



# Ground Cover Plants

## for restoration of backdunes

### INTRODUCTION

A range of native ground cover plants dominate the zone between the sand binding foredunes and the coastal shrub and tree zones landward (refer to Dunes Trust Handbook Article No. 2.4 – Zonation and Succession). The ground cover zone, as with other zones, has been heavily modified since human occupation. These impacts including grazing, pest animals, exotic plants and development are discussed in Section 10 of the Dunes Trust Handbook.

A surprising diversity of native plant species establish and flourish within this ground cover zone. Habitats vary from exposed dune crests and seaward facing slopes to more sheltered leeward slopes and low lying swales. Information on the native ground cover species that inhabit this exposed low vegetation zone can be found in numerous sources such as the New Zealand Plant Conservation Network; NatureWatch NZ; Bay of Plenty Regional Council Backyard Buffers; Esler 1978; and Champion et al. 2012.



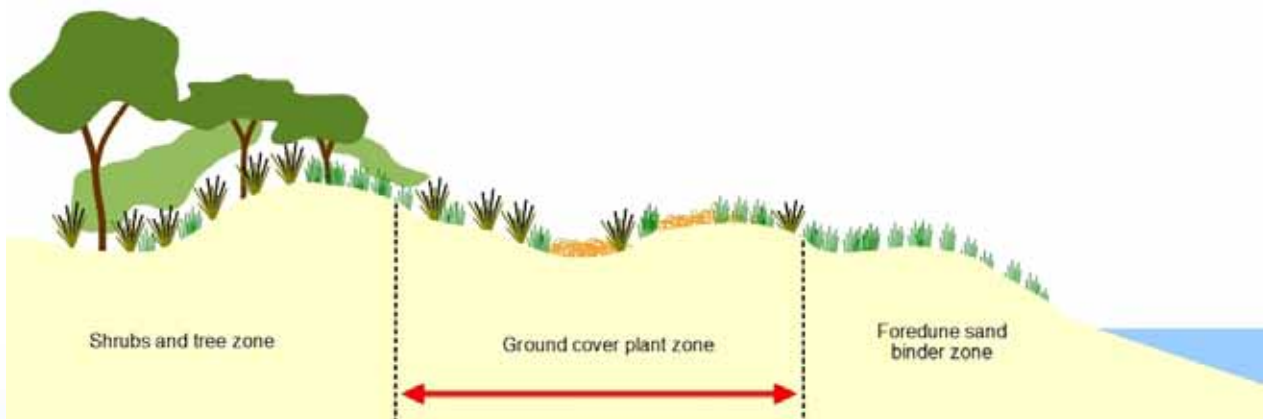
## KEY SPECIES FOR RESTORATION

While restoration projects have invariably involved planting a wide range of plant species, experience from a review of backdune projects nationwide indicates that only a handful of the hardiest early successional species are necessary for successful restoration of backdunes. This article therefore focusses on the major native ground cover plant species that should be planted or are likely to readily regenerate when restoration of the semi-stable ground cover zone is undertaken.

A brief outline has been compiled for selected native species commonly used or readily regenerating in dune restoration areas.

This includes plant description, natural distribution, ecological characteristics and tips on establishment and management. It is recommended that species are planted within their natural ranges.

Many of these species can also be used as part of early successional recovery on landward dunes that will eventually become colonised by shrubs and trees. Species that occur in specific habitats within this zone such as those associated with wetlands and dune lakes will be covered separately in future articles.





**POHUEHUE** Wire vine (*Muehlenbeckia complexa*)



*Description:* A wiry creeping vine forming dense springy mats up to 1m high; climbs over other vegetation and any obstacles such as fencing.

*Natural distribution and habitat:* Common throughout the country; occurs landward of sand binder foredune zone; provides shelter and food for several native creatures including a native copper butterfly Rauparaha that only lives on this species.

*Flowering and seeding:* Numerous creamy white flowers appear in summer; translucent silver fleshy berries appear in autumn and early winter.

*Establishment:* Can be difficult to establish even where natural colonies are common; increased success and growth rates when planted in sheltered sites and when planted in combination with knobby club rush (wiwi); established pohuehue provide shelter for regenerating native shrubs and trees on landward sites.





### TARAKUPENGA Sand coprosma (*Coprosma acerosa*)

*Description:* A low-growing sprawling shrub with orange-brown intertwining supple stems and narrow green leaves.

*Natural distribution and habitat:* Found nationwide; occurs landward of sand binder zone often in association with pohuehue; has become increasingly scarce in many regions although substantial numbers of plants can be found on some beaches.

*Flowers and seeding:* Produces pale blue translucent berries in autumn.

*Establishment:* Can be difficult to re-establish by planting; grown from seed or cuttings; greater success likely when planted in more sheltered microsites.



### WIWI Knobby club rush (*Ficinia nodosa*)

*Description:* A rush-like plant with tall, stout, dark-green stems and distinctive seed clusters just below pointed tips; older stems become straw coloured.

*Natural distribution and habitat:* Very common nationwide; grows in wide variety of conditions on dunes including semi-stable foredunes amongst sand binders but is particularly successful on sheltered landward slopes and moist hollows.



*Flowers and seeding:* Flowers appear from September to December, and fruits from November to May.

*Establishment:* Easily raised from seed or transplanted as divisions from larger plants; useful early successional species for backdune areas even in bare sand (see Coromandel case study); useful for providing initial shelter for inter-planting and encouraging regeneration of other ground cover species and early successional planting on landward shrub and tree zones.



**NIHINIHI Shore bindweed, sand convolvulus (*Calystegia soldanella*)**

*Description:* A perennial herb with stout fleshy roots and branching stems that form dense patches; dies back in colder months but resprouts from rhizomes; sometimes mistaken for an exotic weed.

*Natural distribution and habitat:* Found growing on the foredune amongst spinifex and pingao and in the mid-dune area in sand and shell banks; trailing amongst ground cover such as pohuehue.



*Flowers and seeding:* Solitary pink and white flowers appear from October to March; produces smooth, dark brown seeds throughout the year.

*Establishment:* Regenerates naturally on most foredunes, often amongst a light cover of the native sand binders and ground cover zone with pohuehue; do not need to plant.

**SPECKLED SEDGE (*Carex testacea*)**

*Description:* Densely tufted sedge with orange-red leaves that become long and trailing when mature.

*Natural distribution and habitat:* Throughout North Island, less common in South Island; hardy and grows in a variety of habitats and particularly the semi-stable open zone immediately landward of sand binders.

*Flowers and seeding:* Flowers comprise spikes forming dark-brown almost black nuts; flowers appear from September to December, and seeds from November to May (though seeds may be present throughout the year).



*Establishment:* Easily grown from seedlings or by division of established plants; does well immediately landward of sand binders and among low backdune ground cover; use local sources of closely related *Carex* 'raotest' on west coast from Auckland to Wellington.



**TOROHEKE** Sand daphne (*Pimelea villosa*)



*Description:* Low-growing, much-branched, sprawling shrub with small, pale-green pointed leaves with hairy undersides.

*Natural distribution and habitat:* Nationwide; confined to sand dunes and associated swales and flats; an endangered native plant is in decline and is now rare in most regions; reasons for decline not fully understood – likely to include competition from invasive exotics, disturbance by pest animals, disturbance by beach users.

*Flowers and seeding:* Hairy white flowers with black, red, pink or white fruit; flowers appear from September to March and seeds from October to April.

*Establishment:* Can be grown from seed or cuttings; generally poor results from planting – trial small numbers on a range of sites.





OIOI Jointed wire rush (*Apodasmia similis*)



*Description:* Dense clumped leafless, tall rush-like plant with grey-green or orange stems with regular horizontal black bands which are reduced leaves giving the jointed appearance.

*Natural distribution and habitat:* Mostly coastal in estuaries, saltmarshes, dunes and sandy flats and hollows; occasionally found inland.

*Flowers and seeding:* Flowers small, dark brown-red clusters at tips of mature stems; flowering October to December, fruiting December to March.

*Establishment:* Easily grown from fresh seed and rooted divisions from established plants; on dunes, can plant in or around seasonally moist areas; not widely planted on dunes – use small numbers in trials first.

## OTHER SPECIES

There are a variety of other species that occur within the ground cover zone that can be interplanted once some of the hardy and more commonly occurring species listed above have become established or regenerate naturally. Some of these occur in transition with seaward sand binding zones and landward shrub zones. Examples include:

Shore spurge, waiu-o-kahukura (*Euphorbia glauca*) – occurs on foredunes and semi-stable dunes with sand binders and ground covers; highly palatable; extinct in many regions.

New Zealand spinach, kokihi (*Tetragonia tetragonioides*) – trailing perennial herb that can occur as dense mats amongst backdune vegetation; can do well in partial shade under shrubs/trees or interplanted with knobby club rush (wiwi).

Sand wind grass, perehia (*Lachnagrostis billardierei*) – dune grass on semi-stable foredunes often in transition between foredunes and ground cover zone.



*The sand dunes of Tawharanui Regional Park, north Auckland, with a wide zone of ground cover plants dominated by pohuhue, knobby club rush and speckled sedge.*

## REFERENCES

Bay of Plenty Regional Council, Backyard Buffers.  
*Coast Care Information Brochure No. 9.*  
Environment Bay of Plenty Regional Council. 24p.

Esler, A.E. 1978: *Botany of the Manawatu District.*  
Government Printer, Wellington,  
New Zealand. 206p.

Champion, P.; James, T.; Popay, I.; Ford, K. 2012:  
*An illustrated guide to common grasses, sedges  
and rushes of New Zealand.* New Zealand  
Plant Protection Society. The Caxton Press.  
Christchurch. 182p.

NatureWatch NZ [www.naturewatch.org.nz](http://www.naturewatch.org.nz)

New Zealand Plant Conservation Network  
[www.nzpcn.net.nz](http://www.nzpcn.net.nz)

Authors:

David Bergin, Michael Bergin, Environmental Restoration Ltd  
Jim Dahm, Eco Nomos Ltd



Dunes Restoration Trust of New Zealand  
Email: [info@dunestrust.org.nz](mailto:info@dunestrust.org.nz)  
[www.dunestrust.org.nz](http://www.dunestrust.org.nz)



Community Environment Fund

The Ministry for the Environment does not necessarily endorse or support the content of this publication in any way.

2014

ISSN 2230-6919

The mission of the Dunes Trust is:

*To see the majority of New Zealand dunes restored and sustainably managed using indigenous species by 2050.*