ACTIVITY

2j (i)

Activity Title:

Species lost from the beach (i)

Focusing questions

What animals and plants have disappeared or become less common on our beaches?

Why have these species become less common?

Resources required

- Fact sheet – Species lost from the beach – page 109
- Three level reading questions – Species lost from the beach – page 111
- Copying: make copies of the fact sheet Species lost from the beach and the three level reading questions, or project a digital image of the fact sheet.

Prior learning

2i Interrelationships – dune animals and plants

Special notes

The three activities (2i, 2j and 2k) fit together well as a study of interrelationships and biological diversity. There are great learning links between each of these activities and their associated worksheets.

Method

1 The objective of this activity is to conduct a literacy exercise investigating what animals and plants have disappeared or become less common on our beaches and to begin to explore why this might be the case.

2 Independently read the fact sheet **Species lost from the beach**.

3 Complete the three level reading questions using the following as a guide:

- level one (literal) – the student reads the lines to work out what the writer says;
- level two (interpretative) – the student reads between the lines and infers what the writer means;
- level three (applied) – the student reads beyond the lines and relates the knowledge to other contexts.

Activity Title:

Species lost from the beach

Environmental Education Aspect:

About and For/With the environment

Environmental Education Concept:

- Interdependence
- Biodiversity
- Sustainability

Curriculum Links:

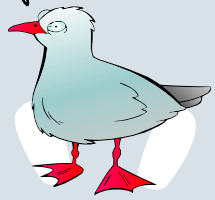
- Literacy

Suggested Curriculum Level:

Secondary

SUSTAINABILITY TIP!

Instead of photocopying one for each student, project a digital image of the fact sheet and save paper.



Possible next steps

- 2j (ii) Species lost from the beach – building on this literacy exercise to develop an action plan for a species disappearing from our beaches.
- 2k Ecosystem relationships – a 'thinking' activity involving an investigation into the potential relationships and interdependencies that might exist between the dunes and other ecosystems.
- Create the actions chosen in the final part of the activity as class projects.

Mānuka or *Leptospermum scoparium*, a plant that would have once been common on the back dune is now uncommon in dune areas. (picture 2)

Species lost from the beach

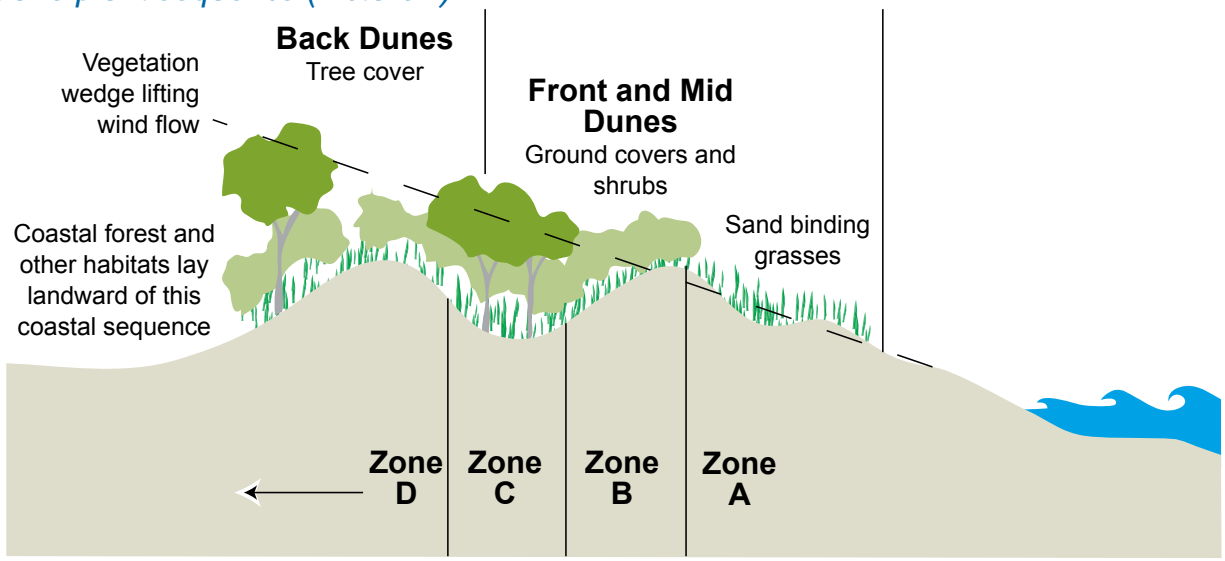
Once upon a time, New Zealand beaches would have looked quite different to how they look today. Imagine a time before humans altered the sand dunes and developed the coastline. Dunes would have backed onto coastal forest, providing natural pathways for forest species to move between dunes and inland forest. Mature forest would have existed on the back dune (Zone D in picture 1 below). Back dunes provided older sands or shingle with sufficient organic matter to shelter and allow taller plants to flourish. Plants like mānuka (see picture 2 above) would have flourished in this area – but are now extremely uncommon on the back of the dunes.

The smaller trees and shrubs that grew on the dunes would have been a very good food source for the birds up in the hills. During the winter and late into the spring they would come down from the hills because there wasn't much food available up there. They would feed along the coast where the weather is a bit kinder.

Plants like pōhuehue or *Muehlenbeckia* which flowers then seeds in late autumn would have provided a food source right through the winter when native birds came down from the mountain areas. The Coast Care Coordinator says "all things seem to happen for a reason. I think that is probably one reason why these plants produce seeds as a food source for winter season birds and right through the year for lizards (skinks and geckos of the lizard family)".

But things are not as they once were on the beach. Geckos and skinks are under serious threat and becoming increasingly uncommon on the Bay of Plenty dunes. If you see something move in the dune undergrowth and nothing flies away when you

Dune plant sequence (Picture 1)



Dune plant sequence showing Zone D, which once would have been mature forest. Few of the plants common to this zone now exist on the back dunes in the Bay of Plenty.

Many native insects have become an uncommon rather than common sight on our beaches. The Giant Centipede is an example. This magnificent creature is 20-25 cm long – which is huge! It has blue legs and a brown body and a nasty little sting! It eats other insects, many of which are less common now, so there are not many found on the beaches around the Bay of Plenty.

investigate it is probably a skink that has been out sunbathing in the sun to warm up. They are hard to see as they are quite shy – as soon as you get near them they disappear into the shade.

Many native birds that once came from the forest to feed on dune plants – even relatively common native birds such as the tui and fantail are seldom seen on the beach.

We don't know for sure how many forest birds traditionally visited the beach. Coast Care says "kiwi used to feed on the beach, that's for sure. On Stewart Island there are still kiwi footprints all over the beach. The kiwi would come down and probe in the soft sand with their beaks to feed on sand grubs. It will be interesting to see if that ever reoccurs on Bay of Plenty's Tūhua or Mayor Island where kiwi have been released."

Even birds that traditionally inhabit the beach environment are now seen in reduced numbers. The New Zealand Dotterel is an example of a bird that nests and lives on the beach whose survival as a species has been severely threatened. Once common, New Zealand dotterels are now seldom seen on our beaches. Fairy terns have also largely gone from our beaches.

Katipō spider numbers have reduced. Coast Care says "they are very shy, tiny wee critters and you have to be really patient and look for them for a long time to get any interaction with them at all".

There are other insects that are under threat like the sand scarab beetles. They are still found in some places along the coast. You will find scarab beetles underneath driftwood, even driftwood that is buried in the sand. They are an extremely important species on the beach and dunes. They are very large and interesting and about the same size as a huhu grub.

Why have we lost these animal species?

We have lost many of these animals and plants from the dunes because their habitat has been destroyed.

For example, the sand scarab feeds on the roots of native plants and also on driftwood – especially buried driftwood. In many places native plants have been replaced by introduced species. Quite often there is not a lot of driftwood around because people collect or burn it.

Humans have introduced animals (especially mammals) that are a major problem to many native animals. Skink populations have been reduced by cats. Unfortunately cats don't even eat them but they will catch them and kill them and play with them. Cats and skinks just don't go together!

Birds like the dotterel that nest on the beach are preyed upon by cats, rats, possums and stoats.

Human activities such as vehicles and even walking on the beach have impacted on native animals and plants. Vehicles on the beach unknowingly drive over dotterel nests. People walking on the beach can accidentally stand on dotterel eggs.

Find out more

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 3158

coastcare
Tiaki takutai

Bay of Plenty Regional Council in partnership with Tauranga City Council; Whakatane, Western Bay of Plenty, and Ōpōtiki District Councils; and the Department of Conservation.

Three level reading questions:

Species lost from the beach

Level 1

Reading on the lines. Tick those statements from the text that are true and cross those that are not. Make sure you can give reasons for your answers.

❒ New Zealand beaches have always looked as they do today.

❒ Once upon a time mature forest would have existed on the back dunes.

❒ Skinks are under serious threat and becoming increasingly uncommon on the dunes.

❒ Even relatively common native birds such as tui and fantail are now seldom seen on our beaches.

❒ The giant centipede has red legs and a black body.

❒ Scarab beetles are found underneath driftwood.

Level 2

Reading between the lines. Tick those statements that you think are true from what the text suggests. Find evidence in the text to support your answer.

❒ Mature forest on back dunes is now extremely uncommon.

Reason:

❒ Humans have impacted on native forest birds, such as tui or fantail, now seldom seen on the beach.

Reason:

❒ Human actions have affected populations of the New Zealand dotterel.

Reason:

Level 3

Reading beyond the lines. Tick those statements you agree with using what the author says and what you know. Be prepared to back up your argument with reasons.

❒ Restoring mature forest to the back dunes would positively impact on a number of native animals once found on our beaches.

Reason:

❒ There are ways that we can reduce the impact of humans and bring back some of the animals that have been lost to the dunes.

Reason:

ACTIVITY

2j (ii)

Activity Title:

Species lost from the beach (ii)

Focusing questions

What animals and plants have disappeared or become less common on our beaches?

Why have these species become less common?

Resources required

- Large sheets of paper and pens
- Fact sheet – Species lost from the beach – page 109
- Action planner template – page 115
- Digital projected image of the Action planner template – page 115

Copying: make copies of the fact sheet or project as a digital image.

Prior learning

2j (i) Species lost from the beach (literacy exercise)

2i Interrelationships – dune animals and plants

Special notes

The three activities (2i, 2j and 2k) fit together well as a study of interrelationships and biological diversity. There are great learning links between each of these activities and their associated worksheets.

Method

1 The objective of this activity is to investigate what animals and plants have disappeared or become less common on our beaches and to begin to explore why this might be the case.

2 Independently read the fact sheet **Species lost from the beach**.

3 The following activity can be done as a diagram or mind map or chart. In small groups, using pens and A3 paper, list native animals and plants that have become less common or absent from New Zealand beaches. This can be done using information from the fact sheet (suggested for level 3 and 4) or as an internet/ library research activity (suggested for level 5 and above). In the space surrounding the list give all the possible reasons for the disappearance or reduction in numbers of native animals and plants on New Zealand beaches.

Activity Title:

Species lost from the beach

Environmental Education Aspect:

About and With/For the environment

Environmental Education Concept:

- Interdependence
- Biodiversity
- Sustainability
- Personal and social responsibility for action

Curriculum Links:

- Science
- Social Science

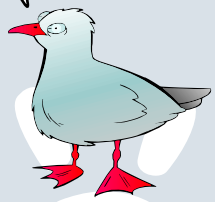
Suggested Curriculum Level:

Any

SUSTAINABILITY TIPS!

Instead of photocopying one for each student, project a digital image of the fact sheet and save paper.

Project digital image of the action planner template and get students to create their own version on re-used paper or card.



Action planner template