

Coastal Clay Banks

Inland sites such as harbours and estuaries are normally moderately sheltered, low energy environments, which are suitable for a greater diversity of plants than exposed sites like Auckland's west coast. The coastlines of Auckland's estuaries are often cliffs (see Coastal Cliff Top Planting Guide), steep clay banks or estuarine beaches. Clay banks usually comprise weakly consolidated material, which may be prone to weathering and erosion, and are often fronted by intertidal flats and/or a narrow beach. These sites, particularly intertidal flats and coastal fringe vegetation, are generally areas with high biodiversity and conservation values. They provide important habitat for coastal birds and form part of the dynamic and ecologically important sequence of coastal vegetation.

Clay banks bordering harbours and estuaries would have naturally supported a land-to-sea sequence of native vegetation. Tall coastal forest dominated by pōhutukawa, kōwhai and kānuka covered upper clay bank slopes. Towards the base of the bank, this forest would have graded into lower shrubs and flax. Specialised plants able to cope with salty tidal fluxes completed the sequence, forming low saltmeadows and estuarine fringes.

Plant roots are important soil binders on clay banks. Different root structures can work together to help stabilise banks and reduce runoff and erosion. Herbaceous and shrubby plants have shallower root systems while larger trees usually have spreading and deeper roots.

Generally, plants help to slow erosion of clay banks because:

- Foliage breaks the impact of rain drops;
- Plants take up water, which reduces runoff and soil saturation;
- Plant roots improve permeability of the soil;
- Roots and stems increase the roughness of the soil surface, increasing infiltration and reducing runoff; and
- Roots bind the soil and help to reduce slips.



Tu feeding on coastal flax with flowering cabbage tree in background.

Planting list

Species suitable for planting on clay banks 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.

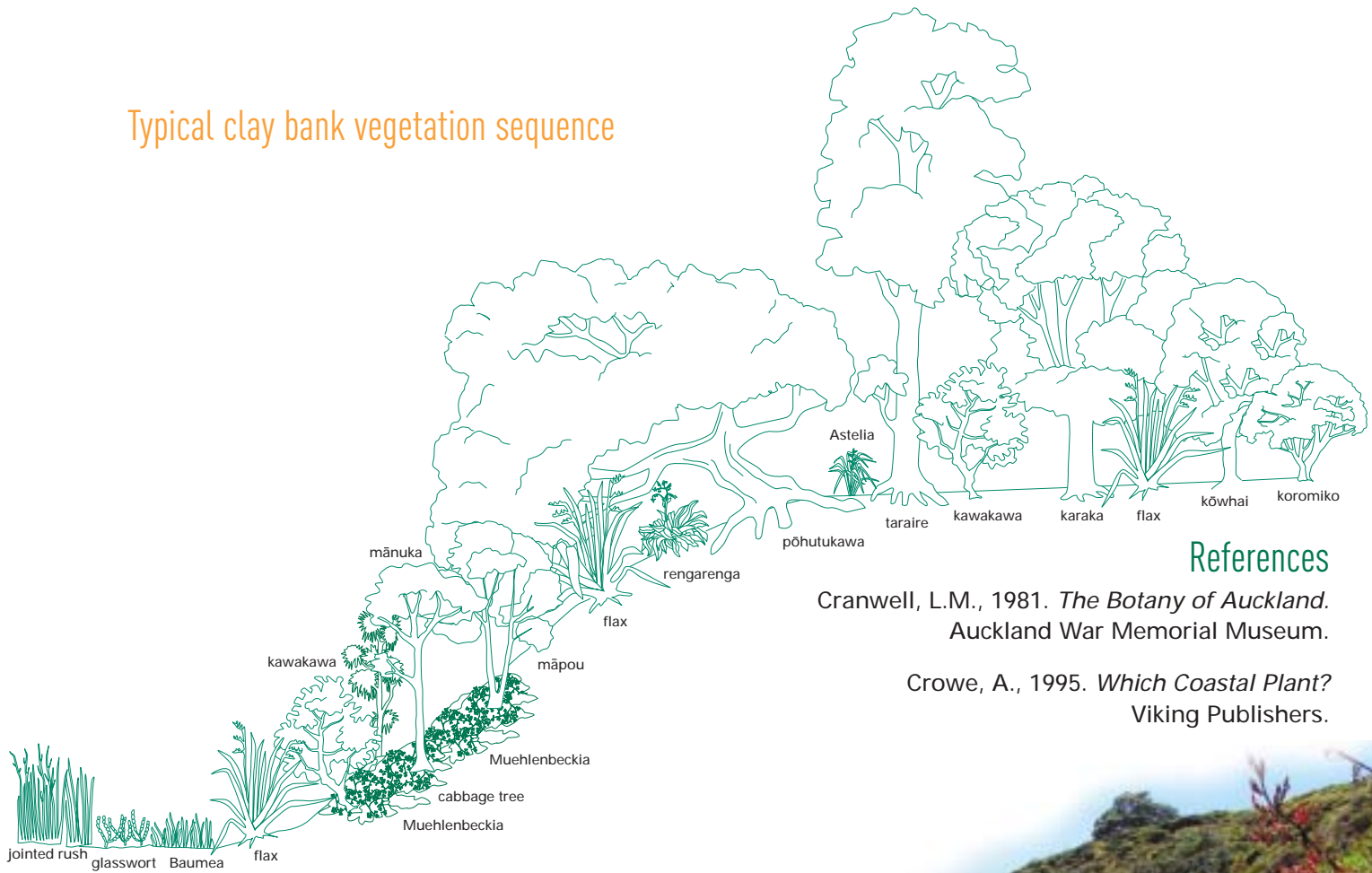
Plants marked with * are colonisers suitable for planting in open situations, where existing vegetation is lacking or has been removed to clear weeds from the site. Other species in this list are more suitable for interplanting in existing vegetation, or after the initial colonisers have become established and have begun to provide some shade and shelter.

Māori name/ Common name	Botanical Name	Life Form	Height	Comments
	<i>Baumea juncea</i>	sedge	1m	Found in lowland coastal swamps, saltmarsh and base of coastal clay banks in estuarine areas.
	<i>Coprosma rhamnoides</i>	shrub	2m	Small leaved divaricating shrub.
akepiro	<i>Olearia furfuracea</i>	small tree	7m	Exposure tolerant. Daisy like flowers in summer.
hangehange	<i>Geniostoma rupestre</i> <i>var. ligustrifolium</i>	shrub or small tree	4m	Lowland shrub with light green foliage. Grows best in full sun. Needs protection from wind when young. Useful understorey species.
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 red flower heads. Attracts birds.
houpara/coastal five finger*	<i>Pseudopanax lessonii</i>	small tree	7m	Good colonising plant in damaged coastal areas. Glossy, leathery leaves. Responds well to pruning. Very hardy.
kānuka*	<i>Kunzea ericoides</i>	tree	16m	Good colonising species. White flowers in spring-summer.
karaka*	<i>Corynocarpus laevigatus</i>	tree	18m	Hardy, leafy canopy tree. Produces large numbers of bright yellowish-orange fruit in summer.
karamū*	<i>Coprosma robusta</i> <i>or C. macrocarpa</i>	shrub or small tree	5m	Hardy shrub with abundant orange berries in late summer-autumn. Moderate salt tolerance. Attracts birds.
karo*	<i>Pittosporum crassifolium</i>	small tree	10m	Common vigorous coastal shrub or tree with grey-green foliage and dark red flowers that are scented at night. Tolerates strong wind, salt and poor soil. Flowers attract birds.
kawakawa	<i>Macropiper excelsum</i>	small tree	7m	Large heart shaped leaves, usually holed by chewing native moth. Self-seeds easily. May need some shelter to establish. Orange fruits in summer attract birds.
kohekohe	<i>Dysoxylum spectabile</i>	large tree	17m	Needs shelter and is frost tender. Flowers and fruits attract birds.
koromiko*	<i>Hebe stricta or H. macrocarpa</i>	shrub	4m	Coloniser. Long, white flower spikes (spring). Excellent on open sites.



Māori name/ Common name	Botanical Name	Life Form	Height	Comments
kōwhai	<i>Sophora microphylla</i> or <i>S. chathamica</i> or <i>S. fulvida</i>	tree	10m	Wind hardy and drought tolerant. <i>S. fulvida</i> should be planted on the Waitakere west coast only.
kōwharawhara or pūwharawhara/ coastal astelia	<i>Astelia banksii</i>	herb	1-2m	Grows on rocks, banks and as an epiphyte often on pohutukawa. Long drooping leaves of silver-green colour. Greenish flowers followed by purple fruit.
māhoe*	<i>Melicytus ramiflorus</i>	tree	10m	Fast growing tree. Good for damp shady sites. Very hardy.
mākaka/ NZ broom	<i>Carmichaelia australis</i>	small tree	10m	Small bush with lavender flowers.
mānuka/ tea tree*	<i>Leptospermum scoparium</i>	small tree	8m	Grows vigorously and has a wide ecological tolerance. Important pioneer species. Forms well developed root system that stabilises banks. White flowers. Avoid disturbing roots when planting.
māpou*	<i>Myrsine australis</i>	tree	7m	Slender tree with red stems. Hardy. Attracts birds.
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.
pōhutukawa	<i>Metrosideros excelsa</i>	large tree	25m	Avoid planting on outermost edge of unstable banks. Tolerates tough conditions but requires protection from browsing when young. Crimson flowers at Christmas. Attracts birds.
porokaiwhiri/ pigeonwood	<i>Hedycarya arborea</i>	tree	15m	Attractive glossy, green leaves, bright orange fruits and black wood. Attracts birds.
puka	<i>Griselinia lucida</i>	tree	8m	Large glossy-green leaf. Very attractive.
pūriri	<i>Vitex lucens</i>	large tree	20m	Pink flowers and berries. Prefers fertile sites. Seeds distributed by kereru/native pigeon.
rangiora	<i>Brachyglottis repanda</i>	small tree	7m	Striking large leaves with grey undersides. Creamy flowers in spring.
rengarenga/ rock lily	<i>Arthropodium cirratum</i>	herb	0.5m	Tolerates light or shade. Prefers dry frost-free sites. Shiny green foliage, white flowers in late spring.
rewarewa/ NZ honeysuckle	<i>Knightia excelsa</i>	tree	30m	Slender tapering tree with long narrow serrated leaves. Rusty red flowers in spring and summer attract tui.
taupata*	<i>Coprosma repens</i>	shrub or small tree	8m	Large shrub 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.
whārangi	<i>Melicope ternata</i>	small tree	8m	Frost tender when young. Attractive shiny green foliage.
wharariki/ mountain flax*	<i>Phormium cookianum</i>	herb	1.5m	Drooping leaves and seedheads. Flowers attract birds. Frost hardy, can withstand strong coastal winds. Also grows in freshwater seepages.
whau	<i>Entelea arborescens</i>	small tree	6m	Relatively short-lived, fast growing tree with large leaves. Attractive white flowers. May need some shelter to establish.

Typical clay bank vegetation sequence



References

Cranwell, L.M., 1981. *The Botany of Auckland*. Auckland War Memorial Museum.

Crowe, A., 1995. *Which Coastal Plant?* Viking Publishers.

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 (09) 366 2000 or check out our website – www.arc.govt.nz

Other factsheets in this series:

- 1 Coastal Planting Guide
- 2 Dunes
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- 4 Coastal cliff tops
- 5 Coastal wetlands, saltmarshes and estuaries



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