

West Coast

BIOREGION

ABOUT THE BIOREGION

The marine environment of the west coast bioregion between Kalbarri and Augusta is predominantly a temperate oceanic zone, and is heavily influenced by the Leeuwin Current which transports warm tropical water down the continental shelf. The fish stocks of the region are typically temperate, in keeping with the shelf water temperatures which range from 18°C to about 24°C. The current is also responsible for the existence of the unusual Abrolhos Islands coral reefs at latitude 29° S and the extended southward distribution of many tropical species along the west and south coasts. This current system, up to several hundred kilometres wide along the west coast, flows most strongly in autumn/winter (April to September) and has its origins in ocean flows from the Pacific through the Indonesian archipelago. The current is variable in strength from year to year, flowing at speeds typically around 1 knot, but has been recorded at 3 knots on occasions. The annual variability in current strength is reflected in variations in Fremantle sea levels, and is related to El Niño or ENSO events in the Pacific Ocean.

Weaker counter-currents on the continental shelf, such as the Capes Current which flows northward from Cape Leeuwin as far as Shark Bay, occur during summer and influence the distribution of many of the coastal finfish species.

The most significant impact of the clear, warm, low-nutrient waters of the Leeuwin Current is on the growth and distribution of the temperate seagrasses. These form extensive meadows in all protected coastal waters of the west coast bioregion, in depths of up to 30 m, and act as major nursery areas for many fish species and particularly for the large western rock lobster stock.

The west coast is characterised by exposed sandy beaches and a limestone reef system which creates surface reef lines often about 5 km off the coast. Sea floors further offshore on the continental shelf are typically coarse sand interspersed with low limestone reef associated with old shorelines. There are few areas of

protected water along the west coast, the exceptions being in the Abrolhos Islands, in the lee of some small islands off the mid-west coast, and behind Rottnest and Garden Islands off the metropolitan area. The major significant marine embayments of the west coast are Cockburn Sound and Geographe Bay. Beyond Cape Naturaliste the coastline changes from limestone to predominantly granite and becomes more exposed to the influences of the Southern Ocean. Along the west coast there are four significant estuarine systems, the Swan/Canning, Peel/Harvey and Leschenault estuaries and Hardy Inlet (Blackwood estuary), all of which are permanently open to the sea and form an extension of the marine environment except when freshwater runoff displaces the oceanic water for a short period in winter and spring.

The principal commercial fishery in this region targets the western rock lobster. The West Coast Rock Lobster Fishery is Australia's most valuable single-species fishery, producing an average catch of 11,000 tonnes valued at around \$300 million annually. There are also significant fisheries for scallops, abalone, blue swimmer crabs, sharks, pilchards, and coastal and estuarine finfish. Many of these inshore fish resources are shared with the recreational sector.

The bioregion is also home to an active wetline fishery, for which specific management arrangements are currently being developed. Demersal line fishers take a range of species including dhufish, snapper, baldchin groper and emperors from boats operating purely as wetliners (i.e. no form of access other than the fishing boat licence) as well as from boats operating in other managed fisheries. There is also an important take of fish by beach seining and near-shore gillnetting using hand-hauled nets, for species including whitebait, mullet and whiting.

In this region more than any other in the State, population growth poses specific challenges for fisheries management. Increased recreational fishing pressure, and the setting of catch shares for commercial and recreational users, remains a major focus of the Department's management activity.

The west coast bioregion is the most heavily used area for recreational fishing owing to its accessibility to the main population centres. The region provides a range of recreational fishing opportunities, from estuarine fishing to beach fishing and boat angling in embayments. Offshore boat angling includes both demersal and pelagic/game fishing opportunities around islands and on the edge of the continental shelf.



Species targeted include black bream, flatfish and blue swimmer crabs in estuaries, and herring, whiting (including King George whiting), tailor, mulloway and abalone from beaches. Boat-based fishing targets herring, whiting, rock lobsters, pink snapper, dhufish, baldchin groper and a number of larger pelagic and game species.

The principal aquaculture development activities in the west coast bioregion are the production of blue mussels (*Mytilus edulis*) and marine algae (*Dunaliella salina*) for beta carotene production, and the emerging black pearl industry based on the production of *Pinctada margaritifera* at the Abrolhos Islands.

The main mussel farming area is in southern Cockburn Sound, where conditions are sheltered and the nutrient and planktonic food levels are sufficient to promote good growth rates. Owing to the generally low productivity of the WA coastline under the influence of the Leeuwin Current, areas outside embayments (where nutrient levels are enhanced) are unsuitable for bivalve aquaculture.

ENVIRONMENTAL MANAGEMENT

Regional Overview

On the west coast, marine habitats are largely protected from any physical impact of commercial fishing by extensive closures to trawling, the only permitted fishing method which can significantly affect marine habitats. These closures, introduced in the 1970s and 1980s, protect essentially all seagrass and reef habitats, with trawling limited to sand areas inhabited by target species such as scallops (West Coast Habitat Protection Figure 1). In addition, habitat and biodiversity protection is provided by specific Fish Habitat Protection Areas, Reef Protected Areas and marine parks in sensitive areas (West Coast Habitat Protection Figure 2). These protective management measures ensure that the marine habitat and biodiversity have remained in good condition. The exception to this, and the major threat to biodiversity and fish habitats in the west coast bioregion, is from coastal development and environmental degradation from terrestrial runoff impacting estuaries and some protected near-shore waters.



During 2003/04, the Department of Fisheries has provided extensive scientific and management advice to Government in relation to the planning for the proposed Capes Marine Park between Busselton and Augusta. It has also been working on the preparation of orders under the *Fish Resources Management Act 1994* in order to modify fisheries regulations in accordance with the final Jurien Bay Marine Park Management Plan.

Following the release for public comment of the draft management plan for the proposed Blue Holes Fish Habitat Protection Area at Kalbarri, a final management plan is being prepared for Ministerial approval.

Recommendations for the development of a land-based tourism facility at the Abrolhos Islands, contained within Fisheries Management Paper no. 146 (the sustainable tourism plan for the islands), were implemented during 2003/04. When a preferred respondent has been selected, they will work with a Departmental working group to satisfy state and federal requirements before environmental approvals are granted. A licence to develop the Long Island site in the Wallabi Group will not be approved by the Minister for Fisheries until all environmental and other aspects of the proposed development are assessed as practical and suitable for this unique marine ecosystem.

