

The SECRETS of SEAGRASS

Seagrass beds can be found in waters up to 56 m in depth.

Natural balls of leaf fibres originating from Posidonia seagrasses are often washed up on beaches. As the leaves are torn off in winter storms they become tangled together and are rolled and rounded by the waves and currents.



Seagrasses are a marine flowering plant that can live underwater. Unlike algae, they are true flowering plants with leaves, roots, flowers, seeds and underground horizontal stems called “rhizomes”. Seagrasses are highly specialised and have adapted to the soft sediments of coastal and estuarine environments. Seagrasses can range from the size of a fingernail to plants with leaves 7 m long. Many individual plants live together to form extensive seagrass “beds” or “meadows”.

Algae are very different to seagrass – they have “holdfasts” instead of roots, do not have veins, and reproduce by spores rather than flowers and seeds.

The importance of seagrass

Seagrasses trap and recycle nutrients. Animals such as dugongs and sea turtles feed directly on the plants themselves. Many other creatures, such as bacteria, worms and crabs, feed on the decomposing leaf litter (known as “detritus”) that releases nutrients when it decomposes or breaks down.

As well as directly producing organic matter, seagrasses play host to a range of small organisms called “epiphytes” (which are plants) and “epifauna” (animals) that live and feed on seagrasses. Juvenile fish, prawns and other marine creatures feed in turn upon the smaller organisms, creating a complex food web.

Seagrass meadows provide shelter for marine animals: They offer protection from predators and provide breeding habitats and nursery areas for a number of fish and crustaceans, including whiting, tailor, flathead, prawns and crabs.

Seagrasses are important stabilisers, trapping sand and sediments by slowing water movement. The “banks” of seagrass provide a protective buffer, preventing erosion of beaches and shores from waves and currents and helping to keep the water clear.

The reduction in water movement is also important for organisms, particularly juveniles, living in shallow areas that would otherwise be buffeted by waves.

Seagrasses oxygenate the water through photosynthesis. One square metre of seagrass can generate up to 10 litres of oxygen per day.



Western Australia: Home of lush marine pastures

Worldwide, around 60 species of seagrasses exist and Australia is home to over 30 species covering an estimated area of 51,000 km².

Western Australia can claim the largest and most diverse seagrass meadows in the world with an unrivalled 27 species and an estimated area covering 20,000 km² – more than the area occupied by rainforest in the whole of Australia. Western Australia’s dry climate and nutrient-poor but clear waters allow seagrasses to thrive.

Wooramel Bank, Shark Bay World Heritage Area

Of Shark Bay’s 13,000 km², about 4,500 km² are covered by seagrasses. Over a quarter of that area is the Wooramel seagrass bank – the largest structure of its type in the world. The bank has taken about 5,000 years to develop. It is no wonder that Shark Bay has the largest breeding populations of dugongs in the world.

Seagrasses in the southwest

Seagrass meadows off the coast of the southwest of the state have the largest biomass (mass of living organisms) and the highest species diversity anywhere in the world, with 27 species of seagrass recognised in this region. Shark Bay contains 12 species of seagrass and the extensive seagrass meadows around Rottnest Island boast nine species.

Shark Bay’s seagrass meadows produce an estimated 8 million tonnes of plant matter a year. You would need 4 to 6 times that area of farm land to produce a similar quantity of wheat.



Some seagrass meadows are so extensive they can be seen from a space shuttle orbiting earth.

Photo: Clay Bryce

Threats to seagrasses

Let’s get serious! Seagrasses are under threat from human impacts and in Western Australia we have already experienced large seagrass losses in Cockburn Sound near Rockingham, and Oyster Harbour and Princess Royal Harbour in Albany. If damaged or removed, seagrass beds take many years to recover.

Threats to seagrasses include:

- **Eutrophication.** Excess nutrients cause either microalgae blooms or excessive growth of epiphytes on the leaves of seagrasses, which reduces the amount of light received for photosynthesis.
- **Turbidity and sedimentation.** If not properly managed, factors such as agriculture and vegetation clearing in catchment areas, coastal and marina development and dredging can cause sand and silt to enter seagrass meadows. Increased turbidity or cloudiness of the water reduces light penetration affecting photosynthesis while a build up of sediments will bury seagrasses.
- **Water pollution.** Stormwater run-off, oil spills, herbicides and pesticides, discharge and other wastes can put large areas of seagrasses at risk.
- **Boating impacts.** Damage to seagrass meadows by boat propellers, anchors, anchor chains and moorings is also common. The anchor from a large vessel can destroy an area of seagrass the size of a football field.
- **Natural causes.** Storms or cyclones large enough to tear up and smother seagrass meadows can occasionally arise.



In the early 1900s, fibre from *Posidonia* seagrasses was mined for its high cellulose content and used in the manufacture of suits, explosives and household products.

Creature Feature

Western rock lobster forage in seagrass meadows close to the reefs in which they shelter.



Blue swimmer crabs forage on organisms living in and amongst seagrasses in coastal waters and estuaries.



Juvenile **King George whiting** use seagrass beds as nursery areas before moving to offshore reefs to begin their adult life.



Dugongs can consume up to 40 kg of seagrass per day.



Many species of juvenile **prawns** are highly dependant on seagrasses for food and shelter.

