



SPREP

Secretariat of the Pacific Regional
Environment Programme

Factsheet

Pacific Seagrasses



Seagrasses are flowering plants (angiosperms) that grow exclusively in the marine environment. Seagrasses are marine plants like mangroves and algae (seaweeds) and are found throughout most Pacific Islands. They relate more closely to water lilies and orchids than land grasses. Scientists believe that seagrasses originated from land plants, either directly from the land, or via freshwater.

They have extensive underground systems (rhizomes) and strong roots that anchor the plant to sandy and muddy substratum. The roots absorb nutrients but, unlike land plants, do not take up water. To cope with living in oxygen-poor mud, seagrasses have air canals that carry oxygen from the leaves to the buried rhizomes and roots. Excess oxygen is secreted from the roots to help create a suitable environment for bacterial growth to speed up the breakdown of detritus.

Seagrass diversity and habitats

There are 60 species of seagrasses globally, distributed from the Arctic to the southern end of New Zealand. Tropical regions have the greatest species diversity. The Pacific Islands have 15 species found mostly in the western Pacific, with species numbers declining as you go eastward. Endemic seagrasses are rare with *Halophila ovalis* subspecies *bullosa* found only in Fiji, Tonga and Samoa.

Seagrasses form beds or meadows comprising of one or more species. These beds are common at water depths of 2-15 metres but can grow at depths of 50 metres or more.

Seagrass reproduction and growth

Seagrass reproduction takes place underwater; pollen is carried by the current until it attaches to the stigma.

Once fertilised, seed pods are produced and these are dispersed by the currents. The expansion of seagrass beds is often not due to the growth of new individual plants from seeds but from the continual growth of rhizomes.

Importance of seagrasses

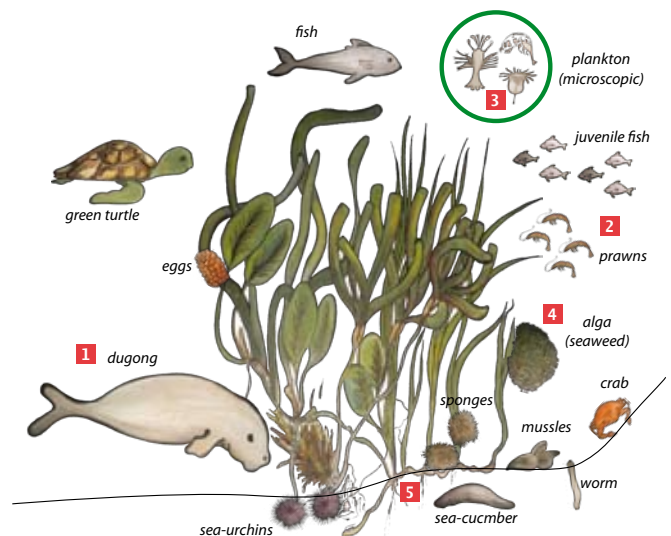
Seagrasses provide food, shelter, breeding and nursery areas for many marine organisms. Big animals graze on them; small animals live amongst them. Research has found that in a 400 square kilometre of seagrass can support 2,000 tonnes of fish a year, of which many species are important for subsistence and commercial fisheries. Our fisheries rely on the health of our seagrass beds.

Seagrasses as food 1 2 3

Seagrasses are food for many culturally important species, including dugong, sea-turtles, fishes, sea-birds and invertebrates. Decaying leaves provide food for small organisms such as bacteria, worms and crabs; these in turn are eaten by juvenile fish, prawns and sea-birds.

Coastal erosion 5

Seagrasses prevent coastal erosion by trapping sediments and stabilising the substratum with their rhizome and root systems. Wave energy is lessened as it flows over seagrasses minimising the impact on coastal areas. Seagrass leaves trap sediments making the water clear.



Seagrasses are vital for the ongoing health of our coastal waters and fisheries. The numbers shown here correspond to some of the important features of seagrasses identified in the text.

Shelter and nursery grounds 4

Seagrass beds are often refuge for small animals and plants, receiving protection from predators, and from harsh sunlight or fluctuating salinity and temperature. Many young animals use seagrass beds as nursery areas before moving into other habitats. Commercially important prawns hatch in the open ocean and make their way to coastal waters where they settle in seagrass beds. When they become large juveniles, they move back out to sea. Prawns are very important to fisheries in countries like Australia and Papua New Guinea. Many animals also lay their eggs in seagrasses. If seagrasses disappear, so will many of the animals and plants that depend on them, as well as our food source.

Carbon storage and ocean acidification

The oceans are our greatest source for absorbing carbon dioxide (CO₂), one of the most potent gases responsible for global warming. Since the industrial revolution, CO₂ emissions into the atmosphere have increased by 30 per cent. The excess CO₂ absorbed by the ocean is reducing the pH making the seawater more acidic (known as Ocean Acidification). Ocean Acidification harms calcified organisms such as corals and shellfish. However, seagrasses and other marine plants can convert this CO₂ into oxygen and simple carbohydrates through photosynthesis, thus trapping the CO₂. This is known as carbon sequestration. Depending on the species, local environment and time of the year, seagrasses can sequester up to 1.33 metric tons of carbon per hectare per year. By removing the excess CO₂ from the ocean, seagrasses are able to help balance the ocean pH and contribute to safeguarding ocean life and to slowing down the overall effects of global warming.

Threats to seagrass

Because seagrass beds are found in shallow coastal waters close to human habitation, they are vulnerable to human activities such as boating, coastal development, dredging and fishing. Natural processes, such as storms, floods and tsunamis, can also cause damage to seagrass beds.

Dredging

Dredging of shipping channels, ports and canals can kill seagrass by their physical removal, or by smothering caused by too much sediment in the water blocking out sunlight.

Nutrients

Nutrients in the sea may come from sewage, fertiliser runoff from agricultural areas, soil eroding from the land and runoff from cities and towns. Nutrients such as nitrogen and phosphorous encourage growth of algae, which can overgrow and smother seagrasses.

Oil

Oil spills damage seagrasses by poisoning them and the organisms that live within them. Oil droplets can attach themselves to the mud and sand making them easy to float away with the current. This leads to the seagrass beds eroding.

Save our Seagrasses

Seagrass beds are directly affected by the way we treat the land and by what we put into the sea. Our population is increasing along the coastline, which puts pressure on our marine environment including seagrass beds. What we do to help the environment will also help seagrasses. By managing our land and activities carefully we will save our seagrasses and our own future.

How can you help?

Your actions will make an important contribution to saving our seagrasses and protecting the marine environment. Some of the things you can do:

- Keep an eye on your seagrass beds. Join or form a group to carry out regular monitoring and conservation of seagrass beds;
- Tell friends and family about the importance of seagrass to marine life and our 'Pacific life';
- Discourage activities such as dredging, dumping rubbish and destructive fishing that affect seagrass;
- Be careful about what you put down the drain - it may be harmful to seagrass and marine life;
- When boating, go slow and don't anchor around shallow seagrass beds;
- Consider the impacts to seagrass beds in environmental impact assessments for coastal development, such as dredging reclamation and construction work.



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