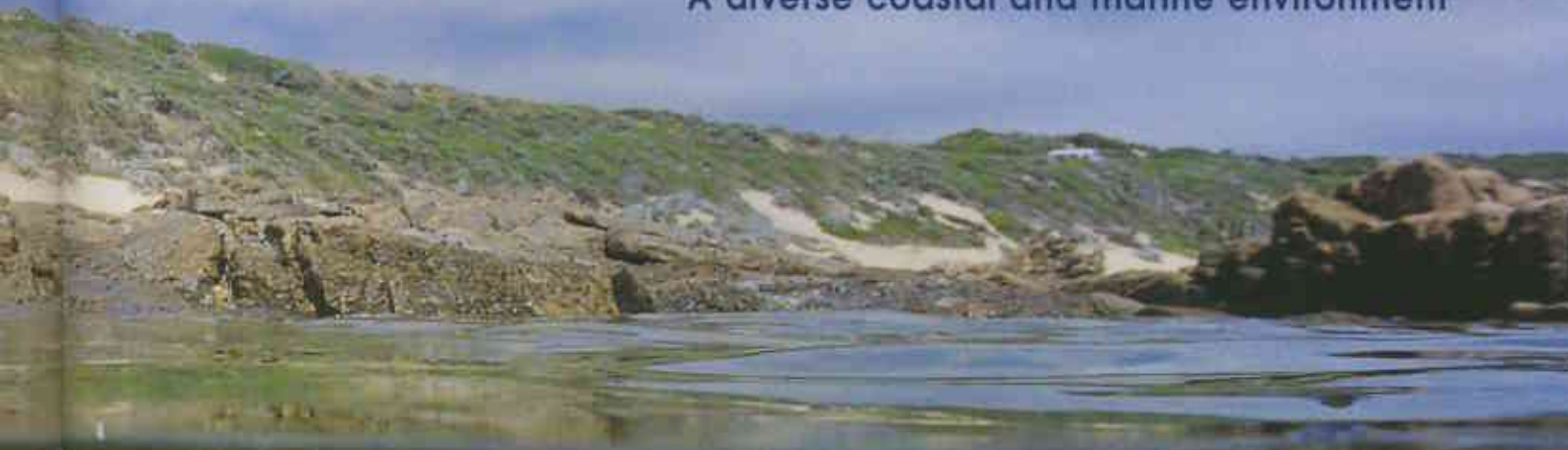


The Capes Coast

A diverse coastal and marine environment



If you take the plunge off the coast of the Leeuwin-Naturaliste capes, the underwater scenery is often one of grandeur. In this underwater wilderness, you may see kelp-covered reefs and drop-offs, populated with fish species such as the giant blue groper that are no longer commonly seen in the metropolitan area. This important area is being considered as a marine conservation reserve and the local community will be actively involved in the planning process.



by Carolyn Thomson-Dans, Kylie Ryan and Andrew Hill

The Geographe Bay, Leeuwin-Naturaliste, Hardy Inlet area was one of a number of areas identified in 1994 as worthy of consideration as a marine conservation reserve. The waters of the region have distinctive coastal types and a wide range of habitats with very high conservation values. In 1997, the area was announced as a priority for consideration through a community consultative planning process.

There are two phases in planning for the proposed marine conservation reserve. The first phase—to develop a draft management plan for the area by a community-based planning advisory committee with knowledge and interest in the proposed area—is about to begin. Members will contribute technical expertise and exchange ideas with the broader community to assist the Department of Conservation and Land Management in developing recommendations on the most appropriate reserve category, boundaries and management strategies. These recommendations will be considered by the Marine Parks and Reserves Authority (MPRA) and the State government, before being released formally for public comment. In the second phase, the public will be asked to

make written submissions on the draft management plan when it is published.

Considerable work has already been undertaken to determine the key ecological and socio-economic values of the area. The work included a biological survey, mapping of marine habitats, a community 'Issues Analysis', early consultation with key groups and consolidating ecological and social information on the area.

COASTAL ZONES

There are four distinct coastal zones within the proposed marine conservation reserve: the low-profile, low-energy shores of Geographe Bay; the high-energy western shores of the Leeuwin-Naturaliste Ridge; the exposed open ocean shores of Flinders Bay; and the estuarine Hardy Inlet.



● Leeuwin-Naturaliste National Park

Previous page

Main: Tidal pool near Margaret River.
Photo – Peter and Margy Nicholas/Lochman
Transparencies

Inset: Giant sea squirt overgrown with a yellow sponge.

Photo – Gerhardt Sauracker/Lochman
Transparencies

Below: Limestone cliffs, such as those above Contos Beach, occur in places on the exposed coastline between the Capes.
Photo – Rob Olver

The wide, north-facing Geographe Bay is protected from the south-westerly swell by Cape Naturaliste and the broad, shallow inner continental shelf. Although much of its west end is rocky, most of the bay is sandy beach.

The exposed waters between Cape Naturaliste and Cape Leeuwin have a very different character. The granitic rocks of the Leeuwin-Naturaliste Ridge have been eroded by the sea, to form sloping rock faces on exposed headlands and rounded boulder fields in more sheltered situations. Beaches of coarse sand stretch between the headlands. In several places, limestone cliffs plunge into the sea. Offshore is the Yallingup Shelf, an area of shallow basement that extends to the edge of the narrow continental shelf.





The south-facing, crescent-shaped Flinders Bay stretches for 80 kilometres, between Cape Leeuwin and Black Head. It has a wide, curving beach backed by a well-developed dune system.

Hardy Inlet is the wide, lower basin of the Blackwood estuary. It opens to the sea via a long, narrow entrance channel. Much of the inlet consists of shallow banks less than a metre deep, between channels that are two to eight metres deep. Large areas are exposed at low tide, with rush islands in the shallowest parts. Two saline lagoons, Deadwater and Swan Lake, open into the eastern side of the entrance channel, near the mouth, and contribute significantly to the estuary's productivity. Hardy Inlet is an important feeding ground and winter refuge for migratory birds.

SEAGRASSES

Seagrasses are important aquatic plants that stabilise the sediment, utilise nutrients in the water and provide food and shelter for a wide range of other organisms.

Apart from the seagrass meadows of Shark Bay, those in Geographe Bay are the most extensive in Western Australia. In waters between two and 14 metres



Top: An array of colourful invertebrates and fish at Canal Rocks.

Photo - Gerhardt Sauracker/Lochman
Transparencies

Centre right: Paddleweed (*Halophila* sp.) forms part of the seagrass meadows of the Leeuwin-Naturaliste area.

Right: A school of Woodward's pomfret.
Photos - Ann Storie



Left: The varied catshark inhabits coastal reefs and weed areas.
Photo – Ann Storr

Below: Hardy Inlet at Augusta is partially blocked by a sandbar.
Photo – Bill Beison/Lochman
Transparencies

deep, there are continuous meadows, mostly of wireweed (*Amphibolis*) and strapweed (*Posidonia*). Below 14 metres, seagrasses become sparse and patchy, but the region's clear waters support the deepest seagrass record for the State, at 45 metres. The clear waters south of Cape Naturaliste allow strapweed and wireweed species to form large beds at depths of around 30 metres. Such extensive development of deep seagrass beds exposed to direct oceanic swell is not found anywhere else in the world.

The seagrass known as sea tassel (*Ruppia maritima*) is the most prominent aquatic plant in Hardy Inlet. This species tolerates a wide range of

salinities and survives in the estuary throughout the year. Another seagrass, wrack grass (*Zostera mucronata*), is confined to the lower part of the inlet where low salinity is experienced only briefly in winter. *Halophila glabra*, which may be Australia's first known annual seagrass, is found along the channel banks from near the mouth to Molloy Island.

MARINE ANIMALS

The proposed marine conservation reserve is at the southern end of the overlap between northern tropical species and the temperate plants and animals of the south. For example, of

the 96 known species of starfish, sea cucumbers, urchins and their kin, 59 per cent are temperate species, 22 per cent have a tropical distribution and 19 per cent are found only in the south-west. Similarly, of the 14 species of coral, 10 are tropical, two are temperate and two (*Coscinaraea marshae* and *Symphyllia wilsoni*) are confined to south-western Australia. Of the 10 tropical species, five have their southern limit near Cape Naturaliste. The presence of tropical species in mainly temperate assemblages is due to the area's geographic location and variety of habitats, and because of the Leeuwin Current transporting tropical species south along the coast.

A total of 247 fish species have been recorded in the Bunbury–Geographe Bay area. The coastline between Busselton and Dunsborough provides important spawning and nursery habitat for at least 13 recreationally and commercially important fish, including Western Australian salmon (*Arripis trutta*), herring (*Arripis georgianus*) and King George whiting (*Sillaginodes punctatus*). In a study of nearshore reef



Right: The harlequin fish is common in the Leeuwin-Naturaliste area.
Photo – Ann Storrie

Below right: The siphon of a sea squirt.
Photo – Gerhardt Sauracker/Lochman
Transparencies

fish around WA during a 16-year period, ten of the most commonly sighted species along the Capes were endemic to the region, highlighting the uniquely Western Australian flavour of the fauna. Of the 150 species identified, 76 per cent were of warm temperate affinity, 19 per cent were subtropical (west coast endemics) and five per cent were tropical. The Hardy Inlet is used by both marine and estuarine fish, and is a nursery area for some species. The leafy seadragon (*Phycodurus eques*)—a protected species—lives in shallow reef and seagrass areas of southern WA, including Geographe Bay.

REEFS AND ISLANDS

Limestone reefs attract a wide range of invertebrates. Areas with caves and overhangs support brightly coloured sea squirts, sponges, bryozoans or lace animals, and soft corals. Sea stars, sea urchins, crustaceans and shellfish are also found in this habitat. Many large fish, such as jewfish (*Glaucosoma hebraicum*), western blue groper (*Achoerodus viridis*) and harlequin fish (*Othos dentex*), are associated with limestone and granite reef habitats.

The largest shoreline reef platforms are at Yallingup, Cowaramup, Gnarabup, and around Hamelin Island and the islands off Cosy Corner. They are home to a diverse range of invertebrates—such as turban shells, dogwhelks, abalone, sea urchins, anemones, sea stars, sponges, molluscs and crustaceans—and predators such as shorebirds and fish.

The larger islands, such as St Alouarn Island near Augusta and Hamelin Island at Hamelin Bay, are vegetated by coastal heath. The smaller islands tend to be bare limestone, gneiss or granite rock. The region's islands are important haul out areas for marine mammals like the New Zealand fur seal, which only reappeared near Augusta during the last 20 years, after having been decimated by sealers last century.

They are also important nesting areas for seabirds such as rock parrots





(*Neophemia petrophila*) and fairy penguins (*Eudyptula minor*). St Alouarn is the only island within the proposed marine conservation reserve where the little penguin is found, with an estimated population of between 11 and 100 birds. The seabird fauna of south-western Australia is unusual, as southern cool-water species nest alongside tropical species, forming unique communities. This is due mainly to the Leeuwin Current bringing tropical species along the west coast as it flows south. Of particular note is the breeding colony of red-tailed tropicbirds (*Phaethon rubricauda*) on Sugarloaf Rock: there may be only five to 12 breeding pairs in WA, with the nearest stable breeding colony at Christmas Island. The bridled tern (*Sterna anethetus*) is another tropical species that reaches the southernmost limits of its breeding range on the islands off Cape Leeuwin.

All of the important seabird breeding islands—including Seal Island, St Alouarn Island, Flinders Island, Hamelin Island, Square Rock, South East Rocks and Sugarloaf Rock—are nature reserves.

MARINE MAMMALS

In winter and spring, watching humpback and southern right whales is now very popular, particularly from Cape Leeuwin, Cape Naturaliste, Gracetown, Cowaramup and the Sugarloaf car park. Whale-watching charters have operated from both Flinders Bay and Geographe Bay since 1993. The peak southern migration of humpback whales off the Cape Naturaliste–Bunbury region occurs during mid-October, and the peak northern migration occurs at the end of June. Humpbacks have been frequently

Top left: Shy albatross are occasionally blown ashore during storms.
Photo – Brett Dennis/Lochman Transparencies

Centre left: The proposed marine conservation reserve supports numerous seabird species, such as this osprey.
Photo – Rob Olver

Left: Colourful sponges and other invertebrates crowd on almost every available space on this limestone wall at Hamelin Bay.
Photo – Eva Boogaard/Lochman Transparencies



observed with exceptionally small and pale calves in the Geographe Bay area, and occasionally in Flinders Bay, suggesting that these areas may also be calving and nursing regions.

Blue whales—the largest living animals on Earth—frequent Geographe Bay, particularly during November. As increased sightings occur within Geographe Bay, which is believed to be an important feeding area, it will be important to identify the factors accounting for the blue whale's presence and perhaps identify the area as a special management zone. A study involving tagging blue whales will be carried out in the near future.

Australian sea lions visit the proposed marine conservation reserve—which lies between two distinct west and south coast populations—to fish, but do not breed or haul out there. Although they were once common on the islands around Augusta, they were wiped out by sealers. As females only return to breed to the island on which they were born, it is unlikely they will ever return. However, numbers of New Zealand fur seals—which haul out on Flinders, St Alouarn and Seal islands—are increasing, and breeding has been recorded on St Alouarn.

On July 30, 1986, one of the world's most successful whale rescues was undertaken at Flinders Bay. Wildlife officers and volunteers laboured for two days and nights in the freezing surf off Augusta's town beach to successfully save 96 whales (see 'Saving the Whales', *LANDSCOPE*, Summer 1986–87).



CULTURAL VALUES

The Capes area is a significant site for Aboriginal people. The Nyoongar people of the south-west lived in the area. The coastal people were called the Waddarn-di Bibbulmun, or sea people, and evidence of their occupation of the area dates back to 37,000 years ago. The area has many culturally significant sites including important burial sites. Eyewitness accounts from the early 19th century indicate that estuarine or inshore marine fishing, mainly of schooling species, was a key activity in traditional south-western Aboriginal communities. Middens containing edible species of shellfish have been found at Cowaramup Point, Ellen Brook, Gnarabup Swamp, Willanup Spring and Jingiee Lake.

Mariners aboard the Dutch ship *Leeuwin* made the first recorded sighting

Top: Geographe Bay is an important feeding area for blue whales, a largely deep sea species that is rarely seen. Photo – Doug Coughran/Lochman Transparencies

Above: The Indicators, a dive site near Canal Rocks. Photo – Ann Storrie

of the south-west in 1622. The French and the English followed the Dutch in the 1790s and the early 1800s. French names dominate the coast between the Capes—de Freycinet, Hamelin, Mentelle, Clairault, Naturaliste—although it was an Englishman, Matthew Flinders, who accurately charted much of the coastline. Eventually, the English settled the area, first at Augusta in 1830, and soon afterwards on the Vasse River (later Busselton).

Because of its wild, unpredictable seas the Leeuwin-Naturaliste coast is



noted for its shipwrecks. Eleven wrecks lie in Hamelin Bay, including three wrecked in the same night during a single storm in July 1900. The WA Maritime Museum's Hamelin Bay Wreck Trail features the *Agincourt* (1882), *Chaudiere* (1883), *Katinka* (1900) and *Toba* (1930s–40s). Another notable wreck is the *Georgette*, a 46-metre iron steamer that was wrecked in 1876 at Calgardup Beach.

COMMERCIAL VALUES

The proposed marine conservation reserve lies in one of WA's most rapidly developing recreational and tourism regions, which makes it an important asset for the State's tourism industry. The adjacent Leeuwin-Naturaliste National Park is the most visited national park in the State, with more than a million visits a year, and nearby attractions include wineries, caves and forests.

Commercial fishing is an important industry for the area, in particular the high-value western rock lobster and abalone fisheries. Other commercial fishing operations in the area include fishing for tuna, mackerel, salmon and blue swimmer crabs. Wetline fishing, purse seining, trawl fishing, gillnet and longline fishing, and estuarine fishing in Hardy Inlet also occur in the area.

RECREATION

The sheltered waters of Geographe Bay are popular with fishers, water skiers, snorkellers, scuba divers, windsurfers, swimmers and sailors. Busselton Jetty—the longest wooden jetty in the southern hemisphere—

stretches for almost two kilometres into Geographe Bay. Built over a 95-year period from 1865, it is used by fishers and divers alike. An underwater observatory at Busselton Jetty will open in 2003, enabling non-diving sightseers to view the spectacular marine life beneath the jetty (see 'Beneath the Busselton Jetty', *LANDSCOPE*, Winter 2002). The HMAS *Swan* wreck provides another excellent dive site in Geographe Bay. The reefs of the Capes coast provide spectacular snorkelling and diving opportunities.

The large swells and excellent breaks along the Leeuwin-Naturaliste coast, such as those at Yallingup and Margaret River, provide some of the world's best surfing, and national and international surf competitions are held there regularly. The intermittent exposed rocky shores and sheltered beaches provide opportunities for fishers and swimmers, and the Hardy Inlet is a favourite spot for recreational fishing.

The beaches, rocky headlands and offshore waters provide a range of opportunities for recreational fishing. Jewfish, salmon, blue groper, snapper, tailor and skipper are popular targets for recreational fishers. Fishers also target western rock lobster and abalone. During autumn, schools of salmon migrate along WA's southern coastline from the Great Australian Bight towards Cape Leeuwin. During this run, salmon often school inshore, moving along the beach and making them prime targets for commercial and recreational fishing.

The waters offshore from the Capes

The Leeuwin-Naturaliste area has become increasingly important for marine-based recreational activities. Photo – Andrew Davoll/Lochman Transparencies

coast have immense cultural, ecological and social values, but these features will mean that the area will come under increasing pressure and use in the future. The diverse community stakeholders that use and value the area will be charged with a significant responsibility when they begin developing a plan for a proposed marine conservation reserve in the area. They will need to balance these competing interests and viewpoints, in the interests of protecting this important area. A marine conservation reserve will help to establish a coordinated management approach for the area that will ensure that these important values will be maintained for future generations.

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The first stage of a long-distance mountain bike trail, that will ultimately lead from Mundaring to Albany, is now open. See page 49.



Discover the underwater wilderness of the Geographe Bay, Leeuwin-Naturaliste, Hardy Inlet area, a potential marine conservation reserve, on page 18.



Little was known about the distribution of the dalgyte, or bilby, in the south-west forests until scientist Ian Abbott interviewed old timers. Turn to page 28.



Older piles of the Busselton Jetty are crowded with marine life, but it was not always so. How do marine animals gradually colonise the piles? See page 34.



The Stirling Range National Park experiences many extremes of weather, from snow falls to bushfires. Find out why on page 10.

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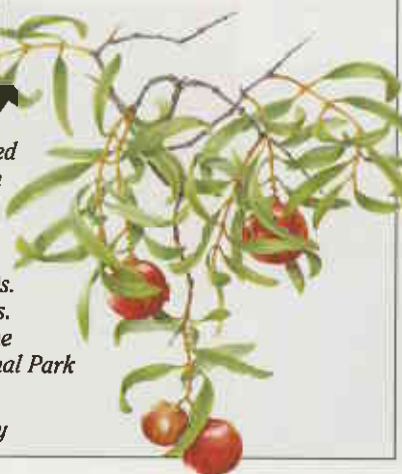
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COVER

Quandong (*Santalum acuminatum*) is one of the most widespread plants in Australia. This small, upright tree is most easily recognised by its bright red fruits, which are edible and also contain a nutritious nut. It belongs to the same genus as the famous sandalwood, which was one of Western Australia's major exports in the late 1800s and early 1900s. Members of this genus are root parasites. *Quandong* grows in dense stands in some areas within the Woodman Point Regional Park (see story on page 42).

Cover illustration by Philippa Nikulinsky



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