



State of the Environment Australia

Supporting Reports

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Coasts and Oceans Theme Report

Australia State of the Environment Report 2001 (Theme Report)

Australian State of the Environment Committee

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Habitats and species (continued)

Seagrasses [CO Indicator 2.9]

Seagrasses are intertidal and subtidal flowering plants found mainly in the shallow waters of protected estuaries and bays. In the southern temperate regions of Australia they often form dense beds, but in the tropics they may also be found in low densities, widely scattered in nearshore areas.

Seagrasses represent our productive, shallow marine pastures that provide important nursery habitat for juvenile fish and prawns or feeding grounds for birds. Seagrasses also provide a vital sediment-trapping and stabilising mechanism for some coastal areas. They are a critical habitat for many commercial fish and invertebrates. In tropical areas seagrasses serve as the staple diet of Dugongs and adult green turtles. The Dugong's specialist requirement for seagrass habitat makes it vulnerable to changes in seagrass locations and extent.

Australia has the highest diversity of seagrasses (both temperate and tropical) in the world, with about 30 species relatively evenly distributed around Australia. It has the greatest area of temperate seagrasses and, as large sections of the north-west coast have yet to be surveyed at any scale, possibly also of tropical seagrasses.

Figure 6 is an indicative map of the distribution and sites of disturbance of seagrass. For mapping purposes, seagrasses are essentially linear features of the coastline. A symbolic linear interpretation has been employed, except in Torres Strait where the area is sufficiently large to be represented naturally. All areas of mangroves greater than 1 km², including those on islands were included. However, many significantly larger areas are still not visible in a map of this size. This map represents all the data available, but seagrass mapping has not been completed for all of Australia.

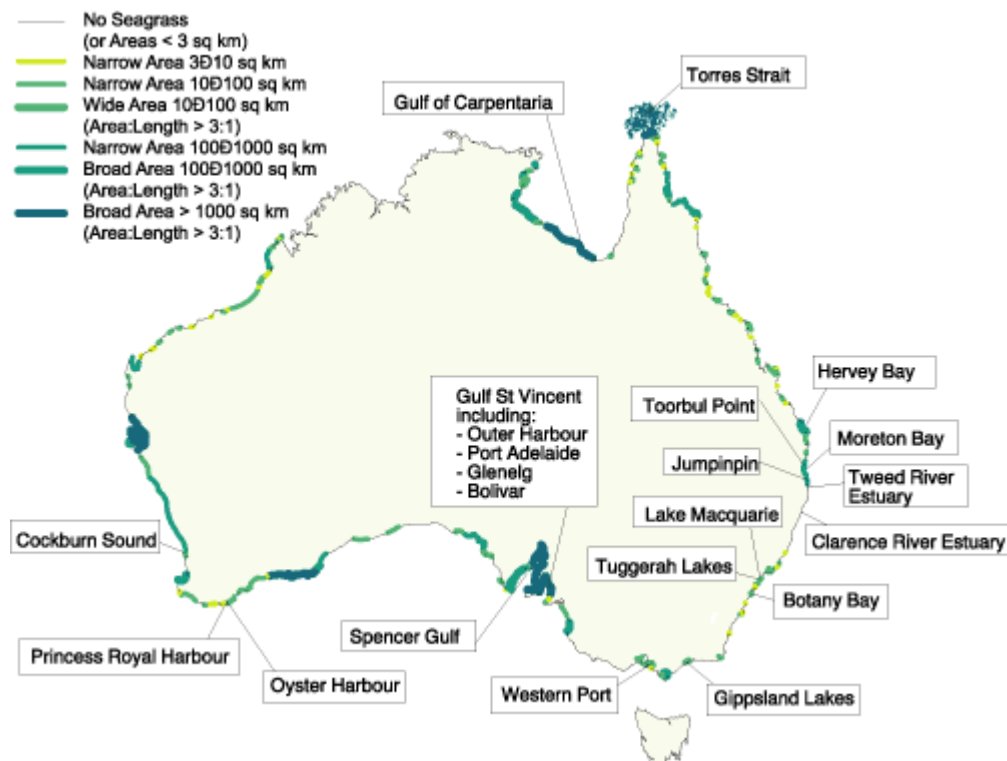


Figure 6: Seagrasses In Australia: indicative distribution and sites of disturbance in continental Australia.

Source: Distribution data compiled from State and Commonwealth sources by Environment Australia (2000) and Kirkman (1997).

The best current estimate of total area is 51 000 square kilometres (Cappo et al. 1998) with Western Australia and Queensland having significant areas of seagrass. The recent discovery of deepwater beds in the Great Barrier Reef World Heritage Area indicates that our knowledge of seagrass is still expanding.

Data on seagrass, algae, benthos and sediment composition in the Great Barrier Reef region has been obtained during a six-year survey (Coles et al. 2000). Seagrasses were surveyed to depths of 60 metres and found at 33% of the sites over the area. From these surveys it is estimated that 40 000 km² of lagoon and inter-reef area has at least some seagrass. The ecological role of inter-reef seagrasses and algae is not well understood. Both shallow and deepwater meadows of *Halophila ovalis* and *Halophila spinulosa* are important Dugong feeding habitat. This seagrass and benthic community data comprises one of the major databases supporting the development of a multi-use zone plan designed to maintain reef biodiversity, and which will eventually determine the location of activities in the Great Barrier Reef Marine Park.

The greatest reduction in seagrass areas has generally been in the tropics, where the causes are mostly natural (cyclones, flooding) but aggravated by anthropogenic effects such as increased sediment discharge. In the tropics many species are seasonal and regrow quickly.

In temperate waters, such as Western Port in Victoria, where disturbances are mostly human induced, the reduction has been proportionately greater and in most cases is irreversible. The dominant temperate seagrass is *Posidonia* which make take many decades to regrow so their recovery is not practically achievable. Attempts to replant *Posidonia* have failed to date.

Kirkman (1997) estimated the reduction of seagrass during the previous 10 years as a result of human activities to be 450 km², and the loss resulting from natural events to be 1000 km². Seagrass meadows have declined in Cockburn Sound, Western Australia, because of nutrient discharges that began in the 1950s (see [Nutrients affecting the Cockburn Sound environment](#)). Declines in a range of fisheries have been observed following the reduction in seagrass areas (Butler and Jernakov 1999).

Beds of *Posidonia* have, in the past, been dug up for sand mining. Less than half a hectare of *Posidonia* has been replanted in response to mining of many hectares of seagrass. The ecological success and the persistence of the transplants is quite uncertain.

An emerging threat to seagrass in south-east Queensland is the increased incidence and scale of *Lyngbya*

outbreaks in Moreton Bay. *Lyngbya* blooms (See [Lyngbya](#)) smother seagrass beds.

Some measures have been undertaken to halt the reduction in seagrass habitats. Seagrasses are protected plants under the *Queensland Fisheries Act 1994*. In the Great Barrier Reef Marine Park, for example, trawling has been prohibited by Marine Park zoning plans in nearly half the mapped seagrass areas, and in additional areas by coastal strip closures. Offshore beds are less protected (Wachenfeld et al. 1998). Some sewage outfalls and stormwater outfalls have been relocated away from seagrass beds.

Seagrass-Watch: community-based monitoring of seagrass resources

The Seagrass-Watch program, established in 1998 as an initiative of the Queensland Department of Primary Industries, involves local community groups in mapping and monitoring seagrass habitats vital for fisheries, turtles and Dugongs.

Seagrass-Watch programs have been established in the Hervey Bay and Whitsundays regions of Queensland with the aim of providing an early warning of change in the seagrasses of each region.

Mapping of seagrass communities by trained community volunteers and seagrass researchers resulted in the successful mapping of 22% of the sites in a detailed baseline survey of Hervey Bay and Great Sandy Straits region in December 1998.

Long-term monitoring sites, including areas of high impacts and 'control' sites, have been established at eight locations.

Seagrass-Watch data and associated geographic information systems (GIS) outputs have been used by environment management agencies for:

- responses to dredging proposals,
- an assessment of flooding impacts,
- world heritage value assessments for World Heritage Area listings,
- regional and local Plans of Management, and
- input to the management of Dugong Protection Areas.

Current levels of interest in Seagrass-Watch are high, but maintaining the effectiveness of the program will require continued government support. Further expansion of the program is expected as Aboriginal and Torres Strait Islander communities, and volunteer groups in other areas become involved in the management of their local seagrass resources.

The Seagrass-Watch program is funded by the Natural Heritage Trust - Coasts and Clean Seas Initiative, CRC for the Great Barrier Reef World Heritage Area, Queensland Parks and Wildlife Service and the Queensland Department of Primary Industries.

Source: McKenzie et al. (2000).



Seagrass monitoring in the Whitsundays.

Source: Queensland Department of Primary Industries.

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