



Section 4: Priority Waikato ecosystems

Beaches and dunes

Most of the region's western coasts consist of high-energy black sand beaches and dunes. The east coast of the region is more sheltered and beaches and dunes are mostly made of white sand.

Our beaches are inhabited by a variety of species, including shellfish such as tuatua and biscuit shells, and a variety of crustaceans such as sandhoppers and paddle crabs. The dunes provide homes and food for small animals including insects, spiders, butterflies, moths and lizards, which in turn provide habitats for shorebirds.

Endemic species of shorebirds are found along the Waikato shorelines, such as:

- New Zealand dotterel
- variable oystercatcher
- wrybill.

Threats to beaches and dunes

Human activities are the main threat to beaches and dunes. Coastal subdivision and other land use activities have had a huge impact on coastal dunes since the 1950s, particularly along the eastern Coromandel. At least 70 per cent of the region's dune areas have been modified for coastal subdivisions, forestry, agriculture and sand mining.

Residential development and associated human activity along dunes has resulted in the removal of sand from dune systems, the loss of dune binding plants such as pingao and spinifex, and threatened dune plants such as the sand tussock *Austrofestuca littoralis*. This has led to the loss of the protective buffer dunes provide against coastal erosion and flooding. In most areas, residential development or agriculture has taken over back dune areas that used to be in coastal forest. There is no remaining full sequence of native dune vegetation left in the Waikato region.

Some threats to dunes:

- Introduced exotic plants that reduce natural character and affect natural dune building and repair include marram, boneseed, wild ginger, coastal wattle, bushy asparagus, kikuyu, agapanthus, silver/white poplar, box thorn, sweet pea shrubs, yukkas, *Agave americana*, blue morning glory and pampas.
- Grazing of dune vegetation by stock, rabbits and hares.
- Sand mining and extraction for iron sands.
- Discharge of stormwater from coastal subdivisions that accelerate beach and dune erosion and degrade amenity and natural character.
- Damage to sand binding grasses by off-road vehicles and pedestrian trampling, leading to serious wind erosion and disruption of natural dune building.
- Predation of ground nesting shore birds by introduced predators (including feral cats, rats, mustelids, dogs and hedgehogs).
- Loss of shore bird habitat due to introduced plants.
- Disturbance to nesting shorebirds by humans, dogs and vehicles.
- Dumping of garden waste on sand dunes.

In the future, sea level rise and other changes likely from predicted global warming could drive further dune erosion.



New Zealand dotterel
Image courtesy of Liz Maire

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Spinifex is an important sand dune binder
Image courtesy of the Department of Conservation

Existing development on the back dunes means that in a lot of cases, natural shoreward movement of dunes can not occur, and they will be "pinched out".

Which types of beaches and dunes are most depleted in our region?

Natural dunes are depleted on both coasts of the Waikato region.

- The east coast (Coromandel Peninsula) beaches and dunes are the most depleted. Many of the natural dunes have been flattened and built on, so both the original structure and vegetation have been severely altered. There are just a few sites where natural dunes remain, but none have a complete sequence of natural vegetation from sand binding grasses through to coastal forest.
- The west coast has seen less development on the dunes, but the vegetation has been altered considerably through changing land use. Many dunes (such as those at Kawhia) are covered in exotic forestry, and native sand binding grasses have been replaced by introduced marram grass.

How do I know what to do, and when?

To carry out restoration work on beaches and dunes you will need to work in conjunction with a beachcare group. To find out if there is one already operating at your beach, or to organise a new one, phone Environment Waikato.

The table overleaf can help your beachcare group to prioritise actions that can help to protect and restore these environments. The actions are listed in roughly priority order, though each site is different and will require its own assessment. It is important to both protect and enhance what small areas of dune still exist. New development needs to be set back far enough from the sea to allow for natural changes in the shoreline, as well as possible future erosion caused by climate change and sea level rise.

Beaches and dunes hot tips

- Call Environment Waikato's Freephone 0800 800 401 or visit their website for information on beaches, dunes, beachcare groups and plant and animal pests: www.ew.govt.nz
- Visit the Weedbusters website: www.weedbusters.org.nz
- Visit the Landcare Research website and read their factsheet on how to prioritise weeds: www.landcareresearch.co.nz/research/biodiversity/landscapesprog/workshops/Stanley_WeedSheet.pdf
- Visit the New Zealand Ecological Restoration Network for information on ecological restoration: www.bush.org.nz/nzern
- Read Environment Waikato's "Fragile: A Guide To Waikato Dunes".
- Read "Which Coastal Plant" by Andrew Crowe, an informative and simple guide to the identification of New Zealand's most common coastal plants.
- Read "Plants of the NZ Coast" by L B Moore and N Adam.



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Choosing Actions: Beaches and dunes

Assess needs/plan

Do this before anything else! Seek professional advice if you need to identify the management issues for your site. Check with Environment Waikato to find out if there is a Beachcare group for your area. You can also get advice from other agencies such as DOC, local councils, local iwi and community groups to find out about similar or related projects planned or underway nearby. Write up a plan of action.

Seek funding

Complete this table to determine what actions are needed and how much each will cost before you apply for funding. You may need to obtain funding before you can start on the work. Call 0800 BIODIV for advice. Remember that dunes and beaches are generally public property. Seek permission from the authorities to erect structures, remove weeds or undertake any planting.

Action and Priority	Comments
Protect shorebirds 1 st Research 2 nd Education 3 rd Signs/Fences	<ul style="list-style-type: none"> Contact the New Zealand Ornithological Society or the Department of Conservation to find out if your area is an important nesting or roosting site for shorebirds. They may also have historical information. If the site is very depleted of shore birds, monitor the situation for a few years to see what changes occur. Encourage the local community to protect shorebirds. Use meetings, presentations, newspaper articles, brochures and posters to highlight the plight of local species. Seek permission and community support to place fencing and signs around shorebird nesting sites during the breeding season. This will encourage people to keep a respectful distance and prevent dogs, pedestrians and vehicles from trampling eggs and disturbing birds. Control pests (see below).
Minimise human damage 1 st Exclude vehicles 2 nd Exclude pedestrians from sensitive areas 3 rd Education	<ul style="list-style-type: none"> Talk to Environment Waikato about options for excluding vehicles from dune areas. Erect signs to educate people about the value of and need to keep off fragile dunes. Build wooden access ways and negotiate fenced off areas to encourage people to keep off fragile dunes and protect sand grasses and back dune vegetation. Plan access ways that will have minimal effect on the dune vegetation. Place signs near access ways to inform people of re-vegetation activities and the importance of leaving dunes undisturbed.
Control weeds 1 st Plant pests 2 nd Other weeds 3 rd Replace with natives	<ul style="list-style-type: none"> Deal with regional plant pests first, including boneseed, pampas, gorse and broom. See Environment Waikato's website. Remove other exotic plants and weeds such as marram grass and wilding pines from the dune and beach area and replant in native vegetation. It is particularly important to replace marram to ensure the dune remains stable. Note also that getting rid of some weeds can just encourage others! Get good advice on weed management. Replace weeds with native plants to reduce weed re-invasion.



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Action and Priority	Comments
<p>Planting</p> <p>1st Stabilise the seaward dune face</p> <p>2nd Stabilise loose migrating sand</p> <p>3rd Restore the back dunes</p>	<ul style="list-style-type: none"> • If the fore dunes are bare, plant native sand grasses such as spinifex and pingao on the seaward dune face to bind the sand. Use ecosourced plants. Don't plant trees or shrubs in the sand grass area seaward of the dune crest, as these species will be subject to salt burn or erosion. • Plant sand binders on loose sand close to the beach. • Plant ground covers, shrubs and trees on the back dunes. These native species can include dune sedge, flax, toetoe, <i>Coprosma repens</i>, cottonwood, karo, ngaio, akeake and pohutukawa. See Auckland Regional Council's website for more planting ideas. • Apply slow release fertilizer at the time of planting. Use water retention crystals and weed releasing in early stages of planting where practical.
<p>Control pests and stock</p> <p>1st Exclude stock</p> <p>2nd Control predators</p> <p>3rd Control herbivores</p>	<ul style="list-style-type: none"> • Prevent stock from grazing on dunes and trampling on beaches. • Hedgehogs, cats, rats and mustelids destroy the breeding attempts of ground nesting birds such as dotterels. Talk to Environment Waikato for advice on pest control, particularly in areas where public safety is important. • Back dune plantings are subject to rabbit and hare browsing. Control these pests if possible to avoid loss of plantings. If it is not appropriate to use poisons or other control methods in public places, try painting the plants with rabbit deterrent. See the plant and animal pest section on Environment Waikato's website for repellent recipes.
<p>Monitoring</p> <p>Monitor success of actions</p>	<p>Take photos of your site. Keep records of which plants you have planted survived so you can learn for next time. Monitor the number of insects and other wildlife on the beach and dunes. If the project is large and needs a lot of funding get a professional monitoring programme in place, to show results to community and funding agencies. Seek advice from the Department of Conservation or the New Zealand Ornithological Society for monitoring shorebirds and animal pests.</p>

