

Activity Title:

Role of plants in dunes – Bryans Beach case study

Focusing question

What role does vegetation play in the formation and function of the dunes?

Resources required

- Case study: The story of Bryans Beach – page 169
- Copying: copy case study (one per student or use digital image).

Prior learning

4a Importance of sand dunes

4b Dune formation

4d Role of plants in dunes

Method

- 1 The objective of the activity is to illustrate using a real life example what role plants play in the formation and function of the dunes.
- 2 Independently read the case study: **The story of Bryans Beach.**
- 3 In groups or as a class discuss
 - What was happening to the beach in the absence of native dune plants?
 - What role and function was performed by the dune plants at Bryans Beach?

Possible next steps

- 4f Beach profiling – eroding and accreting dune comparison – a field activity comparing the different beach profiles for an eroding dune and an accreting dune.

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Role of plants in dunes
– Bryans Beach case study

Environmental Education Aspect:

About the environment

Environmental Education Concept:

- Biodiversity
- Interdependence
- Sustainability

Curriculum Links:

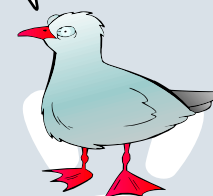
- Social Science
- Science

Suggested Curriculum Level:

Any

SUSTAINABILITY TIP!

Project a digital image of the case study and save paper.





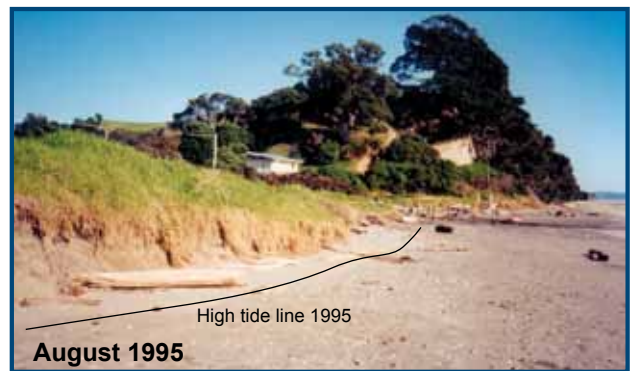
Case study: The story of Bryans Beach

A story - as told to the Coast Care Coordinator

"In 1976 there was a big erosion episode at Bryans Beach. It had finally taken away all the sand that had been loosened and modified by human activity. It shouldn't be any surprise that sand was stripped away although most people were surprised! The sea was then breaking up against the cliff until July 1998. During a 1998 storm a whole pile of driftwood was deposited on the beach. From then on sand started accumulating around the piles of driftwood and formed what appeared to be little islands of sand. These little islands of sand lifted small parts of the beach up higher than the rest of the beach.

In 1999 Bryans Beach Coast Care planted the little islands of sand with native dune plants. There was still sea water coming around these piles but the plants themselves were higher to stay safe. Now a few years later, the plants have grown down the piles of driftwood, and the long runners from the spinifex and pīngao have rapidly colonised the sand. The dune plants have been accumulating or building up the sand. In 1999 the beach was only two to three metres wide. In 2006 the beach was 130 metres wide – much wider than what it was when Coast Care started working there.

It's rather astounding what plants can do to the beach. I believe that most of the sand that came up on that beach was stored on the offshore bars and it was just waiting for dune conditions to improve so it could be trapped again. As soon as the plants were restored and the calm weather waves returned the sand to the beach, water and wind distributed the sand around the plants. The plants colonised this returning sand and trapped it there, beginning the dune rebuilding process. This process happened each time weather conditions were suitable to bring sand back up onto the shore and now the dune and beach are over 130 metres wide."



August 1995

The protective native plants on the original dune were damaged or destroyed, possibly contributing to the erosion of that dune. It was reported that the eroded area had previously been used as a hay paddock! Note the kikuyu grass killed by salt water.



July 2004

A period of natural sand deposition provided an opportunity for the locals. They started planting here in 1999. The restored dunes ensure safe recreation, and natural protection for houses and roads from storm damage. All this accretion only five years after planting!

Atawhaia ngā taipū - Nurture the dunes

