

# coastal planting guide 2

No. 2

## Dunes

Vegetation plays an important role in the formation and stabilisation of coastal sand dunes. Residential development, recreational activities, farming practices and sand mining have contributed to the modification of coastal dunes. Dune vegetation has been damaged or destroyed, and this has led to dune instability and wind erosion. Introduced plant species such as marram (*Ammophila arenaria*) have been planted to try and stabilise these areas and in some areas have displaced native species. It is now recognised that native dune plants provide the best protection.

Pioneer foredune plants, spinifex (*Spinifex sericeus*) and pīngao (*Desmoschoenus spiralis*), trap wind blown sand in the frontal dune (foredune) and have adapted to grow through accumulations of wind blown sand. The leaves and runners of these plants cause a reduction in the surface speed of wind. The reduction in wind energy results in the deposition of sand on and around these plants, naturally rebuilding dunes after erosion.

The **backdune** area is the more stable area behind the foredune. In this area, conditions are slightly more sheltered and a wider range of species may be grown.



Established dune vegetation at Tawharanui Regional Park.

### Did you know?

Coastal sand dunes are threatened habitats. Over the last 50 years, 70% of Auckland's dunelands have been lost.

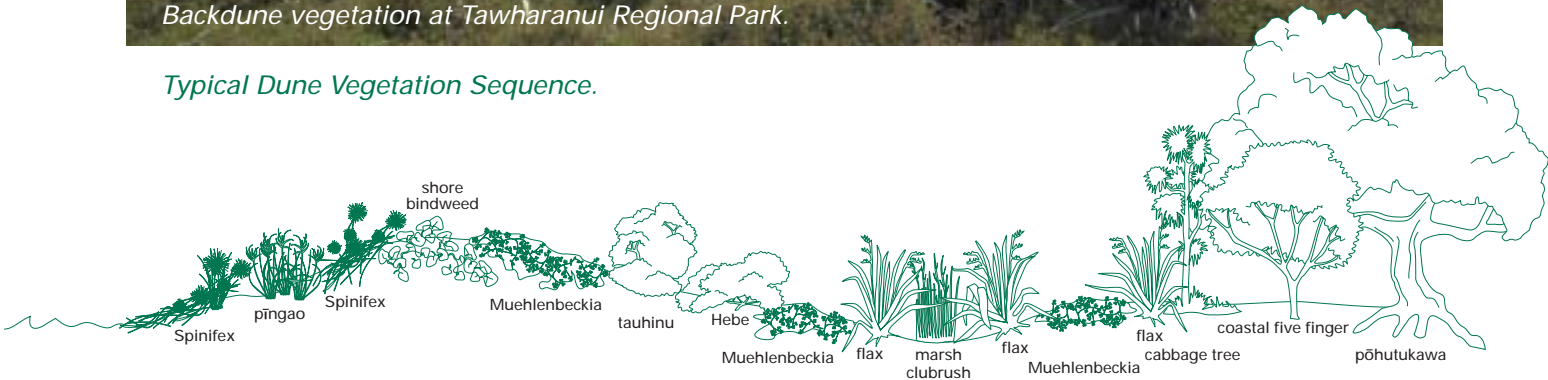


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Backdune vegetation at Tawharanui Regional Park.

Typical Dune Vegetation Sequence.



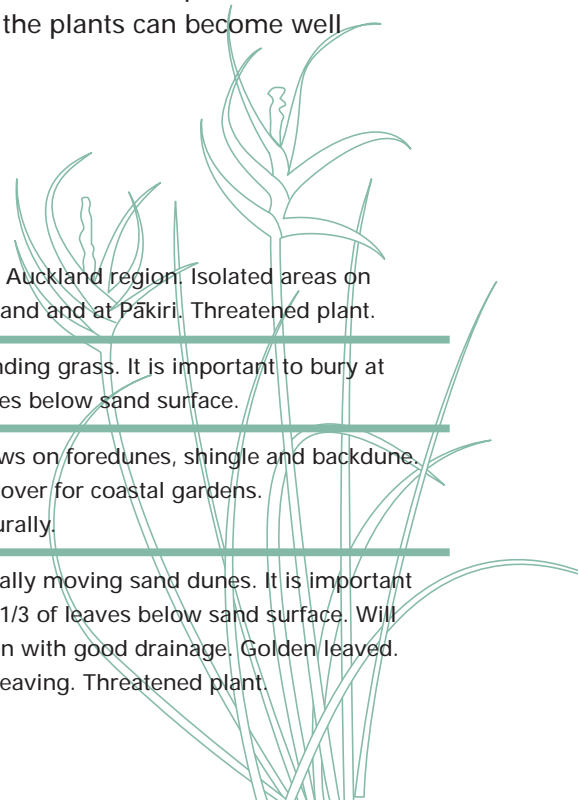
## Planting list

Some species which are successful on dunes are listed in the following table. It should be noted that there are other native plants that would be suitable for these areas around Auckland, however this table provides a manageable number of species that should result in a functional ecosystem.

It is important that **ecologically appropriate** species are planted, and where practicable to obtain plants that have been grown from local sources (ie 'eco-sourced'), so they are able to cope with local environmental conditions. Plant in autumn for best results, so that the plants can become well established before the dry summer months.

### Foredune

Māori name/ Common name	Botanical Name	Life Form	Height	Comments
hinarepe/ sand tussock	<i>Austrofestuca littoralis</i>	tussock	0.5	Not common in Auckland region. Isolated areas on Great Barrier Island and at Pākiri. Threatened plant.
kōwhangatarā/ spinifex	<i>Spinifex sericeus</i>	grass	0.5m	Silvery sand binding grass. It is important to bury at least 1/3 of leaves below sand surface.
nihinihi/ shore bindweed	<i>Calystegia soldanella</i>	ground cover	0.2m	Pink flower, grows on foredunes, shingle and backdune. Also a ground cover for coastal gardens. Establishes naturally.
pīngao/ golden sand sedge	<i>Desmoschoenus spiralis</i>	sedge	0.5-1.0m	Grows on naturally moving sand dunes. It is important to bury at least 1/3 of leaves below sand surface. Will grow in a garden with good drainage. Golden leaved. Also used for weaving. Threatened plant.



## Backdune

Māori name/  
Common name

Botanical  
Name

Life  
Form

Height

Comments

	<i>Carex testacea</i>	grass	0.3m	Orange grass found in backdune. Attractive plant for coastal gardens.
akeake	<i>Dodonaea viscosa</i>	small tree	10m	Hardy. Attractive pale green seed (summer). Requires shelter from salt laden winds.
giant umbrella sedge	<i>Cyperus ustulatus</i>	sedge	0.8m	Good in damp areas such as backdune hollows. Forms large dense clumps.
harakeke/flax	<i>Phormium tenax</i>	herb	2-3m	Very hardy, tolerant of salt exposure. Grows in a range of conditions. Excellent shelter, erect leaves. Upright in habit with tall flower heads that attract birds.
houpara/ coastal five finger	<i>Pseudopanax lessonii</i>	small tree	7m	Good colonising plant in damaged coastal areas. Grows to a large tree. Glossy leathery leaves. Responds well to pruning. Very hardy.
karo	<i>Pittosporum crassifolium</i>	small tree	10m	Common vigorous coastal shrub/tree with grey-green foliage and dark red flowers that are scented at night. Tolerates strong wind, salt and poor soil. Flowers attract birds.
kukaraho/purua marsh clubrush	<i>Bolboschoenus fluviatilis</i>	sedge	1-2m	Can grow in dune hollows. Fast growing. Stems die back over winter.
mākaka/ NZ broom	<i>Carmichaelia australis</i>	small tree	10m	Small bush with lavender flowers.
ngaio	<i>Myoporum laetum</i>	tree	8m	Very wind hardy, grows well in sandy soil. Fleshy gland dotted leaves. Good shelter tree. Frost tender.
oioi/jointed rush	<i>Apodasmia similis</i>	rush	1m	Bordering salt marshes and estuaries, or in dune hollows.
pōhuehue/ wire vine	<i>Muehlenbeckia complexa</i>	vine	1m	Hardy, ideal for banks and other difficult sites. Vigorous shrubby ground cover. Dense tangled mass along rocky coast and dunes. Plant in zone immediately landward of sand binders.
pōhutukawa	<i>Metrosideros excelsa</i>	large tree	25m	Tolerates tough conditions but requires protection from browsing when young. Crimson flowers at Christmas attract birds.
sand coprosma	<i>Coprosma acerosa</i>	ground cover	0.5m	Small orange leaves with pale blue translucent berries. Rare in Auckland region.
tauhinu/ cottonwood	<i>Ozothamnus leptophyllus</i>	shrub	5m	Grows in sand dunes and will tolerate dry cottonwood conditions and wind. Grey/green foliage. Very hardy. more common on West Coast sites.
taupata	<i>Coprosma repens</i>	shrub or small tree	2-4m	Large shrub or small tree with dark green, glossy, rounded leaves. Very hardy, excellent wind and seaspray shelter. Orange berries attract birds.
tī kōuka/ cabbage tree	<i>Cordyline australis</i>	tree	17m	Erect tree with crown of narrow leaves tufted at the end of branches, white flowers in spring. Requires some protection when young. Moderate tolerance to salt and wind. Plant back from the estuarine edge and in damp dune hollows. Fruit attracts birds.
toetoe	<i>Cortaderia splendens</i>	large grass	3m	Tolerates drought and salt wind. Can grow on dry disturbed sites. Tall dense creamy-gold flowering plumes. Not to be confused with the invasive pampas grass from South America which is later flowering

Dune Vegetation Can:	Dune Vegetation Cannot:
Provide habitat and increase biodiversity	Prevent direct wave erosion
Prevent wind erosion by decreasing wind speed at ground level	Tolerate excessive physical damage caused by people, stock or vehicles
Build up sand dunes and reduce the extent of erosion during storms	Tolerate mismanagement such as mowing
Tolerate a hostile environment with high winds, salt spray, sand blast, covering by sand, sandy soil and little water	Tolerate top soiling
Accept massive movements of the dunes	Tolerate introduction of unsuitable plant species
	Tolerate burning

## References

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- Morton, J. 1993. *A Natural History of Auckland*. Bateman in association with ARC.

## Need More Information?

Many of the native plants listed in the coastal planting guidelines are on display at the Auckland Regional Botanic Gardens in Manurewa. Please feel free to visit the Gardens to familiarise yourself with these plants. For further information on coastal planting, local nurseries, pest control, funding opportunities, coastal management and ecological restoration please contact Enviroline on 366 2000 or check out our website – [www.arc.govt.nz](http://www.arc.govt.nz)

## Other factsheets in this series:

- 1 Coastal Planting Guide
- 3 Coastal forests
- 4 Coastal cliff tops
- 5 Coastal wetlands, saltmarshes and estuaries
- 6 Coastal clay banks



*Pīngao in flower, Karioitahi*

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