

**S**eagrasses provide food, shelter, breeding grounds and nursery areas for many marine organisms, including fish, crabs, prawns, jellyfish and octopus. Big animals graze on it, little animals live amongst it. Research has found that 400 square metres of seagrass (10 metres long and 40 metres wide) can support 2,000 tonnes of fish a year. For people who enjoy catching and eating fish, the long-term health of our commercial and recreational fisheries relies heavily on the survival of seagrasses.

### UNDERWATER 'GRASS'

Seagrasses are not true grasses. Nor are they, like most marine plants, an algae (or seaweed). They are true flowering plants with stems, leaves, roots and flowers. They are most closely related to lilies and orchids. Seagrasses were probably given their name because they live in the sea and many of them have ribbon-like grassy leaves.

Eelgrass (or dugong grass), ribbonweed, strapweed and paddle weed are common names for some seagrass species found in the Pacific.

Seagrasses have extensive horizontal underground stems (rhizomes) and strong roots that anchor the plant to the soft bottom. The roots also absorb nutrients but, unlike their land cousins, do not take up water. To cope with living in oxygen-poor mud, seagrasses have evolved air canals that carry oxygen from the leaves to the buried rhizomes and roots.

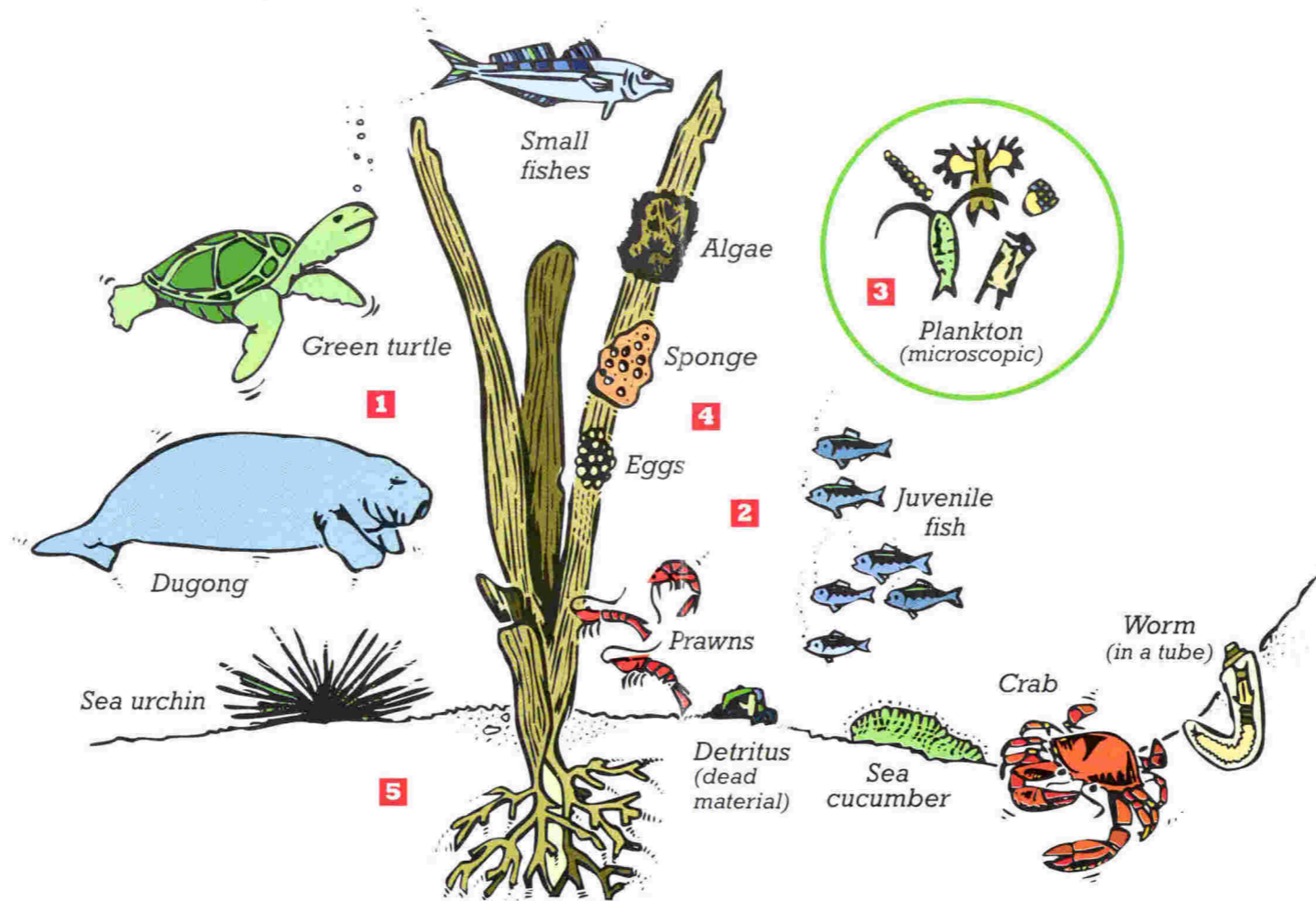
Erect branches and leaves grow off the buried stem. The leaves have a thin skin that allows efficient nutrient and gas uptake from the water.

### SEAGRASS BEDS

Typically, seagrass beds are found in water depths of 2-12 metres, where sunlight intensity is greatest and therefore seagrass growth rate is highest. Seagrass particularly likes estuaries and shallow coastal waters with sandy or muddy bottoms. The plants usually live together in 'seagrass beds' or 'seagrass meadows'.

There are 55 species of seagrass in the world, from the frozen seas of the Arctic to the southern end of New Zealand. Tropical regions however have the greatest variety with two to three times the diversity of temperate waters.

# Seagrasses Save the Sea



**Seagrasses are vital for the ongoing health of our coastal waters and fisheries. They stabilise the sand and mud in which they grow, and provide food, shelter, breeding grounds and nursery areas for many marine organisms, such as fish, crabs, octopus, jellyfish and prawns.**

### FOOD 1 2 3

Green turtles, swans, many invertebrates (animals without backbones), and some vegetarian fish feed directly on seagrass. Seagrass is also the only food of dugongs (sea cows).

Decaying seagrass leaves also provide the food supply for small animals, such as bacteria, worms and crabs; these in turn are eaten by juvenile fish, prawns and seabirds. In some areas, 65% of the food eaten by mullet are the tiny animals and plants living on the seagrass.

### UNDERWATER REPRODUCTION

Like flowering land plants, a seagrass plant reproduces by producing pollen that attaches itself to other flowers, and fertilises it to produce seed. They do this all underwater, with pollen drifting in water currents until they collide with a flower.

The continual outward growth of seagrass beds is often not due to new individual plants but horizontal stems continually growing.

### HARNESSING THE SUN'S POWER PLANT

Like all plants, seagrasses require sunlight to provide energy for their growth – a process called 'photosynthesis'. Water, carbon dioxide and other chemicals are absorbed from the water and, using energy from sunlight, are converted into oxygen and food. One square metre of this grass generates about 10 litres of oxygen per day.

### EROSION CONTROL 5

Seagrasses stabilise the seabed with their roots and horizontal stems, and shed leaves. This prevents fragile coastal sea floor from eroding and therefore helps to create permanent homes for marine animals.

### SHELTER 4

Small animals and plants shelter in the seagrass leaves, receiving protection from predators, and from too much sunlight, or temporary changes in salinity and temperature. Fast water movement is also reduced considerably within seagrass beds, creating a well-protected home for its inhabitants.

### NURSERY

As a nursery for juvenile fish, crabs and prawns, seagrass meadows are worth hundreds of millions of dollars every year to our subsistence, recreational and commercial fisheries. For example, young prawns hatch in the open ocean and rapidly make their way to coastal waters where they settle in seagrass beds. Here, they receive food and protection from tidal currents and larger predatory fish. When they become large juveniles, they move back out to sea. The same situation exists for many fish species. They are also the place where many animals lay their eggs. If seagrass disappears, so will many of the things from the sea that we like to eat.



# Threats to Seagrass

**N**atural processes, such as storms, can damage seagrass beds. However, because seagrass beds are usually found in shallow coastal waters close to human habitation, they are particularly vulnerable to the impact of human activities.

## DREDGING

The dredging of shipping channels, ports and canals can kill seagrass. Dredging not only physically removes seagrass plants, but also creates muddied water that reduces the amount of sunlight penetrating to the seagrass. Without sunlight the plants cannot grow. Silt particles can also smother and suffocate animals and plants living in the seagrass beds.

## NUTRIENTS

While nutrients, such as nitrogen and phosphorus in fertiliser, will help your garden grow, in the sea they upset a delicate balance and feed the algae which can kill seagrass. Nutrients in the sea may come from sewage, fertiliser run-off from agricultural areas, soils eroding from the land and run-off from cities and towns.

## OIL

Oil spills damage seagrass by directly poisoning the plants and the creatures that live within them. Oil droplets can also attach themselves to mud and sand making them lighter than water. When the tide comes in the oil and soil just floats away. This leads to the seagrass beds eroding and eventually the seagrass dying.

## BOATING

Damage to seagrass meadows by boats is also a major problem. Trawlers scrape the seabed, anchors and anchor chains from boats pull up seagrass, and speed boat propellers tear out the plants. Damage can take decades or even centuries to heal.

## PROTECTION NEEDED

Because they are located within the shallow coastal zones and estuaries, seagrass beds are directly affected by the way we treat the land and what we put into the sea. Ever growing human population along the coastline increases pressure unless we care for the environment. What we do to help the environment generally will also help seagrasses. By managing our land more carefully we will save our seagrasses and our own futures.



## How Can I Help?

**Y**our ideas and actions will make an important difference to saving seagrasses and protecting your marine environment.

Things you can do ~

- Anchor away from seagrass beds to avoid damaging them.
- When boating, go slow around shallow seagrass beds.
- Be careful about what you put down the drain.
- Tell your friends and family about the importance of seagrass to marine life and therefore 'Pacific lifestyles'.
- Look at how your community's activities affect seagrasses.
- Join a community group that actively supports seagrass protection.
- Write letters to your local paper or church newsletter to express your concern over dying seagrass and what that means for the community.
- If you attend school or university, do a research project on human impacts on seagrass.



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WRITING DAVID LLOYD ILLUSTRATION GRAPHIC GESTURE DESIGN WORK OF ART

# Seagrass

in the Pacific

**Why do we in the Pacific need to worry about grass that grows in the sea?**

Seagrass is important to all Pacific Islanders and to the world. It provides the fish we eat a place to breed and live and makes the oxygen we breathe.