

About Australian Seagrasses

A 1999 review of Australia's seagrass resources has called for better management of the resource, estimated at around 51,000 square kilometres, as well as a collaborative approach to the issue between managers and users. Funded by the Fisheries Research and Development Corporation, Seagrass in Australia and the accompanying Research and Development Plan, were completed by a team of 17 marine scientists from CSIRO, Australian universities, State Government agencies and industry. The following is a 'snapshot' of Australia's seagrass resources.

Some facts

- Seagrasses are highly specialised marine flowering plants adapted to soft sediments of nearshore environments and which live totally submerged in water.
- There are thought to be less than 70 species of seagrasses worldwide, about half of which are present around Australia's 32,000 kilometre coastline.
- Australia has about 51,000 square kilometres of seagrass meadows, with major areas being the Gulf of Carpentaria, Shark Bay and the southern coast of Western Australia and Spencer Gulf and St Vincents Gulf in South Australia.
- Australia has the most diverse array of tropical and temperate seagrasses in the world, with 22 species in temperate waters and 15 in tropical waters.
- The high biomass and diversity of seagrasses has probably changed little over the past tens of millions of years.
- The highest biomass and species diversity occurs in southwest Western Australia.
- Large seagrass meadows are present in protected areas across the Great Australian Bight, and into South Australia and Tasmania.



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Along the New South Wales coast, seagrasses are confined to estuaries such as Botany Bay, except for the large sheltered embayment of Jervis Bay.

- Tropical beds can be highly diverse, but generally possess lower biomasses than temperate zones. While large areas of seagrasses occupy embayments such as Hervey Bay, Queensland, tropical seagrasses are generally confined to intertidal environments, or to deep water.
- Seagrasses are an essential source of food for dugongs. Caribbean seagrass meadows lost large grazing populations of manatees and sea turtles several hundred years ago due to over-exploitation.

- In areas of northern Australia with a high tidal range, water transparency is often poor, hence conventional remote sensing techniques to detect and monitor seagrass beds from satellites are of limited value. For this reason, the northwestern quarter of the Australian continent, including the whole Northern Territory coastline, remains largely unexplored for seagrass distribution. Animal communities associated with seagrasses in this region, especially in the area of the Northern Territory prawn fisheries, also remain largely unknown.
- Knowledge of shallow water (down to 10m) temperate seagrass distributions is reasonably good, but the understanding of

deep water (down to 20m) seagrasses throughout Australia is rudimentary. Areas subject to more extreme water movement, either tidal or wave-induced, are also poorly studied, compared to seagrasses in more protected areas.

- Perhaps the most widely cited function of seagrass beds is their role in providing shelter from large fish predators and in acting as nurseries for fish and crustaceans such as crabs, lobsters and prawns, including many species of commercial importance.
- Available evidence supports the nursery bed hypothesis for the New South Wales coast, where luderick, bream and snapper associate as juveniles with seagrass habitat in estuaries. However, this hypothesis is not supported for other sections of the Australian coast, with the possible exception of juvenile prawns associating with seagrass beds in tropical Queensland and juvenile baldchin groper associating with coastal seagrass beds along the central Western Australian coast.
- Systematic surveys are urgently required to assess the validity of these hypotheses at a national scale. Surveys are also required to determine whether the primary response of juveniles of the important commercial species in New South Wales is to estuaries or to seagrass habitat within the estuaries.

- Seagrass meadows interact with other habitats. For example, they have a stabilising effect on beaches and sediment.
- Seagrass losses attributed to natural events, elevated nutrients from factories, sewage and agricultural run-off, increased turbidity and siltation in some coastal locations are estimated as high as 100,000 hectares, in the case of Hervey Bay due to high turbidity from flooding of the Mary and Burum Rivers. In Victoria's Westernport Bay, siltation is blamed as a cause for the loss of 17,800 hectares of seagrasses.
- Nutrient increases cause blooms of phytoplankton which can shade the seagrass beds, while changes in

the hydrology of an estuarine or coastal ecosystem through activities such as marina and port developments.

- In the area of resource management, a questionnaire to managers about their concerns revealed a need for greater cooperation between managers with different but interacting responsibilities; lack of adequate information on which to base day-to-day management; and inadequate links between managers and researchers.
- Managers also requested more effective management and educational tools, and greater access to scientific information.



Seagrasses act as nurseries for fish and crustaceans, including many species of commercial importance.

Further information: www.marine.csiro.au

Craig Macaulay (communication group) • phone (03) 6232 5219 • email: craig.macaulay@csiro.au

The full report: *Seagrass in Australia: Strategic Review and Development of an R&D Plan*, by Dr Alan Butler and Dr Peter Jernakoff, is available from CSIRO Publishing for \$65 - freecall 1800 645 051. The full report can also be found at CSIRO Publishing's web site.

Acknowledgments

Dr Alan Butler, CSIRO marine biodiversity and Chairman of the National Seagrass Review Committee. Dr Hugh Kirkman, (1997) *Seagrasses of Australia*. Australia: State of the Environment Technical Paper Series (Estuaries and the Sea), Environment Australia. Dr Kirkman is formerly of CSIRO Marine Research.



Castray Esplanade, Hobart, Tasmania 7000 Phone (03) 6232 5222 Fax (03) 6232 5000

233 Middle Street, Cleveland, Queensland 4163 Phone (07) 3826 7200 Fax (07) 3826 7222

Leach Street, Marmion, Western Australia 6020. Phone (08) 9422 8200 Fax (08) 9422 8222