
Seagrasses Are Special

Level

7

Key questions

What is a seagrass bed?

What is the importance of seagrass?

What damages seagrass?

Key outcome

Understand the features and importance of seagrasses.

Adapted from 1995, 'Seagrass' *Seanotes*, published by Ocean Rescue 2000, Department of Environment, Sport and Territories, and *Sea Country* May 1996: Information on indigenous issues of the Cape York Marine Parks (Queensland Marine Parks), and undergraduate work in Environmental Education and Communication, Griffith University, Queensland.

Hazard warning!

Snorkelling requires practice, and groups must have shore/boat based observers who are proficient lifesavers. Follow safety instructions set by education and lifesaving authorities.

In Queensland and NSW, all seagrasses are protected and may not be picked or destroyed. In other states, sea grasses may be protected in marine protected areas. In areas without protection, small pieces of seagrass may be picked for later identification. Check with local Departments of Conservation or Fisheries authorities.

What you need

Snorkel equipment

Underwater slates (perspex or plastic) or water proof paper and pencil

Identification reference book on sea grasses

Tape measure

Copy of seagrass food chain and introductory comments.

What you do

Read about seagrasses and then do the fieldwork.

Seagrasses

Seagrasses are found in estuaries and shallow coastal waters with sandy or muddy bottoms all around Australia. The plants usually live together in beds or meadows. There are 25 species in Australia, with the world's largest single seagrass bed in Shark Bay, WA. This is over 1 000 square kilometres in area and has developed over 5 000 years. There are extensive sea grass beds in water over 50 m deep off eastern Cape York in Queensland too, and these are very important feeding grounds for dugong.

Seagrasses require sunlight to provide energy for growth. The leaf blades are specially adapted to capture light. Most sea grasses grow to a length of between two and twelve metres. They provide oxygen into the water, shelter for many marine organisms, and food for fish, turtles, swans, and dugong. Small fish and prawns shelter within the seagrass beds and provide breeding areas for many fish including commercial important species such as whiting, mullet, tailor, flathead and prawns. Seagrass also stabilise the sea bed, preventing erosion, and create permanent underwater communities for algae and marine animals.

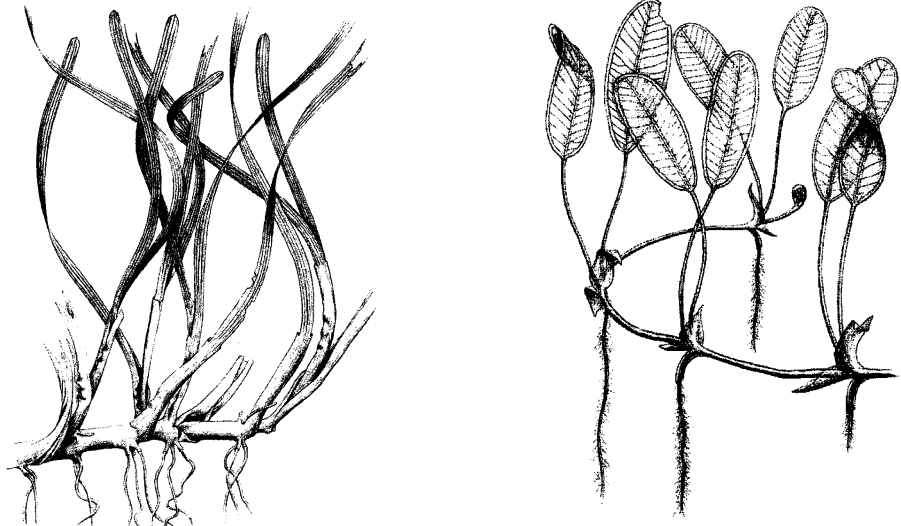
Many seagrass beds around Australian coasts are being

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destroyed by dredging of shipping canals, ports and canal estates. Extra nutrients from sewage or fertilisers in water run off can kill seagrass. Increased sediment from storm run off (often mixed with herbicides) can kill hectares of seagrass after heavy storms or cyclones as sunlight is blocked from the beds. Heavy metal pollution, sand-mining spoil and oil spills also damage seagrass beds. Boats, anchors and speed boat propellers can cause permanent, long term damage.

Measures to save seagrass are not succeeding. Replanting has been trialled but is proving very slow. Aerial mapping now shows the extent of seagrass beds, and coastal managers are now aware of their importance for fish, dugong and turtles. Keeping boats away from shallow beds, reducing sediment outflow from land, and reducing dredging are the chief measures being used.

Figure 1.
Two common
seagrasses



Field work

1. Decide the boundaries of the area to be covered by the whole student group and identify markers or features to set these boundaries (e.g. buoys, edge of pier, anchored boat etc).
2. Work in buddy pairs, one of you with an underwater slate and pencil. You should be able to stand up in the water (being careful not to trample the seagrass). If the water is deeper, make your observations quickly and return to shallower water to discuss these with your partner.
3. Roughly measure out a plot of 5 m by 5 m. Measure the depth of the water (seagrass usually grows between 2-12 m).
4. Record the approximate cover of seagrass, bare sand or rock, algae or other seaweed, coral etc.

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5. Carefully examine the seagrass. Identify the species (two are shown in Figure 1). Draw a sketch of one of the leaves, being careful not to pull up the whole plant.
 - Can you see any roots?
 - Are these growing horizontally along the sand?
 - Are any plants flowering (seagrasses acts like a flowering land plant with pollen floating in the water until they collide with a flower)?
6. Observe life under and around the seagrass.
 - Does algae grow on the seagrass fronds?
 - Can you see molluscs, bivalves, fish, prawns, sea hares or other marine life?
 - Where are they?
 - What are they doing?
7. In sub-tropical and tropical areas of Australia, you may be lucky enough to see dugong, the large 'sea cows' which are herbivore mammals, or green turtles grazing on seagrass. Swans, many invertebrates and some fish may be feeding directly on seagrass.
8. Lie still in the water and assess its clarity. Is there much sediment stirred up or is the water clear (if you have a sechi disk, you can measure how far you can see under water)?
9. Look around you across the seagrass bed.
 - Do you see signs of disruption to the growth?
 - Have anchors dragged across the bed?
 - Is erosion of the seabed obvious?
10. When all pairs have returned to shore, compare your results.
11. Were any parts of the seabed badly eroded and without good seagrass cover?
 - Where was most marine life?
 - What was the average depth and clarity?
 - What was the most dominant species of seagrass?

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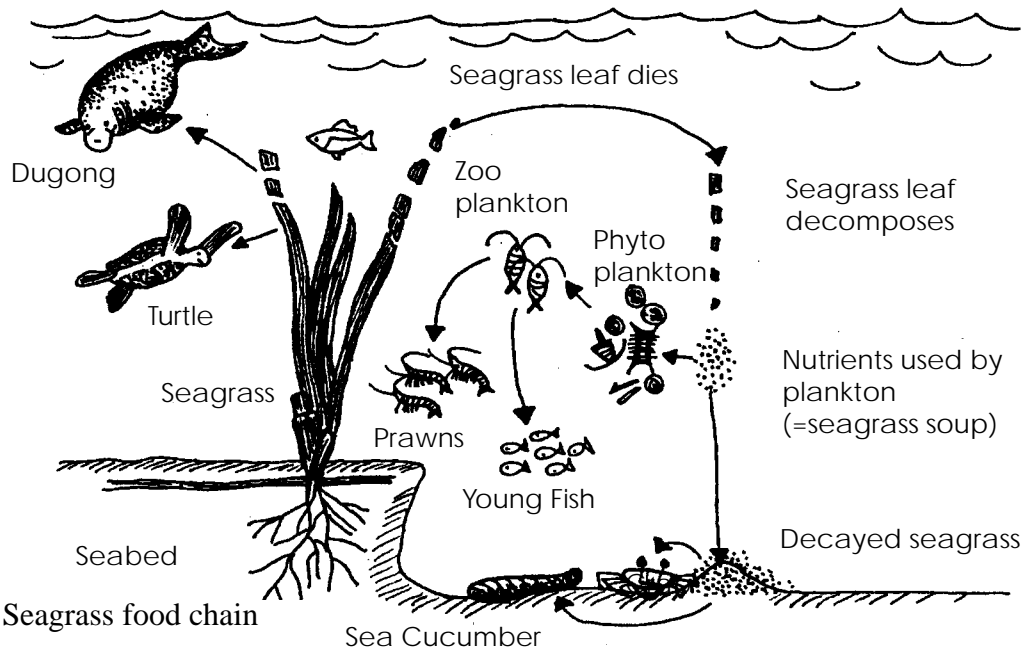


Figure 2. Seagrass food chain
(adapted from *Seacountry* May 1996)

In the classroom

1. Check your observations with Figure 2 (food chain). What elements are missing in your observation area? Can you redraw the diagram providing local information?
2. Can you suggest ways of preserving the seagrass in this area?
3. Undertake some research into case studies of destruction of seagrass and methods being used to rehabilitate seagrass.
4. Undertake research into Aboriginal and Torres Strait Islander literature about their sea country and traditional hunting of dugong for tucker and traditional ceremonies.

References

- Ashton, H.I. 1977, *Aquatic Plants of Australia*, MUP, Melbourne.
Lanyon, J. 1986, *Guide to the Identification of seagrasses in the Great Barrier Reef Region*, Special Publication Series (3), GBRMPA, Townsville.
1995, 'Seagrass', *Seannotes*, D.E.S.T., Canberra.