

Activity Title:**Impacting interconnectedness****Focusing questions**

What interrelationships exist within the dune ecosystem?

How are these interrelationships sometimes affected?

Resources required

- Dune interconnection game instructions – page 213
- A ball of string
- Interconnection game cards – page 214
- Photocopying: copy the interconnection cards, punch holes in them and thread string through them so they can be worn around the neck.

Prior learning

1c Beach diagram

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

2h Introduced dune animals – rabbit case study

2i Interrelationships – dune animals and plants

2j Species lost from the beach

2k Ecosystem relationships

4a Importance of sand dunes

4b Dune formation

4d Role of plants in dunes

5a The past – how have people affected beaches?

5b How do people affect beaches?

Special notes

This activity is an extension of the web of life game played as part of activity 2k – Ecosystem relationships. It aims to use knowledge gained in themes 2, 4 and 5 to explore interrelationships within the dune system and how these are sometimes affected by natural or human-induced changes.

Activity Title:

Impacting interconnectedness

Environmental Education Aspect:

About the environment

Environmental Education Concept:

- Sustainability
- Interdependence

Curriculum Links:

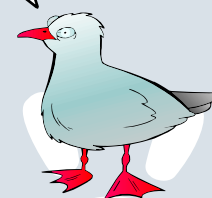
- Social Science
- Science

Suggested Curriculum Level:

Any

SUSTAINABILITY TIP!

Laminate cards for future use!



Method

- 1 The objective of this activity is to explore the interrelationships that exist amongst the dune system. How these interrelationships are sometimes interrupted or affected by natural or human induced factors. The activity explores relationships between different animals and plants (biotic components of the system). It also explores the relationships between biotic and abiotic components (such as sand, wind, sun...) of the dune ecosystem.
- 2 As a revision or review exercise, brainstorm as a group to create a list of biotic (animals and plants) and abiotic (physical non-biological) components of the beach/dune environment. Brainstorm together what has been learned so far about some of the relationships that exist between these different components.
- 3 Play the dune interconnection game.
- 4 Reflect on the implications of taking away, damaging or increasing different components of the system. For example: adding more rabbits, removing or adding more pīngao, increasing waves due to global warming etc.
- 5 Reflection: Do you agree with this statement? Why or why not?
 - Ko ngā takutai moana, ko ngā taipū, ko tātau, raranga tahi kau ana – The coastal strip, the dunes, and us, woven inextricably together.

Possible next steps

- 6a Reducing human impacts – a brainstorm activity looking at what individuals, groups and communities can do to reduce impacts and enhance the beach environment?



Dune interconnection game instructions

What you will need:

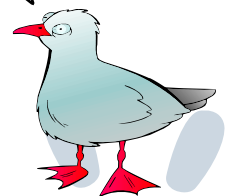
- A large group
- A ball of string
- Interconnection cards with the name or picture of items from the sand dune/beach environment. You may wish to create your own cards or use the ones on the following page.
- Punch a hole in the card and thread string through it so cards can be hung from the neck.

How to play the game:

- The group forms a circle (ideally at the beach near the sand dunes).
- Hand out one card per student. The student 'becomes' the card's subject.
- On the first round, introduce 'yourself' around the circle, such as I am sand.
- On the second round, give the ball of string to one person. That person names a feature they connect with and passes the string to the person holding that particular card. How you connect could be something you give or something you get. For example, pīngao provides dotterel with shelter or pōhuehue provides pōhutukawa with good soil to grow or waves take sand for building offshore sand bars or people remove sand by mining...
- Start slowly and accept all answers to begin with until people have gained confidence in understanding interrelatedness between things. Once everyone has had a turn, you will have created a web of strings showing the interrelatedness of the different parts of the beach ecosystem.
- Discuss how some relationships are positive and others negative.
- Compare the sand dune or beach environment with other environments. For example, a forest, school or city.
- Once a complete web is created, try taking away or increasing some features and discuss what impact these changes would make. For example you could try: adding more rabbits; removing native foredune plants (pīngao and spinifex and shore spurge); adding more native foredune plants; replacing native foredune plants with marram grass; increasing waves due to global warming – in each case discuss what would be affected by this change and the effect would be.

SUSTAINABILITY TIP!

Laminate cards for future use!



Interconnection Game Cards

Sand dune	Pīngao
Tāne	Kōwhangatara or spinifex
Wāhine	Pōhuehue or <i>Muehlenbeckia</i>
Ra	Storm waves



Rauparaha copper butterfly	Pōhutukawa
Rabbits	Black back gulls
<i>Waiū-o-kahukura, Euphorbia glauca or shore spurge</i>	Ngaio
Off-shore sand bars	Sand



Long shore currents	Wind
Pīngao	Foredune
Kōwhangatara or spinifex	Pīngao
Pōhuehue or <i>Muehlenbeckia</i>	Sand
Dotterel	Calm waves

