

## Importance of seagrass

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### Introduction

Seagrasses are flowering plants that grow underwater in marine environments. They are quite different to seaweed which is an alga. Unlike seaweed they have a large root system which is needed to anchor them to the sand. Some nutrients are taken up by the roots, but seagrasses get the majority of their nutrients via absorption through the leaves. Seagrasses can form beds or meadows comprising many individual plants. Seagrass meadows support around 40 times more animals than the adjacent bare sand.

Fifteen species of seagrass are known to occur in South Australia covering an estimated area of 9,620 km<sup>2</sup>. They are generally found growing on sandy or muddy areas in estuaries, coastal lagoons, gulfs and sheltered bays. The most extensive seagrass meadows occur in Spencer Gulf and Gulf St Vincent.



Image 1 *Posidonia sinuosa* seagrass with fruits

It is estimated that seagrasses cover 5,000 km<sup>2</sup> of the sheltered waters of Gulf St Vincent. The dominant seagrasses are known as ribbon-weed or tape-weed (*Posidonia* spp.) and wire-weed (*Amphibolis* spp.) and in the shallower regions, paddle-weed (*Halophila* spp.) and eel grass (*Zostera* and *Heterozostera* spp.).

### Seagrasses in marine ecosystems

Seagrasses play an important role in marine ecosystems. They oxygenate the water, recycle nutrients and provide shelter for marine animals as well as food for fish and other species.

Seagrasses host a diverse range of small organisms called epiphytes (plants) and epifauna (animals) living in microhabitats and grazing on the leaves, stems and root systems. These organisms are important contributors to the overall productivity of seagrass meadows. Excess nutrients however can cause prolific epiphyte growth and lead to seagrass loss. Because of this, seagrasses can be useful indicators of the nutrient loading in the water column. Refer to Adelaide Coastal Waters Information Sheet No.2 *Seagrass Health* (2009) for more detailed information on seagrass loss. Seagrasses also provide a nursery habitat for fish (eg juvenile whiting and flathead) and habitat for many other species, including juvenile crustaceans.

Seagrass leaf litter (known as detritus) makes up a major food source for many marine species. Seagrass detritus found on beaches can be a seed source for seagrass re-colonisation and provides habitat for insects, birds and reptiles. A healthy beach environment is one with seagrass detritus on the beach.



**Image 2 Seagrass detritus on beach**



**Image 3 Close-up of seagrass detritus on beach**

The value of seagrasses and seagrass mats as a carbon sink is also beginning to be recognised, for which the economic carbon storage value can be significant. The loss of approximately 260 km<sup>2</sup> of seagrass in the southern temperate waters of Australia, is estimated to be worth \$500 million (Moore & Westphalen 2007).

## Seagrasses as sediment stabilisers

Seagrasses trap and hold sediment on the sea floor and play an important role in the marine ecosystem. They accumulate fine sediment at the rate of about 1 cm every 100 years. Most of the seagrass beds in Gulf St Vincent have trapped at least one metre of sediment. This implies that Gulf St Vincent seagrass meadows have existed in their current form for at least 10,000 years. The seagrass sediment that has built up as a platform is an important protective buffer from waves for beaches and the shoreline. The seabed and beaches can be readily eroded by waves and currents if the stabilising seagrasses are lost.

Seagrass can be lost over a large area or in the form of blowouts. Blowouts are bare areas between seagrass beds that expand over time due to erosion of sediment at the root zone level. Blowouts are characterised by an erosional scarp (steep slope) on the seaward side, a bare sandy area in the centre and seagrass on the landward side. Expansion of the blowout is a result of faster seagrass erosion than seagrass re-colonisation.

If seagrass is removed it not only results in loss of the local marine ecosystem, but the seabed erodes and deepens causing nearshore wave energy to increase and adjacent beaches can become unstable. Drifting sediment released by seagrass bed erosion can cause management problems for surrounding habitats and developments.



**Image 4 Amphibolis griffithii seagrass blow out**

## References

Bryars S, Collings G and Wear R 2008, 'Seagrasses of Gulf St Vincent and Investigator Strait', Chapter 11 in *Natural History of Gulf St Vincent*, Royal Society of South Australia Inc, pp 132–147.

DEH 1999, *Seagrasses of South Australia*, Department for Environment and Heritage, Adelaide.

EPA 1998, Changes in Seagrass Coverage and Links to Water Quality off the Adelaide Metropolitan Coastline, Environment Protection Authority, Adelaide.

-- 2008, 'Coasts and Seas', State of the Environment Report 2008 for South Australia, EPA, Adelaide.

Fox DR, Batley GE, Blackburn D, Bone Y, Bryars S, Cheshire A, Collings G, Ellis D, Fairweather P, Fallowfield H, Harris G, Henderson B, Kampf J, Nayar S, Pattiaratchi C, Petrusевичs P, Townsend M, Westphalen G and Wilkinson J 2007, *Adelaide Coastal Waters Study: Final Report Volume 1 – Study Findings*, Final Report prepared for the Adelaide Coastal Water Study Steering Committee.

Moore T and Westphalen G 2007, Australian seagrass meadows as potential carbon sinks: focus on Gulf St Vincent, South Australia, A report for the Environment Protection Authority, Adelaide.

## Acknowledgments

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## Useful websites

Environment Protection Authority (SA) Water Quality pages <[www.epa.sa.gov.au/water\\_quality.html](http://www.epa.sa.gov.au/water_quality.html)>

Coast and Marine website <[www.environment.sa.gov.au/coasts/index.html](http://www.environment.sa.gov.au/coasts/index.html)>

CSIRO Adelaide Coastal Waters Study pages <[www.clw.csiro.au/acws/.html](http://www.clw.csiro.au/acws/.html)>

South Australian State of the Environment Report 2008 <[www.epa.sa.gov.au/soe](http://www.epa.sa.gov.au/soe)>

## Images

- 1 *Posidonia sinuosa* seagrass with fruits courtesy of Simon Bryars, DEH.
- 2 Seagrass detritus on beach courtesy of Ron Sandercock, DEH.
- 3 Close up of seagrass detritus on beach courtesy of Ron Sandercock, DEH.
- 4 *Amphibolis griffithii* seagrass blow out courtesy of Simon Bryars, DEH.

## Disclaimer

This publication is a guide only and does not necessarily provide adequate information in relation to every situation. This publication seeks to explain your possible obligations in a helpful and accessible way. In doing so, however, some detail may not be captured. It is important, therefore, that you seek information from the EPA itself regarding your possible obligations and, where appropriate, that you seek your own legal advice.

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## Further information

### Legislation

Legislation may be viewed at: <[www.legislation.sa.gov.au](http://www.legislation.sa.gov.au)>

Copies of legislation are available for purchase from:

Service SA Government Legislation Outlet  
Adelaide Service SA Centre  
108 North Terrace  
Adelaide SA 5000

Telephone: 13 23 24  
Fax: (08) 8204 1909  
Internet: <[shop.service.sa.gov.au](http://shop.service.sa.gov.au)>

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