

NATIVE PLANTING FOR EROSION CONTROL: OTAGO INLAND HILL COUNTRY

	Common Name	Botanical Name	Height (m)	Width (m)	Erosion: Fluvial, Mass, Surface	Drainage	Drought	Waterlogging	Frost	Wind	Co-benefits
PRIORITY PLANTINGS	Ti Kōuka Cabbage Tree	<i>Cordyline australis</i>	5 - 13	2	F/M/S	dry / moist / wet	●	●	●	●	 
	Kānuka	<i>Kunzea ericoides</i>	8 -18	3	F/M/S	dry / moist	●	●	●	●	  
	Mānuka NZ Tea Tree	<i>Leptospermum scoparium</i>	5 - 10	3	F/M/S	dry / moist	●	●	●	●	  
	Rautāwhiri	<i>Pittosporum colensoi</i>	5	4	M/S	moist	●	●	●	●	 
	Kohuhu Black Matipo	<i>Pittosporum tenuifolium</i>	6 - 10	3	M/S	dry / moist	●	●	●	●	  
	Mānatu Ribbonwood	<i>Plagianthus regius</i>	12 - 15	4	M/S	dry / moist / wet	●	●	●	●	 
	Kōwhai Weeping Kōwhai	<i>Sophora microphylla</i>	7 - 25	6	F/S	dry / moist / wet	●	●	●	●	 
SECONDARY PLANTINGS	Toetoe	<i>Austroderia richardi</i>	2 - 3	2	F/S	dry / moist / wet	●	●	●	●	
	Wī Kura / Narrow-leaved Snow Tussock	<i>Chionochloa rigida</i>	1	1	S	moist / wet	●	●	●	●	
	Red Tussock	<i>Chionochloa rubra</i>	1.5	1	S	dry / moist	●	●	●	●	
	Mingimingi	<i>Coprosma crassifolia</i>	4	2	S	dry / moist	●	●	●	●	
	Mingimingi	<i>Coprosma propinqua</i>	1-3	2.5	S	dry / moist / wet	●	●	●	●	
	Kahikatea	<i>Dacrycarpus dacrydioides</i>	25 - 50	5	M/S	moist / wet	●	●	●	●	
	Hard Tussock	<i>Festuca novae-zelandiae</i>	0.4 - 0.6	0.5	S	dry / moist	●	●	●	●	
	Tawhai Rauiki Mountain Beech	<i>Fuscopora cliffortioides</i>	15 - 20	5	M/S	dry / moist	●	●	●	●	
	Kāpuka Broadleaf	<i>Griselinia littoralis</i>	4 - 10	3	S	dry / moist	●	●	●	●	 
	Tawhai Silver Beech	<i>Lophozonia menziesii</i>	20 - 30	5	M/S	moist	●	●	●	●	
	Mountain Akeake	<i>Olearia avicenniifolia</i>	4	2	F/M/S	dry / moist	●	●	●	●	
	Horopito / Pepper Tree	<i>Pseudowintera colorata</i>	3.5	1.5	F/M/S	moist	●	●	● F*	●	 
	Harakeke Flax	<i>Phormium tenax</i>	2 - 3	2	F/M/S	dry / moist / wet	●	●	●	●	 
	Wharariki Mountain Flax	<i>Phormium cookianum</i>	1 - 1.5	1.2	F/M/S	dry / moist	●	●	●	●	 
	Wī Silver Tussock	<i>Poa cita</i>	0.3 - 1	0.5	S	dry / moist	●	●	●	●	
	Mountain Tōtara, Hall's Tōtara	<i>Podocarpus laetus</i>	10 - 20	7	M/S	dry / moist	●	●	● F*	●	
	Tōtara	<i>Podocarpus totara</i>	10 - 30	7	M/S	dry / moist	●	●	● F*	●	
	Hebe Odora	<i>Veronica odora</i>	1	1	S	dry / moist	●	●	●	●	
	Koromiko Hebe	<i>Veronica salicifolia</i>	2	2	S	dry / moist	●	●	●	●	 

Surface erosion: involves the movement of a thin layer of particles across the ground by water, wind or gravity

Mass movement erosion: includes a wide range of erosion types where material moves down slope as a more-or-less coherent mass under the influence of gravity.

Fluvial erosion: involves the removal of material by channelised running water

Tolerance:

Low

Med

High

F*: Frost tender when young.

Co-benefits:



= continued grazing possible



= shelter or nurse plant



= Honey



= attracts nectar/insect feeding birds

NATIVE PLANTING FOR EROSION CONTROL: OTAGO COASTAL HILL COUNTRY

	Common Name	Botanical Name	Height (m)	Width (m)	Erosion: Fluvial, Mass, Surface	Drainage	Drought	Waterlogging	Frost	Wind	Salt	Co-benefits
PRIORITY PLANTINGS	Karamū	<i>Coprosma robusta</i>	4	2	S	dry / moist	●	●	●	●	●	🐝🐦🏠
	Ti Kōuka Cabbage Tree	<i>Cordyline australis</i>	5 - 13	2	F/M/S	dry / moist / wet	●	●	●	●	●	🐝🐦
	Kānuka	<i>Kunzea ericoides</i>	8 - 18	3	F/M/S	dry / moist	●	●	●	●	●	🐝🐦🏠
	Mānuka NZ Tea Tree	<i>Leptospermum scoparium</i>	5 - 10	3	F/M/S	dry / moist	●	●	●	●	●	🐝🐦🏠
	Tarata Lemonwood	<i>Pittosporum eugenioides</i>	6 - 12	3	M/S	moist	●	●	●	●	●	🐝🐦
	Kohuhu Black Matipo	<i>Pittosporum tenuifolium</i>	6 - 10	3	M/S	dry / moist	●	●	●	●	●	🐝🐦🏠
	Mānatu Ribbonwood	<i>Plagianthus regius</i>	12 - 15	4	M/S	dry / moist / wet	●	●	●	●	●	🐝🐦
SECONDARY PLANTINGS	Toetoe	<i>Austroderia richardi</i>	2-3	2	F/S	dry / moist / wet	●	●	●	●	●	🐦
	Wi Kura / Narow-leaved Snow Tussock	<i>Chionochloa rigida</i>	1	1	S	moist / wet	●	●	●	●	●	
	Mingimingi	<i>Coprosma crassifolia</i>	4	2	S	dry / moist	●	●	●	●	●	🐦
	Mingimingi	<i>Coprosma propinqua</i>	1-3	2.5	S	dry / moist / wet	●	●	●	●	●	🐦
	Korokio Wire-netting Bush	<i>Corokia cotoneaster</i>	3	1.5	F/S	dry / moist	●	●	●	●	●	🐝🐦
	Kahikatea	<i>Dacrycarpus dacrydioides</i>	25 - 50	5	M/S	moist / wet	●	●	●	●	●	🐦
	Kāpuka Broadleaf	<i>Griselinia littoralis</i>	4-10	3	S	dry / moist	●	●	●	●	●	🐝🐦
	Houhere / Narrow-leaved Lacebark	<i>Hoheria sextylosa</i>	18	3	M/S	dry / moist	●	●	●	●	●	🐝🐦
	Mountain Akeake	<i>Olearia avicenniifolia</i>			F/M/S	dry / moist	●	●	●	●	●	🐦
	Akiraho Golden Akeake	<i>Olearia paniculata</i>	4	2	S	dry / moist	●	●	●	●	●	🐝🐦
	Hakapiri / Chatham Island Akeake	<i>Olearia traversiorum</i>	4 - 12	2	S	dry / moist	●	●	●	●	●	🐝🐦
	Wharariki Mountain Flax	<i>Phormium cookianum</i>	1 - 1.5	1.2	F/M/S	dry / moist	●	●	●	●	●	🐝🐦
	Harakeke Flax	<i>Phormium tenax</i>	2 - 3	2	F/M/S	dry / moist	●	●	●	●	●	🐝🐦
	Tōtara	<i>Podocarpus totara</i>	10 - 30	7	M/S	dry / moist	●	●	● F*	●	●	🐦
	Horopito / Pepper Tree	<i>Pseudowintera colorata</i>	3.5	1.5	F/M/S	moist	●	●	● F*	●	●	🐝🐦
	Koromiko Hebe	<i>Veronica salicifolia</i>	2	2	S	dry / moist	●	●	●	●	●	🐝🐦

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 Mass movement erosion: includes a wide range of erosion types where material moves down slope as a more-or-less coherent mass under the influence of gravity.
 Fluvial erosion: involves the removal of material by channelised running water

Tolerance:

Low Med High

F* : Frost tender when young.

Co-benefits:



= continued grazing possible



= shelter or nurse plant



= Honey



= attracts nectar/insect feeding birds

EXOTIC PLANTING FOR EROSION CONTROL: OTAGO HILL COUNTRY

Common Name	Botanical Name	Height (m)	Width (m)	Evergreen/Decid	Erosion: Fluvial, Mass, Surface	Drainage	Drought	Frost	Wind	Salt	Coppicing	Co-benefits
Tagasaste Tree Lucerne	<i>Chamaecytisus proliferus subsp. palmensis</i>	5 - 7	5	E	S	dry / moist	●	-9	●	●		  
Macrocarpa	<i>Cupressus macrocarpa</i>	30-40	30	E	M/S	dry / moist	●	●	●	●	●	   
Tasmanian Snow Gum (peppermint)	<i>Eucalyptus coccifera</i>	15	3	E	F/M/S	dry / moist / wet	●	-14	●	●	●	   
Brown Barrel (Ash Group)	<i>Eucalyptus fastigata</i>	30	10	E	F/M/S	moist	●	-12	●	●	●	   
Shining Gum (Shining Gum)	<i>Eucalyptus nitens</i>	50 - 70	8	E	F/M	moist	●	-14	●	●	●	   
Messmate (Stringybark)	<i>Eucalyptus obliqua</i>	25 - 50	10	E	F/M	moist	●	-10	●	●	●	   
Swamp Gum (Gums)	<i>Eucalyptus ovata</i>	17 - 30	6	E	F/M/S	dry /moist / wet	●	-11	●	●	●	   
Alpine Snow Gum (Ash Group)	<i>Eucalyptus pauciflora</i>	8	6	E	F/M/S	dry / moist	●	-20	●	●	●	  
Poplar 'Argyle'	<i>Populus 'Argyle'</i>	TBC	TBC	D	F/M/S	moist	●	●	●		●	  
Poplar 'Fraser'	<i>Populus 'Fraser'</i>	TBC	TBC	D	F/M/S	moist	●	●	●		●	  
Poplar 'Otahuaao'	<i>Populus 'Otahuaao'</i>	TBC	TBC	D	F/M/S	moist	●	●	●		●	  
Poplar 'Veronese'	<i>Populus 'Veronese'</i>	20 - 30	6	D	F/M/S	moist	●	●	●		●	  
Poplar 'Weraiti'	<i>Populus 'Weraiti'</i>	TBC	TBC	D	F/M/S	moist	●	●	●		●	  
Chinese / Yunnan Poplar	<i>Populus yunnanensis</i>	TBC	TBC	D	F/M/S	dry / moist	●	●				  
Basket Willow	<i>Salix 'Moutere'</i>	TBC	TBC	D	F/M/S	moist / wet	●	●	●		●	
Willow	<i>Salix 'Tangoio'</i>	25	8	D	F/M/S	moist / wet	●	●	●		●	  

*:Note: There is little long term information regarding some willow species (and particularly recent willow cultivars) and their ability to spread. Even species previously recommended as low-spread species or thought to be sterile have caused major issues around the country. Although careful selection has been made, strict guidelines will help to ensure the best possible control measures are in place. These recommendations are: keep willow plantings a minimum distance of 50m away from the 1:100 year flood plain of any flow channels, waterways or riverbeds.

Co-benefits:  = shade  = timber/ pulp  = firewood

Tolerance:  Low  Med  High

 = shelter  = Honey  = fodder  = attracts nectar/insect feeding birds

NATIVE PLANTING FOR EROSION CONTROL: OTAGO HILL COUNTRY



Mary Joyce (Naturalist)

Toetoe

Austroderia richardii

Suits damp to wet sites, also tolerates drier sites. Common along stream banks, river beds, around lake margins. Good wind-break once established, protects stock. Bank stabilization plant, also useful in runoff prevention and along water courses.



Jesse Bythell (NZPCN)

Wt Kura / Narrow-leaved Snow Tussock

Chionochloa rigida

Tussock suited for drier sites, common on pastoral grazing lands of high country. Prefers montane to low alpine zones, but is known to descend to sea level in Otago.



Red Tussock

Chionochloa rubra

Grows in the exposed and windy environments, good for wetter soils, also tolerates drier sites, can trap and store snow, which helps regulate water flow in alpine catchments and retain soil.



Wayne Bennett (NZPCN)

Mingimingi

Coprosma crassifolia

Tough shelter plant for drought-prone sites, grows on rocky & sandy soils. Wind hardy. As part of the dry woodland community, it plays an important role in conditioning the soil, this creates a more hospitable environment for less robust species and broadleaf/podocarp forest succession.



Jeremy R. Rolfe (NZPCN)

Mingimingi

Coprosma propinqua

Hardy and adaptable, Tolerating a wide range of growing conditions, including poor soil, gravel, edges of bogs & swamps. Major component of grey shrubland. Fruits attract birds & helps disperse seed.



Karamū

Coprosma robusta

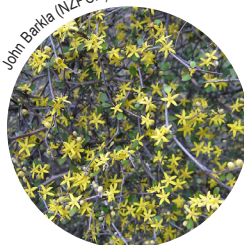
Fast-growing shelter and nurse plant. Laden with bright-orange fruit/seeds, ideal for attracting birds. Shade tolerant. Suits low-frost sites.



Tī Kōuka / Cabbage Tree

Cordyline australis

Widespread and common from coastal to montane forest. Most commonly encountered on alluvial terraces within riparian forest. Hardy to wetland and hill slope planting.



John Barkie (NZPCN)

Korokio / Wire-netting Bush

Corokia cotoneaster

Densely interlaced branchlets. Red berries/seed. It will grow and develop in dry, rocky, and dense soils. Very hardy to drought and cold.



Jacqui Ceux (Naturalist)

Kahikatea

Dacrycarpus dacrydioides

The tallest native growing tree, slow growing, ideal in fertile, moist to wet or swampy ground, tolerates drier rain with good rainfall. Intolerant of heavy frosts.



Hard Tussock

Festuca novae-zelandiae

Hard tussock, common in low tussock grasslands on dry, windy and cold plains in Otago. Deep rooted and dominant on steep, exposed slopes, tolerates poor soils. In alpine areas at lower altitudes *Festuca novae-zelandiae* is associated with (*Chionochloa rigida*).



Jeremy R. Rolfe (NZPCN)

Tawhai Rauriki / Mountain Beech

Fuscospora cliffortioides

The hardiest of the beeches, will grow in most areas, but not in frost hollows. Tolerates hard, dry infertile, poorly-drained land sites in alpine areas by using a nurse species which also helps improve early growth (ie manuka) often growing along the eastern side of the South Island.



John Sawyer (NZPCN)

Kāpuka / Broadleaf

Griselinia littoralis

Bushy tree, grows in a range of soil, prefers well drained. Suits coastal situations tolerating rough winds and drought once established.



James Bailey (Naturalist)

Houhere / Narrow-leaved Lacebark

Hoheria sextylosa

Fast growing tree with slender branches and a profusion of white flowers in summer.



Jeremy R. Rolfe (NZPCN)

Kānuka

Kunzea ericoides

Fast growing, coloniser of dry exposed ground. Grows in any soil type except water-logged. Good for screening or shelter of more tender plants, not usually grazed by browsing animals. Flowers provide a source of nectar.



Mānuka / NZ Tea Tree

Leptospermum scoparium

Prefers cool moist sites, Slow growing but generally hardy. Most beeches prefer some shelter or light shade when first planted, grows well when planted with a nursing species.

NATIVE PLANTING FOR EROSION CONTROL: OTAGO HILL COUNTRY



Tawhai / Silver Beech

Lophozonia menziesii

Prefers cool moist sites, Slow growing but generally hardy. Most beeches prefer some shelter or light shade when first planted, grows well when planted with a nursing species.



Mountain Akeake

Olearia avicenniifolia

Bushy shrub grows on banks and rocky sites in full sun, shadier sites on stream beds and damp gullies. Attractive source of nectar.



Akiraho / Golden Akeake

Olearia paniculata

Suits sunny -dry, coastal exposed sites with well drained soils. Fragrant flowers, good shelter plant.



Hakapiri / Chatham Island Akeake

Olearia traversiorum

Tough shelter tree for dry exposed coastal sites. Endemic to Chatham Islands, not naturally found in the Otago region.



Wharariki / Mountain Flax

Phormium cookianum

Fast growing hardy low shelter, grows on cliffs and mountain slopes, in seepages, along stream sides or on the margins of bogs.



Harakeke / Flax

Phormium tenax

Fast growing hardy low shelter, withstands strong and coastal winds, thrives in diverse environments particularly around water, also tolerates drier sites.



Tarata / Lemonwood

Pittosporum eugenioides

Great in a windy position, also provides a barrier for the surrounding more intolerant plants. Not as cold hardy or dry tolerant as Pitt. Tenufolium.



kōhūhū / black matipo

Pittosporum tenuifolium

Tolerates wind, drought, frost, coastal conditions, also provides a barrier for the surrounding more intolerant plants. A key species for forest revegetation.



Mānatu / Ribbonwood

Plagianthus regius

Fast growing tree often prominent in lowland alluvial forest. Small juvenile foliage is replaced with larger leaves, grows in a range of conditions.



Wi / Silver Tussock

Poa cita

Often found in dry woodland and grassland plant communities, prefers full sun tolerating hardy sites with poor soil.



Hall's Tōtara / Tōtara-kiri-kōtutukutuku

Podocarpus laetus

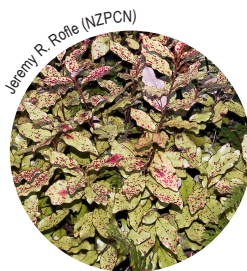
Slow growing and hardy, but preferring some shelter when young, suits being interplanted with a nurse species. Similar to Pod. Tot. but generally occurs at higher altitudes. Often found on impoverished soils.



Tōtara

Podocarpus totara

Slow growing and hardy, but frost tender when young. Suits being interplanted with a nurse species, relative resistance to grazing by livestock.



Horopito / Pepper Tree

Pseudowintera colorata

Dense slow growing shrub, likes rich organic matter. Peppery leaves are unpalatable to browsers.



Kōwhai / Weeping Kōwhai

Sophora microphylla

Compact fine-leaved tree, usually a single trunk with weeping, spreading branches. Nectar for birds. Suited to upper bank plantings of riparian areas, rocky sites and hill slopes, avoid very dry sites.

NATIVE PLANTING FOR EROSION CONTROL: OTAGO HILL COUNTRY

Jeremy R. Rolfe (NZPCN)



Hebe Odora

Veronica odora

Low spreading shrub, inhabiting mountains, grows best in well-drained soils.

Melissa Hutchison (NZPCN)



Koromiko / Hebe

Veronica salicifolia

Fast-growing spreading shrub. Provides good low shelter and is an excellent revegetation plant. Prefers full sun and moist soil. Once established has considerable drought and frost tolerance.

EXOTIC PLANTING FOR EROSION CONTROL: OTAGO HILL COUNTRY

Jeremy R. Rolfe (NZPCN)



Tagasaste / Tree Lucerne

Chamaecytisus proliferus subsp. palmensis

Good nursing crop for native species. Valuable forage, supplementary feed for livestock. 15 year lifespan. Tolerates moderate frosts, best planted away from streams.

Richard (Naturalist)



Tasmanian Snow Gum (Peppermint)

Eucalyptus coccifera

Adaptable species that grows in a wide range of soil types and environments. Good shelter tree creamy-white flower in summer. Snow, wind and frost hardy.

Sly Mazurkewicz (Naturalist)



Brown Barrel (Ash Group)

Eucalyptus fastigata

Large tree, heavily branched when open grown. Tolerates heavy soils of moderate fertility and cool sites. Carry's high volumes of timber and coppices well. Creamy white flowers in summer attract birds and bees, good shelter.

Sam (Naturalist)



Shining Gum (Shining Gum)

Eucalyptus nitens

Fast growing, esp. in fertile & clay soils. Tolerates exposed cold winds, unsuitable for wet or drought-prone sites. Shelter and fuel-wood tree with great timber potential. Common in Otago. Note: Grows a long root run so is best planted set back from productive crop paddocks.

Southernwoods



Macrocarpa

Cupressus macrocarpa

Tolerant of drought, frost and salt-laden winds, it does best in well drained, deep soils at altitudes of up to 600m. Widely planted in New Zealand for shelter and timber. Particularly useful in coastal conditions but does suppress native regeneration when densely planted.

Patrick Whites (Naturalist)



Messmate (Stringybark)

Eucalyptus Obliqua

Fast growing. Tolerates a range of conditions, coastal sites, exposure, clay soil. Profuse flowers in summer for birds & bees. Strong timber, long burning firewood, usually coppices reliably.

Maria Neukomm (Naturalist)



Swamp Gum (Gums)

Eucalyptus ovata

Vigorous grower in damp sites, swamps and waterlogged areas. Strong limbs, not suited to ridge tops or overly dry sites for long periods. White flowers attract Tuis and Bell birds. Provides good shelter and quality firewood.



Poplar 'Argyle'

Populus 'Argyle'

Vigorous grower commonly used as a fodder tree, early rough bark development makes it useful on cattle farms. It tolerates relatively dry and windy sites often used in east coast regions. It is palatable to possums, has moderate resistance to poplar leaf rusts and leaf anthracnose.

poplarandwillow.org



Poplar 'Fraser'

Populus 'Fraser'

Narrow-medium sized crown with only a few heavy limbs. Typically used on lower slopes, below 'Argyle' and 'Veronese'. Palatable to possums, moderate susceptibility to rust. Tolerant to drier sites and wind exposure.

poplarandwillow.org



Poplar 'Otahuaao'

Populus 'Otahuaao'

Medium sized crown, a heavy stem and occasionally a few heavy branches. Moderate growth rate. Female tree particularly suited to eastern regions. It has good wind and drought tolerance and can be used in the lower slopes, below 'Argyle' and 'Veronese'.

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Poplar 'Veronese'
Populus 'Veronese'

Narrow crown. Most suitable species on dry sites, tolerates clay soil and is relatively drought tolerant compared with other poplars. Commonly used on windy and exposed sites. Is not possum resistant. Moderate susceptibility to rust & leaf spot disease. Female tree.



Poplar 'Weraiti'
Populus 'Weraiti'

Narrow-medium sized crown with excellent leader dominance. Female tree. It has good wind and drought tolerance and can be used in the lower slopes, below 'Argyle' and 'Veronese'. is susceptible to rust and possums, but less so than varieties.



Chinese / Yunnan Poplar
Populus yunnanensis

Tall broad-crowned, heavily branched, holds leaves until late autumn. Unpalatable to possums, moderate susceptibility to rust. Has a high zinc content in the foliage assists facial eczema control in sheep. Most tolerant poplar to dry sites.



Basket Willow
Salix 'Moutere'

Dense and reasonably narrow crown. Mainly have a single stem Fast growing. Erosion control for gullies, banks, lower slopes, can also be used for shelter belts. Tolerates windy sites. A male clone. Requires moist site through summer.



Willow
'Salix matsudana x alba 'Tangoio'

Has a wider crown that 'Moutere'. High wind tolerance and very good lower branch retention. Female clone, not to be planted where seedling establishment could be an issue. Excellent root to shoot ration and is ideal for slope and gully erosion control, hillside and shelter-belts. Is more drought tolerant than other species. Has a higher leaf protein for stock fodder.

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