

RESTORATION OF DIFFICULT SAND DUNE SITES

Guidelines for Restoration

The Coastal Restoration Trust of NZ is developing guidelines for community and management agencies with a step-by-step approach to restoration of our most challenging dune systems. The guidelines will include all elements relevant to successful restoration including landowner involvement, site preparation, species selection, implementation, monitoring, maintenance, and costs.

The guidelines will draw on lessons learned from a wide range of other projects on the Northland, Auckland, Waikato, Bay of Plenty, Taranaki, Kapiti, Tasman, and Pegasus Bay coasts.

They will be available as peer-reviewed Technical Articles published as part of the Coastal Restoration Handbook available on the website.



What is classified as a Difficult Sand Dune Site?

- Sites on particularly exposed coastlines, sometimes in more remote locations and/or where significant weed problems occur.
- These sites typically have little or no indigenous biodiversity and poor dune form and function.
- Several flagship sites have been identified in the Waikato region which are examples of difficult sites to restore and where collaborative projects are underway.



EXPOSED HIGH ENERGY WEST COAST SITES

Restoration of two severely degraded dunes on exposed, high energy Waikato west coast sites, typical of many difficult sites around New Zealand

Nukuhakari Station north of Awakino

- A large sheep and cattle farm on the west coast north of Awakino where stock access has led to serious degradation and wind erosion.
- Several bays exposed to the prevailing westerly winds with extensive landward migrating dunes now cover several hectares of both front and back dunes.
- Activity to date includes largescale planting along a very exposed northern section and establishment of fertiliser trials 20 m above the high water mark at the southern end.
- Planting of several thousand spinifex is well underway to forming a vegetated foredune that is reducing sand movement landward.
- Focusing areas between existing vegetation to form a continuous zone of vegetation is proving successful.



Overlooking the site soon after planting was initiated in early 2015 (left). By April 2016 further planting of spinifex and pingao had seen development of a spinifex-dominated foredune that is reducing landward migration of sand and allowing the landowner to attempt re-sowing of pasture (right).



Establishment of the fertiliser planting trials in collaboration with the Waikato Regional Council and landowners Hamish and Bridget Nelson (left). Foredune vegetation comprising spinifex and pingao five months after planting in 2016 (right).

Seaview, Awakino

- A private camping ground where the natural dunes have been levelled, filled and grassed; adjacent shoreline presently experiencing severe wave erosion along this high wind and wave energy coastline.
- Dune restoration includes reshaping of erosion scarp, removal of fill to landward zone, planting spinifex on the frontal dune, and establishing a vine/rushland on landward sites.
- Ongoing issues include severe wave overtopping of the low dune during occasional storm events where limited space was available to form the dune, weed management, protection of cultural sites, and disposal of unearthed debris.
- In collaboration with the camp ground manager focus has been on monitoring and maintenance (planting and weed control).



Typical view of the severely eroding modified frontal dune prior to restoration (left) and the restored area two years after reshaping and planting in spinifex (right).

WEED-INFESTED BACKDUNE EAST COAST SITES, COROMANDEL

Restoration of two severely degraded weed-dominated backdune sites on the Waikato east coast which are typical of modified dune sites at urban/resort communities elsewhere in the country

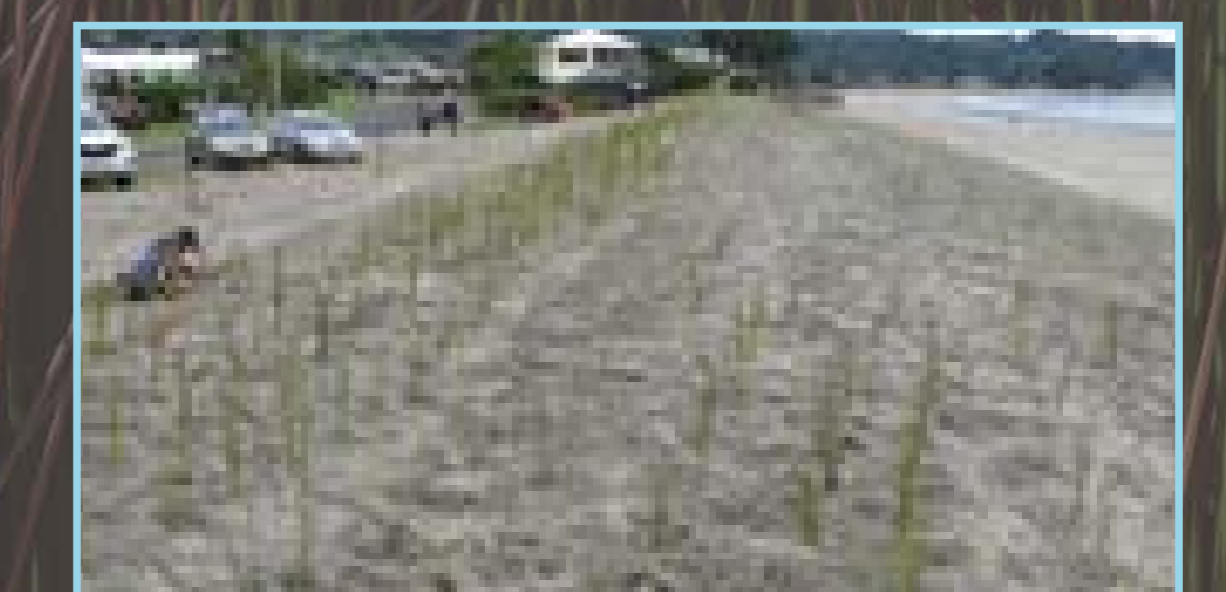
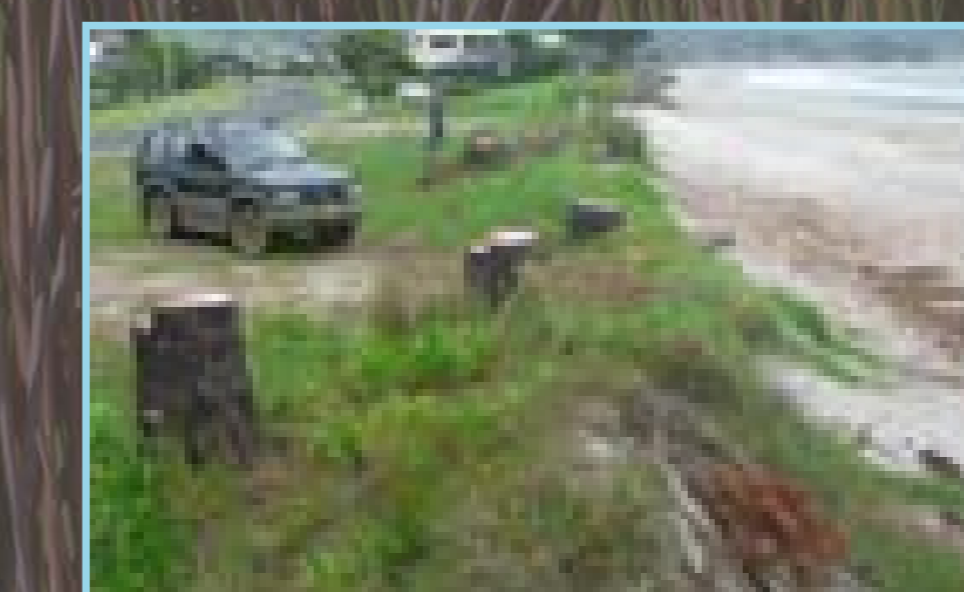
Cooks Beach and Whangapoua Beach, Coromandel Peninsula

- Sites have expanded and now include locations at Whangapoua, Whitianga, Cooks Beach, Tairua, Pauanui and Whangamata.
- Frontal dune areas are dominated by dense exotic vegetation communities; other areas have had the original dune bulldozed level at the time of development, and then grassed, often over a clay/fill cap.
- This project focuses on working with adjacent private landowners in restoration of these areas in collaboration with Waikato Regional Council and Thames Coromandel District Council.
- As dunes are dominated by exotics, a 'whole-of-dune' approach involves:

- blanket spraying of dense, exotic vegetation from front to landward;
- mechanical removal and burial of the vegetation cover and seed banks;
- re-shaping where needed; and
- dense planting of native sand binders on frontal dunes, and wiwi and other mid-dune species landward up to property boundaries.



Whangapoua Beach - restoration work end of Year 1 (above) and end of Year 2 (below) where wiwi is the dominant native successfully planted.



Cooks Beach - before restoration (left), during planting following spraying and earthworks (middle), and after planting (right).



Cooks Beach eastern end - project area towards the end of Year 1 (left) and a year later (right)