

Activity Title:

Role of plants in dunes

Focusing question

What role do plants play in the formation and function of the dunes?

Resources required

- PowerPoint presentation – 4d Role of plants in formation and function of dunes
- A3 paper and pens
- Dune vegetation cards. There are two sets – basic (level 3 and below) or advanced (level 4 or higher) – use the dune card set appropriate to student level and ability – page 166
- Copying: create (copy and cut) enough sets of the dune vegetation cards so there is one for each small group.

Prior learning

2a Native dune plants – who lives where and why?

2b Introduced dune plants and weeds

2d Plant ID

2e Plants of the local sand dune community

4a Importance of sand dunes

4b Dune formation

Method

- 1 View the PowerPoint presentation **4d Role of plants in formation and function of dunes** before using it with the class, or set a small group this responsibility. Identify good places to stop for discussion and questioning. Have some questions already identified such as How do foredune plants contribute to healthy dunes? How do the roles of foredune and back dune plants differ?
- 2 The objective of this activity is to explore the role that plants play in the formation and function of sand dunes.
- 3 View the PowerPoint presentation as a class and create a mind map of new learning.

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Role of plants in dunes

Environmental Education Aspect:

About the environment

Environmental Education Concept:

- Biodiversity
- Interdependence
- Sustainability

Curriculum Links:

- Social Science
- Science

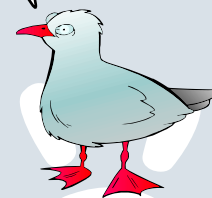
Suggested

Curriculum Level:

Any

SUSTAINABILITY TIP!

Laminate dune vegetation cards for future re-use.



- 4 Use the dune card set appropriate to student level and ability. In small groups summarise and reinforce learning from the PowerPoint presentation by conducting the dune vegetation cards exercise. Each group has two sheets of A3 paper. One headed “Dune vegetation can” and the other headed “Dune vegetation cannot”. Hand out one set of dune vegetation cards to each small group. Place the dune vegetation cards on the correct sheet of A3 paper.

Possible next steps

- Conduct a role play activity where students take on a role pretending to be different parts of the dune system.
- 4e Role of plants in dunes – Bryans Beach case study. This activity looks at a real life case study where the planting of dune plants dramatically stems erosion and alters the shape of a beach, and demonstrates the importance of natural driftwood accumulation.



Basic dune vegetation cards

Dune vegetation can withstand:	Dune vegetation cannot withstand:
Wind erosion	All direct wave erosion
Most waves and storms	Houses being built on them or people playing on them or farming on them
Salt spray and sea water	Damage caused by people's feet, stock or vehicles
Sand blasting	Damage caused by mowing
Sandy soil to grow in	Top-soil
Little water to drink	Introduction of weeds or pest plants



Advanced dune vegetation cards

Dune vegetation can:	Dune vegetation cannot:
Prevent wind erosion by decreasing wind speed at ground level	Prevent all direct wave erosion – dune sand may not be bound sufficiently by plant roots to resist all wave attack. Sand naturally moves onshore and offshore in a cycle
Build up sand dunes and thus reduce the extent of recession produced by a storm	Tolerate significant modification from residential development, recreational activities, farming practices (such as stock grazing) and beach mining
Reduce wave erosion caused by overwash – where dune management allows	Tolerate excessive physical damage caused by people, stock or vehicles
Tolerate a hostile environment – of high winds and salt spray and sea water (in particular native vegetation)	Tolerate mismanagement such as mowing
Tolerate a hostile environment – of sand blasting and being covered by sand	Tolerate top-soiling which prevents free drainage and is unsuitable for growth of many native dune species
Tolerate a hostile environment – of sandy soil and little water	Tolerate the introduction of unsuitable plant species. Some undesirable plants displace natural vegetation – others such as palm trees do not reduce wind erosion and accelerate wave erosion when they fall

