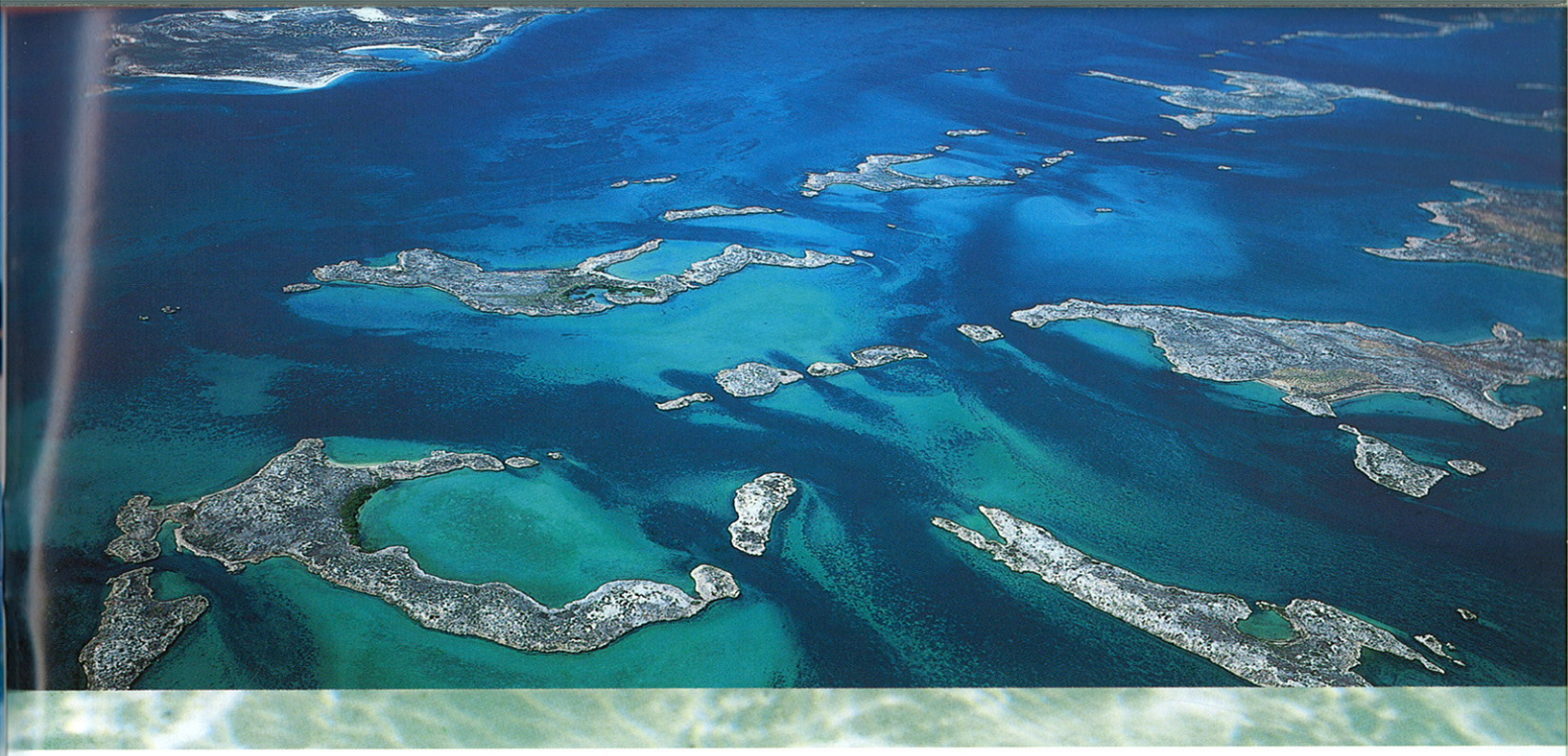
How does the Pilbara's vast resource sector coexist with conservation and recreation in this biologically important region?

Delivering **marine and coastal** outcomes for the community

by Ian Walker



Opposite page
Green turtles in the shallows at the Montebello Islands.
Photo – Peter and Margy Nicholas/ Lochman Transparencies

Above Aerial view of the Montebello Islands.
Photo – Col Roberts/Lochman Transparencies

The Pilbara is often regarded as the engine room of the nation, with 20 per cent of Australia's gross domestic product derived from the region. Iron-ore, liquid natural gas, petroleum, gold and other minerals are all products of the Pilbara. Nowhere else in Australia do the terms 'multiple use' come face to face with conservation as they do in the Pilbara. The region contains Australia's largest ports, longest private railway, largest gold mine and largest iron-ore production areas. The vast resource sector coexists with cultural and environmental gems such as Western Australia's largest and second largest national parks, Rudall River (Karlamilyi) and Karijini; Australia's largest fringing reef at Ningaloo Marine Park; the Montebello and Barrow islands; the Dampier Archipelago; and Millstream-Chichester National Park, to name a few.

Connection to country

The Indigenous people have a strong connection to this country and describe their origins in the Pilbara as 'when the earth was soft'. In many areas, native title rights have been granted. Others are jointly managed with the traditional owners and the Department of Conservation and Land Management (CALM). All of the region's major parks are jointly managed through park councils (see 'Learning together' on pages 39–43). This passion and connection to country is highlighted in the DVD *An ancient land, a living culture: a vision for Millstream-Chichester National Park*. You can view this DVD on CALM's NatureBase website (www.naturebase.net), Juluwarlu TV or by contacting CALM's Karratha office.

This coexistence of people and industry collides in our marine and coastal areas, where mining, industries and conservation have to exist symbiotically. Then throw into the mix commercial and recreational fishing, commercial tour operators such as whale shark operators, pastoralists and increasing numbers of tourists. Working collaboratively with many people and industries to conserve and sustainably manage these unique areas is a challenge for the whole community.

Marine and coastal protected areas

Protected areas in the region have increased over the last decade, consistent with national and international trends. For example, the Convention of Biological Diversity set a target of conserving 10 per cent of the world's oceans in fully protected ('no take') areas by 2012. WA is progressing towards these targets, with 2.5 per cent of State waters fully protected in 'no take' zones (with 12.2 per cent of State waters now in marine conservation reserves). Considerable efforts are still required to reach these targets to ensure the world's marine areas are conserved.

Our marine and coastal areas are home to whales, whale sharks, manta rays, turtles and sharks, along with thousands of other plants and animals including corals. The marine protected areas off the Pilbara coast contain the majority of the State's coral reef habitats. The waters around the Dampier Archipelago have the richest marine biological diversity known in WA, and greater than the Great Barrier Reef (see 'Dampier Archipelago down under', *LANDSCOPE*, Summer 2003–04)!

Proposed Dampier Archipelago Marine Park

The proposed Dampier Archipelago Marine Park (about 122,170 hectares) and Cape Preston Marine Management Area (92,750 hectares) lie in the Pilbara nearshore marine bioregion. The 12 major and 30 minor islands in the Dampier Archipelago represent peaks of a drowned landmass. The waters of the proposed reserves are relatively pristine, although there are areas of localised species and habitat depletion.

Marine habitats here are extremely varied, and include algae-covered limestone reefs, coral reefs, beaches and rocky shores. The marine plants and animals are predominantly tropical, with a number of regionally endemic species. Intertidal soft sediment habitats generally support a species-rich invertebrate fauna—an important food source for migratory birds. Coral and fish species are also diverse. Mangrove areas support

Above Dolphin Island in the Dampier Archipelago.
Photo – David Bettini

many invertebrate species, and provide nursery areas or shelter for vertebrates. Four marine turtle species nest on the beaches, and the area is a significant rookery site for many species of seabirds.

Dampier has the second largest tonnage port in Australia, with most cargo being salt, iron-ore, liquefied natural gas and condensate. Processing and other industries are likely to significantly increase. The productive and sheltered waters provide a range of recreational fishing and diving opportunities.

Islands of the Pilbara coast

More than 300 islands, ranging from small sand cays to the 23,000-hectare Barrow Island, lie between Exmouth Gulf and Port Hedland. Most are conservation reserves. The islands are mostly limestone, with low coastal cliffs, white sandy beaches and occasional pale orange-brown alluvial sandplains. However, those of the Dampier Archipelago are composed of basalts, granophyres and granites.

Vegetation is similar to that on the mainland coast. Islands of the Dampier Archipelago are the most floristically diverse, with sandplain and drainage line associations being particularly varied. Mangroves are more prevalent on islands closer to the coast.

Many of the islands are home to endemic species or subspecies of mammals, reptiles and birds. Most larger islands support mammal populations (mostly rodents), with Barrow Island having 14 terrestrial mammal species and no feral animals. Feral rats, cats, foxes and mice have now been eradicated from many Pilbara islands, however, the house mouse remains on Thevenard Island, and the Montebello Islands are now depopulated in native mammals as a result of cats and rats.

Reptiles thrive on the islands. Of particular significance are the Hermite Island worm lizard (*Aprasia rostrata rostrata*), which is threatened, and endemic reptiles on Barrow Island (*Ctenotus pantherinus acripes* and *Rhamphotyphlops longissimus*). Rosemary Island in the Dampier Archipelago supports the largest hawksbill rookery in the Indian Ocean. Barrow Island, Legendre and Delambre Islands in the Dampier Archipelago, and the Montebello Islands also have significant turtle nesting areas.

The earliest known European shipwreck in Australia, the *Tryal*, lies north-west of the Montebello Islands. Early maritime industries in the region included whaling, pearling and turtle hunting. In the 1950s, the British undertook atomic weapons testing on the Montebello Islands, exploding three atomic devices. During the testing, roads and other facilities were constructed. Structures and a considerable amount of rubbish remain from this period. There is residual, low-level radiation on Trimouille and Alpha islands around the test sites.

There are gas and oil processing facilities on Barrow, Varanus and Thevenard islands.

Ageless stories in stone

The Burrup Peninsula contains the world's largest concentration of rock engravings (see 'Making their mark: Pilbara rock art' on pages 6–10)—thought to be up to 18,000 years old, older than the Ancient Egyptian Pyramids—and the world's largest collection of standing stones and other stone arrangements. Some of the shell middens date from 4000 years ago.

The rocky scree of the Burrup (Murujuga) varies in colour from orange red to deep purple. The coastal strip comprises sandy beaches, rocky shores, saline mudflats and areas of mangrove swamp. Spinifex hummock grasslands dominate, with emergent shrubs and open low woodland. Most trees are found in gullies, gorges and creeklines or in rock pockets. The peninsula has a richer diversity of wildlife than any equivalent sized area of the Pilbara, with 32 mammal species (four introduced), 168 birds (one introduced) and 60 reptiles and frogs. The threatened Pilbara olive python (*Liasis olivaceus barroni*), Rothschild's rock-wallaby (*Petrogale rothschildi*), an undescribed species of planigale and

two undescribed reptiles, both belonging to the *Lerista muelleri* complex, are of particular interest.

The Burrup Peninsula also contains Australia's premium industrial estate for the natural gas industry and major port facilities. While most of the landscape is intact, areas with industrial developments and related infrastructure have been significantly disturbed. A historic native title settlement in 2003 saw the State return freehold title of some 60 per cent of the Burrup Peninsula to Aboriginal ownership. This area is to be jointly managed as a conservation reserve by the Indigenous owners and CALM, which will provide new opportunities for local Indigenous people and greater recognition of their unique place in the region.

Montebello/Barrow Islands

The Montebello Islands Marine Park (59,240 hectares), Barrow Island Marine Park (4530 hectares) and Barrow Island Marine Management Area (148,540 hectares) are in the Pilbara offshore marine bioregion.

Of more than 300 islands and islets in the area, there are 265 in the Montebello complex, 40 in the Lowendal group and nine in the Barrow Island region. The mainly limestone islands have convoluted coastlines with many embayments, lagoons and channels and exceptional habitat diversity. The Montebello/Barrow Islands lie in an area considered to be the headwaters of the Leeuwin Current, so the reserves may be an important source of recruitment for tropical species along the west coast.

Mangrove communities on the Montebello Islands are of international significance due to their distance from the mainland. Four species of marine turtles and at least 15 species of seabirds nest on the islands.

Some of the highest quality pearls in the world are produced within the reserves. The major commercial fishing activities in the region are fish trawling and line fishing. Recreational fishers target abundant prized table fish species.

Ningaloo Marine Park

The world renowned Ningaloo Marine Park, about 1200 kilometres north of Perth, protects the largest fringing reef in Australia. The park is globally significant, due to its close proximity to the continental shelf and deeper oceanic waters.

Most of the park's waters, plants and animals are in pristine condition. The corals of Ningaloo Reef are diverse and

Above Fishing at Hearson Cove on the Burrup Peninsula.
Photo – Jiri Lochman

Right Cowrie Cove in the Burrup Peninsula Nature Reserve.
Photo – David Bettini

abundant, with changes in species richness occurring within relatively short distances. Hundreds of fish and coral species can be observed including coral trout, pipefish, clownfish, rays and the odd reef shark. Turtles often swim amongst the coral reef habitats, which form about two thirds of the park.

Ningaloo Reef and its adjacent foreshore are popular for camping and water-based activities. The reef's proximity to the shore means visitors can easily view the lagoon and reef communities without a boat. Recreational line, spear and net fishing are popular. However, over the last decade, the community has gained greater understanding of the ecological values of the park, and the need to protect the park's marine environment. This is evident in the increasing numbers of visitors to the park who primarily enjoy nature-based tourism activities such as snorkelling and diving.

The annual aggregation of whale sharks at Ningaloo was first documented in the early 1980s. Ningaloo is now a world-renowned hotspot for whale shark interaction and a model for successful nature-based tourism. Tourism along the Ningaloo-Carnarvon coast is increasing rapidly, with visitation to Ningaloo increasing at approximately 10 per cent each year and contributing around $127 million to the State's economy. Ningaloo Marine Park has more than 160 licensed tour operators, up from 52 five years ago.

Cape Range National Park

Cape Range National Park encompasses 50,581 hectares of the Cape Range peninsula, a heavily dissected limestone range and fringing coastal plain adjacent to the northern part of Ningaloo Marine Park.

The park supports a range of flora and internationally significant wildlife, values recognised by its inclusion on the Register of the National Estate and the

Above left Perentie seeking food at Coral Bay.
Photo – Bill Belson/Lochman Transparencies

Left Snorkelling at Coral Bay in Ningaloo Marine Park.
Photo – Peter and Margy Nicholas/ Lochman Transparencies

Above Mangroves near the mouth of Yardie Creek, Cape Range National Park. *Photo – Brett Dennis/Lochman Transparencies*

current proposal to nominate the area for World Heritage listing. The park protects a diversity of landforms (such as karst, protected gorges, the anchialine system and coastal plain), and many species at the limits of their geographical range or in geographically isolated populations.

The park is particularly rich in flora for an arid limestone environment, with 630 species, subspecies and varieties recorded. The diverse wildlife can be attributed to the range of habitats (from mangrove and intertidal marine to sandy ridges, subterranean wetlands, alluvial plains, rocky ranges and caves). Internationally significant stygofauna (animals that live in groundwater) live in the caves and there are important turtle rookeries along the coast. Rich fossil deposits include Pleistocene coral reefs that represent several periods of coral reef development.

Cape Range National Park contains the earliest known (Pleistocene) occupation site based on a marine economy in Australia. Sites within the park have potential to reveal significant insights into regional changes to climate, flora and fauna, and the lifestyles of Indigenous people.

Recreation and tourism opportunities available to the growing number of visitors include outstanding scenic landscapes, remote camping and nature-based experiences such as watching wildlife like kangaroos, osprey and bustards.

Giralia

The former Giralia pastoral lease covers about 230,889 hectares at the southern end of the Exmouth Gulf, one of the largest embayments on the WA coast. The eastern and southern shores of the bay are dominated by mangroves and mudflat habitats of great significance.

The area is rich in fossils. Those discovered include Archosaurian reptiles (*Pterosaurus*) dating back to the late Cretaceous (from 70 to 66 million years ago). The area abounds with well preserved examples of marine animals, including ammonites, corals and large shark teeth.

Pastoral stay accommodation is available at the homestead for visitors wanting to make the most of the natural environment and the hospitality of the managers.

Integrated marine and coastal program

To ensure that our natural areas are conserved for future generations, CALM is undertaking a range of strategies with other government and non-government agencies and, importantly, with the community.

We need a change in approach and focus, where community needs are considered equally in decision making while protecting natural and cultural values. As a result, a five-year marine and coastal program has been established, identifying strategies across the Pilbara region to increase understanding and management of our unique and outstanding natural areas. Key themes of the program include planning, community engagement, research and monitoring, compliance, park maintenance and capital development.

A communication plan has been developed to encourage and engage the community and involve them in management and conservation of the region. Working with the community and winning their hearts and minds is fundamental to the long-term sustainability of the area.

At the recent International Marine Protected Area Congress, Director General of the IUCN (World Conservation Union) Achim Steiner made the point that 'we cannot manage biodiversity, however, we can manage the people, their understanding and effects on it'.

A real Australian experience, where the desert meets the sea, awaits you along the marine and coastal environments of the Pilbara. Together we can ensure that the amazing diversity of marine and coastal environments and opportunities will be available for our children's children.

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For further information on the region's Marine and Coastal Program contact CALM's Karratha or Exmouth Offices.