Foredune Vegetation

working *together* to care for *our* coast

in partnership with...

Environment Bay of Plenty

Western Bay of Plenty District Council

Tauranga City

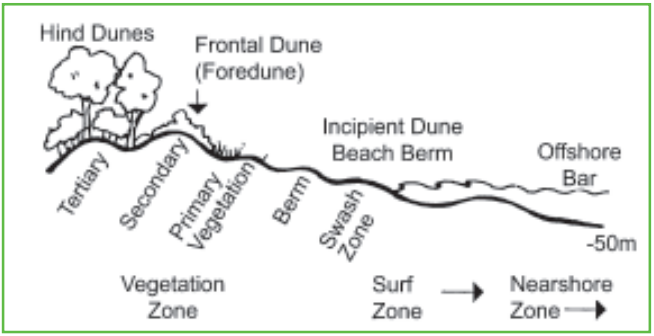
Opotiki District Council

Department of Conservation Te Papa Atawhai

Coast Care BOP Programme

Coast Care Information Brochure Number 3

Appropriate native vegetation plays an important part in the formation and stabilisation of coastal sand dunes.



Large areas of our coastal foredunes have been modified by residential development, recreational activities, farming practices and beach mining. These disturbances have led to a change in the dune stability, often resulting in vegetation loss and wind erosion. Introduced plant species have been planted to try to stabilise these areas and in some areas these have displaced native species. To date, no introduced plants have been found to provide equal or better protection than the native dune plants. The superior function of native dune plants is the principle practical reason for their exclusive use by Coast Care groups in the Bay of Plenty Region.

Recently, there have been some attempts to restore the natural coastal vegetation on sand dunes. The Resource Management Act (1991) places an obligation on land managers to protect and preserve the natural character of the coastal environment, including areas of native vegetation.

Pioneer foredune plants, spinifex (*Spinifex sericeus)* and pingao (*Desmoschoenus spiralis*), trap wind blown sand in the frontal dune. This sand serves as a reservoir for the beach during periods of wave erosion. If sand-trapping dune vegetation is not present, wind-blown sand from the beach moves inland and is lost from the beach/dune system.

The above-ground parts of these dune plants act as filters, causing a reduction in the surface speed of sand carrying wind. This reduction in wind energy results in the deposition of sand on and around these plants, to naturally rebuild dunes after wave attack.

Spinifex and pingao have the ability to grow through accumulations of wind blown sand. Cycles of sand deposition and plant growth result in dune formation and buildup.

Secondary vegetation zone plants, may cover the crest of the foredune and extend inland to include the secondary dune. They can gradually replace the foredune plants where soil conditions improve and habitat conditions become less hard (e.g. decreased exposure to salt spray and sand blast).

Where these plants form a dense cover, the dunes are well stabilised.

Coastal forest or tertiary zone vegetation, is composed of trees and shrubs, and represents the climax or mature state of natural coastal vegetation. (This forest zone has disappeared from nearly all of New Zealand's coastal dunes due to land development).

Many of the coastal forests species can tolerate growing in the secondary vegetation zone, but are in shrub form or stunted, due to excessive exposure to strong winds and salt spray.

Dune Vegetation Can ✔

Prevent Wind Erosion by decreasing wind speed at ground level

Build Up Sand Dunes and thus **Reduce The Extent Of Erosion During Storms**

Reduce Wave Erosion Caused By Overwash - where dune management allows.

Tolerate Hostile Environment - of high winds, salt spray, sand blast, covering by sand, sandy soil and little water.

Accept Massive Movements Of The Dunes both vertically and horizontally.

Dune Vegetation Cannot ✘

Prevent Direct Wave Erosion - dune sand is not strongly bound by plant roots under heavy wave attack

Tolerate Excessive Physical Damage - caused by people, stock or vehicles

Tolerate Mismanagement such as:
- **Mowing**: which destroys some species!

Tolerate Topsoiling: which prevents free drainage and is unsuitable for growth of many native dune species.

Tolerate Introduction Of Unsuitable Plant Species: some undesirable plants shade-out and displace natural vegetation.

Foredune Primary Zone

Pingao
Desmoschoenus spiralis
Spinifex (Kowhangatara)
Spinifex sericeus
Sand fescue (Hinarepe)
Austrofestuca littoralis
Beach spurge (Waiuu-o-kahukura)
Euphorbia glauca
Sand convolvulus (Nihinihi)
Calystegia soldanella
NZ Ice Plant (Horokaka)
Disphyma australe

This list has been compiled with the assistance of *Forest Research* and local nurseries.

Sand Secondary Zone

Pohuehue
Muehlenbeckia complexa
Sand Coprosma
Coprosma acerosa
Carex
Carex testacea
Tauhinu, cottonwood
Cassinia leptophylla
Harakeke, flax
Phormium tenax
Ti kouka, Cabbage Tree
Cordyline australis
Toe toe
Cortaderia toe toe
Taupata
Coprosma repens
Haupara, Coastal Fivefinger
Pseudopanax lessonii

Coastal Forest Teritary Zone

Pohutukawa
Metrosideros excelsa
Karo
Pittosporum crassifolium
Kohuhu
Pittosporum tenuifolium
Ngaio
Myoporum laetum
Puriri
Vitex lucens
Akeake
Dodonea viscosa
Kanuka
Kunzea ericoides
Karamu
Coprosma robusta
Manuka
Leptospermum scoparium
Hebe species
Ti kouka, Cabbage Tree
Cordyline australis
Haupara, Coastal Fivefinger
Pseudopanax lessonii

Titles in this information series are:

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No. 9	Backyard Buffers
No. 10	Coast Care Code

Contact

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