting up, and the marine park will give the region an even greater profile.”

Integrated management

A number of marine parks along our coast are adjacent to national parks or other conservation reserves on the mainland or islands and, therefore, can be managed as a single integrated unit. Ningaloo Marine Park and the adjacent Cape Range National Park are a very good example of how terrestrial and marine parks can be managed by the Department of Conservation and Land Management in an integrated, complementary, and cost-effective manner. The parks are able to share infrastructure and visitor facilities, and facilities in Cape Range National Park are located to complement marine park attractions. The Milyering Visitor Centre, within Cape Range National Park, provides interpretation facilities for the two parks from 'range to reef'. In other words, the marine park benefits from the fact that a superb facility could be built on national park land right next to it.

In fact—as an integrated unit—the Ningaloo-Cape Range region is the State's next priority for consideration for World Heritage listing. The State Government recently announced that a strip of the coast along the Ningaloo Marine Park (south of the Cape Range National Park) had been identified for exclusion from pastoral stations from 2015, when pastoral leases expire. These exclusions will play an important role in the integrated management of the Ningaloo Marine Park and the coastal strip.

Another example is Penguin Island and the surrounding waters of the Shoalwater Islands Marine Park, which are managed as a single unit. The little penguins and other seabirds do not make a distinction between park boundaries—Penguin Island provides them with nesting habitat, but they are equally at home in the waters of the marine park, in which they feed—nor do park managers. The penguin viewing facility is used to educate the many visitors that it draws to the island about the values of the Shoalwater Islands Marine Park and its wildlife, and also encourages them to leave the wild penguins in peace. The facility makes a small profit, which is used to help manage the adjacent marine park. Rangers and other staff manage both areas simultaneously and cost-effectively.

The same approach is used at Shark Bay Marine Park, which shares boundaries with Monkey Mia Reserve, Francois Peron National Park, Shell Beach Conservation Park and numerous island nature reserves. The integrated management approach will confer even more benefits in the future, as marine reserves are declared at Leeuwin-Naturaliste and along the State's southern coast, where about 70 per cent of the coast is protected in national parks and nature reserves.



In other words, Jurien can look forward to maintaining a strong and secure fishing industry, while it reaps additional benefits from the increased tourism that the marine park will attract to the area. Through their declaration and ensuing management, which includes public education and participation programs, the existence of marine reserves can influence the type of recreational activities that occur within them. For instance, early tourism to Exmouth was mostly based around fishing. However, since the declaration of Ningaloo Marine Park in 1987, the use of the area has undergone a major change to more passive activities such as snorkelling, nature appreciation and sightseeing.

Marine reserves also bring economic benefits. A study of the economic effects of tourism on Exmouth, recently carried out by Professor David Wood from Curtin University, illustrated the value of the Ningaloo Marine Park to the local economy. Ningaloo Marine Park was considered by visitors to be the most important tourist attraction in the Exmouth area. More than 83 per cent of all respondents considered the Ningaloo Marine Park to be a reason for visiting Exmouth. By far the biggest pastime for all visitors was snorkelling, with 75.6 per cent of WA visitors, 67.9 per cent of interstate visitors and 71.4 per cent of overseas visitors undertaking this activity. Other activities that were found to be extremely popular were swimming with whale sharks, coral viewing and sightseeing. The study estimated that about \$80 million per annum was spent in the Exmouth area by visitors coming to see the wonders of the Ningaloo Marine Park, with these visitors contributing a further \$40 million per annum to the wider State economy.



Above left The Department of Conservation and Land Management ensures visitor facilities in Cape Range National Park are away from turtle nesting areas.

Left The Milyering Visitor Centre, within Cape Range National Park, also services the adjacent Ningaloo Marine Park.
Photos – Jiri Lochman

Right Because of their isolation, the Rowley Shoals provide one of the best chances to preserve a pristine coral reef system anywhere in the world.

Photo – Ann Storr

Below right The Montebello Islands are among the Pilbara's marine treasures that will next be considered for reservation.

Photo – Kevin Kenneally



What about the rest?

Despite these achievements, divers, scientists and others are well aware that our existing marine reserves only protect a relatively small portion of the marine wonders of Western Australia.

To look at the full picture, we need to go back to before any of the State's current marine reserves were declared. Recognising the need for a Statewide marine parks and reserves system, the State Government established a Working Group in 1986 made up of marine scientists and planning officers from a range of Government agencies and academic and research bodies. The brief of the Working Group was to review the coast as a whole, and to identify areas that had important conservation, scientific, and public recreation values, making them worthy candidate areas for future consideration for marine reservation. As a result, in June 1994, the State Government released a report entitled *A Representative Marine Reserve System for Western Australia*.

In assessing particular areas, this report considered a number of factors. For instance, there are two fundamental provinces for marine plants and animals in WA (tropical and temperate). Then there are broadscale physical structures, such as continental shelf systems, shore systems (beaches, rocky shores, tidal flats, sounds, embayments and deltas) and estuarine systems. Western Australia has 18 primary marine bioregions (the nearshore Pilbara coastal waters, for example, are considered to be one of these bioregions). And, within each of these, there are up to nine major ecosystems (saltmarshes, rocky shores, seaweed-kelp beds, seagrass meadows, coral reefs, southern estuaries, mangroves, tidal flats and the open ocean).

Using this approach, the report identified more than 70 areas around



the State for consideration as possible marine reserves. Now that the Jurien Bay Marine Park has been declared, the Government's next priority areas are the Montebello-Barrow islands; the Dampier Archipelago-Cape Preston region; the Geographe Bay/Leeuwin-Naturaliste/Hardy Inlet area (see 'Capes Coast', *LANDSCOPE*, Summer 2002); and the Walpole-Nornalup estuaries; as well as proposed extensions to the Ningaloo and Rowley Shoals marine parks. Biological assessments of the Recherche Archipelago, a 200-kilometre-long smattering of more than 300 islands off the coast of Esperance, are currently underway in advance of proposed marine reserve planning processes. Extensions to the Shark Bay and Shoalwater Islands marine parks are also proposed.

Western Australia is blessed with a remarkable and unique marine environment. We have a special responsibility to protect and conserve this wonderful marine heritage. A comprehensive, adequate and representative marine reserve system will form a 'string of pearls' gracing our coast (see page 14). The value of such a

marine reserve system will appreciate in years to come, as areas in other parts of the world are affected by ever-increasing population pressures and industrial development. Managed properly, our marine reserves will allow future generations of Western Australians to reap the aesthetic, recreational and economic benefits such a system can confer.

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