

Activity Title:

Dune use management and different parts of the beach

Focusing question

How do human activities affect different parts of the dune system?

Resources required

- Fact sheet – Dune use – page 225
- A3 sheets of paper and coloured pens
- Beach activity labels – page 227
- Copying: photocopy sufficient beach activity labels for one set per small group. Cut out the labels. Copy the fact sheet Dune use for independent reading.

Prior learning

- 1c Beach diagram
- 3b Parts of the beach and human activities
- 5b How do people affect beaches?
- 5c Positive and negative beach use posters
- 5d Photo montage – human impact on dunes
- 5e Current issue case study – vehicle damage in sand dunes

Method

- 1 This activity investigates how human actions affect different parts of the dune system. The objective of the activity is to create a beach activity plan that presents ideas on how we can minimise negative impact of human activity through controlling what activity we do where on the beach.
- 2 Read the fact sheet **Dune Use**.
- 3 In small groups use coloured pens on A3 (or larger) paper to draw a picture of the beach profile that shows the different parts of the beach. Use colours and labels to show the following areas or zones:
 - i. The beach: low tide to high tide
 - ii. The foredunes
 - iii. The back dune

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Environmental Education Aspect:

About the environment

Environmental Education Concept:

- Personal and social responsibility for action
- Sustainability
- Interdependence

Curriculum Links:

- Social Science

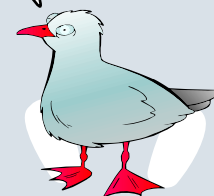
Suggested Curriculum Level:

Any

SUSTAINABILITY TIP!

Laminate the labels for future re-use.

Project a digital image of the fact sheet for everyone to read independently and save paper.



- 4 Imagine you are employed by the council and have been asked to create a beach activity plan. The beach activity plan will determine what activities can occur in which zones on the beach. Use the beach activity labels to show what activities you would or would not allow in the different parts of the beach. Place labels in the zones of the beach to show what activities you would and wouldn't allow in each zone on the beach. Placement of labels should attempt to minimise the impact of human activity on the beach. Not all labels will be used. NOTE: For level 5 and above you may also wish to create your own labels.
- 5 Each group nominates a group spokesperson to present their beach activity plan to the class.
- 6 Discussion:
 - Which part of the dune is most fragile – why is this the case?
 - In real life what are some ways we can reduce human impact on the dunes?

Possible next steps

- 6c RMA and coastal management legislation – an activity that looks at what legislation covers the coast and how this legislation impacts on management of the coast.
- 6f Coast Care jigsaw – an activity that uses jigsaw puzzles and discussion around the Coast Care Code to reinforce learning about how we can help protect dunes.
- 6m Developing a plan of action to protect the local beach – an action oriented activity requiring reflection on what has been learnt during this unit of study and the development of a plan of action for conservation of a local dune system.



Dune use

Many of New Zealand's sandy beaches are backed by a system of sand dunes and interdune hollows. There is an increasing demand by people to use the dunes and beaches more extensively for a range of activities and pursuits.

As the dune system protects the coastline against erosion, increasing use needs to be carefully planned and managed to minimise danger to the dunes and their vegetation.

The beach and frontal dune

The beach itself is tolerant to a range of intensive recreational users, but the frontal dune is extremely fragile. Destruction of frontal dune vegetation results from even moderate pedestrian use.

Once small patches of the frontal dune lose their vegetative cover, strong onshore winds can complete the destruction. Initially this is by producing blowouts, then traverse mobile dunes, and finally a completely unstable dune system that moves inland. Loss of sand from the frontal dune system by wind action accelerates the landward movement of the coastline.

Natural recovery from damage is slow because environmental conditions are unfavourable for plant growth.

Secondary and back dunes

Most other zones of the dune complex are less fragile than the frontal dune. However, these areas are still sensitive to activities – particularly the top and seaward dune faces.

To prevent damage to dune vegetation and to give the damaged areas a chance to recover, it is often necessary to fence off dune areas (especially the frontal dune) and provide access tracks to the beach. This helps in two ways: protection of foredune vegetation, and concentration of people through one area with the assistance of facilities, such as walkways built to lessen the impact.

Vehicles and horses on the beach

Vehicles and horses travelling on the beach between high and low water marks have little impact on the beach system – although they do impact on the marine life such as shellfish beds. Vehicles and horses in the dunes damage and destroy vegetation and can result in increased beach erosion rates.

The main impact is on the dune vegetation, firstly by direct bruising and breaking of the above ground parts, and secondly by physical damage to the underground parts by shearing forces of tyres and hooves.

For many years we have enjoyed the sandy beaches around our coastline and have thought little of our impact upon these places. We are now learning that sand dunes are a dynamic and fragile environment. They require people's understanding and protection for them to retain their protective vegetation and to continue as a buffer between the land and sea margins.

In many areas of the Bay of Plenty, Coast Care programmes are being organised by Bay of Plenty Regional Council in partnership with the coastal district and city councils and the Department of Conservation. They're a chance for the community to become involved in the protection and enhancement of our coastal areas. These groups are involved in a variety of works with support from their local authorities. You are welcome to also become involved and assist at any time with planting, seed collection, fencing or educating others!

If you want more information on Coast Care groups and programmes contact:

**Coast Care Coordinator,
Bay of Plenty Regional Council**

Telephone: 0800 884 880

Facsimile: 0800 884 882

Email: coastcare@boprc.govt.nz

Website: www.boprc.govt.nz

Address: 5 Quay Street, PO Box 364, Whakatāne

Beach activity labels

No vehicles	Pedestrian access restricted to designated pathways
Vehicles permitted	Quad bikes permitted
No horses	Quad bikes not permitted
Horses permitted	Cattle grazing permitted
Vehicles restricted to vehicle access ways	Quad bikes restricted to vehicle access ways
No vehicles	Pedestrian access restricted to designated pathways
Vehicles permitted	Quad bikes permitted
No horses	Quad bikes not permitted
Horses permitted	Cattle grazing permitted
Vehicles restricted to vehicle access ways	Quad bikes restricted to vehicle access ways



No cattle grazing	Walking permitted
No walking	Walking restricted to designated pathways
Walking permitted	Walking restricted to designated pathways
No sand boarding	All pedestrian access permitted
Sand boarding permitted	No pedestrian access permitted
All pedestrian access permitted	No pedestrian access permitted
No pedestrian access permitted	Walking restricted to designated pathways
All pedestrian access permitted	No pedestrian access permitted
No sand boarding	No cattle grazing
Sand boarding permitted	All pedestrian access permitted

