

Otago Peninsula Plants

**An annotated list of vascular plants
growing in wild places**

Peter Johnson

2004

Published by
Save The Otago Peninsula (STOP) Inc.
P.O. Box 23
Portobello
Dunedin, New Zealand

ISBN 0-476-00473-X

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Acknowledgements

The data gathering for this list has been carried out while the author has worked as a botanist with the former Botany Division, DSIR, and subsequently with Landcare Research Ltd. Publication of this list has been made possible by a grant to Save The Otago Peninsula Inc. from the Biodiversity Advice Fund. The Biodiversity Advice Fund and the Biodiversity Condition Fund are administered by the Department of Conservation. I thank Moira Parker, Graeme Weir, Lala Frazer, and Jenny Winter (all STOP) for their support and for comments on the manuscript.

I am indebted to botanical colleagues who have helped with plant identifications: Ilse Breitwieser, Elizabeth Edgar, Kerry Ford, Phil Garnock-Jones, Michael Heads, Peter Heenan, Bryony Macmillan, Bill Sykes, Colin Webb, and Hugh Wilson. I am grateful to the late John Holloway for the loan of the field notebook of his grandfather, Rev. Dr J.E. Holloway, who recorded plants at some Otago Peninsula sites in the early decades of last century.

Many of the plant records are not my own, but result from the keen eyes of other plant hunters, especially Don Bruce, Helen Clarke, Peter Cooke, Pat Enright, Michael Heads, Pru Johnson, Rory Logan, Graeme Loh, Richard Lord, David Lyttle, Shanta McPherson, Moira Parker, Brian Patrick, Brian Rance, Aalbert Rebergen, Geoff Rogers, and the late Jeanette West.

Introduction

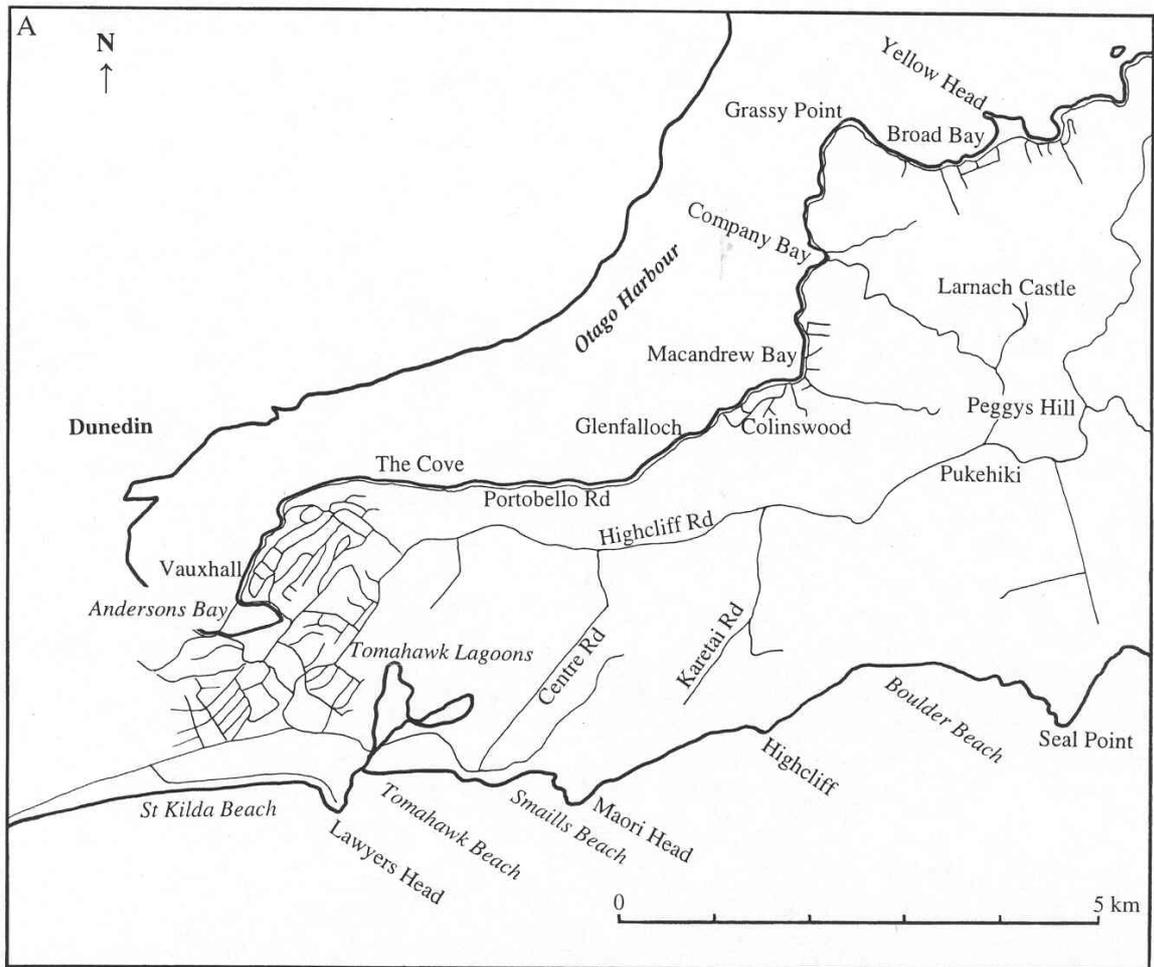
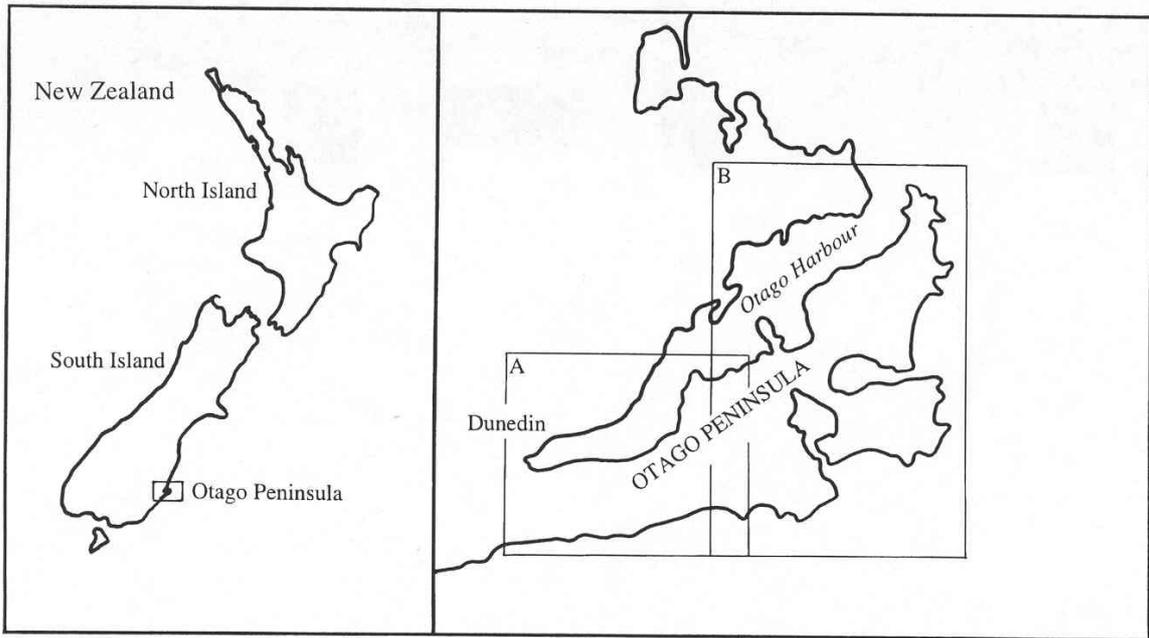
Jutting obliquely into the South Pacific Ocean on the east coast of the South Island of New Zealand, Otago Peninsula encloses Otago Harbour, with the city of Dunedin at its head (Fig. 1). The landscape is one of low hills, bounded by coastal cliffs, beaches, and embayments. In pre-human times most of the land was forested, but over the last two centuries, since European settlement, most of the forest has been converted to pasture. Nevertheless, small patches and strips of native vegetation remain as clues to the former vegetation pattern. Today the flora is a mixture of native plants which have persisted in the face of deforestation, fire, and grazing, and naturalised plants, mostly from other temperate parts of the world, which are at various stages of establishment in the wake of these disturbances.

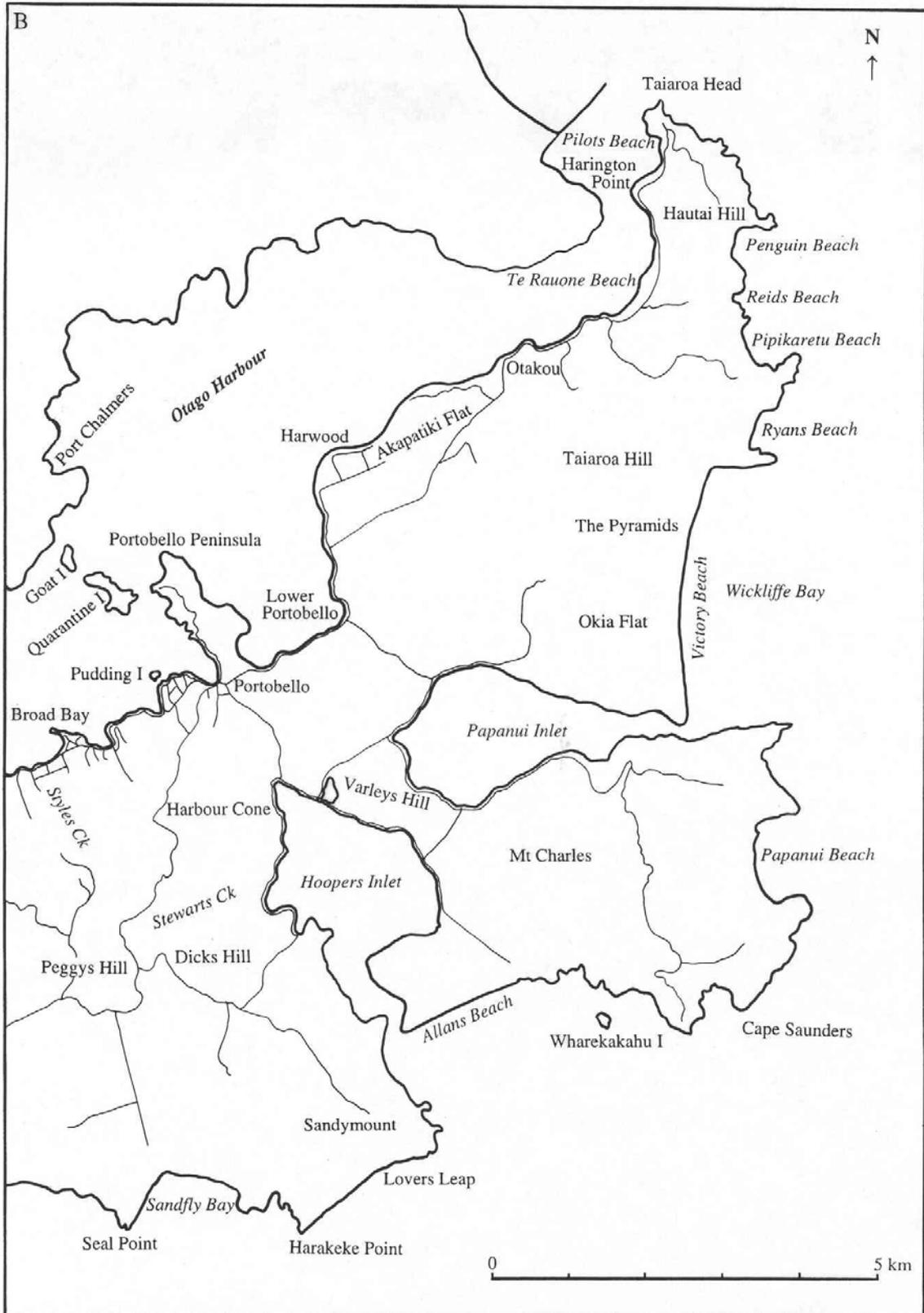
This list of plants growing in wild places on Otago Peninsula is a contribution to knowledge of biodiversity, a term which was not yet in vogue when I started, about 1980, to document the variety of plant life on Otago Peninsula by collecting and critically identifying specimens of plants growing in the wild, and making notes on their abundance, distribution, habitats, and ecology. In its broadest sense, biodiversity embraces all living organisms: the diversity of species, the genetic diversity within and beyond these, and the communities that they form. This account provides a brief introduction to Otago Peninsula habitats and vegetation types, but is primarily a district flora: an annotated list of the vascular or 'higher' plants, i.e. those having vascular tissue for conducting water and food materials, namely the ferns and their allies, the gymnosperms, and the flowering plants. Not included are other plant or plant-like groups such as algae, seaweeds, mosses, liverworts, and lichens, each of which contribute much further biodiversity to Otago Peninsula.

The list covers plants considered as native to Otago Peninsula (including historical records), those originating from elsewhere in New Zealand or overseas which have become naturalised as reproducing populations, and also alien plants which occur in wild places where they have been planted but have not yet become naturalised. The record of naturalised plants is a story of invaders, ranging from those which have already become widespread to those recent arrivals still gaining a foothold, and including plants which are useful as well as those which are actual or potential weeds.

Note that this document is not a vegetation survey, nor a conservation assessment exercise. Although no overall biological survey of Otago Peninsula has yet been undertaken, there have been studies on particular reserves and habitat types. Otago Peninsula reserves are included in the surveys by Allen (1978) and Ward & Munro (1989). An initial inventory of forest and scrub vegetation on Otago Peninsula was reported on by Johnson (1982). Forest remnants have been described also by Johnson (1979, 1991b) and Clarke et al. (1990). Vegetation types of the harbour side of the Peninsula were described by Allan & Johnson (1991). Otago Peninsula dunes and beaches are included in the inventory by Johnson (1992). Vegetation and flora of sand country are also described by Johnson (1976, 1980, 1986, 1990, 1993a, 1993b, 1998) and Johnson & Rogers (2003). Accounts of coastal vegetation are provided by Paviour-Smith (1956) and Partridge (1983), and of harbour shores and islands by Johnson (1987, 1991a, 1989a, 1989b, 1997).

The purpose of this plant list is partly as a scientific baseline of what grows here. Although the flora of New Zealand is relatively well known, there are still relatively few regions or districts for which the flora is documented in combination with observations on plant habitats and abundance. I hope this floristic information will support conservation activities, including actions to prevent local extirpation of plant species, to protect the remnants of native vegetation and maintain their composition and condition, to retain something of the natural character of the Peninsula vegetation in a landscape context, and to manage the invasion and spread of weeds. I hope also that the plant list will inform and stimulate those who gain satisfaction from recognising the plants around them, and engender ongoing observations on the flora.





Study area and methods

For the purposes of this list, Otago Peninsula has been defined approximately by the narrow point of its isthmus between Andersons Bay Inlet and St Kilda Beach. Coastal and harbour islands have been included.

Historical sources of floristic information have been gleaned from Dunedin Naturalists' Field Club (1871, 1916, 1932), Petrie (1896), Bathgate (1922), Simpson & Thomson (1938), and Martin (1962). Another useful source has been the field notebook of Rev. Dr J.E. Holloway, the first head of the Botany Department, University of Otago.

My starting point for recording the current flora of Otago Peninsula has been the plant lists accompanying botanical surveys of particular sites and habitats (see references in introduction, above). Additional observations have been made over the last 25 years by walking the land and tilling the soil. Coverage of Otago Peninsula land has included a visit to some part of each of the 1 km grid squares of the 1: 50 000 topographic map. All the roads and walking tracks have been travelled, and every hill climb, beach walk, or fishing trip has also been with an eye out for the plants. A dinghy has provided access to harbour shores and islands, and to parts of the outer coast. An abseil rope has helped for reaching steep coastal slopes where sheep and rabbits have never been. Living and gardening at Broad Bay has been a hands-on way to learn about the growing conditions of plants and the ecology of the weeds. Commuting into the city by car or bus has allowed for ongoing observations on the roadside flora. Despite this coverage over many years, new plant discoveries keep turning up.

Most of the plant records are backed up by specimens lodged in the Landcare Research herbarium (CHR) at Lincoln. In addition I have searched this herbarium and that of the Botany Department, University of Otago (OTA) for other Otago Peninsula collections. In identifying plants I have relied principally on the Flora of New Zealand series, and on the expert opinions of plant systematics colleagues. I have attempted also to keep abreast of the taxonomic literature, especially as it affects changes to plant names and classification concepts, and to note any Otago Peninsula specimens cited in monographs or papers describing new taxa.

The scientific names of plants change from time to time for several reasons, mainly as a result of revised plant classifications, but also because a former name has been found to have been wrongly applied to a plant. The botanical names and taxonomic concepts used in this list follow those currently recorded on the Landcare Research website database for New Zealand Plants: Nga Tipu o Aotearoa.

Plant identification

This list does not include identification keys or descriptions of species. These can be found in the Flora of New Zealand series (Allan 1961, Moore & Edgar 1976, Healy & Edgar 1980, Edgar & Connor 2000, Webb et al. 1988).

Some illustrated identification books covering Otago Peninsula plants are: ferns (Brownsey & Smith-Dodsworth 1989), trees and shrubs (Poole & Adams 1990; Eagle 1986a,b), small-leaved shrubs (Wilson & Galloway 1993), grasses (Lambrechtsen 1972), orchids (St George 1999), and wetland plants (Johnson & Brooke 1989). The Stewart Island plant book of Wilson (1982) is also relevant.

The Otago Peninsula environment

Otago Peninsula is c. 24 km along its main NE–SW axis, c. 8 km wide, c. 9600 ha, and its hill summits reach 400 m in altitude.

Most of Otago Peninsula is made of volcanic rocks, part of the Dunedin Volcanic Complex, formed 13–11 million years ago (Benson 1968, Bishop & Turnbull 1996). The initial eruptions, centred on the Portobello - Port Chalmers area, produced ash and flows of light-coloured rock, now mostly eroded away, but some of these earliest volcanic rocks remain as the soft, white to orange-weathered outcrops of harbour shores. Later eruptive phases produced more basalt, much darker, as layers of lava flows, still preserved as the seaward-facing slopes of the Peninsula. Subsequent erosion of major valleys produced Otago Harbour, Papanui and Hoopers Inlets, their beds being eroded down at times of low sea level coinciding with intense glacial periods over the last million years. Erosion by the sea has created the high cliffs of Peninsula headlands and the offshore stacks. Cliffs and former stacks around the inland margins of Okia Flat, Akapatiki Flat, and the inlets derive from a period, possibly around 20 000 years ago, when sea level was higher than at present.

Outcropping rocks form various types of habitat for plants: cliffs and stacks of hard basalt, mainly coastal but also somewhat inland; steep coastal slopes variously composed of in situ basalt, layers of more porous ash, and talus slopes of broken rock; hill-crest boulder fields of basalt columns or more commonly of boulders strewn on cryoplanation surfaces dating from times of periglacial climate; and soft trachyte rocks of harbour headlands. Localised outcrops of sandstone and mudstone occur in the central part of the Peninsula, having been pushed up by domes of volcanic phonolite; these three rock types do not seem to be of particular significance to the vegetation and flora upon them, other than having resulted in areas of relatively thin soils.

Sand country is extensive on Otago Peninsula. The large sand flats (Akapatiki, Okia, Allans Beach-Hoopers Inlet, and St Kilda) were deposited as sea level became lower following interglacial periods. These sand flats have low dunes, interspersed with hollows prone to dampness. Numerous beaches, large and small, are backed by currently active dunes. Massive sand blows are present behind Otakou and Sandfly Bay, the sand veneer from the latter reaching up and over Sandymount (320 m).

Although Otago Peninsula was not glaciated during the Pleistocene, it was nevertheless strongly affected by one of the consequences. The much-lowered sea levels of major glacial periods exposed large areas of continental shelf offshore: the source of wind-blown silt — or loess — which has blanketed most of the Peninsula, especially the slopes below about 180 m, with a 0.5–3.0 m depth of what is now the yellow-brown clay that underlies most soils (Leslie 1973a, 1973b).

The soils of Otago Peninsula, described by Leslie (1976), are derived mainly from mixtures of loess and the weathering products of volcanic rocks. These materials form unstable hillsides, hence the abundance of landslides (Leslie 1974). The loess-derived soils, although moderately fertile and mostly deep enough to provide plenty root space for plants, nevertheless have the properties of becoming hard and cracked during dry weather, yet waterlogged during wet seasons. Most hillside gullies are choked with loess, so their upper sections tend to be seepages rather than open streams. Soils are better-drained on hill tops where they are derived primarily from weathered volcanic rock, and on most of the sand country, although organic soils are present in some dune hollows and beneath estuarine marshes.

Rainfall on Otago Peninsula is in the order of 700–880 mm per year (Leslie 1976), i.e. sufficient to support forest vegetation. Rainfall is fairly evenly spread throughout the year. Mild droughts can occur in some years, usually in autumn. The temperate coastal climate is one of cool winters (6.7 degrees C mean value, July) and mild summers (15 degrees C mean value, February) (Leslie 1976). The predominant winds are from the south-west and north-east, the former typically bringing strong squalls with rain, and the latter gentle rain and low cloud, including orographic cloud which can

envelop the hill tops and add to the water budget of upper slopes. Occasional east or south-east winds typically last for several days and bring seeping drizzle. Winds from the north-west and west can sometimes be both dry and strong; these are the winds most likely to raise salt-spray from the harbour and scorch vegetation in exposed sites. Frosts are relatively mild. Snowfalls can lightly blanket the Peninsula a few times each winter and spring, but seldom to sufficient depth to cause any physical damage to vegetation. Every few years, snowfall followed by a freezing wind can affect plants in sites that do not normally receive frosts. By far the warmest Peninsula habitats must be the north-aspect slopes of the harbour margin, where sunshine is intensified by reflection from the harbour.

Vegetation and habitats

In pre-human times, most of Otago Peninsula was covered with forest, though this would have graded to scrub on rocky sites with thin soils, and to scrub, grassland, and sedgeland on exposed coastal sites. Maori occupation of Otago Peninsula would have resulted in localised forest clearance and probably also forest fire. Forest clearance would have accompanied activities such as the cultivation of ti, cabbage tree, and its cooking in umu-ti for the fructose product kauru (Knight 1966). During early European times most of Otago Peninsula, except for the sand country, was still covered in bush (Forrest 1963). Farming settlers must have made a rapid job of felling and firing most of the forest. Indeed, one of the manly sports for city axemen at one time was to visit the Peninsula for tree-felling excursions (Knight 1978). Sawmilling was carried out on the Peninsula, probably targetting podocarps (matai, Hall's totara, rimu, some kahikatea) though these were probably not especially dense on the Peninsula. Some timbers were used for farming fences: the surviving original posts are mostly Hall's totara, kowhai, and broadleaf.

Today only 5.25 % of Otago Peninsula retains any native forest or scrub (Johnson 1982). The original forests could probably have been called podocarp-broadleaved forest, although the proportion of podocarps might not have been very great. Today's forest remnants still contain a smattering of Hall's totara and matai, while rimu, kahikatea, miro, and totara are known from very few sites. Many tree species contribute to the forest, especially broadleaf, ngaio, kohuhu, lemonwood, narrow-leaved lacebark, lowland ribbonwood, mahoe, fuchsia, and kowhai. In the middle part of the Peninsula, kanuka is dominant as tall scrub and low forest that has regenerated since clearance of the original forest. Some of today's forests are plantations of pines, macrocarpa, or eucalpts, or else comprised of weedy trees like sycamore, elder, and hawthorn.

Several types of scrub and shrubland are present. Where rocky sites have defied complete conversion to pasture, shrubs of *Coprosma propinqua* and *C. crassifolia* are usually common, often also with many other small-leaved native shrubs that would have originally been components of the forest understorey. Peppertree scrub occurs on some hill crests. Coastal slopes tend to have scrub dominated by *Hebe elliptica* and *Olearia aviceniifolia*, or sometimes by tree nettle. Naturalised woody weeds, especially gorse and broom, form extensive patches of scrub within pasture land but also on dunes, roadsides, and coastal slopes.

Grasslands dominated by the native silver tussock persist on coastal headlands, and the remnants of red tussock (or hybrids with narrow-leaved snow tussock) suggest that this might once have been more widespread on sand flats. Most of Otago Peninsula is now grassland of pasture plants, the main grasses being browntop, sweet vernal, ryegrass, cocksfoot, crested dogstail, timothy, and Yorkshire fog, in the company of clovers, daisy flatweeds, and other herbs.

Sand dunes would once have been extensively covered with pingao, grading inland to flaxland, scrub, and native forest, all of which are still present on the sand blow that extends across Sandymount. Today's dunes are mostly covered with marram grass, grading inland to scrub of tree lupin and elder. Sand flats hold a mixture of bracken fernland and rushland of knobby clubbrush and *Juncus* species.

Coastal slopes provide for many plant communities, including various mixtures of shrubs, ferns, and herbs of cliffs and rubble slopes, seepages with coastal succulents, and floristically rich but localised areas of turf along the crests of coastal headlands. Most harbour shores have been modified by road development, creating steep banks which are mainly clothed in a large assemblage of weedy and horticultural plants.

Saltmarshes occur mainly around the large inlets, with a sequence of vegetation types from subtidal seagrass to intertidal saltmarsh communities of turf herbs, sedgelands, and oioi rushland.

Freshwater wetland habitats include seepages, streams, small ponds, and lagoons, all of which contain aquatic plants as well as having marginal wetland communities. Small areas of *Carex* or raupo swamp occur in some low-lying sites. Ephemeral wetlands are present on Okia Flat, as seasonally ponded depressions holding turf, sedgeland, and rushland zones that contain a large number of native turf herbs.

Analysis of the flora

Numbers of plant taxa are tabulated by major plant groups in Table 1 and by their growth forms in Table 2. The flora of wild vascular plants currently known to occur on Otago Peninsula totals 705, being 374 native and 331 naturalised plants. All but four of the ferns are native. Native tree and shrub species exceed the naturalised ones, and this is true also for sedges, rushes, orchids, and other monocot herbs. For climbers there are equal numbers of native and naturalised. There are more naturalised than native species among the grasses and the dicot herbs, where the contribution is especially marked in the cress, pea, foxglove, dock, and mint families (Table 3).

Table 1 Numbers of plant taxa recorded from Otago Peninsula, within major plant groups.

		Current flora	Formerly recorded	Total
Native	Ferns	56	4	60
	Gymnosperms	6		6
	Dicots	215	9	224
	Monocots	97	1	98
	Total	374	14	388
Naturalised	Ferns	2		2
	Gymnosperms	3		3
	Dicots	266	1	267
	Monocots	60		60
	Total	331	1	332
Planted	Gymnosperms	1		1
	Dicots	44		44
	Monocots	3		3
	Total	48		48
Total	Ferns	58	4	62
	Gymnosperms	10		10
	Dicots	525	10	535
	Monocots	160	1	161
	Total	753	15	768

Table 2 Numbers of native and naturalised plant taxa in the currently recorded flora of Otago Peninsula, listed by growth forms.

	Native	Naturalised	Total
Ferns	56	2	58
Gymnosperms	6	3	9
Dicots			
trees	22	14	36
shrubs	54	44	98
climbers	12	12	24
herbs	127	196	323
Monocots			
trees	1		1
climbers	1	1	2
sedges	32	3	35
rushes	13	6	19
grasses	22	43	65
orchids	13		13
other herbs	15	7	22
Total	374	331	705

Table 3 Plant families represented in the current flora of Otago Peninsula by 10 or more taxa, with numbers of native and naturalised taxa in each.

Family		Native	Naturalised	Total
Asteraceae	daisy family	40	38	78
Poaceae	grass family	22	43	65
Cyperaceae	sedge family	32	3	35
Brassicaceae	cress family	5	27	32
Fabaceae	pea family	2	25	27
Rosaceae	rose family	9	14	23
Rubiaceae	coffee family	18	4	22
Apiaceae	carrot family	13	8	21
Juncaceae	rush family	12	6	18
Scrophulariaceae	foxglove family	5	13	18
Crassulaceae	stonecrop family	5	12	17
Caryophyllaceae	chickweed family	4	12	16
Onagraceae	fuchsia family	13	1	14
Ranunculaceae	buttercup family	7	6	13
Orchidaceae	orchid family	13		13
Boraginaceae	forget-me-not family	2	10	12
Polygonaceae	dock family	2	10	12
Lamiaceae	mint family		12	12
Solanaceae	potato family	1	9	10

Plant species not recently recorded

Table 4 Plants formerly recorded from Otago Peninsula but not observed in recent decades.
Key to habitats: C = coast, D = dunes, R = rocky places, F = forest, W = wetland.

	Habitat	Location
Native ferns:		
<i>Blechnum durum</i>	C	Tomahawk cliffs
<i>Cheilanthes humilis</i>	R	Andersons Bay
<i>Hymenophyllum dilatatum</i>	F	Pukehiki
<i>Lastreopsis microsora</i> subsp. <i>pentangularis</i>	F	Tomahawk Lagoon head
Native dicot herbs:		
<i>Elatine gratioloides</i>	W	Wickliffe Bay
<i>Gingidia montana</i>	R	near Andersons Bay
<i>Glossostigma elatinoides</i>	W	Wickliffe Bay
<i>Ischnocarpus novae-zelandiae</i>	R	Andersons Bay
<i>Myosurus minimus</i> subsp. <i>novae-zelandiae</i>	W	Wickliffe Bay
<i>Parahebe canescens</i>	W	Wickliffe Bay
<i>Rumex neglectus</i>	C	Seal Point
Native woody plants:		
<i>Melicytus lanceolatus</i>	F	Mt Charles
<i>Pimelea arenaria</i>	D	Sandymount
Native sedge:		
<i>Carex litorosa</i>	W	Wickliffe Bay, Portobello
Naturalised herb:		
<i>Spergularia marina</i>	W	Sandymount

Abundance and rarity of the current flora

Table 5 lists numbers of plant taxa according to the number of sites of occurrence. Thus 101 of the 374 native taxa (27%) occur at 15 or more sites, and the figures for naturalised taxa are 79 of the 331 (i.e. a generally similar figure of 24%). Likewise, a similar distribution can be seen in a comparison of plant numbers recorded from just one or two sites, i.e. 36% (135/ 374) of the native taxa and 41% (136/ 331) of the naturalised taxa. In the case of the naturalised plants, those which occur at only one or two sites are likely to be either relatively recent arrivals on the scene, or else not very effective at establishing in the wild. In the case of the native taxa recorded at just one or two sites, these must include plants that are naturally very localised, those for which there has never been much available habitat, but also those which must have suffered severe loss of habitat and other impacts such as grazing, fire, and competition from weeds since European colonisation.

The ‘uncommon’ native plants are further considered in Table 6, where they are grouped according to their principal habitats and growth forms, and in Table 7 which lists geographical areas having concentrations of these ‘uncommon’ plants.

Table 5 Numbers of native and naturalised plant taxa in the currently recorded flora of Otago Peninsula, according to the number of sites at which they have been recorded.

Number of sites	Native	Naturalised
1	77	84
2	58	51
3	34	30
4	21	25
5	17	8
6	9	11
7	13	10
8	10	10
9	10	8
10	10	6
11	6	1
12	4	4
13	2	1
14	2	3
15+	101	79
Total	374	331

Table 6 Occurrence of native plant taxa currently known on Otago Peninsula from only one or two sites, listed by their habitats and growth forms.

Habitats:		Growth forms:	
forest and scrub	45	dicot herbs	47
freshwater wetlands	36	shrubs	19
rocky sites	16	ferns	17
dunes	14	sedges	16
brackish wetlands	10	grasses	10
coastal turf	8	rushes	8
other coastal habitats	6	other monocots	8
		orchids	5
total	135	trees	5
		total	135

Table 7 Otago Peninsula locations having concentrations of records of plants currently known from from only one or two sites.

Location	Number of site records
Okia Flat/ Wickliffe Bay	33
Peggys Hill/ Pukehiki	25
Sandymount/ Sandfly Bay	24
Allans Beach/ Hoopers Inlet	22
Tomahawk Lagoon	11
Cape Saunders	10
The Pyramids	6
Quarantine and Goat Islands	5
Harbour Cone	5
Pipikaretu	5
Karetai Road	4

Nationally threatened and uncommon plants

Table 8 Plant taxa listed as nationally threatened or uncommon by de Lange et al. (2004) and which have been recorded on Otago Peninsula are listed here, according to their categories of threat or rarity, and with a note as to their present status on Otago Peninsula.

Nationally Endangered

Lepidium oleraceum (Brassicaceae)

OP: 3 remote coastal sites

Myosurus minimus subsp. *novae-zelandiae* (Ranunculaceae)

OP: recorded before 1940 at Wickliffe Bay

Chronically Threatened; Serious Decline

Carex litorosa (Poaceae)

OP: previously known from Wickliffe Bay and Portobello

Drymoanthus flavus (Orchidaceae)

OP: 2 sites, Sandymount and The Pyramids

Isolepis basilaris (Cyperaceae)

OP: Tomahawk Lagoon, recorded from Hoopers Inlet

Myosotis pygmaea var. *pygmaea* (Boraginaceae)

OP: 4 sites, coastal cliff tops

Olearia fimbriata (Asteraceae)

OP: Harbour Cone, single shrub not recently relocated

Chronically Threatened; Gradual Decline

Brachyglottis sciadophila (Asteraceae)

OP: 8 sites with low forest, frequent at 2 sites

Carex cirrhosa (Cyperaceae)

OP: dune hollow wetland near The Pyramids

Desmoschoenus spiralis (Cyperaceae)

OP: 11 sites, localised on coastal dunes

Epilobium chionanthum (Onagraceae)

OP: widespread in seepages and swamps

Lepidium tenuicaule (Brassicaceae)

OP: only near Cape Saunders, locally common in turf on cliff top

Ranunculus recens var. *recens* (Ranunculaceae)

OP: 3 sites on coastal cliff tops, formerly known at 4 other sites

Raoulia monroi (Asteraceae)

OP: only at Sandfly Bay, a single patch on dune sand

Raukaua edgerleyi (Araliaceae)

OP: 5 forest sites, a few trees only in total

Sonchus kirkii (Asteraceae)

OP: frequent on coastal rubble slopes

Tupeia antarctica (Loranthaceae)

OP: 2 forest sites, where very locally present

Table 8 continues ...

... Table 8 continued ...

At Risk; Sparse

Anemanthele lessoniana (Poaceae)

OP: only on Goat Island where occasional plants in low forest

Crassula ruamahanga (Crassulaceae)

OP: only at Glenfalloch as a lawn weed

Pterostylis tristis (= *Hymenochilus tristis* in de Lange et al 2004) (Orchidaceae)

OP: only on Sandymount, apparently very localised

Korthalsella salicornioides (Viscaceae)

OP: seen recently at one forest edge site, Hoopers Inlet

Mimulus repens (Scrophulariaceae)

OP: localised populations at Tomahawk Lagoon and Hoopers Inlet

Olearia fragrantissima (Asteraceae)

OP: 3 sites with small populations in scrub

Oreomyrris "minute flower" (Apiaceae)

OP: 3 sites in coastal cliff top turf

Pseudopanax ferox (Araliaceae)

OP: 6 dry forest sites with small populations

Senecio carnosulus (Asteraceae)

OP: frequent on sand and rubble below coastal cliffs

At Risk; Range Restricted

Acaena microphylla var. *pauciglochidiata* (Rosaceae)

OP: coastal cliff top turf at Cape saunders and Highcliff

Elymus falcis (Poaceae)

OP: only on a bouldery cliff top near Cape Saunders

Helichrysum selago var. *tumidum* (Asteraceae)

OP: common along high coastal cliffs but only at Cape Saunders and Sandymount

Myosotis rakiura (Boraginaceae)

OP: seen recently only on coastal cliff at Highcliff, formerly more widespread

Rumex neglectus (Polygonaceae)

OP: formerly known from Seal Point

Senecio glaucophyllus subsp. *basinudus* (Asteraceae)

OP: 3 coastal sites

Data Deficient

Geranium microphyllum (Geraniaceae)

OP: 8 sites at forest margins or in rocky ground

Lepilaena bilocularis (Zannichelliaceae)

OP: common in Tomahawk Lagoons

Lepidium desvauxii (Brassicaceae)

OP: 3 roadside sites, where behaving as a weed. Webb et al. (1988) treat this species as being naturalised from Australia but note that its collection from remote coastal sites in New Zealand gives the impression of it being native; this suggestion may have led to its tentative listing by de Lange et al. (2004).

Neopaxia linearifolia (Portulacaceae)

OP: only in moist turf of dune hollow wetlands near The Pyramids

Vittadinia australis (Asteraceae)

OP: recorded only on The Pyramids

Weeds

Table 9 Naturalised plants that are actual or potential weeds on Otago Peninsula, with the number of sites recorded (+ = 15 or more) and their principal habitats .

Key to habitats: A = aquatic, C = coast, D = dunes, F = forest, M = saltmarsh, P = pasture, R = roadsides, gardens, etc. S = scrub, W = wetland.

Habitat entries are underlined for weed species that are already well-established. Those in bold type are habitats where the weed species is considered to pose an ongoing threat or nuisance.

		no. of sites	habitats
Trees and shrubs			
<i>Acer pseudoplatanus</i>	sycamore	7	F
<i>Berberis darwinii</i>	Darwin's barberry	9	FS
<i>Berberis glaucocarpa</i>	barberry	1	PS
<i>Berberis wilsoniae</i>		1	CS
<i>Brachyglottis repanda</i>	rangiora	4	F
<i>Cedronella canariensis</i>	balm of Gilead	6	FRS
<i>Chrysanthemoides monilifera</i>	bone-seed	1	CP
<i>Crataegus monogyna</i>	hawthorn	+	FPS
<i>Cytisus scoparius</i>	broom	+	DPSR
<i>Erica lusitanica</i>	Spanish heath	3	RS
<i>Hypericum androsaemum</i>	tutsan	14	<u>F</u>
<i>Lavatera arborea</i>	tree mallow	+	<u>CDR</u>
<i>Leycesteria formosa</i>	Himalayan honeysuckle	6	FS
<i>Lupinus arboreus</i>	tree lupin	+	DRS
<i>Lycium ferocissimum</i>	boxthorn	5	CDP
<i>Pinus radiata</i>	radiata	+	CD
<i>Prunus lusitanica</i>	Portugal laurel	2	F
<i>Ribes sanguineum</i>	flowering currant	9	FS
<i>Ribes uva-crispa</i>	gooseberry	+	F
<i>Rosa rubiginosa</i>	sweet brier	11	CP
<i>Rubus erythrops</i>	blackberry	+	DFRS
<i>Sambucus nigra</i>	elder	+	DFS
<i>Solanum marginatum</i>	white-edged nightshade	1	P
<i>Teline monspessulana</i>	Montpellier broom	+	S
<i>Ulex europaeus</i>	gorse	+	CDPS
Climbers			
<i>Bomarea multiflora</i>	bomarea	+	FS
<i>Calystegia silvatica</i>	great bindweed	7	R
<i>Clematis vitalba</i>	old man's beard	4	F
<i>Eccremocarpus scaber</i>	Chilean glory creeper	1	FS
<i>Hedera helix</i>	ivy	4	F
<i>Passiflora pinnatistipula</i>	passionfruit	2	F
<i>Passiflora tripartita</i> var. <i>azuayensis</i>	banana passionfruit	+	F

Table 9 continues ...

... Table 9 continued ...

<i>Senecio mikanoides</i>	German ivy	7	DS
<i>Solanum dulcamara</i>	bittersweet	8	DFS
<i>Tropaeolum speciosum</i>	Chilean flame creeper	4	FS
Dicot Herbs			
<i>Anthriscus caucalis</i>	beaked parsley	10	DF
<i>Arabidopsis thaliana</i>	wall cress	+	R
<i>Arctium minus</i>	burdock	+	DFP
<i>Atriplex prostrata</i>	orache	+	CM
<i>Cakile edulenta</i>	sea rocket	2	D
<i>Callitriche stagnalis</i>	starwort	+	W
<i>Carduus tenuiflorus</i>	winged thistle	12	P
<i>Carduus nutans</i>	nodding thistle	4	P
<i>Cirsium arvense</i>	Californian thistle	+	DP
<i>Cirsium vulgare</i>	Scotch thistle	+	DP
<i>Conium maculatum</i>	hemlock	+	DFS
<i>Crepis capillaris</i>	hawksbeard	+	DP
<i>Digitalis purpurea</i>	foxglove	+	F
<i>Fumaria muralis</i>	scrambling fumitory	+	D
<i>Galium aparine</i>	cleavers	+	DF
<i>Hieracium pilosella</i>	mouse-ear hawkweed	6	P
<i>Hypochoeris radicata</i>	catsear	+	DP
<i>Lapsana communis</i>	nipplewort	3	F
<i>Leontodon taraxacoides</i>	hawkbit	+	DP
<i>Marrubium vulgare</i>	horehound	+	P
<i>Mycelis muralis</i>	wall lettuce	2	F
<i>Myosotis laxa</i>			
subsp. <i>caespitosa</i>	water forget-me-not	9	W
<i>Myosotis sylvatica</i>	garden forget-me-not	7	F
<i>Nasturtium microphyllum</i>	one-rowed watercress	+	W
<i>Nemesia floribunda</i>		14	DFS
<i>Plantago coronopus</i>	buck's horn plantain	+	M
<i>Ranunculus repens</i>	creeping buttercup	+	PW
<i>Rumex crispus</i>	curled dock	13	PW
<i>Rumex obtusifolius</i>	broad-leaved dock	+	PW
<i>Senecio elegans</i>	purple groundsel	+	D
<i>Senecio jacobaea</i>	ragwort	+	DP
<i>Senecio vulgaris</i>	groundsel	8	R
<i>Silybum marianum</i>	variegated thistle	4	P
<i>Soliva sessilis</i>	Onhunga weed	4	R
<i>Sonchus asper</i>	prickly sow thistle	+	CDR
<i>Sonchus oleraceus</i>	sow thistle	+	CDR
<i>Stachys sylvatica</i>	hedge woundwort	3	F
<i>Stellaria alsine</i>	bog stitchwort	+	W
<i>Stellaria media</i>	chickweed	+	DF
<i>Taraxacum officinale</i>	dandelion	+	PR
<i>Trifolium repens</i>	white clover	+	DP

Table 9 continues ...

... Table 9 continued ...

<i>Urtica urens</i>	nettle	+	<u>P</u>
<i>Vinca major</i>	periwinkle	7	<u>F</u>
Monocot herbs			
<i>Agrostis capillaris</i>	browntop	+	<u>CD</u>
<i>Agrostis stolonifera</i>	creeping bent	+	<u>W</u>
<i>Ammophila arenaria</i>	marram grass	+	<u>D</u>
<i>Anthoxanthum odoratum</i>	sweet vernal	+	<u>D</u>
<i>Bromus diandrus</i>	ripgut brome	+	<u>D</u>
<i>Bromus willdenowii</i>	prairie grass	+	<u>D</u>
<i>Critesion murinum</i>	barley grass	+	<u>P</u>
<i>Cyperus eragrostis</i>	umbrella sedge	7	<u>R</u>
<i>Dactylis glomerata</i>	cocksfoot	+	<u>DF</u>
<i>Elodea canadensis</i>	Canadian pondweed	1	<u>A</u>
<i>Glyceria declinata</i>	floating sweetgrass	+	<u>W</u>
<i>Holcus lanatus</i>	Yorkshire fog	+	<u>D</u>
<i>Iris foetidissima</i>	stinking iris	1	<u>F</u>
<i>Juncus articulatus</i>	jointed rush	+	<u>W</u>
<i>Juncus gerardii</i>	saltmarsh rush	1	<u>M</u>
<i>Puccinellia fasciculata</i>	salt grass	+	<u>M</u>
<i>Schedonorus phoenix</i>	tall fescue	9	<u>MW</u>
<i>Tradescantia fluminensis</i>	wandering Jew	3	<u>F</u>
Ferns and allies			
<i>Dryopteris filix-mas</i>	male fern	10	<u>F</u>
<i>Selaginella kraussiana</i>	selaginella	1	<u>F</u>

List of plants

Layout

The layout of the list is firstly by major plant groups: ferns and their allies (spore-bearing vascular plants), gymnosperms (seed plants lacking flowers, often with cones), and the two groups of flowering plants, the dicotyledons (or dicots; having two seed leaves, typically net-veined leaves, and flower parts variable in number), and the monocotyledons (or monocots; having one seed leaf, typically parallel-veined leaves, and flower parts usually in threes). Within these groups, plants are listed alphabetically by family (e.g. Solanaceae, potato family), by genus (e.g. *Solanum*), and by species (e.g. *S. tuberosum*, potato). An index is included for family, genus, and common names.

Plant names

Informal names are included for the larger plant families, following the treatment in Webb et al. (1990), and have been coined also for other distinctive families which lend themselves to being characterised by a member plant that is familiar to New Zealand readers. Botanical names are formally cited with the inclusion of the author name(s), usually abbreviated according to international convention, e.g. *Solanum tuberosum* L., which in this case indicates that the plant was named by Linnaeus. This naming protocol makes absolutely clear the use of the plant name in relation to its original description. Some of the plants are listed as a named variety (var.) or subspecies (subsp.). Species having the symbol X included before the species name are those known to be of hybrid origin. For listed plants that have undergone a name change very recently the most recently applied earlier name is included in brackets. Common names for plant species are cited when available.

Annotations and symbols

All entries without a preceding symbol are considered as native to Otago Peninsula.

- * Naturalised, including some species native to other parts of New Zealand, but naturalised beyond their natural distribution limits on Otago Peninsula.
- P Planted in semi-wild places, doubtfully or not yet naturalised, though sometimes spreading vegetatively. All plants listed in this category have become naturalised in other parts of New Zealand.
- # Species recorded in earlier times but not seen recently.
- 1,2,3,etc Number of localities recorded. For species having continuous linear distributions, e.g. along roads or coastlines, separate sites are those 1 km or more apart.
- + Present at 15 or more sites.

FERNS AND FERN ALLIES

ASPLENIACEAE

Asplenium appendiculatum (Labill.) C. Presl

(= *A. terrestre* Brownsey)

- + Occasional on dry ground in forest.

Asplenium bulbiferum G. Forst.

hen and chickens fern

- + A common forest fern especially in gullies, but dense and tall only where inaccessible to livestock. Most Peninsula plants seem to be subsp. *gracillimum*, but the larger subsp. *bulbiferum* may also be present.

Asplenium flabellifolium Cav.

necklace fern

7. Occasional among tree roots in dry forest, among boulders on hilltops, or forming small mats under kanuka.

Asplenium flaccidum G. Forst.

hanging spleenwort

- + A common epiphyte in forest remnants, on horizontal limbs and in forks of branches, especially of *Griselinia*; also on macrocarpa trees in shelter belts.

Asplenium hookerianum Colenso

- + Common, typically on rather bare dry ground among tree roots in mahoe - fuchsia forest.

Asplenium lyallii (Hook.f.) Moore

- + Widespread in forest and scrub, at forest edges, and among rocks in the open; reduced by grazing.

Asplenium obtusatum G. Forst.

shore spleenwort

- + Mostly coastal, on cliffs where out of reach of livestock, occasional in the Portobello Road seawall; rarely away from the coast, e.g. on a stone house wall on the top road.

Asplenium polyodon G. Forst.

sickle spleenwort

2. Large terrestrial clumps in forest on Goat Island and in a bush gully near Pipikaretu.

BLECHNACEAE

Blechnum blechnoides (Bory) Keys

(= *B. banksii* (Hook.f.) Diels)

- + Strictly coastal, on moist often overhanging cliffs and on steep turfy banks.

Blechnum chambersii Tindale

- + In forest, often with *B. fluviatile*; most common in gullies.

Blechnum colensoi (Hook.f.) Wakef.

2. In Stewarts Creek, both in its deep gully and where it arises on the steep north-east face of Peggys Hill; on damp ground under mahoe - fuchsia forest.

Blechnum discolor (G. Forst.) Keys crown fern
8. Not widespread, and common only in forest patches where grazing animals are few or absent, e.g. Peggys Hill, Pudding Island. Although crown fern resists browsing by deer in most New Zealand forests it would seem to have decreased on Otago Peninsula perhaps as a result of cattle browsing.

Blechnum durum (Moore) Christen.

- # Listed from Tomahawk cliffs (Dunedin Naturalists' Field Club, 1932) but not seen there recently. Possibly misidentified for large forms of *B. banksii*. Fronds of *B. banksii* in scrub at Boulder Beach reach 40 cm long, with pinnae 20 mm long.

Blechnum fluviatile (R.Br.) Salomon kiwakiwa

- + This and *B. chambersii* are the most common blechnums. Found in forest, especially under mahoe or kanuka; persists also in the open on grassy banks where it withstands moderate grazing.

Blechnum novae-zealandiae T.C. Chambers et P.A. Farrant kiokio

9. A relatively uncommon fern on Otago Peninsula. The robust growth form of this species is an infrequent plant of steep banks above forest streams, recorded at six sites. The smaller and more spindly form with narrow pinnae (swamp kiokio) has been recorded in wet shaded ground at three sites, e.g. at Otakou, on bases of *Carex secta* tussocks in a swamp.

Blechnum penna-marina (Poir.) Kuhn little hard fern

- + Widespread but never abundant; on forest edges, in open scrub, and among boulders or rock outcrops.

Blechnum procerum (G. Forst.) Swartz small kiokio

12. Occasional in forest but common only where there are few or no grazing animals, e.g. Peggys Hill, Pudding Island.

Blechnum vulcanicum (Blume) Kuhn

4. Near Harbour Cone, Company Bay, Sheppards Island, and north end of Victory Beach; rocky banks or cliff bases.

CYATHEACEAE

Cyathea dealbata (G. Forst.) Swartz silver tree fern, ponga

14. This is the most frequent tree fern and is locally abundant in dry forests, particularly under old kanuka, e.g. Dicksons Hill.

Cyathea smithii Hook.f. soft tree fern

7. Now a rarity in forests, patches of forest containing dead tree fern trunks outnumbering those with live ones. Young plants do occur in forest that is not too opened up, e.g. at the head of Stewarts Creek, where three species of tree fern occur together.

DENNSTAEDTIACEAE

Histiopteris incisa (Thunb.) J.Smith water fern

13. Never abundant and usually represented at most by a few fronds in forest clearings.

Hypolepis ambigua (A.Rich.) Brownsey et Chinnock

- + The most widespread *Hypolepis* and the tallest, usually straggling among shrubs in partly open situations.

Hypolepis millefolium Hook.

thousand-leaved fern

- 7. Scattered and uncommon at forest edges, e.g. Mt Charles.

Hypolepis rufobarbata (Colenso) Wakef.

- 5. Forest edge or scrub at Pipikaretu, Sandymount, Dicksons Hill, Castlewood Road, and near Highcliff.

Leptolepia novae-zelandiae (Colenso) Diels

- 5. Locally abundant on forested streamsides at the head of Stewarts Creek and north and east of Macandrew Bay; less common in forest near Larnach Castle and south of Pukehiki.

Lindsaea linearis Swartz

- 1. Collected at Wickliffe Bay by Bruce Campbell in 1952; not seen recently.

Paesia scaberula (A.Rich.) Kuhn

lace fern

- 2. Forest edge near Portobello and at Turnbolls Bay.

Pteridium esculentum (G. Forst.) Cockayne

bracken

- + Locally dominant as a low-growing plant on consolidated dunes, e.g. Okia Flat and Allans Beach; occasional in low coastal scrub, on roadside banks, and among rocky ground in pasture.

DICKSONIACEAE

Dicksonia squarrosa (G. Forst.) Swartz

wheki, rough tree fern

- 12. Like *Cyathea smithii* this tree fern of forest remnants is also approaching a rare state.

DRYOPTERIDACEAE

* *Dryopteris filix-mas* (L.) Schott

male fern

- 10. A naturalised fern of forests but mainly found close to houses or former habitations.

Lastreopsis glabella (A.Cunn.) Tindale

- + Locally common, especially on sides of gullies in forest.

Lastreopsis hispida (Swartz) Tindale

hairy fern

- 3. A forest fern, seen only at Stewarts Creek, Varleys Hill, and Taiaroa Bush.

Lastreopsis microsora (Endl.) Tindale subsp. *pentagularis* (Colenso) Tindale

- # Recorded (as *Ctenitis decomposita* (R.Br) Cop.) from the head of Tomahawk Lagoon by Bathgate (1922). Brownsey & Smith-Dodsworth (1989) record this species as very local in coastal regions of the South Island, reaching north Westland and Dunedin.

Polystichum neozelandicum Fee subsp. *zerophyllum* (Colenso) Perrie

shield fern

(= *P. richardii* (Hook.) J. Smith

- + One of the most common ferns on the ground in dry mahoe or kanuka forest.

Polystichum vestitum (G. Forst.) Presl prickly shield fern
+ Widespread in forest, often heavily grazed. It is abundant in the open on Peggys Hill and Mt Charles.

Rumohra adiantiformis (G. Forst.) Ching

4. An epiphyte of tree bases in shady forest: Peggys Hill, Stewarts Creek, near Pukehiki and near Larnach Castle.

GRAMMITIDACEAE

Ctenopteris heterophylla (Labill.) Tindale

5. A rare epiphyte (Harbour Cone, Peggys Hill, Portobello Peninsula); also terrestrial in cliff-top crevices at Cape Saunders and Sandymount.

Grammitis billardieri Willd.

1. Locally common in low forest on top of Peggys Hill; collected by Pat Enright March 1991.

HYMENOPHYLLACEAE

Hymenophyllum bivalve (G. Forst.) Swartz

a filmy fern

1. In forest near top of Peggys Hill, collected by Pat Enright, September 1990.

Hymenophyllum demissum (G. Forst.) Swartz

a filmy fern

2. A few clumps in mahoe - fuchsia forest in a gully below Pukehiki and in forest near the top of Peggys Hill. Filmy ferns would have been abundant in the humid interior of the original forest, at least in valleys and on misty hilltops. It is likely that the grand scale of initial forest clearing involved such dessication as to obliterate most filmy ferns, and recolonisation within regenerating forest stands has not yet occurred.

Hymenophyllum dilatatum (G. Forst.) Swartz

a filmy fern

- # Listed in notebook of J.E. Holloway, from notes supplied by W. Martin in 1924, as growing in deep bush at Pukehiki.

Hymenophyllum flabellatum Labill.

a filmy fern

2. Occurs near *H. demissum* below Pukehiki, on the base of a tree fern trunk, and in forest near top of Peggys Hill.

Hymenophyllum minimum A. Rich.

a filmy fern

2. Growing with liverworts on a small steep bank in pasture above the harbour edge on the south side of Portobello Peninsula, and on the south side of Sandymount in coastal cliff-top turf.

Hymenophyllum multifidum (G. Forst.) Swartz

a filmy fern

1. Three epiphytic patches in low forest on top of Peggys Hill.

Hymenophyllum pulcherrimum Colenso

a filmy fern

1. Five plants growing close together as epiphytes in forest near the top of Peggys Hill (Pat Enright, September 1990).

Hymenophyllum rarum R. Br.

a filmy fern

1. Epiphyte on trunk in forest near top of Peggys Hill (Pat Enright, September 1990).

Hymenophyllum sanguinolentum (G. Forst.) Swartz a filmy fern
1. Two plants survive in low epiphytic situations in forest near the top of Peggys Hill.

Trichomanes venosum R.Br.

5. Like the *Hymenophyllum* species this filmy fern is now much reduced and demands humid forest. In addition, it relies on tree fern trunks for its habitat. Seen only in gullies below Pukehiki, at head of Stewarts Creek, below Karetai Road, and at two sites on Peggys Hill.

LYCOPODIACEAE

Lycopodium fastigiatum R.Br. a clubmoss
1. Grows on a dry clayey roadside bank at the head of Stewarts Creek.

Lycopodium volubile G. Forst. a clubmoss
1. Grows on the same clay bank as *L. fastigiatum*.

OPHIOGLOSSACEAE

Botrychium biforme Colenso fine-leaved parsley fern
1. A single plant seen among ferns under kanuka - fuchsia forest north-east of Harbour Cone. It is likely that the report of *B. australe* R.Br. from Mt Charles by the Dunedin Naturalists' Field Club refers to *B. biforme*.

Ophioglossum coriaceum A. Cunn. adder's tongue
4. Summit of Mt Charles, north side of Sandymount, and near Lovers Leap, in short pasture on thin rocky soil; and as a 0.5 m wide patch among sparse annual weeds in a herbicide-treated roadside gravel verge of Highcliff Road near the top of Paradise Road.

OSMUNDACEAE

Leptopteris hymenophylloides (A.Rich.) Presl.
5. Restricted to moist gullies in forest, usually just a few plants; e.g. near Macandrew Bay and at Taiaroa Bush.

POLYPODIACEAE

Microsorium pustulatum (G. Forst.) Copel. hound's tongue fern
(= *Phymatosorus diversifolius* (Willd.) Pic.Ser.)
+ Abundant as an epiphyte on forest trees, on forest floors, and in the open on rock outcrops, roadside banks, stumps, and as an epiphyte on macrocarpa trees.

Pyrrosia eleagnifolia (Bory) Hovenkamp leather leaf fern
+ A widespread and common epiphytic fern of forests, often on dry upper parts of trunks. Also common on macrocarpa trees in shelterbelts, and on rock faces.

PSILOTACEAE

Tmesipteris tannensis (Spreng.) Bernh. fork fern, chain fern
1. Two epiphytic plants in forest near top of Peggys Hill (Pat Enright, September 1990).

PTERIDIACEAE

Adiantum cunninghamii Hook. maidenhair fern

3. Cliff base at north end of Victory Beach and scrubby hillside on north side of Hoopers Inlet; also recorded from Mt Charles (Martin 1962).

Cheilanthes humilis (G. Forst.) Green rock fern

- # Noted (as *C. sieberi* Kunze) as once occurring on rocks on the south side of Andersons Bay (Martin, 1962).

Pellaea rotundifolia (G. Forst.) Hook. button fern

- + Widespread, typically on dry, often stony ground in mahoe forest.

SALVINIACEAE

Azolla filiculoides Lam. floating water-fern

4. Locally abundant, covering ponds on sand flats at Okia Flat and Otakou; also at Pipikaretu and McKay Road.

SELAGINELLACEAE

* *Selaginella kraussiana* (Kunze) A. Braun

1. Established under sycamore trees on a roadside near Larnach Castle.

THELYPTERIDACEAE

Pneumatopteris pennigera (G. Forst.) Holttum gully fern

7. Alongside streams in forest; common only at the head of Stewarts Creek.

GYMNOSPERMS

CUPRESSACEAE

cypress family

- * *Cupressus macrocarpa* Hartw. macrocarpa
+ Widely planted around early farm houses for shelter and in small woodlots. Many straighter specimens are now being milled with portable sawmills. Most trunks show 80 to 110 growth rings. Seedling establishment occurs only on dry ground, such as on the driest of roadside banks or on the bared ground where mature trees have fallen.

PINACEAE

pine family

- * *Pinus pinaster* Aiton maritime pine
2. Several trees planted on the rear of sand dunes, Boulder Beach, and at south end of Okia Flat, where some wild seedlings also occur.
- * *Pinus radiata* D. Don radiata pine
+ Planted for woodlots and shelter. Self-seeded on dry banks and headlands (e.g. Yellow Head), rocky sites (e.g. Turnbolls Bay), and on dunes (e.g. Sandfly Bay).
- P *Pinus sylvestris* L. Scots pine
1. A group of trees planted on Quarantine Island.

PODOCARPACEAE

podocarp family

- Dacrydium cupressinum* Lamb. rimu
2. This and other podocarps, once probably common forest emergents, were almost completely milled out during settlement. Rimu persists in only two sites: as a single leaning tree 12 m tall in the gullyhead bush southwest of Larnach Castle, and a stand of 62 trees covering 1.5 ha of a gentle ridge crest in the gully between Harbour Cone and Dicksons Hill. The trees are upright, round-headed, 12–14 m tall, 10–60 cm diameter, growing with pokaka and matipo in a situation with a former long history of grazing; there is no regeneration.
- Dacrycarpus dacrydioides* (A. Rich.) de Laub. kahikatea
2. Only on the west edge of Hoopers Inlet where a few small trees grow above the edge of an estuarine swamp, and a single large tree among hillslope kanuka forest north-east of Dicks Hill.
- Podocarpus hallii* Kirk Hall's totara
+ The most common podocarp remaining on the Peninsula, it can survive in the open and is widespread (43 sites) as a small tree on dry sites, especially coastal headlands. Locally dominant.
- Podocarpus totara* D. Don totara
3. Not easy to distinguish from *P. hallii* because of hybridisation. However, large trees with thick rosy bark typical of *P. totara* occur in a grove on a sandy hillside in Sandymount Wildlife Refuge, at Boulder Beach, and among *P. hallii* at McKay Road.

Prumnopitys ferruginea (D. Don) de Laub.

miro

2. A solitary tree grows in forest on the upper south slopes of Peggys Hill, and two small trees grow on Goat Island.

Prumnopitys taxifolia (D. Don) de Laub.

matai

12. Usually solitary or a few trees together, mostly 4–6 m tall but larger specimens occur on Varleys Hill and in Sandymount Wildlife Refuge. Seedlings were seen at these two sites but not elsewhere.

DICOTYLEDONS

ACANTHACEAE

- P *Acanthus mollis* L. bear's breeches
1. Broad Bay, planted under trees on a steep dry roadside bank, it has spread vegetatively to form a patch several metres across.

ACERACEAE

- * *Acer pseudoplatanus* L. sycamore
7. Of scattered occurrence; most common among regenerating forest and scrub near habitation, e.g. Larnach Castle.

AIZOACEAE

ice plant family

- * *Aptenia cordifolia* (L.) Schwantes
1. Roadside bank and cliff near Challis Point; common over a small area.
- * *Carpobrotus aequilaterus* (Haw.) N.E.Br. ice plant
5. Planted and perhaps naturalised at a few sites along Portobello Road and on sandy ground beside the harbour at Harwood.
- * *Carpobrotus edulis* (L.) L.Bolus ice plant
4. The large-leaved ice plant planted along Portobello Road banks, especially on the harbour-side sea wall; well established on coastal cliffs and sandy hillside at Pilots Beach.
- Disphyma australe* (W.T. Aiton) N.E.Br. horokaka, native ice plant
+ This is the common ice-plant of cliffs, dry rubble slopes, and clay ledges along the outer coast and on cliffs and headlands along the harbour edges. Hybrids with *Carpobrotus edulis* have been extensively planted along Portobello Road banks. They are intermediate in leaf size between the parents and further recognisable by the sterile flowers lacking pollen.
- * *Disphyma clavellatum* (Haw.) Chinnock Australian ice plant
1. Harbour edge roadside at Portobello, east of Pudding Island. Probably of planted origin, but several mats of various sizes suggest it is establishing further on its own.
- P *Drosanthemum floribundum* (Haw.) Schwantes
2. Portobello Road near Macandrew Bay. Planted on steep sunny banks above the road, forming dense carpets 2–4 m across.
- P *Lampranthus spectabilis* (Haw.) N.E. Br.
5. Planted on a few steep banks above Portobello Road, mainly near residences, and forming draping mats, several metres high and wide, virtually smothered with purple flowers in early summer.
- Tetragonia implexicoma* (Miq.) Hook.f. native spinach
(= *T. trigyna* Hook.f.)
+ Common on the coast; among grasses, scrub or trees on sandy or rubbly ground.

APIACEAE (= UMBELLIFERAE)**carrot family**

- * *Angelica pachycarpa* Lange angelica
2. Road verge on Andersons Bay causeway; a single plant only in 1984 but numerous by 1989. Also a single plant at Boulder Beach in 2002, among coastal revegetation plantings.
- * *Anthriscus caucalis* M.Bieb. beaked parsley
10. Locally common under trees or shrubs especially on sandy ground of dune flats, e.g. Okia Flat and Harwood.
- Apium prostratum* Vent. native celery
+ Found right along the sea and harbour coasts in moist rock crevices and ledges, in saltmarshes and sometimes on dunes.
- Centella uniflora* (Colenso) Nannf.
4. Damp pasture at Cape Saunders, near Boulder Beach, behind Allans Beach and in turf on Okia Flat.
- * *Conium maculatum* L. hemlock
+ Widespread as a garden weed, on grassy road verges, among scrub on dunes, and frequent in some patches of open bush, e.g. near Colinswood.
- * *Foeniculum vulgare* Miller fennel
2. Roadsides near Broad Bay, and Macandrew Bay, a few plants only.
- Gingidia montana* (J.R. Forst. et G. Forst.) Dawson native aniseed
Listed (as *Ligusticum gingidium*) in notebook of J.E. Holloway, from notes supplied by W. Martin in 1924, as growing “beyond Andersons Bay”. Not recently seen on the Peninsula.
- Hydrocotyle elongata* A. Cunn.
3. Abundant through one area of ngaio forest west of Glenfalloch, under trees near Larnach Castle, and under coastal forest above Lovers Leap.
- Hydrocotyle heteromeria* A. Rich. waxweed
+ The most common *Hydrocotyle*, regularly found around the edges of forest and scrub, and sometimes in damp lawns.
- Hydrocotyle hydrophila* Petrie
3. Abundant around the ponds at The Pyramids (this is the type locality for the species); seen also in moist turf at Allans Beach and around Tomahawk Lagoon.
- Hydrocotyle moschata* G. Forst.
+ Slightly less common than *H. heteromeria* but regularly occupying similar forest-edge or open forest habitats; also a weed of lawns and gardens.
- Hydrocotyle novae-zeelandiae* D.C. var. *novae-zeelandiae*
3. Locally common among the bases of *Juncus* plants in swampy ground at Pipikaretu, Okia Flat and Allans Beach.

Hydrocotyle sp. (= *H. novae-zeelandiae* D.C. var. *montana* Kirk)

5. This glossy-leaved *Hydrocotyle*, a species distinct from *H. novae-zeelandiae*, is of very local occurrence at Allans Beach and Broad Bay, and in sandy pasture on Hautai Hill, and Sandymount.

Lilaeopsis novae-zeelandiae (Gand.) Hill

1. Confined to the damp sandy edges of Tomahawk Lagoon, the type locality for the species.

* *Melanoselinum decipiens* (Schraeder et Wendl.) Hoffm. parsnip palm

2. In groups, originally planted, on roadside banks near Otakou and near Challis Point.

Oreomyrrhis ramosa Hook.f.

1. Among pasture grasses in boulderfield on east side of upper slopes of Harbour Cone.

Oreomyrrhis sp. "minute flower"

3. This undescribed species, known also by the tag names *Oreomyrrhis* "minutiflora" and *Oreomyrrhis* "coastal", forms small appressed rosettes in coastal turf and pasture of clifftops at Sandymount, Cape Saunders, and among rocks atop Mt Charles. The same species occupies similar habitats on Stewart Island (Wilson, 1982), and on the coast of Southland.

* *Pastinaca sativa* L. parsnip

4. Grows wild among grasses and shrubs on a few banks alongside Portobello Road.

* *Petroselinum crispum* (Miller) A.W. Hill wild parsley

- + A very common plant on roadside banks between Broad Bay and Dunedin.

Scandia geniculata (G. Forst.) J.W. Dawson climbing aniseed

10. A low scrambling liane of scrub and forest edges but common only away from livestock, e.g. on the harbour islands.

Schizeilema trifoliolatum (Hook.f.) Domin

- + Sometimes frequent on the ground in dry forests, forming low patches on otherwise bare ground.

* *Torilis japonica* (Houtt.) DC. upright hedge-parsley

2. Locally common on a roadside bank just south of Harbour Cone, and near the lime kilns.

APOCYNACEAE

Parsonsia heterophylla A. Cunn. native jasmine

- + Evenly scattered through most forest and scrub, particularly common climbing upon *Coprosma* shrubs at forest edges.

* *Vinca major* L. periwinkle

7. Persists and spreads around abandoned farm gardens, in residential gardens and under hedges. Planted along Portobello Road where it now forms extensive mats on lower banks.

AQUIFOLIACEAE

- * *Ilex aquifolium* L. holly
3. Recorded within forest near Glenfalloch, Tomahawk Lagoon, and Pudding Island.

ARALIACEAE

ivy family

- * *Hedera helix* L. ivy
4. An occasional ground cover on the banks above Portobello Road, and common also on the forest floor of Pudding Island.

Pseudopanax colensoi (Hook.f.) Philipson three-finger
6. Much reduced by grazing animals, and now found mainly on roadsides, e.g. Grassy Point, Peggys Hill area; also Goat Island.

Pseudopanax crassifolius (A. Cunn.) K. Koch lancewood
+ A few mature trees can be found in most forest remnants, but young plants are scarce.

Pseudopanax ferox Kirk fierce lancewood
6. This lancewood, locally distributed in Otago, is similarly local on Otago Peninsula, being common in dry coastal forest at Sandymount and otherwise seen at Lower Portobello, on a scrubby rocky knoll along Karetai Road, and as single plants in two forest patches near Clifden (Highcliff Road) and on Goat Island.

Raukaua anomalus (Hook.) A.D. Mitch., Frodin et Heads
(= *Pseudopanax anomalus* (Hook.) K. Koch)
1. Listed from Sandymount by Dunedin Naturalists' Field Club (1932); a single shrub again recorded below its summit by Brian Rance in 1986.

Raukaua edgerleyi (Hook.f.) Seem. raukawa
(= *Pseudopanax edgerleyi* (Hook.f.) K. Koch)
5. A rare small tree of forest, e.g. Peggys Hill, Stewarts Creek, and above Camp Road.

Raukaua simplex (G. Forst.) A.D. Mitch., Frodin et Heads haumakaroa
(= *Pseudopanax simplex* (G. Forst.) K. Koch)
1. Restricted to the top of Peggys Hill where it occurs with several other local rarities in low hilltop forest. A solitary small tree of the hybrid *Raukaua anomalus* X *simplex* was recorded from a forest remnant in Stewarts Creek.

Schefflera digitata J.R. Forst. et G. Forst. pate, seven-finger
5. Usually in bushy gullies, e.g. near Company Bay and Broad Bay.

ASTERACEAE (= COMPOSITAE)

daisy family

- * *Achillea millefolium* L. yarrow
+ Occasional on grassy road verges where it forms small colonies, and recorded also as a garden weed. A deep pink form, probably the cultivar 'Cerise Queen' grows beside Seal Point Road.

Anaphalioides bellidioides (G. Forst.) Glenny everlasting daisy
(= *Helichrysum bellidioides* (G. Forst.) Willd.)
7. Sporadically distributed among short grasses on dry banks or near rock outcrops.

- Anaphalioides hookeri* (Allan) Anderb.
(= *Gnaphalium hookeri* Allan)
11. Occasionally met on clayey roadside banks where it forms extensive mats, e.g. near Little Hoopers Inlet.
- * *Arctium minus* (Hill) Bernh. burdock
+ Common in open dry forest, especially on coastal hillsides such as Sandymount, and often found on ground bared by sheep at forest edges.
- * *Argyranthemum frutescens* (L.) Schultz-Bip marguerite daisy
4. Occasional bushes of this daisy are planted on the banks above Portobello Road. It is naturalised on cliffs at Andersons Bay and Macandrew Bay.
- P *Artemisia arborescens* L. hedge artemisia
3. Single shrubs or groups, planted at a few sites on banks above Portobello Road.
- * *Bellis perennis* L. daisy
+ Regularly found in lawns and more sporadically in pasture.
- P *Brachyglottis greyi* (Hook.f.) B. Nord.
4. Shrubs of this or one of its cultivars or hybrids have been planted on banks above Portobello Road.
- * *Brachyglottis repanda* J.R. Forst. et G. Forst. rangiora
4. This New Zealand plant does not occur naturally south of the Kaikoura coast, but is well established near Port Chalmers and in the Dunedin Town Belt. It is less common on the Peninsula, being sporadically planted along Portobello Road, but apparently self-established within forest in Stewarts Creek and on Quarantine and Pudding Islands.
- Brachyglottis rotundifolia* J.R. Forst. et G. Forst. mutton-bird scrub
1. Restricted to the south side of Portobello Peninsula where shrubs cover low steep headlands beside the harbour. This population is well north of others on the east coast of the South Island, which suggests it may be of planted origin.
- Brachyglottis sciadophila* (Raoul) B. Nord. climbing groundsel
8. Frequent at Taiaroa Bush and in forest behind Broad Bay; rare at other sites in dry open forest.
- Brachyscome radicata* Hook.f.
1. In turf among high coastal cliffs above The Chasm, near Sandymount.
- * *Calendula officinalis* L. marigold
2. Growing with wallflowers on a rocky knob at Kohuka, beside the lower channel of Hoopers Inlet, presumably planted but also persisting in this oddly remote spot. Also wild on the verge of Portobello Road at Company Bay.
- * *Carduus nutans* L. nodding thistle
4. Broad Bay, in heavily grazed pasture among other thistles; also Pipikaretu Road, Clarks Hill, Otakou.
- * *Carduus tenuiflorus* Curtis winged thistle
12. A thistle of irregular occurrence in pasture, most common in dry parts of coastal hillsides.

- Celmisia gracilentia* Hook.f. grassland daisy
 3. Okia Flat and near Otakou Golf course, among short grasses on consolidated sand flats; and on clifftop at Maori Head.
- * *Centaurea montana* L.
 1. This purple-blue flowered ornamental has been collected from the wild only once in New Zealand, from an Otago Peninsula roadside in 1965 by George Scott.
- * *Chrysanthemoides monilifera* (L.) Norlindh bone-seed
 1. Collected at Andersons Bay in 1957 by Arthur Healy; this yellow-flowered shrub weed persists on steep, sunny, harbour-edge slopes on the south-west side of Andersons Bay Inlet.
- * *Cirsium arvense* (L.) Scop. Californian thistle
 + The most abundant thistle on the Peninsula, and the most troublesome weed of pastures.
- * *Cirsium vulgare* (Savi) Ten. Scotch thistle
 + Probably more widespread but less abundant than *C. arvense*, growing in a greater variety of habitats, but most often in pasture.
- Cotula australis* (Spreng.) Hook.f. soldier's button
 6. A weed especially of roadside gravel or dry compacted soil on vehicle tracks, e.g. Akapatiki Flat.
- Cotula coronopifolia* L. bachelor's button
 + Found in puddly ground and ditches adjacent to saltmarshes, and sometimes on clay banks near the harbour.
- * *Crepis capillaris* (L.) Wallr. hawksbeard
 + Most common on weedy sand dunes such as at Tomahawk and Smaills Beaches but also widespread in disturbed ground of pastures and roadsides.
- * *Crepis vesicaria* L. beaked hawksbeard
 2. This robust *Crepis* is obviously common when it flowers in early summer along roadsides between Macandrew Bay and Dunedin.
- Euchiton involucratus* (G. Forst.) Holub creeping cudweed
 (= *Gnaphalium involucratum* G. Forst.)
 2. In turf in moist dune hollows behind Allans Beach and at Okia Flat.
- Euchiton limosus* (D.G. Drury) Holub creeping cudweed
 (= *Gnaphalium limosum* Drury)
 1. In seepage in rank pasture at head of Hoopers Inlet.
- Euchiton ruahinicus* (D. Drury) Breitw. et J.M. Ward creeping cudweed
 (= *Gnaphalium ruahanicum* (D. Drury) C.J. Webb)
 + An occasional plant of moist turf on sand flats or among low grasses on harsh pasture sites.
- Euchiton traversii* (Hook.f.) Holub
 (= *Gnaphalium traversii* Hook.f.)
 1. Found in turf surrounding ponds on Okia Flat.

- P *Gazania rigens* (L.) Gaertner gazania
 2. Forming large open mats, conspicuously orange when in flower, where planted on banks above Portobello Road, e.g. at Company Bay.
- Helichrysum filicaule* Hook.f. slender everlasting
 + More common than the similar everlasting *Anaphalioides bellidioides* (= *H. bellidioides*), but occurring in similar habitats, also on stable sand flats.
- Helichrysum intermedium* whipcord daisy
 (= *H. selago* (Hook.f.) Benth. et Hook.f. var. *tumidum* Cheeseman)
 2. The only vascular plant taxon endemic to Otago Peninsula, this whipcord shrub grows only around Cape Saunders and between Lovers Leap and Harakeke Point, forming compact low bushes on the coastal cliffs. Although the name *H. intermedium* has been adopted for the species previously known by the invalid name *H. selago* (Webb et al. 1988), it should be noted that var. *tumidum* has not been formally named as a variety of *H. intermedium*. The Otago Peninsula entity is nevertheless distinctive, its branchlets being more stout than varieties found in other parts of the South Island. Despite its restricted geographical range on Otago Peninsula it is nevertheless secure in its inaccessible habitat.
- Helichrysum lanceolatum* (Buchanan) Kirk
 (= *H. glomeratum* (Raoul) Benth. et Hook.)
 10. Often associated with *Corokia cotoneaster* among open scrub of dry coastal land harbour-edge headlands, e.g. Portobello Peninsula. The hybrid between this and *Anaphalioides bellidioides* formerly described as *H. purdiei* Petrie, was recorded from Portobello in the catalogue of the Dunedin Naturalists' Field Club (1932).
- * *Hieraceum pilosella* L. mouse-ear hawkweed
 6. Recorded among rocks above the quarry near Highcliff; on Sheppards Island, Papanui Inlet; near Larnach Castle; on the upper western face of Sandymount, near the top of Peggys Hill, and at Broad Bay. The habitat is most often thin drought-prone patches of soil in pasture. This hawkweed species has greatly increased in inland Otago over the last 20 years. Although uncommon on Otago Peninsula, it has also increased in frequency here. Its repeated appearance in a gravel path in a Broad Bay garden probably indicates a considerable 'seed rain' now arriving from Central Otago.
- * *Hypochoeris radicata* L. catsear
 + A widespread flatweed of pasture, dunes, lawns, roadsides, and waste places.
- Lagenifera petiolata* Hook.f.
 8. Mostly in turf or short grassland atop coastal cliffs or on sand flats.
- Lagenifera pumila* (G. Forst.) Cheeseman parani
 3. At Sandfly Bay, The Pyramids, and near Larnach Castle, in slight shade of trees or shrubs.
- Lagenifera strangulata* Colenso
 1. Under kanuka on sandy soil at Sandymount.
- * *Lapsana communis* L. nipplewort
 3. Common in forest remnants above Colinswood and north of Highcliff, seen also at Portobello on a roadside.
- * *Leontodon autumnalis* L. autumn hawkbit
 2. An infrequent weed of waste ground and pasture, e.g. near Karetai Road.

- * *Leontodon taraxacoides* (Villars) Mérat hawkbit
 + Mainly coastal, on dunes, rubble slopes, and clifftops; seen also on disturbed roadsides and in pasture.
- Leptinella dioica* Hook.f. subsp. *dioica*
 + A regular component of turf in saltmarshes, and on coastal banks and headlands.
- * *Leucanthemum vulgare* Lam. oxeye daisy
 6. Usually on roadside banks, e.g. along Highcliff and Portobello Roads; also on Goat Island. A population near the Soldier's Monument, Highcliff Road, which in 1980 was confined to the roadside, had by January 2000 spread markedly into pasture both up- and down-slope.
- * *Matricaria dioscoidea* DC. rayless chamomile
 + An occasional plant of gravel road verges and dry mud of vehicle tracks.
- * *Mycelis muralis* (L.) Dumort. wall lettuce
 2. Collected from under pines at the top of Greenacres Street and seen otherwise only on a roadside near Harbour Cone.
- Olearia arborescens* (G. Forst.) Cockayne et Laing a tree daisy
 9. An occasional shrub of rocky banks, e.g. Sandymount Road.
- Olearia avicenniifolia* (Raoul) Hook.f. mountain akeake
 + Often in similar habitats to those of *O. arborescens*, but more common, and a regular component of scrub on steep coastal sites.
- Olearia bullata* H.D. Wilson et Garn.-Jones a tree daisy
 1. South-west flank of Harbour Cone, a single shrub 2.5 m tall in pasture on hillside adjacent to a forest remnant; located by Geoff Rogers in 1996.
- Olearia fimbriata* Heads a tree daisy
 1. Collected on a forest margin on the south-west slope of Harbour Cone in 1977 (specimen in Landcare Research herbarium, Dunedin); a single tree that has evaded subsequent rediscovery.
- Olearia fragrantissima* Petrie fragrant tree daisy
 3. Small populations survive among other shrubs on a rocky knoll near Karetai Road, at a similar site on the ridge south of Sandymount, and in clifftop scrub at Vauxhall.
- Olearia ilicifolia* Hook.f. mountain holly
 2. Persisting as rare shrubs near the tops of Mt Charles and Peggys Hill.
- * *Olearia paniculata* (J.R. Forst. et G. Forst.) Druce akiraho
 1. This native plant, found naturally as far south as Oamaru, is widely planted as hedges which persist around some old farm sites. Planted also on Pudding Island, where it is now maintaining itself from seedlings.
- P *Olearia traversii* (F. Muell.) Hook.f. Chatham Islands akeake
 3. This Chatham Islands species has been planted along Portobello Road banks and on Pudding Island, and as part of a revegetation planting for yellow-eyed penguin nesting habitat at the west end of Boulder Beach.

- P *Olearia lineata* (Kirk) Cockayne cv. 'Dartonii' a tree daisy
 2. This cultivar has been planted on banks above Portobello Road, e.g. at Vauxhall.
- P *Osteospermum fruticosum* (L.) Nordlindh dimorphotheca
 5. Forming a few mats upon steep banks above Portobello Road, originally planted.
- Ozothamnus leptophyllus* (G. Forst.) Breitw. et J.M. Ward tauhinu, cottonwood
 (including *Cassinia vauvilliersii* (Homb. et Jacq.) Hook.f.)
 5. Coastal low scrub only at Sandymount, Sandfly Bay, Pudding Island, and Pipikaretu, and on a hillside south of Pukehiki.
- * *Pericallis Xhybrida* R. Nordenstam cineraria
 3. A garden escape, established at a few places along Portobello Road.
- * *Petasites fragrans* (Vill.) C.Presl winter heliotrope
 3. Forming patches by vegetative spread on suburban roadsides, as an escaped or relict garden plant, e.g. Broad Bay, and on the dune face at St Kilda.
- Pseudognaphalium luteoalbum* (L.) Hilliard et B.L. Burt
 + Often found on dry unstable soil on coastal banks. cudweed
- Raoulia australis* Hook.f. scabweed
 4. A mat plant of very thin, often sandy soil overlying rock near Cape Saunders, Sandymount, Sandfly Bay, and on a ridge of Harbour Cone.
- Raoulia glabra* Hook.f.
 8. Occasionally found in compact vegetation among rock outcrops on ridges or roadsides, e.g. Harbour Cone.
- Raoulia monroi* Hook.f.
 1. Only in the centre of Sandfly Bay where sand thinly covers a rock outcrop.
- Raoulia subsericea* Hook. f.
 1. Upper north-east crest of Peggys Hill, on dry thin soils near rock outcrops, growing alongside *R. glabra*.
- Raoulia tenuicaulis* Hook.f.
 2. Sandy thin soil over rock at Sandymount and on a clifftop near Cape Saunders.
- P *Senecio angulatus* L. Cape ivy
 3. Roadsides near Harwood, Portobello and Broad Bay; plants persisting from gardens and hedges.
- Senecio biserratus* Belcher fireweed
 + Occasional on disturbed ground, e.g. slips, dunes, forest and scrub edges, and clearings. Often growing with *S. minimus*, but less common.
- Senecio carnosulus* (Kirk) C.J. Webb a shore groundsel
 + Found on the coast, most abundant on rubble slopes, but also on cliffs and dune faces.
- * *Senecio elegans* L. purple groundsel
 + Frequent to abundant at most beaches, growing among marram grass on unstable foredunes.

- Senecio glaucophyllus* Cheeseman subsp. *basinudus* Ornduff a shore groundsel
 3. A coastal plant, larger and less common than *S. carnosulus*, collected at Quarantine Island, Cape Saunders, and Papanui Beach. Listed from Allans Beach by Ornduff (1960).
- Senecio glomeratus* Poir. fireweed
 6. On a few dry roadside banks, most obvious in early summer, e.g. Hoopers Inlet.
- * *Senecio jacobaea* L. ragwort
 + Widespread, but seldom abundant, in pastures and along grassy roadsides.
- * *Senecio mikanioides* Walp. German ivy
 7. A low sprawling climber naturalised on a few roadsides or among lupins on dunes, e.g. Boulder Beach, Tomahawk Beach, and Sandfly Bay.
- Senecio minimus* Poir. fireweed
 + Occasional to frequent on any disturbed or open ground, e.g. slips, roadside banks, dunes, forest and scrub edges, and clearings.
- Senecio quadridentatus* Labill. cotton fireweed
 2. Dry rocky roadside bank south of Pukehiki, and on a rock outcrop at The Pyramids.
- * *Senecio sylvaticus* L. wood groundsel
 2. Collected on a grassy road verge near Boulder Beach, and seen on dry eroding hill face pasture behind Turnbills Bay.
- * *Senecio vulgaris* L. groundsel
 8. A weed of disturbed ground in gardens and in gravel of road verges. Recorded from just 3 sites up to 1990, this species appears to have become more widespread since then.
- * *Silybum marianum* (L.) Gaertner variegated thistle
 4. Small infestations occur on roadsides and in pasture, e.g. Broad Bay, Harwood.
- * *Soliva sessilis* Lopez et Pavon Onehunga weed
 4 A spiny-fruited lawn weed, South American in origin, which has steadily spread from the warmer north (including Auckland city, hence the name 'Onehunga weed' from one of its suburbs). Its first appearance at Dunedin and other Otago sites has been mainly on well-trodden public lawns and at sites where the spiny fruits would dislodge from the footwear of people disembarking from vehicles. First recorded on Otago Peninsula in 2002 beside bus stops and in lawns at Broad Bay, Macandrew Bay, Portobello, and Glenfalloch Garden.
- * *Sonchus asper* (L.) Hill prickly sow thistle
 + An occasional weed of dry roadside and coastal banks.
- Sonchus kirkii* Hamlin puha, native sow thistle
 + Strictly coastal, among cracks and ledges of low cliffs, and on rubble slopes.
- * *Sonchus oleraceus* L. sow thistle
 + The most common sow thistle, regularly seen on coastal dunes and banks, roadsides, and forest edges, and as a garden weed.

- * *Tanacetum parthenium* (L.) Schultz feverfew
 3. A few plants persist as garden escapes on a roadside north of Peggys Hill, and in bared ground of a horse paddock under eucalypts at Broad Bay. Noted also alongside Portobello Road near Waverley.
- * *Tanacetum vulgare* L. tansy
 1. Planted and spreading, at least vegetatively, along grassy verge of road south-east of Karetai Road.
- * *Taraxacum officinale* G. Weber dandelion

+ A common weed in gardens and lawns, less often seen in pastures and on roadsides.
- * *Tripleurospermum inodorum* Sch. Bip scentless chamomile
 3. Gravelly road verges at Broad Bay, Andersons Bay, and near Portobello.
- Vittadinia australis* A.Rich. white fuzzweed
 1. Noted only on dry crumbly soil on the smaller of The Pyramids.

BERBERIDACEAE

barberry family

- * *Berberis darwinii* Hook. Darwin's barberry
 9. Well-established and spreading in low forest and scrub around Peggys Hill and in the Waverley area; less common at other sites, e.g. Pudding Island. This colourful, prickly shrub has become very common on the west side of Otago Harbour, but is at an earlier stage of colonisation on the Peninsula.
- * *Berberis glaucocarpa* Stapf barberry
 1. A single wild plant in hillside pasture, Broad Bay; also planted as a roadside hedge, Portobello.
- * *Berberis wilsonae* Hemsley
 1. Planted on roadside banks at Burns Point, Waverley and now perpetuating itself from seed.

BIGNONIACEAE

- * *Eccremocarpus scaber* Ruiz Lopez et Pavón Chilean glory creeper
 1. Established under trees behind Glenfalloch as a garden escape.

BORAGINACEAE

forget-me-not family

- * *Borago officinalis* L. borage
 1. Listed from Macandrew Bay in Dunedin Naturalists' Field Club catalogue of 1871. This culinary herb is still cultivated and likely to appear from time to time as small wild populations close to habitations, as it did on a roadside at Company Bay in 2004.
- * *Echium candicans* L.f. Pride of Madeira
 3. Naturalised on dry banks along Portobello Road between Waverley and Macandrew Bay.
- * *Echium pininana* Webb et Berth. giant bugloss
 12. This species, taller and larger-leaved than *E. candicans* shares its habitat but is slightly more widespread. Hybrids between the two species occur near Waverley.

- * *Echium vulgare* L. viper's bugloss
 1. A single plant became obvious when flowering in January 1984 on the road verge, Andersons Bay causeway. Plants were again obvious in the same area in January 2000.
- * *Myosotis arvensis* (L.) Hill field forget-me-not
 1. Seen only on the larger of The Pyramids where it is locally common on partly bare soil on small terraces at the base of dry cliff faces.
- * *Myosotis discolor* Pers. grassland forget-me-not
 2. Collected twice only, from moist pasture near Karetai Road and Broad Bay.
- * *Myosotis laxa* Lehm. subsp. *caespitosa* (Schultz) Nordh. water forget-me-not
 9. In seepages and swamps, e.g. near Tomahawk, but never common.
- Myosotis pygmaea* Colenso var. *pygmaea* a dwarf forget-me-not
 4. This tiny forget-me-not grows in coastal turf and gritty soil atop coastal cliffs at The Pyramids, Cape Saunders, Lovers Leap and Boulder Beach. Listed by Dunedin Naturalists' Field Club (1932) also from Seal Point and Papanui Inlet dune hollows.
- Myosotis rakiura* L.B. Moore Stewart Island forget-me-not
 1. A single plant recognised and photographed by Brian Patrick in 1990 on cliffs at Highcliff. This large forget-me-not of southern coasts appears to have declined where it reaches its northern limit in the Dunedin area. The Dunedin Naturalists' Field Club (1932) list it from "Blackhead, St Clair, Hoopers Inlet, Seaview, etc.". Martin (1962) stated that it still occurred near Cape Saunders. Whether it still persists there today is not known. It is also currently known from three small populations below Cargills Castle, just west of Otago Peninsula.
- * *Myosotis sylvatica* Hoffm. garden forget-me-not
 7. This grows as a discard or a garden escape at a few sites along Portobello Road, and has become a common weed within disturbed forest remnants at Glenfalloch, Colinswood, and Styles Creek Bush.
- * *Pentaglottis sempervirens* (L.) L. Bailey alkanet
 2. A garden escape on roadsides at Broad Bay and Smaills Beach.
- * *Symphytum Xuplandicum* Nyman Russian comfrey
 4. A garden weed found also in some roadside waste places, e.g. Broad Bay, Otakou, and Sandymount.

BRASSICACEAE (= CRUCIFERAE) cress family

- * *Arabidopsis thaliana* (L.) Heynh. wall cress
 + In 1990 this early spring-flowering cress was known only from Broad Bay and near Otakou, but by 1997 it had become widespread, especially along gravel road verges, a pattern of rapid spread and increase which has likewise occurred through much of Otago and Southland over the same period.
- * *Barbarea intermedia* Boreau winter cress
 4. An infrequent weed of cultivated ground, also seen on roadside banks near Larnach Castle and along Karetai Road.

- * *Barbarea verna* (Miller) Aschers winter cress
 1. Collected only from a roadside at Colinswood.
- * *Brassica oleracea* L. wild cabbage
 5. Well established along portions of roadside bank with loose soil on Portobello Road.
- * *Brassica rapa* L. subsp. *sylvestris* (L.) Janchen wild turnip
 4. Roadside banks at Grassy Point, Portobello, and Broad Bay.
- * *Cakile edentula* (Bigelow) Hook. sea rocket
 2. Te Rauone and Reids Beaches, growing along the line where beach meets foredune.
- * *Capsella bursa-pastoris* (L.) Med. shepherd's purse
 + An occasional weed of cultivated ground, also seen on gravel roadsides and on dry knolls in pasture.
- Cardamine corymbosa* Hook.f. native bittercress
 2. A form of this species with large solitary flowers grows in coastal turf above cliffs at Sandymount and Cape Saunders.
- Cardamine debilis* DC. native bittercress
 + Occasional to frequent in most forest remnants, in light gaps and at forest edges.
- * *Cardamine flexuosa* With. wavy bittercress
 1. Collected from Peggys Hill under open forest; probably more common.
- * *Cardamine hirsuta* L. bittercress
 + A common garden weed, most obvious in spring, also found with *C. debilis* at some forest edge sites.
- * *Cardamine* sp.
 2. This weed of domestic and public gardens has become abundant in Dunedin, and probably elsewhere in New Zealand, over the last decade, being a common contaminant in nursery-raised plants in containers. Recorded at Broad Bay and Glenfalloch Garden. It has pinnate, small, finely hairy leaves, which are often purplish, making the plant cryptic and easily overlooked. The flowers are tiny, without petals, and the capsules almost hair-like. This entity keys out to somewhere near *Cardamine corymbosa*, but is quite distinct from other forms of that species. Its weediness suggests that it is a species naturalised in New Zealand from overseas, though there are other native herbs, even ones relatively uncommon in the wild, which have become weeds of cultivated ground in gardens.
- * *Cheiranthus cheiri* L. wallflower
 9. Well established on dry sunny roadside banks between Portobello and Dunedin.
- * *Coronopus didymus* (L.) Smith twin cress
 6. A weed of cultivated garden soil, found also in roadside gravel and on dry knolls in pasture, e.g. Broad Bay.
- * *Coronopus squamatus* (Forsk.) Asch. wart cress
 1. Gravelly vehicle track, Karetai Road.
- * *Diplotaxis muralis* (L.) DC. wall rocket
 1. Sandy roadside at St. Kilda Beach.

- * *Erophila verna* (L.) Chevall. whitlow grass
 3. First noted in October 2003, in gravel of road verges of Highcliff Road between Pukehiki and Highcliff Hill, locally abundant with other annual cresses (especially *Arabidopsis* and *Capsella*) on ground regularly sprayed with herbicide.
- * *Hirschfeldia incana* (L.) Lagrèze-Fossat hoary mustard
 2. Dry roadside bank among tree roots at Waverley, and sandy road verge at St. Kilda Beach.
- * *Hymenolobus procumbens* (L.) Schinz et Thell.
 1. On a rubbly coastal bank above the stony beach at Kaitangata, east of Sandymount; a few plants only. Garnock-Jones (1979) notes that this cress, known from S. Europe and Tasmania, and once considered native to New Zealand, had been previously recorded from the Otago coast, but not collected for over 50 years.
- * *Iberis umbellata* L. candytuft
 1. Recorded by Healy (1957) from cliffs at Andersons Bay.
- Ischnocarpus novae-zelandiae* (Hook.f.) Schulz
 # Recorded from Andersons Bay (Dunedin Naturalists' Field Club 1932), but even then noted as "not recently reported".
- * *Lepidium desvauxii* Thellung bushy peppergrass
 3. Collected from dry roadside banks, e.g. at Hoopers Inlet and Otakou.
- * *Lepidium pseudotasmanicum* Thellung narrow-leaved cress
 8. An occasional weedy cress of dry waste ground such as roadsides, clay banks, and dunes.
- Lepidium oleraceum* Sparrm. Cook's scurvy grass
 3. Now known only from Wharekakahu Island (Partridge, 1983), and from fertile disturbed ground within gull colonies on a headland below The Chasm and below the coastal cliffs of Highcliff. It has apparently disappeared from mainland sites where it formerly grew, e.g. Tomahawk (Dunedin Naturalists' Field Club, 1932) and Seal Point (listed in notebook of J.E. Holloway, 1929).
- Lepidium tenuicaule* Kirk
 1. Only at Cape Saunders where it is locally common in turf and on eroded soil on a coastal cliff-top.
- * *Lobularia maritima* (L.) Desv. alyssum
 6. Locally common on dry banks along Portobello Road.
- * *Lunaria annua* L. honesty
 3. Banks above Portobello Road, a garden escape.
- * *Matthiola incana* (L.) R.Br. stock
 4. Established at a few roadside bank sites along Portobello Road and on sea cliffs at Taiaroa Head. One population is white-flowered, the others purple-flowered.

- * *Nasturtium microphyllum* Boenn. ex Reichb. one rowed watercress
 (= *Rorippa microphylla* (Reichb.) Hylander
 + Widespread in seepages and along streamsides in pastures, where the plants are heavily grazed. It grows more luxuriantly in a few swamps and roadside ditches. This species of watercress is the more common one of southern New Zealand; it is possible that the other watercress, *Nasturtium officinale* R.Br. (= *Rorippa nasturtium-aquaticum* (L.) Hayek) may also be present on Otago Peninsula.
- * *Raphanus sativus* L. radish
 2. Wild on roadsides at Andersons Bay and Broad Bay.
- Rorippa palustris* (L.) Besser marsh yellow cress
 1. In damp mud beneath raupo and *Carex secta* on a pond margin, Akapatiki Flat
- * *Sisymbrium officinale* (L.) Scop. hedge mustard
 9. A weed of gardens and bare soil on dry roadside banks, e.g. Waverley, Grassy Point.
- * *Sisymbrium orientale* L. oriental mustard
 2. Collected from dry loose soil on a roadside bank near Macandrew Bay, and from the Broad Bay cemetery.

BUDDLEJACEAE

- P *Buddleja davidii* Franchet buddleia
 3. Persisting in old farm gardens and planted on roadside banks at Macandrew Bay. Apparently not yet naturalised here, though it is abundantly so at the Logan Point Quarry, just across the harbour.
- P *Buddleja globosa* Hope
 2. Persisting in an abandoned farm garden, and planted on a roadside bank at Macandrew Bay.

CALLITRICHACEAE

- Callitriche petriei* R. Mason native starwort
 1. Found in turf surrounding ponds beside The Pyramids.
- * *Callitriche stagnalis* Scop. starwort
 + Typically grows in ditches and roadside water tables with permanently wet bases.

CAMPANULACEAE

bell flower family

- Wahlenbergia gracilis* (G. Forst.) Schrad. harebell
 + Restricted to crumbly soil on dry rock faces, dry hillsides, or clay banks, e.g. The Pyramids.

CANNABACEAE

- * *Humulus lupulus* L. hops
 1. Persistent weed in hedge at Broad Bay.

CAPRIFOLIACEAE

- P *Lonicera nitida* Wilson hedge honeysuckle
1. Roadside bank above Portobello Road, either planted or else persisting from discarded hedge trimmings.
- * *Leycesteria formosa* Wallich Himalayan honeysuckle
6. Within or at the edges of disturbed forest, but never common, e.g. behind Glenfalloch.
- * *Sambucus nigra* L. elder
+ The most widespread naturalised shrub, dominant on the rear parts of many sand dunes and at some bouldery sites from sea level to the hilltops. It is found also in open forest and standing alone in pastures.

CARPODEACEAE

- Carpodetus serratus* J.R. Forst. et G.Forst. marble leaf
+ Recorded from 21 forest remnants, but always a rare or occasional tree.

CARYOPHYLLACEAE

chickweed family

- * *Cerastium fontanum* Baumg. subsp. *vulgare* (Hartm.) Greuter et Burdet mouse-ear chickweed
+ Widespread in pasture, on disturbed ground of dunes and forest edges, in lawns and as a garden weed.
- * *Cerastium glomeratum* Thuill. annual mouse-ear chickweed
1. Collected as a garden weed at Broad Bay but probably more widespread.
- Colobanthus muelleri* Kirk
+ Typically near the coast, in sandy rock crevices and cliff-top turf, e.g. Sandfly Bay and Cape Saunders; also on the summit of Mt Charles.
- * *Polycarpon tetraphyllum* (L.) L. allseed
14. An occasional small herb of dry sites, especially bared soil or clay outcrops on the coast and in pasture.
- * *Sagina apetala* Ard. annual pearlwort
3. Gravelly roadsides at Broad Bay, Tomahawk, and St Kilda.
- * *Sagina procumbens* L. pearlwort
+ A frequent small weed of gardens and paths, found also on roadsides, in pastures, along forest edges, and sometimes in damp or coastal habitats.
- Scleranthus biflorus* (J.R. Forst. et G. Forst.) Hook.f.
2. In gritty rock crevices on cliffs near Cape Saunders and at The Pyramids.
- * *Silene gallica* L. catchfly
2. Gravel roadsides at Smaills Beach and near Challis Point.
- * *Silene vulgaris* bladder campion
1. Steep gravelly bank above harbour bay head, Turnbolls Bay.

- * *Spergula arvensis* L. spurrey
 4. A weed of roadsides and cultivated ground.
- Spergularia media* (L.) C.Presl
 + Occasional on bare ground along coastal clifftops and in saltmarsh around the edge of the coastal inlets.
- * *Spergularia marina* (L.) Griseb. sea spurrey
 # Collected from Sandymount in 1895 by B.C. Aston (WELT 62145) who also collected it from Kaikorai. The species is known elsewhere in New Zealand only from the Lake Ellesmere area, Canterbury.
- * *Spergularia rubra* (L.) Presl et C. Presl sand spurrey
 2. Hard ground on roadsides at Dick Road and Tomahawk.
- * *Stellaria alsine* Grimm bog stitchwort
 + Occasional in seepages in pasture, or on the banks of small streams in the open.
- Stellaria decipiens* Hook.f. native chickweed
 (= *S. parviflora* Hook.f.)
 + A common creeping herb of dry ground in native forest remnants.
- * *Stellaria graminea* L. stitchwort
 8. Usually in damp grassy places; abundant in an ungrazed pasture near Macandrew Bay.
- * *Stellaria media* (L.) Cirillo chickweed
 + Abundant under the open edges of forests, among scrub on dunes, and in bared ground of roadsides, gardens, and farms.

CELASTRACEAE

- * *Euonymus europaeus* L. spindle tree
 3. Occasional self-sown shrubs in woodland understorey at Glenfalloch Garden; also apparent in 2004 on Goat Island and Pudding Island.

CHENOPODIACEAE

fathen family

- Atriplex buchananii* (Kirk) Cheeseman
 9. Grows on Wharekakahu Island, around the adjacent mainland coast, near Ryans Beach, at Cape Saunders, near Boulder Beach, at Sandfly Bay, and Quarantine Island, typically on caked and otherwise almost bare mud or clay on coastal terraces or rubble slopes.
- * *Atriplex prostrata* DC. orache
 + A widely distributed coastal herb typically found among seaweed and other flotsam on sandy or bouldery beach-heads, and around the edges of the big inlets.
- * *Chenopodium album* L. fathen
 2. A weed in cultivated ground at Allans Beach and Broad Bay.
- Chenopodium glaucum* L. subsp. *ambiguum* (R.Br.) Thell. glaucous goosefoot
 5. Coastal rubbly ground at Sandfly Bay, Sandymount, Pipikaretu, and Papanui Beach; and on damp sand at Tomahawk Lagoon.

- * *Chenopodium murale* L. nettle-leaved fathen
 2. A weed in cultivated ground at Allans Beach and on a coastal bank below Sandymount.

Einadia allanii (Aellen) Paul G. Wilson
 8. Locally common on dry soil of scrubby coastal headlands, e.g. the harbour islands, Grassy Point, and Cape Saunders.

Sarcocornia quinqueflora (Ung.-Sternb.) A.J. Scott glasswort
 (= *Salicornia australis* Sol. ex Benth.)
 + Dominant on the edges of tidal flats at Hoopers Inlet, less common at Papanui Inlet and around the harbour; occasional in wet rock crevices on the sea coast.

Suaeda novae-zelandiae Allan sea blite
 + Found in damp sand near high tide level around Hoopers and Papanui Inlets, and occasionally on sea cliffs.

CLUSIACEAE

- * *Hypericum androsaemum* L. tutsan
 14. Well established in some forest remnants, particularly around Company and Macandrew Bays.

P *Hypericum calycinum* L. rose of Sharon
 1. Planted but not yet naturalised on banks above Portobello Road.

Hypericum japonicum Murray swamp hypericum
 2. A single group of plants in a dune hollow by The Pyramids, and again in the moist head of a hillside gully above Broad Bay.

CONVOLVULACEAE

bindweed family

- * *Calystegia silvatica* (Kit.) Griseb. great bindweed
 7. A weed of gardens, occasionally found on roadsides and rough ground on dunes; established from rhizome fragments in discarded garden rubbish.

Calystegia soldanella (L.) R.Br. shore bindweed
 2. A prostrate coastal herb probably once common on sand dunes in the district, but recorded recently only at Boulder Beach and Papanui Inlet.

Calystegia tuguriorum (G. Forst.) Hook.f. a native bindweed
 + This insignificant liane grows on forest edges, especially near the coast, and is regularly present among divaricating shrubs on rocky ground.

- * *Convolvulus arvensis* L. field bindweed
 1. Gravel roadside, just east of Papanui Inlet. An ephemeral, collected in 1984 but not seen there since.

Dichondra sp. aff. *brevifolia*
 1. In turf sward on the windswept crest of Mt Charles, close to the summit rocks. (*D. repens* grows a few metres away, at the margin of peppertree scrub.)

Dichondra repens J.R. Forst. et G. Forst.

Mercury Bay weed

5. A plant of relatively dry turf or short sward, seen at Cape Saunders, Allans Beach, Otakou golf course, near The Pyramids, and on top of Mt Charles.

CORIARIACEAE

tutu family

Coriaria arborea R. Linds.

tree tutu

7. Mainly in scrub at forest edges, e.g. Grassy Point, Sandymount, and Hoopers Inlet.

Coriaria sarmentosa G. Forst.

tutu

2. Among scrub on sandy soils around Sandymount.

CORYNOCARPACEAE

* *Corynocarpus laevigatus* (J.R. Forst. et G. Forst.)

karaka

3. Planted at Macandrew Bay and Broad Bay; also in bush behind Glenfalloch Garden where it is spreading locally from seed. This native New Zealand tree reaches its natural southern limit on Banks Peninsula.

CRASSULACEAE

stonecrop family

* *Aeonium arboreum* (L.) Webb et Berth.

4. Established on dry banks along Portobello Road. This is the most common naturalised *Aeonium*.

* *Aeonium haworthii* (Salm-Dyck) Webb et Berth.

pinwheel aeonium

1. Dry roadside bank at Challis Point.

* *Aeonium undulatum* Webb et Berth.

giant aeonium

2. Dry banks above Portobello Road. The largest *Aeonium* species here, scarcely naturalised but increasing vegetatively to form clumps of plants at a few sites.

* *Aeonium Xvelutinum* Praeger

1. Recorded in Vol. IV, Flora of New Zealand, from Andersons Bay. This garden escape hybrid was probably collected from the cliffs.

* *Cotyledon orbiculata* L.

1. Listed as naturalised on Otago Peninsula, in Vol IV, Flora of New Zealand, probably on the basis of plants growing on the bank above Portobello Road.

Crassula moschata G. Forst.

shore stonecrop

- + Grows close to the sea on wet rock platforms; less common on wet sand around estuaries.

* *Crassula multicava* Lemaire

fairy crassula

2. Waverley and Challis Point, roadside bank above Portobello Road. Probably planted originally, but has expanded at least vegetatively to mats 2 m or so across.

Crassula ruamahanga A.P. Druce

1. Recorded from Otago Peninsula in Vol. IV, Flora of New Zealand. It occurs at Glenfalloch Garden as a weed in shaded lawn. This tiny native herb is scattered and relatively uncommon through New Zealand, its natural habitat being damp muddy ground under forest, but it has become a weed of cultivated ground, including public gardens and bowling greens in Dunedin.

Crassula sieberiana (Schult.) Druce

- + Found on thin soils among rock outcrops on ridges and hillcrests, and less often on gravel roadsides.

Crassula sinclairii (Hook.f.) A.P. Druce et D.R. Given

1. Restricted to Tomahawk Lagoon, where it grows in moist sand subject to inundation.

Crassula tetramera (Toelken) A.P. Druce et Sykes

- + Rock outcrops and thin soils in the open. Formerly included within *C. sieberiana*, but Peninsula collections confirm that both species occur here. This species collected for example at Papanui Inlet.

* *Echeveria Ximbricata* Deleuil

2. High roadside banks near Challis Point and at Andersons Bay.

* *Sedum acre* L.

stonecrop

5. In roadside gravel, e.g. Broad Bay and on sand at Sandfly Bay.

* *Sedum album* L.

white stonecrop

2. Naturalised on a rocky bank above Portobello Road and on roadside gravel on Andersons Bay causeway.

* *Sedum decumbens* R.T. Clausen

1. Roadside bank on Portobello Road on city side of Glenfalloch. One big patch, having expanded vegetatively from an original planting.

* *Sedum praealtum* DC.

shrubby stonecrop

- + Originally planted but now well established on dry banks above the harbour between Macandrew Bay and Dunedin.

* *Sedum reflexum* L.

2. Rocky roadside banks above Portobello Road. Probably planted originally, but now spread a few metres over dry banks.

DROSERACEAE

sundew family

Drosera binata Labill.

forked sundew

1. This sundew persists in a small bog on the flats behind Allans Beach.

ELAEOCARPACEAE

Aristotelia serrata (J.R. Forst. et G. Forst.) W.R.B. Oliv.

wineberry

- + Widespread but usually infrequent, preferring open or formerly open forest sites such as gullies, forest edges, and clearings.

- Elaeocarpus hookerianus* Raoul pokaka
 2. In the valley south of Dicksons Hill 74 large trees grow with a stand of rimus, and in bush at Pipikaretu there are 6 trees; no young ones occur at either site.

ELATINACEAE

Elatine gratioloides A. Cunn.

- # Listed by Petrie (1896) and by Martin (1962) as occurring at Wickliffe Bay, but not seen there in recent years.

EPACRIDACEAE

southern heath family

- Cyathodes juniperina* (J.R. Forst. et G. Forst.) Druce prickly mingimingi
 7. Forms compact windswept bushes on crests of harbour headlands and grows among light scrub or under kanuka on dry hill faces.

- Dracophyllum longifolium* (J.R. Forst. et G. Forst.) R.Br. inaka
 7. Locally common in scrub fringing some harbour headlands, e.g. Portobello Peninsula. Seen on the sea coast at Boulder Beach and at Sandymount, and on the top of Peggys Hill.

- Leucopogon fraseri* A. Cunn. var. *fraseri* patotara
 8. Grows in dry rocky or stable sandy places, among grasses, e.g. Okia Flat, Sandymount.

ERICACEAE

heath family

- P *Arbutus unedo* L. strawberry tree
 2. Planted on banks above Portobello Road.
- * *Erica lusitanica* Rudolphi Spanish heath
 3. Naturalised near Portobello on two small roadside bank sites, and on a wet rocky hillside at Paradise Road.
- Gaultheria antipoda* G. Forst. bush snowberry
 6. An occasional small shrub found on windswept low coastal headlands, e.g. Yellow Head.
- Gaultheria macrostigma* (Colenso) D.J. Middleton wiry snowberry
 (= *Pernettya macrostigma* Colenso)
 1. Occasional among grasses and *Leucopogon fraseri* on sandy knolls at Okia Flat.

ESCALLONIACEAE

- Corokia cotoneaster* Raoul korokio
 8. Mostly in scrub on dry coastal headlands, e.g. Portobello Peninsula, but also on some rocky knolls on higher ground.
- * *Escallonia rubra* (Ruíz Lopez et Pavón) Pers. red escallonia
 1. A once-popular hedge plant that grows wild on a steep harbour-edge bank at Yellow Head, Broad Bay, but has also been planted at three sites on banks above Portobello Road.

EUPHORBIACEAE**spurge family**

- * *Euphorbia helioscopia* L. sun spurge
 3. A weed in a vegetable garden at Broad Bay; and along roadsides at Macandrew Bay and Highcliff Road.
- * *Euphorbia peplus* L. milkweed
 12. A garden weed, occasionally met also on roadsides and in open bush remnants.

FABACEAE (= LEGUMINOSAE)**pea family**

- Carmichaelia petriei* Kirk a native broom
 3. Locally common at The Pyramids and on the ridge south of Sandymount. A few shrubs grow on a scrubby rock knoll near Karetai Road. This is the only native broom species recorded from the Peninsula. *C. petriei* is a variable species; plants on Otago Peninsula have the relatively tall stature (to 3 m) and narrow stems typical of coastal Otago populations that would formerly have been known as *C. virgata* Kirk.
- * *Chamaecytisus palmensis* (Christ) Bisbey et K. Nicholls tree lucerne
 9. Originally planted, e.g. along Portobello Road, this propagates itself from seed but has not spread far; recorded also from forest edge above Colinswood.
- * *Cytisus scoparius* (L.) Link broom
 + Broom is obvious right along Portobello Road and is locally very abundant where it has invaded pasture, e.g. on Portobello Peninsula, behind Company and Macandrew Bays, and on Grassy Point, and although scattered elsewhere it is absent from some parts of the Peninsula.
- * *Lathyrus latifolius* L. everlasting pea
 3. On bank above road between Macandrew Bay and Waverley; planted and locally naturalised.
- P *Lathyrus tingitanus* L. Tangier pea
 1. Portobello Road bank; planted.
- * *Lotus pedunculatus* Cav. lotus
 4. On roadsides near Grassy Point, Hoopers Inlet, Otakou Golf course, and north of Peggys Hill.
- * *Lupinus arboreus* Sims tree lupin, yellow lupin
 + The most common naturalised shrub, covering extensive areas of sand dunes; scattered on non-sandy substrates around the harbour edge.
- * *Medicago arabica* (L.) Hudson spotted bur medick
 1. Hillside pasture, Mt Charles.
- * *Medicago lupulina* L. black medick
 2. Collected on roadside banks at the lime kilns and near The Cove.
- * *Medicago sativa* L. lucerne
 1. Recorded only in sandy grassland fringing the picnic ground at Te Rauone Beach.

- P *Paraserianthes lophantha* (Willd.) J. Neilson brush wattle
 2. Macandrew Bay and Quarantine Island; planted on sunny banks.
- * *Racosperma dealbatum* (Link) Pedley silver wattle
 1. Planted on a roadside bank at Broad Bay and spreading by root suckers to form a thicket.
- * *Racosperma melanoxylon* (R.Br.) C. Martius Tasmanian blackwood
 1. Planted in bush gully behind Glenfalloch and spreading locally from seedlings.
- Sophora microphylla* Aiton kowhai
 + Widespread but most common on sunny faces with dry soil. Both old trees and young plants can be found in the open among pasture.
- * *Spartium junceum* L. Spanish broom
 1. Occasionally planted, but self-propagating on a steep clay bank of a road cutting near Portobello.
- * *Teline monspessulana* (L.) K. Koch Montpellier broom
 + Well established along Portobello Road on dry banks overlooking the harbour.
- * *Teline Xspachianus* Webb
 2. Collected at Andersons Bay by A.J. Healy and near Macandrew Bay by C.J. Webb.
- * *Teline stenopetala* (Webb et Berth.) Webb et Berth.
 1. Collected along Portobello Road on the roadside bank; less common than *T. monspessulana*.
- * *Trifolium arvense* L. haresfoot trefoil
 1. Only at Sandfly Bay in an area of sandy rock outcrops.
- * *Trifolium dubium* Sibth. suckling clover
 + Widespread in dry pastures but seldom common.
- * *Trifolium glomeratum* L. clustered clover
 1. Sunny patch of hillside pasture, on thin drought-prone soil, behind Turnbolls Bay.
- * *Trifolium micranthum* Viv. lesser suckling clover
 1. Grassy road verge near Otakou golf course.
- * *Trifolium ornithopodioides* L. trigonel
 2. Near Cape Saunders and south of Ryans Beach, in gritty soil in pasture at clifftops.
- * *Trifolium pratense* L. red clover
 + Found occasionally among long grass on road verges and on harbour islands, usually away from grazing animals.
- * *Trifolium repens* L. white clover
 + Widely distributed and often common in pastures, lawns, roadside grass, and gardens.
- * *Trifolium striatum* L. striated clover
 1. Collected in 2002 in pasture on a slightly dry ridge on a slope south of Pukehiki.
- * *Trifolium subterraneum* L. subclover
 3. Grassy road verge near Otakou golf course, and in pasture on sandy soils at Allans Beach and Okia Flat.

- * *Ulex europaeus* L. gorse
 - + Locally abundant, sometimes taking over pastures, but found also on sand dunes, roadside banks, and coastal cliffs.
- * *Vicia hirsuta* (L.) Gray hairy vetch
 - 2. Seen on a roadside and as a garden weed, Broad Bay.
- * *Vicia sativa* L. vetch
 - 10. An occasional garden weed, noted also in a few grassy roadsides and waste places.

FUMARIACEAE

- * *Fumaria bastardii* Boreau Bastard's fumitory
 - 1. Collected from Portobello, on a roadside bank, but possibly confused with *F. muralis* at other sites.
- * *Fumaria muralis* Koch scrambling fumitory
 - + A weed of gardens, also seen among lupin scrub on a few dunes, e.g. Te Rauone Beach. By 2003 this had become widespread on roadside banks, e.g. Highcliff Road and Portobello Road.

GENTIANACEAE

gentian family

- * *Centaureum erythraea* Rafn. centaury
 - 7. Moist sandy or grassy ground, e.g. Boulder Beach, Little Hoopers Inlet. Both white and pink flowered forms occur.
- Gentiana grisebachii* Hook.f. marsh gentian
 - 3. On damp banks among pasture at Taiaroa Hill and near Karetai Road, and beside a boggy dune hollow at Okia Flat.

GERANIACEAE

geranium family

- * *Erodium moschatum* (L.) L'Her. musky storksbill
 - 1. A weed of cultivated ground at Allans Beach.
- * *Geranium dissectum* L. cut-leaved geranium
 - 1. Grassy roadside at Harwood.
- Geranium microphyllum* Hook.f. a native geranium
 - 8. Mostly at forest edges or on bouldery scrubby hillcrests; never common.
- * *Geranium molle* L. dove's foot
 - + An occasional plant of dry pasture, stable dunes or waste places.
- Geranium retrorsum* D.C. a native geranium
 - 2. Grassy road verges at Broad Bay and The Cove.
- * *Geranium robertianum* L. herb robert
 - 8. Found along Portobello Road, near Pukehiki, and at a few other roadside and forest-edge sites.

- * *Geranium rubescens* Yeo greater herb robert
 2. Roadsides near Company Bay and Larnach Castle.
- Geranium sessiliflorum* Cav. var. *arenarium* G. Simpson et J.S. Thomson a native geranium
 5. A coastal plant, e.g. of clifftop turf at Cape Saunders, and sand dune at Boulder Beach, a habitat from which it has largely disappeared.
- P *Pelargonium Xasperum* Willd.
 1. Planted near Challis Point, forming a broad clump on the bank above Portobello Road.
- P *Pelargonium Xhortorum* L. Bailey zonal pelargonium
 1. Planted on banks above Portobello Road at Macandrew Bay.
- Pelargonium inodorum* Willd. native pelargonium
 1. Collected by Don Bruce on the east side of Okia Flat on eroded unstable sand among pasture and low bracken on old dune system.
- P *Pelargonium peltatum* (L.) L'Hér. ivy-leaved geranium
 2. Planted, and forming scrambling or hanging patches on the banks of Portobello Road.

GOODENIACEAE

- Selliera radicans* Cav. remuremu
 + Dominant in saltmarsh turf as at Hoopers Inlet, but found also on coastal headlands subject to salt spray, and on the road verge along the harbour edge.

GRISELINIACEAE

- Griselinia littoralis* (Raoul) Raoul broadleaf
 + A very common tree of native forest remnants, often surviving as isolated gnarled individuals in the open. Fluted logs in pastures are the longest remaining indication of former forests. Broadleaf posts also survive from early fences.

GROSSULARIACEAE

- * *Ribes sanguineum* Pursh flowering currant
 9. On roadsides, forest margins and in scrub, usually as only scattered shrubs.
- * *Ribes uva-crispa* L. gooseberry
 + A weedy shrub persisting around old farmhouses; also found along a few roadsides and in open forest remnants where it may be quite common, e.g. Colinswood.

GUNNERACEAE

- Gunnera monoica* Raoul
 5. Moist open banks, e.g. roadside north of Peggys Hill. Paviour-Smith (1956) listed *G. monoica* var. *albocarpa* and *G. mixta* from grassy meadows at Hoopers Inlet. *G. albocarpa* (or var. *albocarpa*) is now treated as synonymous with *G. monoica*. *G. mixta* is considered a hybrid between *G. monoica* and *G. prorepens*, but in the absence of any records of *G. prorepens* from Otago Peninsula, it is likely that the *G. mixta* record is based upon a misidentification.

HALORAGACEAE

Gonocarpus aggregatus (Buchanan) Orchard

2. Moist dune hollows behind Allans Beach and at Okia Flat.

Gonocarpus micranthus Thunb.

4. At Allans and Boulder Beaches in moist sandy ground, around dune hollows at Okia Flat, and in pasture on Mt Charles.

Gonocarpus montanus (Hook.f.) Orchard

2. Only on Sheppards Island in Papanui Inlet, on the edge of a dry bank, and on dry rocky ground on The Pyramids.

Haloragis erecta (Murray) Oken

- + Widespread in disturbed soil of roadside and coastal banks.

Myriophyllum propinquum A. Cunn.

a native milfoil

2. Collected from a pond in pasture near Papanui Beach and from the shallow margins of a pond near The Pyramids.

Myriophyllum triphyllum Orchard

water milfoil

2. Found in the same pond as *M. propinquum* at The Pyramids, but in deeper water, and common as a submerged aquatic in Tomahawk Lagoon.

ICACINACEAE

Pennantia corymbosa J.R. Forst. et G. Forst.

kaikomako

13. A rare or occasional small tree of forest remnants, e.g. Varleys Hill.

LAMIACEAE (= LABIATAE)

mint family

* *Cedronella canariensis* (L.) Webb et Berth.

balm of Gilead

6. A locally common shrub of some forest and scrub remnants, especially near Company Bay and north of Harbour Cone.

* *Galeobdolon luteum* Hudson subsp. *luteum* cv. 'Variegatum'

aluminium plant

3. Established as large patches at Broad Bay and Glenfalloch, under shade of trees and hedges as an escape or discard from gardens. This may not self-propagate from seed but it spreads extensively by stolons.

P *Glechoma hederacea* L.

ground ivy

1. Planted and forming large patches on a road frontage at the top of Centre Road.

* *Lamium amplexicaule* L.

henbit

1. A garden weed, Broad Bay.

* *Lamium purpureum* L.

red dead nettle

3. A garden weed, noted also on roadsides.

- * *Marrubium vulgare* L. horehound
 - + Regularly found on ground bared by animals under and around isolated trees and shrubs in pastures, and on loose rocky hillsides.
- * *Mentha Xpiperita* L. subsp. *spicata* peppermint
 - 1. Pasture beside a stream at the Glen, Broad Bay.
- * *Mentha pulegium* L. pennyroyal
 - 1. A solitary plant in a seepage on east side of Dicks Hill.
- * *Mentha spicata* L. subsp. *spicata* spearmint
 - 2. Moist roadside near Mt Charles and in raupo swamp at Tomahawk Lagoon.
- * *Nepeta cataria* L. catnip
 - 1. Forest remnant above Colinswood, Macandrew Bay; on ground disturbed by weed eradication.
- * *Prunella vulgaris* L. selfheal
 - + A widely distributed weed of lawns and wet grassy sites.
- * *Stachys arvensis* (L.) L. staggerweed
 - 1. A garden weed at Broad Bay; probably much more common.
- * *Stachys sylvatica* L. hedge woundwort
 - 3. A weed of gardens and disturbed forest edges at Broad Bay and Glenfalloch.

LINACEAE

- * *Linum bienne* Miller pale flax
 - 2. Suburban roadside at Macandrew Bay, and beside the road to Sandymount headland.
- * *Linum catharticum* L. purging flax
 - 4. On seasonally damp banks in hillside pasture, e.g. near Little Hoopers Inlet and the lime kilns.
- Linum monogynum* G. Forst. rauhuia
 - + Scattered along the sea and harbour coasts, preferring dry rock outcrops and cliffs.

LOBELIACEAE

lobelia family

- Pratia angulata* (G. Forst.) Hook.f. panakenake
 - 2. A single plant was seen on top of Peggys Hill in wet pasture. Martin (1962) recorded it also behind Allans Beach.
- Pratia perpusilla* Hook.f.
 - 2. Common in turf around ponds on sand flats at Wickliffe Bay; noted also behind Allans Beach by Martin (1962).

LORANTHACEAE

mistletoe family

- Ileostylus micranthus* (Hook.f.) Tiegh. common mistletoe
(= *Loranthus micranthus* Hook f.)
- + An abundant mistletoe, regularly parasitising divaricating shrubs in open habitats. Its most common hosts are *Coprosma propinqua*, *C. crassifolia* and *Crataegus monogyna*; it was seen also upon *Coprosma areolata*, *C. rotundifolia*, *Melicytus ramiflorus*, *Helichrysum lanceolatum*, and on a cultivated pear tree. Peter de Lange has recorded it also on *Coprosma repens* and *Cytisus scoparius* near Portobello.
- Tupeia antarctica* (G. Forst.) Cham. et Schltld. pirita, white mistletoe
- 2. Seen to the west of Glenfalloch parasitising a bush of hawthorn (*Crataegus monogyna*) which was host also to abundant *Ileostylus*, and at Colinswood on a forest margin where locally common on adjacent individual host trees of *Pittosporum eugenioides*, *Crataegus monogyna*, and *Coprosma crassifolia*.

MALVACEAE

mallow family

- Hoheria angustifolia* Raoul narrow-leaved lacebark
- + A common tree of forest remnants.
- P *Hoheria sexstylosa* Colenso lacebark
- 2. Planted among other trees on banks above Portobello Road near Company Bay.
- * *Lavatera arborea* L. tree mallow
- + Locally common on banks along Portobello Road, seen also at some coastal sites, e.g. Papanui Inlet and Tomahawk Beach, growing on dunes.
- P *Lavatera assurgentiflora* Kell Californian mallow
- 2. Steep banks above Portobello Road, at Portobello and near Glenfalloch; probably planted, at least at the former site.
- * *Malva neglecta* Wallr. dwarf mallow
- 2. Roadside at Macandrew Bay and waste ground by farmyards near Hoopers Inlet.
- Plagianthus divaricatus* J.R. Forst. et G. Forst. saltmarsh ribbonwood
- + The only shrub of saltmarsh, restricted to the margins of Hoopers and Papanui Inlets, and Tomahawk Lagoon, usually accompanying oi oi rushland.
- Plagianthus regius* (Poir.) Hochr. lowland ribbonwood
(= *P. betulinus* A. Cunn.)
- 11. Sporadically distributed, but locally common in forest, e.g. at Taiaroa Bush; often growing with *Hoheria angustifolia*.

MELIANTHACEAE

- P *Melianthus major* L. Cape honey flower
- 4. Forming large patches, by rhizomatous spread, in old farm gardens and where planted on roadside banks near Portobello.

MORACEAE

- Streblus heterophyllus* (Blume) Corner milk tree
(= *Paratrophis microphylla* (Raoul) Cockayne)
+ An occasional small tree of open forest remnants.

MYOPORACEAE

- P *Myoporum insulare* R.Br. boobialla, Australian ngaio
1. Planted at Boulder Beach, alongside *M. laetum* and probably in error for that, as part of the revegetation of nesting habitat for yellow-eyed penguins.

- Myoporum laetum* G. Forst. ngaio
+ A frequent to abundant tree in many forest remnants, very tolerant of coastal conditions but by no means restricted to the coast.

MYRSINACEAE

- Myrsine australis* (A. Rich.) Allan mapou
+ An occasional to frequent shrub or small tree of almost all forest remnants.

- Myrsine divaricata* A. Cunn. wiry matipo
3. Restricted to hilltop low forests on Peggys Hill where it is common, a patch of ngaio forest west of Taiaroa Bush, and as a single shrub in a scrubby knoll at Karetai Road.

MYRTACEAE

manuka family

- * *Eucalyptus globulus* Labill. Tasmanian blue gum
4. Planted extensively, especially along the banks above Portobello Road where it is propagating from seed; well established on hillsides near The Gums.

- Kunzea ericoides* (A. Rich.) J. Thompson kanuka
(= *Leptospermum ericoides* A. Rich.)
+ Dominant in tall scrub especially around Hoopers Inlet, typically on dry hillsides. It is invading pastures at some sites.

- Leptospermum scoparium* J.R. Forst. et G. Forst manuka
9. Much less widespread than *Kunzea ericoides* though often growing with that species. Most common on Dicks Hill, Varleys Hill, and on swampy flats behind Allans Beach.

- Lophomyrtus obcordata* (Raoul) Burret rohutu
10. An occasional shrub of forest understoreys, more common among other divaricating shrubs in open bouldery habitats.

- Metrosideros diffusa* (G. Forst.) Sm. white climbing rata
+ Widespread in the more intact forest remnants as a climber appressed to tree trunks, and persisting also among divaricating shrubs or around rocks on bouldery hill crests.

- P *Metrosideros excelsa* Gaertn. pohutukawa
4. Planted along Portobello Road and on Titiremoana (Pudding Island).

- Neomyrtus pedunculata* (Hook.f.) Allan rohutu
 1. Confined to near the top of Peggys Hill where occasional shrubs grow within and along the edges of low forest.

NOTHOFAGACEAE

southern beech family

- P *Nothofagus menziesii* (Hook.f.) Oerst. silver beech
 1. A few trees planted on Titiremoana (Pudding Island).

OLEACEAE

- P *Forsythia suspensa* (Thunb.) M. Vahl forsythia
 1. Planted on bank above Portobello Road.

ONAGRACEAE

fuchsia family

- Epilobium alsinoides* A. Cunn.
 subsp. *atriplicifolium* (A. Cunn.) P.H. Raven et Engelhorn a native willow-herb
 2. Clifftop at Cape Saunders; listed from Otago Peninsula also by Raven & Raven (1976).
- Epilobium billardioreanum* Sér. subsp. *billardioreanum* a native willowherb
 2. On a saturated slip face south of Ryans Beach, and in swamp at Okia Flat. Listed for Otago Peninsula also by Raven & Raven (1976), based on an early collection by D. Petrie.
- Epilobium billardieranum* Sér.
 subsp. *cinereum* (A.Rich) P.H. Raven et Engelhorn a native willow-herb
 1. On rock outcrops by the lime kilns.
- Epilobium chionanthum* Hausskn. a native willow-herb
 + A widespread minor component of most seepage and swamp vegetation.
- * *Epilobium ciliatum* Raf. tall willow-herb
 + A weed of gardens and waste ground, including damp places.
- Epilobium komarovianum* H. Lév. a native willow-herb
 9. Restricted to turf communities on coastal cliffs and headlands.
- Epilobium nerterioides* A. Cunn. a native willow-herb
 + Widespread under open forest and scrub.
- Epilobium nummulariifolium* A. Cunn. creeping willow-herb
 3. Dry forest at two sites and a garden weed at Broad Bay.
- Epilobium pallidiflorum* A. Cunn. a native willow-herb
 1. Tomahawk Lagoon, in Typha swamp.
- Epilobium pubens* A. Rich. a native willow-herb
 2. Rocky forest edges at Karetai Road and Harbour Cone.
- Epilobium rotundifolium* G. Forst. a native willow-herb
 8. Occasional under light forest.

Fuchsia colensoi Hook.f.

- + Probably common but often overlooked as a form of *F. excorticata*. It is nevertheless distinct by its smaller leaves and stature when the two species grow together.

Fuchsia excorticata (J.R. Forst. et G. Forst.) L.f.

kotukutuku, tree fuchsia

- + Found in most forest remnants, often abundant, especially in gullies.

P *Fuchsia magellanica* Lam.

- 4. Planted along Portobello Road, and a relic of cultivation as at Okia Flat.

Fuchsia perscandens Cockayne et Allan

climbing fuchsia

- 6. Usually in open forest or at forest edges, this lianoid fuchsia is inconspicuous and may be much more common.

OROBANCHACEAE

* *Orobanche minor* Smith

broomrape

- 2. Among grasses between road verge and harbour at Challis Point and Edwards Bay.

OXALIDACEAE

oxalis family

* *Oxalis articulata* Savigny

sourgrass

- 8. This species has larger leaves, deeper pink flowers and is less common than *O. incarnata* but similarly occurs as a garden weed, a roadside plant, and persisting in abandoned farm gardens.

* *Oxalis corniculata* L.

horned oxalis

- 1. A garden weed at Broad bay, probably more widespread.

Oxalis exilis A. Cunn.

yellow oxalis

- 4. A small yellow-flowered native oxalis seen at Papanui Beach, and in clifftop coastal turf at Cape Saunders and Sandymount; also a garden weed at Broad Bay.

* *Oxalis incarnata* L.

lilac oxalis

- 11. A persistent weed of gardens, established also from discarded garden rubbish on a few roadside banks.

PAPAVERACEAE

poppy family

* *Papaver somniferum* L.

opium poppy

- 1. A single wild plant appeared briefly in early summer 1990 in a gravelly roadside ditch beside Portobello Road.

PASSIFLORACEAE

passionfruit family

* *Passiflora tripartita* Juss. var. *azuayensis* Holm-Niels et P.Jorg.

banana passionfruit

- + This is the common weedy passionfruit vine of the southern South Island, formerly referred to as *Passiflora mollissima* (Kunth) L. Bailey. It has become increasingly common in neglected parts of gardens, in hedges, among roadside trees and scrub, and in native forest remnants, especially those close to suburbs.

- * *Passiflora pinnatistipula* Cav.
 2. This passionfruit was first collected in 2003 in Styles Creek Bush at Broad Bay, and to the south of Otakou.

PIPERACEAE

pepper family

- * *Macropiper excelsum* (G. Forst.) Miq. kawakawa
 1. In the bush gully behind Glenfalloch Garden, originally planted but spreading locally from seed. This New Zealand native has its natural southern limit on Banks Peninsula.

PITTOSPORACEAE

pittosporum family

Pittosporum eugenioides A. Cunn. tarata, lemonwood
 + A widespread but seldom abundant tree of forest remnants.

Pittosporum tenuifolium Gaertn. kohuhu
 + A common small tree of forest and scrub, dominant in some seral communities, e.g. Turnbulls Bay and Dicksons Hill. Broad-leaved specimens, approaching *P. colensoi*, grow on cliffs south of Boulder Beach.

PLANTAGINACEAE

plantain family

- * *Plantago coronopus* L. buck's-horn plantain
 - + A herb of salty disturbed ground, most common on roadsides fringing the harbour and inlets; less common along the sea coast.

- * *Plantago lanceolata* L. narrow-leaved plantain
 - + A common weed of lawns, dry banks, and roadsides; sometimes in pastures.

- * *Plantago major* L. broad-leaved plantain
 9. Found occasionally in fertile grassy sites; it tolerates wet or compacted soils, e.g. lawns, roadsides, and vehicle tracks in farmland.

Plantago raoulii Decne. kopakopa
 10. This flattened rosette herb occurs in cliffside turf of the sea coast, and less commonly in short grass on hillcrests or forest edges.

Plantago triandra Berggr. subsp. *masonae* (Cheeseman) Sykes starweed
 7. Found in turf communities on coastal cliffs (e.g. Sandfly Bay), dune hollows (e.g. Allans Beach), and Otakou golf course.

POLEMONIACEAE

- * *Navarettia squarrosa* (Eschsch.) Hook et Arn. Californian stinkweed
 1. A single plant seen on a suburban roadside ditch at Broad Bay in 1996.

POLYGALACEAE

- * *Polygala serpyllifolia* Hose heath milkwort
1. Upper dry zone of turf margin of a dune hollow at The Pyramids.

POLYGONACEAE

dock family

- P *Fallopia aubertii* (L. Henry) Holub Russian vine
1. Planted and forming an extensive patch on a steep bank at Company Bay.
- * *Fallopia convolvulus* (L.) A. Löve cornbind
2. A garden weed, e.g. at Broad Bay.
- Muehlenbeckia australis* (G. Forst.) Meisn. pohuehue
+ This creeper is found in most forest remnants, often smothering much of the canopy.
- Muehlenbeckia complexa* (A. Cunn.) Meisn. wirevine
1. Collected with certainty only from among divaricating shrubs on a rocky knoll near Karetai Road.
- * *Polygonum arenastrum* Boreau small-leaved wireweed
2. Common as prostrate plants on gravel and dry mud along Dick Road; seen also on a vehicle track over pasture at Broad Bay.
- * *Polygonum aviculare* L. wireweed
4. An infrequent weed of gardens, collected also on a roadside at Broad Bay, and in cultivated ground at Allans Beach.
- * *Polygonum hydropiper* L. water pepper
1. A few plants in wet ground surrounding a pond near Otakou.
- * *Polygonum persicaria* L. willow weed
2. Garden weed, e.g. at Broad Bay.
- P *Polygonum polystachyum* Wall. Indian knotweed
1. Planted, and spreading vegetatively to form a roadside patch at Pukehiki.
- * *Rumex acetosella* L. sheep's sorrel
+ An occasional weed of cultivated ground, pasture, and gardens.
- * *Rumex conglomeratus* Murray clustered dock
1. In a seepage among pasture in a gully at the head of Hoopers Inlet.
- * *Rumex crispus* L. curled dock
13. In swamps, ditches and lagoon edges, but also a garden weed.
- Rumex neglectus* Kirk shore dock
Listed in the 1929 notebook of J.E. Holloway, as growing in the blowhole gully at Seal Point, along with *Lepidium oleraceum*. Neither species seems to be present there now.
- * *Rumex obtusifolius* L. broad-leaved dock
+ Widespread as a weed of disturbed ground, e.g. gardens, roadsides, and waste places; sometimes in pastures.

- * *Rumex pulcher* L. fiddle dock
 1. Broad Bay, a single plant in hillside pasture.

PORTULACACEAE

- Montia fontana* L. subsp. *fontana* blinks
 5. An uncommon plant of seepages and roadside ditches, e.g. near Boulder Beach.

- Neopaxia linearifolia* Heenan
 1. Moist turf of pond margins by The Pyramids.

- Neopaxia sessiliflora* (G.Simpson) Heenan
 1. Sandy ground on top of Sandymount.

PRIMULACEAE

primula family

- * *Anagallis arvensis* L. scarlet pimpernel
 + An occasional weed of disturbed fertile ground such as gardens, roadside banks, and bared ground on farmland.

- Samolus repens* (J.R. Forst. et G. Forst.) Pers. maakoako, sea primrose
 + Associated with glasswort in saltmarsh fringing tidal flats, e.g. Hoopers Inlet. Also occupies moist crevices and ledges on sea cliffs.

PROTEACEAE

protea family

- P *Grevillea rosmarinifolia* Cunn.
 1. Planted on banks above Portobello Road.

RANUNCULACEAE

buttercup family

- Clematis foetida* Raoul a native clematis
 14. This creeper, insignificant when not in flower grows mainly in dry mahoe forest where it may smother parts of the canopy along with the more abundant *Muehlenbeckia australis*.

- Clematis paniculata* Gmel. puawhananga
 10. Most common in low *Coprosma* or kanuka scrub; the white flowers very obvious in spring, but plants otherwise inconspicuous.

- * *Clematis vitalba* L. old man's beard
 4. A weed of hedges, e.g Broad Bay, and an occasional liane in bush above Colinswood.

- Myosurus minimus* L. subsp. *novae-zelandiae* (W.R.B. Oliv.) Garn.-Jones mousetail
 # Collected from Wickcliffe Bay by George Simpson probably before 1940 (OTA 33404).

- Ranunculus acaulis* DC. sand buttercup
 4. On damp sand and clay banks at the top edge of beaches at Papanui Beach, Sandfly Bay, Portobello Peninsula, and near Ryans Beach.

- * *Ranunculus acris* L. giant buttercup
 12. Among cocksfoot on roadsides, especially in the Peggys Hill, Company Bay, and Highcliff Road areas.
- Ranunculus foliosus* Kirk grassland buttercup
 8. In short grassland on banks in pasture and on coastal clifftop or headland turf, e.g. Cape Saunders.
- Ranunculus glabrifolius* Hook.f. a native buttercup
 3. Grows among rushes and turf plants on pond margins at The Pyramids and Allans Beach, and in clifftop coastal turf at Cape Saunders.
- * *Ranunculus parviflorus* L. small-flowered buttercup
 7. On dry knolls of pasture on sunny hillsides, e.g. Broad Bay.
- Ranunculus recens* Kirk var. *recens* a dwarf native buttercup
 3. Clifftop turf near Cape Saunders, Harakeke Point, and Seal Point. Not seen at any of the four locations listed by Dunedin Naturalists' Field Club (1932).
- Ranunculus reflexus* Garn.-Jones a native buttercup
 3. Forest margins at Pipikaretu, Mt Charles, and Broad Bay.
- * *Ranunculus repens* L. creeping buttercup
 + Widespread in pastures, lawns, gardens, on roadsides, and regularly present in any moist grassy places.
- * *Ranunculus sceleratus* L. celery-leaved buttercup
 6. In wet mud fringing ponds on sand flats, e.g. Okia Flat, and in a roadside ditch at Lower Portobello.
- * *Ranunculus trichophyllus* Chaix water buttercup
 1. Common around the shallow margins of a pond near Lovers Leap in October 1984. Two years earlier the only aquatic plant recorded from this pond was *Potamogeton cheesemanii*.

ROSACEAE

rose family

- Acaena anserinifolia* (J.R. Forst. et G. Forst.) J.B. Armstr. bidibid
 4. An infrequent plant, e.g. edge of coastal scrub at Sandymount.
- Acaena juvenca* B.H. Macmill. bush bidibid
 + This delicate mat-forming bidibid is regularly found within and at the edge of dry forest and scrub.
- Acaena microphylla* Hook.f. var. *pauciglochidiata* Bitter bidibid
 2. Cape Saunders and Highcliff among low turf and silver tussock on coastal headland.
- Acaena novae-zelandiae* Kirk bidibid
 + The common bidibid of open sites such as dunes, roadside banks, and coastal banks.
- Acaena pallida* (Kirk) Allan bidibid
 3. A very large bidibid, common on the dunes at Tomahawk and Smaills Beach and collected also on Goat Island.

- * *Aphanes arvensis* L. parsley piert
 + Common on small dry knolls in pasture. It is likely that other species of *Aphanes* may also be present on the Peninsula.
- * *Cotoneaster glaucophyllus* Franchet
 1. Yellow Head, Broad Bay: low shrubs on windswept harbour headland.
- * *Cotoneaster simonsii* Baker Khasia berry
 3. Sporadic on the bank above Portobello Road, some planted but others self-sown, e.g. at Ross Point. Common under kanuka among regenerating native trees at Turnbolls Bay.
- * *Crataegus monogyna* Jacq. hawthorn
 + Widespread as tall shrubs scattered through pasture, sometimes covering large areas of hillside, e.g. north-east of Highcliff and above Harwood.
- * *Duchesnea indica* (Andrews) Focke Indian strawberry
 1. Carpeting ground under kowhai and sycamore trees at Colinswood Bush.
- * *Malus domestica* Borkh. apple
 4. Scattered trees along Portobello Road have probably grown from discarded apple cores.
- Potentilla anserinoides* Raoul silverweed
 5. Found among the bases of rushes on moist sand flats.
- P *Prunus avium* L. wild cherry
 1. Portobello Road verge, planted or perhaps semi-wild from a discarded cherry stone.
- * *Prunus cerasifera* Ehrh cherry plum
 5. Occasional trees on roadside banks above Portobello Road.
- * *Prunus lusitanica* L. Portugal laurel
 2. Pudding Island and near Larnach Castle; wilding shrubs in the shade of trees.
- * *Prunus mahaleb* L. St Lucie cherry
 1. A large suckering shrubby patch on a steep roadside bank near Challis Point may belong to this species.
- * *Rosa canina* L. dog rose
 2. Roadside banks above Portobello Road at Broad Bay; possibly deliberately planted. Flowers white.
- * *Rosa micrantha* Smith
 2. Roadside banks above Portobello Road, and in pasture at Broad Bay. Perhaps more widespread, having probably not been recognised compared with the very similar *R. rubiginosa*.
- P *Rosa pimpinellifolia* L. burnet rose
 1. Roadside low bank just east of the top of Seal Point Road; a single suckering clump with double cream-white flowers, probably planted.
- * *Rosa rubiginosa* L. sweet brier
 11. Scattered bushes grow on dry sunny faces in pasture or on roadside banks, e.g. the south side of Papanui Inlet.

- P *Rosa wichuraiana* hybrid cv. 'Alberic Barbier'
 3. Planted, Portobello Road; this cream-flowered rambler rose flowers most of the year.
- Rubus cissoides* A. Cunn. bush lawyer
 + The common prickly liane found in most forest remnants, often abundant.
- * *Rubus erythrops* Edees et Newton blackberry
 + Occasional on road and forest margins, and persisting under considerable shade in regenerated forest and scrub.
- * *Rubus laciniatus* Willd. cut-leaved blackberry
 1. Only on Goat Island.
- Rubus schmidelioides* A. Cunn. bush lawyer
 9. Collected from forest near Karetai Road and recorded from a few other forest sites, but possibly mistaken at times with leafy forms of *R. squarrosus* which is a commoner species.
- Rubus squarrosus* Fritsch leafless lawyer
 + A frequent liane of forest remnants, or forming low dense tangles over shrubs in the open.

RUBIACEAE

coffee family

- Coprosma acerosa* A. Cunn sand coprosma
 1. Persists over a small area of stable sandy ground on top of Sandymount.
- Coprosma areolata* Cheeseman
 + A widespread tall shrub of forest interiors and margins; the most common forest *Coprosma*.
- Coprosma crassifolia* Colenso
 + This and *C. propinqua* are the most common *Coprosma* species on the Peninsula, together dominating low scrub on rocky knolls and headlands from the coast to the hilltops.
- Coprosma foetidissima* J.R. Forst. et G. Forst. stinkwood
 1. Locally common in relatively undisturbed low forest on top of Peggys Hill but not seen elsewhere.
- Coprosma linariifolia* Hook.f. yellow-wood
 1. In light forest on Mt Charles.
- Coprosma* sp. (= *C. parviflora* Hook.f. var. *dumosa* Cheeseman)
 3. A shrub of hilltops, common at bush edges on Peggys Hill, rare on Mt Charles.
- Coprosma propinqua* A. Cunn. mingimingi
 + A widespread and abundant shrub along with *C. crassifolia* (see above).
- * *Coprosma repens* A. Rich. taupata
 + This coastal native shrub which did not naturally occur in the south of the South Island, is well established along the harbour edge, and is abundant in dune and coastal scrub at Tomahawk, Smaills, and Boulder Beaches.

Coprosma rhamnoides A. Cunn.

- + Occasional to frequent, as a tightly divaricating shrub in open habitats, and a more open low shrub within forests, especially under kanuka.

Coprosma rigida Cheeseman

14. A shrub of open habitats, almost restricted to hilltops, growing beside other *Coprosma* species.

* *Coprosma robusta* Raoul karamu

5. Although occurring naturally only as far south as about Palmerston, this has become well established in Dunedin and Port Chalmers, but on the Peninsula is less common. Recorded from light bush near Glenfalloch, Turnbolls Bay, Waverley, Harington Point, and Goat Island. A single shrub of the hybrid *C. propinqua* X *robusta* was seen on Goat Island.

Coprosma rotundifolia A. Cunn.

- + Widespread in forest, typically in moist shady situations where it is sometimes abundant.

Coprosma rubra Petrie

1. A few shrubs alongside a stream in a dense mahoe - fuchsia forest in a south-facing gully south of Pukehiki.

Coprosma rugosa Cheeseman

1. North side of Peggys Hill; one clump of shrubs among pasture in a broad gully.

Coprosma virescens Petrie

9. Abundant in and near Taiaroa Bush, otherwise seen only in scrub on a few hilltops, e.g. Karetai Road and Varleys Hill.

* *Galium aparine* L. cleavers

- + A frequent weed of sand dune scrub and gardens, less often in open forest and waste places.

Galium perpusillum (Hook.f.) Allan native bedstraw

2. In turf around ponds beside The Pyramids, and on sand flats at Allans Beach.

Galium propinquum A. Cunn. native bedstraw

3. Single plants were seen at a forest edge at Pipikaretu, among flax atop Sandymount, and in *Carex* swamp at Okia Flat.

Nertera depressa Gaertn.

11. Typically forms a turf among rock outcrops on steep hillsides, but never common.

Nertera setulosa Hook.f.

3. A common plant of turf in moist hollows only at Okia Flat and Allans Beach, and in short pasture among rock outcrops on the south face of Harbour Cone.

Nertera villosa B.H. Macmill. et R. Mason

1. Restricted to low forest near the top of Peggys Hill where a few plants form mats on the forest floor.

* *Sherardia arvensis* L. field madder

- + Widely distributed but seldom common in dry hillside pastures.

RUTACEAE

- Melicope simplex* A. Cunn. poataniwha
+ Widespread and sometimes abundant under low forest on dry sites, and with other divaricating shrubs on knolls, ridges and rocky hill crests.

SALICACEAE

willow family

- P *Populus alba* L. white poplar
3. Suckering thickets from specimens originally planted, e.g. at Broad Bay.
- P *Populus nigra* L. cv. 'Italica' Lombardy poplar
+ Planted on farmland and along a few roadsides, spreading locally only by suckers.
- P *Salix alba* L. white willow
1. Roadside at The Cove; planted.
- * *Salix fragilis* L. crack willow
3. More-or-less established from planted trees on swampy parts of the flats near Harwood; sporadically planted elsewhere.
- P *Salix Xreichardtii* A. Kerner pussy willow
2. Planted on banks above Portobello Road.
- P *Salix viminalis* L. osier
2. Planted on moist roadsides south-west of Harbour Cone and at The Glen, Turnbolls Bay.

SCROPHULARIACEAE

foxglove family

- * *Cymbalaria muralis* Gaertn. ivy-leaved toadflax
1. Growing wild on a tree stump at Broad Bay.
- * *Digitalis purpurea* L. foxglove
+ Widespread in open disturbed forest, often the most abundant plant under kanuka.
- * *Euphrasia nemorosa* (Pers.) Wallr. European eyebright
3. In pasture on hillsides between Pukehiki and Boulder Beach.
- Glossostigma elatinoides* Benth.
Listed by Martin (1962) from Wickliffe Bay, but not seen there recently.
- Gratiola sexdentata* A. Cunn.
2. Listed by Martin (1962) from Wickliffe Bay where it still forms large patches in shallow water of one dune hollow beside The Pyramids, and at the south end of Okia Flat.
- Hebe elliptica* (G. Forst.) Pennell shore hebe
+ Regularly found in scrub on the sea coast and around the harbour edge.
- P *Hebe Xfranciscana* cv. 'Blue Gem'
6. Commonly planted along Portobello Road, both on the harbour side and on the inland side. This cultivar shares the salt-tolerance of both its parents, *H. elliptica* and *H. speciosa*.

- Hebe salicifolia* (G. Forst.) Pennell koromiko, willow-leaved hebe
 + An occasional shrub of open low forest and scrub.
- P *Hebe speciosa* (A. Cunn.) Cockayne et Allan
 5. Planted on banks above Portobello Road.
- Limosella australis* R.Br. mudwort
 (= *L. lineata* Glück)
 1. Restricted to damp sand around the margins of Tomahawk Lagoon.
- * *Linaria purpurea* (L.) Miller purple linaria
 2. Naturalised in roadside gravel near Colinswood and at Ross Point.
- * *Mimulus guttatus* DC. monkey musk
 + Locally common beside streams in pasture country, in seepages over rock outcrops, in roadside ditches, and in raupo swamp, e.g. Tomahawk Lagoon.
- * *Mimulus moschatus* Lindl. musk
 6. Less common than the larger *M. guttatus*, this was seen usually in seepages or along streamsides in pasture, e.g. near Company Bay.
- Mimulus repens* R.Br. New Zealand musk
 2. Restricted to saltmarsh at Hoopers Inlet and on moist sand around Tomahawk Lagoon.
- * *Nemesia floribunda* Lehm.
 14. Most commonly found among lupin or elder scrub on dunes, especially in the areas around Otakou, Victory Beach, and Sandfly Bay; occasional also on non-sandy roadsides and open forest.
- Parahebe canescens* W.R.B. Oliv.
 # Collected at Wickliffe Bay by B.C. Aston in 1896 but not seen there in recent years.
- * *Parentucellia viscosa* (L.) Caruel tarweed
 8. An uncommon plant, generally found in moist grassland, e.g. Tomahawk Lagoon.
- * *Verbascum thapsus* L. woolly mullein
 2. Dry sunny banks only at Lower Portobello and on the south side of Papanui Inlet.
- * *Verbascum virgatum* Stokes moth mullein
 1. A single plant became evident when flowering on the road verge on the Andersons Bay causeway in late 1984.
- * *Veronica arvensis* L. field speedwell
 + Widespread but seldom common, in pastures, lawns, and gardens.
- * *Veronica persica* Poiret scrambling speedwell
 1. A locally common weed of gardens or other cultivated ground.
- * *Veronica serpyllifolia* L. turf speedwell
 3. Moist pasture and lawn, e.g. at Okia Flat.

SOLANACEAE**potato family**

- P *Brugmansia sanguinea* (Ruíz Lopez et Pavon) D.Don datura
 2. Planted on banks above Portobello Road.
- * *Lycium ferocissimum* Miers boxthorn
 5. On sand dunes at Pipikaretu and Tomahawk, in coastal scrub at Goat Island, and as thickets on some hillsides and road cuttings near Portobello and behind Harwood.
- * *Physalis peruviana* L. cape gooseberry
 2. Two plants appeared in disturbed soil on a roadside bank at Broad Bay in 1991 (presumably from a discarded fruit), persisted for a year, and themselves bore fruit. In 1996 about a dozen plants were seen along the margin of kanuka forest, beside a recently cleared vehicle track on Varleys Hill.
- * *Solanum chenopodioides* Lam. velvety nightshade
 1. Dry roadside ditch at Company Bay, a few plants only.
- * *Solanum crispum* Ruíz Lopez et Pavon Chilean potato tree
 1. Sometimes planted in gardens, but seen in the wild only behind Broad Bay as individual tall scrambling shrubs (one at least now eradicated) in each of two adjacent forest remnants.
- * *Solanum dulcamara* L. bittersweet
 8. A weakly scrambling plant, sporadic in waste places and disturbed forest.
- * *Solanum jasminoides* Paxton potato vine
 1. In a modified forest remnant at Colinswood Bush, Macandrew Bay.
- Solanum laciniatum* Aiton poroporo
 + This weedy native shrub regularly appears in disturbed forest and scrub, persists on forest edges and grows with lupin scrub on sand dunes.
- * *Solanum marginatum* L.f. white-edged nightshade
 1. Restricted to the west end of Quarantine Island where a few shrubs grew in steep rocky pasture. Several attempts have been made to eradicate it, perhaps now successfully.
- * *Solanum nigrum* L. black nightshade
 10. A weed of bared soil, often where dry around tree bases.
- * *Solanum tuberosum* L. potato
 7. Persists in gardens and where tubers have been dumped on roadsides. Strongly established under lupins on dunes at the west end of Sandfly Bay.

THYMELAEACEAE**daphne family**

- * *Daphne laureola* L.
 1. Garden weed under hedges at Broad Bay.
- Pimelea arenaria* A. Cunn. sand daphne
 # “Formerly common on beach, Sandymount” (Dunedin Naturalists' Field Club, 1932), but not seen there in recent years. This record may refer to the species below.

Pimelea urvilleana A. Rich.

4. Sandy clifftops at Harakeke Point, Highcliff, Allans Beach, and on a rocky headland of Quarantine Island.

TROPAEOLACEAE

- * *Tropaeolum majus* L. garden nasturtium
 8. Established at a few places along the banks of Portobello Road.
- * *Tropaeolum speciosum* Poeppig et Endl. Chilean flame creeper
 4. Conspicuously common in 1999 in a hillside forest remnant south of Broad Bay; seen also in roadside bush on the west side of Peggys Hill, beside Allans Beach Road at Portobello, and at the end of Beaconsfield Road at Portobello.

ULMACEAE

- P *Ulmus Xhollandicus* Dutch elm
 3. Suckering bushes and small trees, planted alongside Portobello Road.

URTICACEAE

nettle family

Australina pusilla (Poir.) Gaudich.

2. An abundant mat-forming herb on the forest floor at Taiaroa Bush, but seen elsewhere only in forest near Pipikaretu.

Parietaria debilis G. Forst.

2. A native herb that is uncommon in the Dunedin district, but locally frequent on bouldery ground in low forest at Taiaroa Bush, and under pines behind Glenfalloch, whence it had been listed also by Dunedin Naturalists' Field Club (1932).

Urtica ferox G. Forst.

ongaonga, tree nettle

- + Mainly coastal, it chokes the understorey of some coastal forest and scrub, e.g. at Taiaroa Bush, Mt Charles, and Sandymount. Grazing has probably encouraged its increase.

Urtica incisa Poir.

native stinging nettle

9. On dry or bare ground in light shade of forest.

* *Urtica urens* L.

nettle

- + A weed of dry, bared, fertile soil on forest edges, around sheep camps, beside trees in pastures, and near sheep yards.

VALERIANACEAE

* *Centranthus ruber* (L.) DC.

spur valerian

2. Only a few plants are naturalised on roadside banks near Macandrew Bay, though this species is much more common on shady cliffs near Port Chalmers.

VIOLACEAE

violet family

- Melicytus alpinus* (Kirk) Garn.-Jones porcupine shrub
(=*Hymenanthera alpina* (Kirk) W.R.B. Oliv.)
2. Clifftops near Cape Saunders and rocky ground on The Pyramids.
- Melicytus lanceolatus* Hook.f. narrow-leaved mahoe
Noted by Martin (1962) as formerly on Mt Charles but not seen there recently.
- Melicytus micranthus* Hook.f. small-leaved mahoe
2. A single shrub survives at a forest edge near Pipikaretu. Martin (1962) listed it from Waverley.
- Melicytus ramiflorus* J.R. Forst. et G. Forst. mahoe, whiteywood
+ The most common small native tree on Otago Peninsula, found in almost all forest remnants, usually abundant, especially in gullies.
- * *Viola arvensis* Murray field pansy
2. Roadsides of Highcliff Road and the top of Castlewood Road.
- Viola cunninghamii* Hook.f. white violet
4. Among turf and grasses on a coastal clifftop at Sandymount, in moist turf at Allans Beach and Okia Flat, and on Mt Charles.
- Viola filicaulis* Hook.f. forest violet
3. Locally common in low forest on Peggys Hill; otherwise restricted to Mt Charles and Sandymount where it grows in sandy ground among *Phormium* and in clifftop turf.

VISCACEAE

- Korthalsella lindsayi* (Oliver) Engl. twiggy mistletoe
10. This insignificant mistletoe, often resembling the foliage of the divaricating shrubs on which it grows, was recorded most commonly upon *Coprosma crassifolia*, *Melicope simplex* and *Lophomyrtus obcordata* and less often on *Coprosma areolata* and *C. rigida*.
- Korthalsella salicornioides* (A. Cunn.) Tiegh. dwarf mistletoe
1. Martin (1962) states that it was once common at Hoopers Inlet and Wickliffe Bay. J.E. Holloway recorded both species of *Korthalsella* at the top end of Hoopers Inlet in 1925. Aalbert Rebergen found *K. salicornioides* in this vicinity again in 2002, upon kanuka next to a small kahikatea wetland.

WINTERACEAE

horopito family

- Pseudowintera colorata* (Raoul) Dandy horopito, peppertree
+ An occasional shrub of forest understoreys, abundant only near the hilltops where it may dominate low scrub as on Mt Charles and Peggys Hill.

MONOCOTYLEDONS

ALSTROEMERIACEAE

* *Bomarea multiflora* Mirb.

- + An attractive orange-flowered vine that persists in and near gardens of harbour-edge suburbs, and has become an abundant invasive weed in adjacent forest remnants over the last 20 years, apparently having chosen the Dunedin area as the first part of New Zealand in which to demonstrate its weed potential. It has been referred to in New Zealand also by the name *Bomarea caldasii* Kunth. There is some doubt as to which species of this South American genus occur in this country.

ASPHODELACEAE

cabbage tree family

Arthropodium candidum Raoul

- 1. Seen only on dry rocky ground in a bush gully behind Pipikaretu Beach.

Astelia fragrans Colenso

bush lily

- + Mostly in forest and scrub where grazing has not been too heavy. Common only in steep coastal rocky sites in forest, coastal scrub, or in the open.

Cordyline australis (G. Forst.) Endl.

cabbage tree, ti

- + Conspicuous and widespread, but seldom abundant; emergent from scrubby bush or surviving in pasture. Sites with Maori ovens (umu-ti) used for cooking cabbage tree roots have been described by Knight (1966).

Herpolirion novae-zelandiae Hook.f.

grass lily

- 1. Recorded by Don Bruce from a damp dune hollow at the south end of Okia Flat.

P *Kniphophia uvaria* (L.) Oken hybrids

red hot poker

- 3. Planted on Portobello Road edge; a clump of several plants in a marshy hollow beside a vehicle track at the north end of Okia Flat, probably planted, were removed by 2004.

COMMELINACEAE

* *Tradescantia fluminensis* Vell.

wandering Jew

- 3. Planted on banks above Portobello Road and spreading vegetatively to form patches a few metres across. Also a rampant garden plant, persisting under hedges.

CYPERACEAE

sedge family

Baumea rubiginosa (Spreng.) Boeck.

- 2. Known from one site on the moist sand flat behind Allans Beach, and from two moist dune hollows among *Juncus gregiflorus* in the central part of Okia Flat.

Baumea tenax (Hook.f.) Blake

- 1. Scattered in a few moist dune hollows, with *Carex dipsacea* and *Lepidosperma australe* in the central and southern part of Okia Flat.

- Bolboschoenus caldwellii* (V. Cook) Soják sea clubrush
1. A few clumps growing on moist sandy verges of Tomahawk Lagoon constitute the southern limit of this sedge.
- Carex appressa* R.Br.
10. Found mainly near the coast, locally common in seepages and on damp valley floors.
- Carex breviculmis* R.Br.
2. Collected in 1993 by Pat Enright from sandy ground beside a vehicle track on the north side of Sandymount, and by Brian Patrick from pasture beside a seepage on a hillside behind Boulder Beach.
- Carex cirrhosa* Berggr.
1. Collected near The Pyramids from damp turf at pond margins.
- Carex coriacea* Hamlin
11. Occasional in wet pasture; dominates moist dune hollows behind Allans Beach.
- Carex dipsacea* Berggr.
3. Common on Okia Flat in moist dune hollows and recorded also on Varleys Hill and Goat Island.
- Carex dissita* Boott
2. On Goat and Quarantine Islands, within dry coastal forest.
- Carex flagellifera* Colenso
5. Moist coastal sites at Varleys Hill, Papanui Inlet, Goat Island, Quarantine Island, and among *C. dipsacea* in moist dune hollows along the hill base beside The Pyramids.
- Carex forsteri* Wahlenb.
9. An unusual sedge in its preference for dry ground within forest; most common where out of reach of livestock as on Pudding Island.
- Carex lessoniana* Steud.
2. Occasional among rushes in damp sand hollows at Okia Flat and at Boulder Beach.
- Carex litorosa* Bailey
- # Collected from Wickliffe Bay by D. Petrie and listed by Simpson & Thomson (1938) as *C. petriei* Cheeseman. The specimen has curled leaf tips, similar to those of *C. cirrhosa* which grows here also. The Dunedin Naturalists' Field Club catalogue of 1916 lists it also from Portobello.
- * *Carex ovalis* Gooden. oval sedge
3. Recorded only from seepages in pasture in two gullies north of Harbour Cone, and from a damp grassy roadline (Paradise Road) above Boulder Beach.
- Carex secta* Boott niggerhead
6. Locally dominant in small swamps behind dunes, e.g. Pipikaretu.
- Carex testacea* Boott
6. Common among silver tussock on coastal headlands at Cape Saunders, Sandymount, and Boulder Beach, and at the moist edges of Tomahawk Lagoon and Little Hoopers Inlet. Occasional in steep rocky *Coprosma* scrub on the larger of The Pyramids.

Carex trifida Cav.

4. Seen only at Papanui Inlet, near Seal Point, Goat Island, and Quarantine Island, in moist ground just above the sea shore.

Carex pumila Thunb.

sand sedge

4. Like many native sand plants this is now rare, being seen only at St Kilda and Harakeke Point (both single plants on sandy clifftops), in moist sand by a stream at Cicely Beach, and most abundantly beside the stream that emerges between dunes at Sandfly Bay.

Carex virgata Boott

4. Occasional in wet places, e.g. around dune hollows near The Pyramids.

* *Cyperus eragrostis* Lam.

umbrella sedge

7. First recorded in 1996 in a damp roadside ditch of Portobello Road just west of Glenfalloch. By 2000 this had spread to 7 sites between Broad Bay and The Cove, its increase having been encouraged by road maintenance machinery.

Desmoschoenus spiralis (A. Rich.) Hook.f.

pingao, pikao

11. This dune sedge has been replaced by the introduced marram grass at most sandy beaches, though it is still common at Cicely Beach and another small beach nearby. Scattered patches or solitary plants have been recorded above Te Rauone, Pipikaretu, Victory Beach, Allans Beach, the slopes of Sandymount, Sandfly Bay, Smaills Beach and on headlands at Smaills Beach and Lawyers Head. Despite the general decline of pingao on southern South Island coastal dunes, there must still be a sufficient seed supply such that vigorous populations of 20–40 plants establish during phases when fresh sand builds new foredunes, e.g. at Victory Beach and at the south side of Hoopers Inlet mouth, though these dunes are again eroded every few years. Attempts have been made to replant pingao on the Sandymount to Sandfly Bay dunes.

Eleocharis acuta R.Br.

spike sedge

4. An infrequent sedge of moist dune hollows and seepages in hillside pasture.

Isolepis basilaris Hook.f.

1. Collected from the shores of Tomahawk Lagoon, and previously recorded by Simpson & Thomson (1938) from Hoopers Inlet.

Isolepis cernua (M.Vahl) Roemer et Schultes

slender clubrush

- + Common in saltmarsh and in moist seepages on the sea coast.

Isolepis habra (Edgar) Soják

1. Damp ground under flax and niggerheads beside The Pyramids.

Isolepis inundata R.Br.

1. Among *Sphagnum* and *Juncus gregiflorus* in a wet dune hollow near the centre of Okia Flat.

Isolepis nodosa (Rottb.) R.Br.

knobby clubrush

- + Occurs in various coastal sites but most common on consolidated sand on headlands and behind beaches, e.g. Okia Flat.

* *Isolepis setacea* (L.) R.Br.

4. Infrequent in moist ground or seepages within pasture, e.g. Broad Bay.

- Lepidosperma australe* (A. Rich.) Hook.f. square sedge
 2. Locally common in moist dune hollows on the southern half of Okia Flat, and occasional in a small bog on the sand flats behind Allans Beach.
- Schoenoplectus pungens* (M. Vahl) Palla three-square
 3. Forms clumps in wet sand, periodically inundated, at Hoopers and Papanui Inlets, and Tomahawk Lagoon.
- Schoenus concinnus* (Hook.f.) Hook.f.
 2. An abundant small sedge of saltmarsh fringing Hoopers and Papanui Inlets.
- Schoenus maschalinus* Roem. et Schult.
 2. A tiny sedge of moist turf in sand hollows at Allans Beach and Okia Flat.
- Uncinia leptostachya* Raoul hooked sedge
 1. A distinctively tall and dark green sedge, found only near the ungrazed rocky top of the larger of The Pyramids, forming stiff tussocks among shrubs and grasses. This appears to be the only Otago record of *U. leptostachya*.
- Uncinia rubra* Boott in Hook.f. hooked sedge
 1. A single plant among flax and grassland on Sandymount.
- Uncinia rupestris* Raoul hooked sedge
 1. Collected only on Peggys Hill, in relatively undisturbed forest.
- Uncinia uncinata* (Linn.f.) Kirk hooked sedge
 12. On forest floors, but because of grazing never common except on islands.

HYDROCHARITACEAE

oxygen weed family

- * *Elodea canadensis* Michaux Canadian pondweed
 1. Aquatic in the eastern arm of Tomahawk Lagoon.

IRIDACEAE

iris family

- * *Crocoshia Xcrocoshmiflora* (Nicholson) N.E. Brown montbretia
 6. A garden weed, persisting among discarded rubbish and on roadsides.
- * *Iris foetidissima* L. stinking iris
 1. A few clumps in disturbed ground adjacent to houses at Colinswood Bush, Macandrew Bay.
- Libertia ixioides* (G. Forst.) Spreng. native iris, mikoikoi
 9. Grows on dry rocky ground within light forest, or in the open; on cliff bases, roadsides, or islands away from grazing animals.
- * *Sisyrinchium iridifolium* Kunth
 1. Among rank grasses on a sunny hill spur north of Harbour Cone, on the fringe of a domestic garden against kanuka scrub.

JUNCACEAE**rush family**

- Juncus antarcticus* Hook.f. a dwarf rush
2. Damp dune hollows behind Allans Beach and near The Pyramids.
- * *Juncus articulatus* L. jointed rush
+ Found in many seepages, along stream edges, and beside ponds.
- * *Juncus bufonius* L. toad rush
+ An occasional small rush of seasonally wet soil or compacted bare soil of vehicle tracks, roadsides, gardens, and near farm gates.
- Juncus distegus* Edgar a rush
1. Hautai Hill, among scattered silver tussock in pasture on slightly sandy soil on a hilltop.
- * *Juncus effusus* L. soft rush
8. Sporadically distributed in moist, gently sloping pastures or around moist hollows.
- * *Juncus gerardii* Loisel. saltmarsh rush
1. The first New Zealand collection of rush was from Andersons Bay by D. Petrie in 1891. The species no longer occurs there, probably because of habitat loss following reclamation, but in 2003 Aalbert Rebergen discovered recent infestations in saltmarsh of the Parker covenant on the north side of Papanui Inlet.
- Juncus gregiflorus* L.A.S. Johnson a rush
+ The most common tall rush on the Peninsula, found in moist open gullies in pasture, and particularly common on Okia Flat.
- Juncus novae-zelandiae* Hook.f. a dwarf rush
2. Moist dune hollows at Allans Beach and in a seepage near Karetai Road.
- Juncus pallidus* R.Br. a giant rush
4. Occasional plants of this robust rush grow on the moist sand flats at Okia Flat and Allans Beach; seen also in two moist gullies in pasture.
- Juncus planifolius* R.Br. flat-leaved rush
4. Noted in a seepage, in disturbed pasture soil, and most abundantly on freshly bared soil beside drains at Allans Beach.
- * *Juncus procerus* E. Meyer a giant rush
1. Damp hillside pasture at Broad Bay.
- Juncus pusillus* Buchenau a dwarf rush
2. This tiny rush grows in moist turf in sand hollows near The Pyramids and Allans Beach.
- Juncus sarophorus* L.A.S. Johnson a rush
1. Abundant at Okia Flat, where it grows with *J. gregiflorus* and *J. effusus* in the moist hollows across the sand flat.
- Luzula banksiana* E. Meyer var. *acra* Edgar coastal woodrush
3. A rare plant of coastal cliffs at Cape Saunders, Highcliff, and Lovers Leap. This may be the northern limit of this variety on the Otago coast.
- * *Luzula congesta* (Thuill.) Lej. woodrush
3. In dry pasture, only at Grassy Point, near Karetai Road, and at the south end of Okia Flat.

- Luzula decipiens* Edgar a dwarf woodrush
2. Known from sand hollows at Hoopers Inlet (Healy & Edgar 1980; earlier recorded as *L. celata* by Moore & Edgar 1976), and from a 1993 collection by Pat Enright from sandy ground fringing wind-eroded terracettes on the south side of the summit of Sandymount.

- Luzula picta* A. Rich. var. *picta* a woodrush
1. Pasture on Portobello Peninsula.

- Luzula rufa* Edgar a woodrush
1. Seen only on Sheppards Island in Papanui Inlet.

JUNCAGINACEAE

- Triglochin striata* Ruiz et Pav. arrow-grass
3. In moist sand beside Tomahawk Lagoon and Hoopers Inlet, and beside moist dune hollows at Okia Flat.

LEMNACEAE

duckweed family

- Lemna minor* L. duckweed
2. Covers ponds near The Pyramids; also in a small *Typha* swamp at Otakou.

- Wolffia australiana* (Benth.) den Hartog et van Plas watermeal
1. This tiny floating plant is common among duckweed and *Azolla* in ponds near The Pyramids.

LILIACEAE

lily family

- P *Agapanthus orientalis* Leighton agapanthus, Nile lily
8. Widely planted along Portobello Road, but not obviously spreading from seed.
- * *Allium triquetrum* L. three-cornered garlic
8. A weedy garden plant found where rubbish has been discarded on roadsides.
- * *Muscari armeniacum* Baker grape hyacinth
3. Portobello Road, small roadside clumps arising from discarded garden bulbs.

ORCHIDACEAE

orchid family

- Chiloglottis cornuta* Hook.f. green bird orchid
3. Kanuka forest near Dicksons Hill, and seen twice (Broad Bay, Andersons Bay) in gardens having pine bark mulch, the orchids presumably having come in as tubers or seed from the source pine plantation.

- Corybas macranthus* (Hook.f.) Reichb.f. a spider orchid
3. Found under trees near Larnach Castle, in damp steep banks in pasture near Karetai Road and in turf banks above high coastal cliffs at Lovers Leap.

- Corybas trilobus* (Hook.f.) Reichb.f. a spider orchid
2. Found on a shaded roadside clay bank under sycamore and macrocarpa trees north-east of Larnach Castle, and collected by Pat Enright in damp ground under kanuka at Sandymount.

Winika cunninghamii (Lindley) M.A. Clem., D.L. Jones et Molloy lady's slipper orchid
(= *Dendrobium cunninghamii* Lindley.)

1. Listed in notebook of J.E. Holloway, from information supplied by W. Martin in 1924 as growing on rocks at Sandymount. I have been unable to locate specimens there, but have found one group of plants in a forested gully south-east of Pukehiki.

Drymoanthus flavus Molloy et St George

2. Recorded in 1991 by Ian St George 'on kanuka near Sandymount', and confirmed upon kanuka trunks in Sandymount Wildlife Refuge by Pat Enright, who with Rory Logan has found this orchid also in scrub on the bouldery north-east face of the larger of The Pyramids.

Earina autumnalis (G. Forst.) Hook.f. Easter orchid, raupeka

7. Seen mainly around Peggys Hill and Taiaroa Bush, either epiphytic or on rock outcrops, e.g. at The Pyramids and the Victory Beach cliffs where it is abundant. One clump grows on a harbour-edge rock knob on Quarantine Island.

Earina mucronata Lindl. bamboo orchid, peka-a-weka

- + A more widespread species than the above, epiphytic on tree limbs in the less disturbed remnants of native forest. Plants from rock bluffs east of Taiaroa Hill have shorter, broader, and more rigid leaves, and a later flowering time: characters which are retained in cultivation, and fit the description of *Earina aestivalis* Cheeseman, an entity of some taxonomic uncertainty.

Microtis oligantha L.B. Moore small onion orchid

1. Collected by Pat Enright in 1993 on a grassy coastal bench at Sandymount.

Microtis unifolia (G. Forst.) Reichb.f. maikaika, onion orchid

7. Among low grasses on dry clay banks or in pasture, e.g. Boulder Beach and Broad Bay. This orchid commonly appears spontaneously in gardens.

Pterostylis graminea Hook.f. a greenhood orchid

4. An infrequent orchid of forest and forest edges, e.g. near Pipikaretu.

Pterostylis montana Hatch a greenhood orchid

3. On a forest-edge grassy bank near Karetai Road, and in open forest at Peggys Hill and Sandymount.

Pterostylis tristis Colenso a greenhood orchid

1. Reported (as *P. mutica*) from the summit of Sandymount by Martin (1962), and again by St George (1992) who noted: "reliably reported and drawn in flower in December 1968 from Sandymount on the Otago Peninsula by Bruce Irwin, who recorded twelve plants, one of which carried nine flowers." Collected again in flower in December 1992 by Pat Enright, from sandy ground with turf on the hill crest of Sandymount. This latter collection may be the very similar species *P. tanypoda*.

Thelymitra longifolia J.R. Forst. et G. Forst. sun orchid

7. Mostly on dry clay banks.

PHORMIACEAE

phormium family

P *Phormium cookianum* Le Jolis mountain flax, wharariki

4. Planted along the harbour side of Portobello Road.

Phormium tenax J.R. Forst. et G. Forst.

New Zealand flax, harakeke

- + Normally a common component of scrub on coastal and harbour-edge headlands, often also in sand dune scrub.

POACEAE (= GRAMINEAE)

grass family

- * *Agrostis capillaris* L. browntop
 - + A dominant grass of pastures, especially those on dry thin soils of hill crests.
- Agrostis muscosa* Kirk pincushion grass
 - 1. Cape Saunders in low turf above a high coastal cliff.
- * *Agrostis stolonifera* L. creeping bent
 - + Occasional, sometimes common in wet ground such as seepages in pasture, raupo swamp, and the upper edge of saltmarsh.
- * *Aira caryophyllea* L. silvery hair grass
 - 6. Usually on dry ground among rocks, e.g. Cape Saunders clifftop.
- * *Aira praecox* L. early hair grass
 - 2. Dry thin sandy soil at Sandfly Bay and Harwood.
- * *Alopecurus geniculatus* L. kneed foxtail
 - 5. An occasional plant of seepages in pasture.
- * *Ammophila arenaria* (L.) Link marram grass
 - + The dominant grass of foredunes at all beaches.
- Anemanthele lessoniana* (Steud.) Veldkamp gossamer grass
 - 1. Occasional large tussocks grow on ridges under low forest on Goat Island.
- * *Anthoxanthum odoratum* L. sweet vernal
 - + Widespread and abundant in most pastures.
- * *Arrhenatherum elatius* (L.) J. Presl. et C. Presl tall oat grass
 - 5. Occasional along the harbour-edge verge of Portobello Road.
- * *Avena sativa* L. oat
 - 1. Road verge at Ross Point, Broad Bay
- * *Briza maxima* L. large quaking grass
 - 3. A garden discard established on roadside banks near Portobello, Broad Bay, and Macandrew Bay.
- * *Briza minor* L. shivery grass
 - 1. A single plant appeared in a garden at Broad Bay in 2003.
- * *Bromus diandrus* Roth ripgut brome
 - + Very common on dry roadside banks, e.g. above Portobello Road, but obvious only when flowering in early summer; also locally common on the rear of sand dunes.
- * *Bromus hordeaceus* L. soft brome
 - + Widespread but usually restricted to dry ground, e.g. roadsides and consolidated sand dunes.

- * *Bromus tectorum* L. downy brome
 2. Consolidated dunes at Boulder and Allans Beaches.
- * *Bromus willdenowii* Kunth prairie grass
 + Occasional on roadsides, e.g. along Portobello Road, and on dunes at Smaills Beach and Tomahawk.
- Chionochloa conspicua* (G. Forst.) Zotov
 5. On a few coastal scrubby slopes, e.g. Lovers Leap and Hoopers Inlet.
- Chionochloa rubra* Zotov subsp. *cuprea* Connor red tussock
 2. Scattered tussocks on the southern half of Okia Flat and a few more on sand flats behind Allans Beach are either *C. rubra* or hybrids between this and *C. rigida* (Raoul) Zotov.
- Cortaderia richardii* (Endl.) Zotov toetoe
 7. Of sporadic natural occurrence, mostly among scrub on coastal cliffs, or on dunes.
- * *Cortaderia selloana* (Schult. et Schult.f.) Asch. et Graebn. pampas
 10. Extensively planted along Portobello Road, sometimes establishing from seed in the water tables.
- * *Critesion murinum* (L.) A. Love subsp. *murinum* barley grass
 (= *Hordeum murinum* L.)
 + Widespread and locally common on dry open sites, particularly sheep camps near shelter trees, dry terraces or ridges in pasture, and on coastal headlands.
- * *Cynosurus cristatus* L. crested dogstail
 + One of the most common grasses of pasture.
- * *Dactylis glomerata* L. cocksfoot
 + The dominant grass of ungrazed grasslands, especially road verges, and the Taiaroa Head albatross colony. It grows smaller and less densely in grazed pasture and can tolerate moderate shade in heavily grazed forest.
- Dichelachne crinita* (L.f.) Hook.f. plume grass
 10. A grass of dry sites such as clay banks, not found within reach of livestock. It is obviously common along Portobello Road banks in mid-summer but is inconspicuous when not flowering.
- Elymus falcis* Connor
 1. Among boulders on the exposed crest of a coastal cliff-top at Cape Saunders, growing alongside *E. solandri*.
- Elymus solandri* (Steud.) Connor blue wheat grass
 6. A grass of dry banks and rock outcrops, almost restricted to sites inaccessible to livestock, e.g. harbour islands and headlands, and the bank above Portobello Road.
- * *Elytrigia pycnantha* (Godron) A. Love sea couch
 + Grows on the verge between roadside and harbour edge, locally dominant, e.g. Lower Portobello.
- * *Elytrigia repens* (L.) Nevski twitch, couch
 4. A weed of gardens, seen also on one roadside.

- * *Festuca ovina* L. subsp. *hirtula* (W.G. Travis) M.J. Wilk.
1. Stable sand flats beside the Otakou golf course.
- * *Festuca rubra* L. subsp. *commutata* Gaudin Chewings fescue
4. Dry roadside banks near Harbour Cone, at Camp Road, Karetai Road, and on sand flats near the Otakou golf course.
- * *Glyceria declinata* Bréb. floating sweet grass
+ Widespread in seepages, and at the edges of small streams and ponds in pastures, locally abundant.
- Hierochloa redolens* (Vahl) Roem. et Schult. holy grass
+ Regularly found on steep banks along the sea coast and harbour edges where out of reach of grazing animals.
- * *Holcus lanatus* L. Yorkshire fog
+ An occasional grass in pastures, but more common on roadsides and other disturbed fertile sites, including gardens.
- * *Holcus mollis* L. creeping fog
1. Listed along with *H. lanatus* from grassy meadow at Hoopers Inlet by Paviour-Smith (1956). I have never convincingly found this strongly rhizomatous *Holcus* myself but may well have overlooked it.
- Lachnagrostis littoralis* (Hack.) Edgar subsp. *salaria* Edgar
2. On roadside bank and in upper zone of saltmarsh at estuary edge, Hoopers Inlet.
- Lachnagrostis pilosa* (Buchanan) Edgar subsp. *pilosa*
2. On coastal cliffs at Sandymount and Goat Island.
- Lachnagrostis tenuis* (Chesseman) Edgar
2. Among rock rubble on a coastal headland at Sandymount inaccessible to grazing animals, and in scrub on a steep rocky face on the larger of The Pyramids.
- * *Lagurus ovatus* L. harestalk
1. Seen only at Harwood, in sandy soil on a roadside.
- * *Leymus arenarius* (L.) Hochst. lyme grass
(= *Elymus arenarius* L.)
1. Recorded only at west end of Boulder Beach, among marram grass on frontal dune.
- * *Lolium perenne* L. perennial ryegrass
+ Widespread but only rarely dominant in pastures.
- Microlaena avenacea* (Raoul) Hook.f. bush rice grass
1. Probably once common in fertile sites in the original forests, but recorded now only as a rarity in a steep forested gully near Karetai Road.
- Microlaena polynoda* (Hook.f.) Hook.f.
3. Seen in dry forest where out of reach of livestock behind Glenfalloch, near Pipikaretu Beach, and in scrub on a rocky knoll near Karetai Road.
- Microlaena stipoides* (Labill.) R.Br.
3. On a sunny rock face on the smaller of The Pyramids, under kanuka on Dicks Hill, and in scrub on a rocky knoll near Karetai Road.

- * *Parapholis incurva* (L.) C.E. Hubb. sickle grass
 1. Harbour-edge roadside at Company Bay.
- * *Phalaris minor* Retz. lesser canary grass
 2. On roadside banks near Harwood and along Seal Point Road.
- * *Phleum pratense* L. timothy
 6. Occasional on ungrazed roadsides.
- * *Poa annua* L. annual poa
 + A very common short grass of lawns, road verges, and vehicle tracks in pastures.
- Poa astonii* Petrie blue shore tussock
 + The common tussock grass of sea cliffs and harbour-edge headlands.
- Poa breviglumis* Hook.f.
 1. Sandymount, in dappled light under tall kanuka on old sand blow, growing alongside more abundant carpets of *Poa matthewsii*.
- Poa cita* Edgar silver tussock
 + Occasional on hilltops, common on sand flats, e.g. Allans Beach and Okia Flat, and dominant across large areas of high coastal headlands, particularly around Cape Saunders and Sandymount.
- Poa matthewsii* Petrie
 + This is the common lax grass of dry, partially shaded forest floors, especially under kanuka.
- * *Poa pratensis* L. meadow grass, Kentucky bluegrass
 7. Usually on moist waste ground, roadsides, or damp coastal grassland; also in pastures where it is easily overlooked, and may be quite common.
- Poa pusilla* Berggr.
 1. Collected only from sandy grassland among *Phormium* on the top of Sandymount.
- * *Polypogon monspelliensis* (L.) Desf. beard grass
 1. Moist sandy verges of Tomahawk Lagoon.
- * *Puccinellia distans* (L.) Parl. reflexed salt grass
 1. Recorded by Allan & Jansen (1940) from Tomahawk Lagoon, and possibly more widespread in Otago Peninsula saltmarshes.
- * *Puccinellia fasciculata* (Torr.) E.P. Bicknell
 + Collected from Hoopers Inlet, Papanui Inlet, Tomahawk Lagoon, and Company Bay; this is a common *Puccinellia* of saltmarshes and the harbour edge, growing alongside the shorter *P. stricta*.
- * *Puccinellia rupestris* (With.) Fernald et Weath.
 2. Collected from Tomahawk Lagoon and the road verge beside the harbour at Company Bay, these being the only known New Zealand sites for this species which is naturalised from western Europe (Edgar & Connor 2000).
- Puccinellia stricta* (Hook.f.) Blom
 + The common small *Puccinellia* of exposed coastal slopes close to the sea, and found commonly also in saltmarshes and along the road verge beside the harbour.

- * *Rytidosperma penicillatum* (Labill.) Connor et Edgar
 1. On a dry knoll in pasture behind Pipikaretu Beach.
- Rytidosperma unarede* (Raoul) Connor et Edgar
 11. The only common *Rytidosperma* on the Peninsula, found on dry knolls, banks, or rock outcrops.
- * *Schedonorus phoenix* (Scop.) Holub tall fescue
 (= *Festuca arundinacea* Schreb.)
 9. An occasional grass of roadside banks, moist grassland adjacent to wetlands, and the upper zones of saltmarshes.
- * *Triticum aestivum* L. wheat
 1. Roadside gravel at Vauxhall; ephemeral.
- * *Vulpia bromoides* (L.) Gray vulpia hair grass
 10. At scattered sites, favouring dry banks or sandy ground.
- * *Vulpia myuros* (L.) C.C. Gmel. vulpia hair grass
 3. On road verges beside the harbour, e.g. at Harwood.

POTAMOGETONACEAE

pondweed family

- Potamogeton cheesemanii* A. Benn. pondweed
 3. Aquatic in ponds near The Pyramids and near Lovers Leap, and in Tomahawk Lagoon.

RESTIONACEAE

restiad family

- Apodasmia similis* (Edgar) B.G. Briggs et L.A.S. Johnson oioi
 (= *Leptocarpus similis* Edgar)
 10. Common in saltmarshes surrounding Hoopers Inlet and less common at Papanui Inlet; also found in moist sand at Sandfly Bay.

RIPOGONACEAE

- Ripogonum scandens* J.R. Forst. et G. Forst. supplejack
 + A widespread liane but common only in the less disturbed forest patches.

RUPPIACEAE

- Ruppia megacarpa* R. Mason horse's mane weed
 2. Common in a ditch at Hoopers Inlet and in the shallow waters of Tomahawk Lagoon.
- Ruppia polycarpa* R. Mason horse's mane weed
 1. Common on the shallow bed of Tomahawk Lagoon.

TYPHACEAE

raupo family

Typha orientalis C.B. Presl

raupo

4. Dominates small swamps beside both arms of Tomahawk Lagoon and near Otakou; also present at Little Hoopers Inlet.

ZANNICHELLIACEAE

Lepilaena bilocularis Kirk

1. The dominant aquatic plant in the shallow waters of Tomahawk Lagoon.

Zannichellia palustris L.

1. Occurs on the shallow, sandy bed of Tomahawk Lagoon, but less common than *Lepilaena*.

ZOSTERACEAE

seagrass family

Zostera novazelandica Setchell

seagrass

- + Abundant on subtidal and intertidal sand flats from Te Rauone to Harwood and Lower Portobello; also at Company Bay.

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<i>Ammophila</i>	79	bindweed family	46	<i>Calystegia</i>	46
<i>Anagallis</i>	62	bittercress	41	CAMPANULACEAE	43
<i>Anaphalioides</i>	32	bittersweet	69	Canadian pondweed	75
<i>Anemantele</i>	79	blackberry	65	candytuft	42
<i>Angelica</i>	30	black medick	50	CANNABACEAE	43
annual mouse-ear chickweed	44	black nightshade	69	cape gooseberry	69
annual pearlwort	44	bladder campion	44	Cape honey flower	56
annual poa	82	BLECHNACEAE	21	Cape ivy	37
<i>Anthoxanthum</i>	79	<i>Blechnum</i>	21	CAPRIFOLIACEAE	44
<i>Anthriscus</i>	30	blinks	62	<i>Capsella</i>	41
<i>Aphanes</i>	64	blue shore tussock	82	<i>Cardamine</i>	41
APIACEAE	30	blue wheat grass	80	<i>Carduus</i>	33
<i>Apium</i>	30	bog stitchwort	45	<i>Carex</i>	73
APOCYNACEAE	31	<i>Bolboschoenus</i>	73	<i>Carmichaelia</i>	50
<i>Apodasmia</i>	83	<i>Bomarea</i>	72	<i>Carpobrotus</i>	29
apple	64	bone-seed	34	CARPODETACEAE	44
<i>Aptenia</i>	29	boobialla	57	<i>Carpodetus</i>	44
AQUIFOLIACEAE	32	borage	39	carrot family	30
<i>Arabidopsis</i>	40	BORAGINACEAE	39	CARYOPHYLLACEAE	44
ARALIACEAE	32	<i>Borago</i>	39	<i>Cassinia</i>	37
<i>Arbutus</i>	49	<i>Botrychium</i>	25	catchfly	44
<i>Arctium</i>	33	boxthorn	69	catnip	55
<i>Argyranthemum</i>	33	<i>Brachyglottis</i>	33	catsear	35
<i>Aristolelia</i>	48	<i>Brachyscome</i>	33	<i>Cedronella</i>	54
<i>Arrhenatherum</i>	79	bracken	23	CELASTRACEAE	45
arrow-grass	77	<i>Brassica</i>	41	celery-leaved buttercup	63
<i>Artemisia</i>	33	BRASSICACEAE	40	<i>Celmisia</i>	34
<i>Arthropodium</i>	72	<i>Briza</i>	79	<i>Centaurea</i>	34
ASPHODELACEAE	72	broad-leaved dock	61	<i>Centaureium</i>	52
ASPLENIACEAE	21	broad-leaved plantain	60	centaury	52
<i>Asplenium</i>	21	broadleaf	53	<i>Centella</i>	30
<i>Astelia</i>	72	<i>Bromus</i>	79	<i>Centranthus</i>	70
ASTERACEAE	32	broom	50	<i>Cerastium</i>	44
<i>Atriplex</i>	45	broomrape	59	chain fern	25
Australian ice plant	29	browntop	79	<i>Chamaecytisus</i>	50
Australian ngaio	57	<i>Brugmansia</i>	69	Chatham Islands akeake	36
<i>Australina</i>	70	brush wattle	51	<i>Cheilanthes</i>	26
autumn hawkbit	35	buck's-horn plantain	60	<i>Cheiranthus</i>	41
<i>Avena</i>	79	buddleia	43	CHENOPODIACEAE	45

<i>Chenopodium</i>	45	crown fern	22	<i>Einadia</i>	46
cherry plum	64	CRUCIFERAE	40	ELAEOCARPACEAE	48
Chewings fescue	81	<i>Ctenopteris</i>	24	<i>Elaeocarpus</i>	49
chickweed	45	cudweed	37	ELATINACEAE	49
chickweed family	44	CUPRESSACEAE	27	<i>Elatine</i>	49
Chilean flame creeper	70	<i>Cupressus</i>	27	elder	44
Chilean glory creeper	39	curled dock	61	<i>Eleocharis</i>	74
Chilean potato tree	69	cut-leaved blackberry	65	elm	70
<i>Chiloglottis</i>	77	cut-leaved geranium	52	<i>Elodea</i>	75
<i>Chionochoa</i>	80	<i>Cyathea</i>	22	<i>Elymus</i>	80
<i>Chrysanthemoides</i>	34	CYATHEACEAE	22	<i>Elytrigia</i>	80
cineraria	37	<i>Cyathodes</i>	49	EPACRIDACEAE	49
<i>Cirsium</i>	34	<i>Cymbalaria</i>	67	<i>Epilobium</i>	58
cleavers	66	<i>Cynosurus</i>	80	<i>Erica</i>	49
<i>Clematis</i>	62	CYPERACEAE	72	ERICACEAE	49
climbing aniseed	31	<i>Cyperus</i>	74	<i>Erodium</i>	52
climbing fuchsia	59	cypress family	27	<i>Erophila</i>	42
climbing groundsel	33	<i>Cytisus</i>	50	<i>Escallonia</i>	49
clubmosses	25	<i>Dacrycarpus</i>	27	ESCALLONIAACEAE	49
CLUSIACEAE	46	<i>Dacrydium</i>	27	<i>Eucalyptus</i>	57
clustered clover	51	<i>Dactylis</i>	80	<i>Euchiton</i>	34
clustered dock	61	daisy	33	<i>Euonymus</i>	45
coastal woodrush	76	daisy family	32	<i>Euphorbia</i>	50
cocksfoot	80	dandelion	39	EUPHORBIACEAE	50
coffee family	65	<i>Daphne</i>	69	<i>Euphrasia</i>	67
<i>Colobanthus</i>	44	daphne family	69	European eyebright	67
COMMELINACEAE	72	Darwin's barberry	39	everlasting daisy	32
common mistletoe	56	datura	69	everlasting pea	50
COMPOSITAE	32	<i>Dendrobium</i>	78	eyebright	67
<i>Conium</i>	30	DENNSTAEDTIACEAE	22	FABACEAE	50
CONVOLVULACEAE	46	<i>Desmoschoenus</i>	74	fairy crassula	47
<i>Convolvulus</i>	46	<i>Dichelachne</i>	80	<i>Fallopia</i>	61
Cook's scurvy grass	42	<i>Dichondra</i>	46	fathen	45
<i>Coprosma</i>	65	<i>Dicksonia</i>	23	fathen family	45
<i>Cordyline</i>	72	DICKSONIACEAE	23	fennel	30
<i>Coriaria</i>	47	dicotyledons	29	ferns	21
CORIARIACEAE	47	<i>Digitalis</i>	67	<i>Festuca</i>	81
cornbind	61	dimorphotheca	37	feverfew	39
<i>Corokia</i>	49	<i>Diplotaxis</i>	41	fiddle dock	62
<i>Coronopus</i>	41	<i>Disphyma</i>	29	field bindweed	46
<i>Cortaderia</i>	80	dock family	61	field forget-me-not	40
<i>Corybas</i>	77	docks	61	field madder	66
CORYNOCARPACEAE	47	dog rose	64	field pansy	71
<i>Corynocarpus</i>	47	dove's foot	52	field speedwell	68
<i>Cotoneaster</i>	64	downy brome	80	fiere lancewood	32
cotton fireweed	38	<i>Dracophyllum</i>	49	filmy ferns	24
cottonwood	37	<i>Drosanthemum</i>	29	fine-leaved parsley fern	25
<i>Cotula</i>	34	<i>Drosera</i>	48	fireweed	37
<i>Cotyledon</i>	47	DROSERACEAE	48	flat-leaved rush	76
couch	80	<i>Drymoanthus</i>	78	flax	78
crack willow	67	DRYOPTERIDACEAE	23	floating sweet grass	81
<i>Crassula</i>	47	<i>Dryopteris</i>	23	floating water-fern	26
CRASSULACEAE	47	<i>Duchesnea</i>	64	flowering currant	53
<i>Crataegus</i>	64	duckweed	77	<i>Foeniculum</i>	30
creeping bent	79	duckweed family	77	forest violet	71
creeping buttercup	63	Dutch elm	70	forget-me-not family	39
creeping cudweed	34	dwarf mallow	56	fork fern	25
creeping fog	81	dwarf mistletoe	71	forked sundew	48
creeping willow-herb	58	<i>Earina</i>	78	<i>Forsythia</i>	58
<i>Crepis</i>	34	early hair grass	79	foxglove	67
cress family	40	Easter orchid	78	foxglove family	67
crested dogstail	80	<i>Eccremocarpus</i>	39	fragrant tree daisy	36
<i>Critesion</i>	80	<i>Echeveria</i>	48	<i>Fuchsia</i>	59
<i>Crocasmia</i>	75	<i>Echium</i>	39	fuchsia family	58

<i>Fumaria</i>	52	haumakaroa	32	ivy-leaved geranium	53
FUMARIACEAE	52	hawkbit	36	ivy-leaved toadflax	67
<i>Galeobdolon</i>	54	hawksbeard	34	jointed rush	76
<i>Galium</i>	66	hawthorn	64	JUNCACEAE	76
garden forget-me-not	40	heath family	49	JUNCAGINACEAE	77
garden nasturtium	70	heath milkwort	61	<i>Juncus</i>	76
<i>Gaultheria</i>	49	<i>Hebe</i>	67	kahikatea	27
<i>Gazania</i>	35	<i>Hedera</i>	32	kaikomako	54
gentian family	52	hedge artemisia	33	kanuka	57
<i>Gentiana</i>	52	hedge honeysuckle	44	karaka	47
GENTIANACEAE	52	hedge mustard	43	karamu	66
GERANIACEAE	52	hedge woundwort	55	kawakawa	60
<i>Geranium</i>	52	<i>Helichrysum</i>	35	Kentucky bluegrass	82
geranium family	52	hemlock	30	Khasia berry	64
German ivy	38	hen and chickens fern	21	kiokio	22
giant aeonium	47	henbit	54	kiwakiwa	22
giant bugloss	39	herb robert	51	kneed foxtail	79
giant buttercup	63	<i>Herpolirion</i>	72	<i>Kniphophia</i>	72
<i>Gingidia</i>	30	<i>Hieraceum</i>	35	knobby clubbrush	74
glasswort	46	<i>Hierochloe</i>	81	kohuhu	60
glaucous goosefoot	45	Himalayan honeysuckle	44	kopakopa	60
<i>Glechoma</i>	54	<i>Hirschfeldia</i>	42	korokio	49
<i>Glossostigma</i>	67	<i>Histiopteris</i>	22	koromiko	68
<i>Glyceria</i>	81	hoary mustard	42	<i>Korthalsella</i>	71
<i>Gnaphalium</i>	34	<i>Hoheria</i>	56	kotukutuku	59
<i>Gonocarpus</i>	54	<i>Holcus</i>	81	kowhai	51
GOODENIACEAE	53	holly	32	<i>Kunzea</i>	57
gooseberry	53	holy grass	81	LABIATAE	54
gorse	52	honesty	42	lace fern	23
gossamer grass	79	hooked sedge	75	lacebark	56
GRAMINEAE	79	hops	43	<i>Lachnagrostis</i>	81
GRAMMITIDACEAE	24	<i>Hordeum</i>	80	lady's slipper orchid	78
<i>Grammitis</i>	24	horehound	55	<i>Lagenifera</i>	35
grape hyacinth	77	horned oxalis	59	<i>Lagurus</i>	81
grass family	79	horokaka	29	LAMIACEAE	54
grass lily	72	horopito	71	<i>Lamium</i>	54
grassland buttercup	63	horopito family	71	<i>Lampranthus</i>	29
grassland daisy	34	horse's mane weed	83	lancewood	32
grassland forget-me-not	40	hound's tongue fern	25	<i>Lapsana</i>	35
<i>Gratiola</i>	67	<i>Humulus</i>	43	large quaking grass	79
great bindweed	46	HYDROCHARITACEAE	75	<i>Lastreopsis</i>	23
greater herb robert	53	<i>Hydrocotyle</i>	30	<i>Lathyrus</i>	50
green bird orchid	77	<i>Hymenanthera</i>	71	<i>Lavatera</i>	56
greenhood orchids	78	<i>Hymenolobus</i>	42	leafless lawyer	65
<i>Grevillea</i>	62	HYMENOPHYLLACEAE	24	leather leaf fern	25
<i>Griselinia</i>	53	<i>Hymenophyllum</i>	24	LEGUMINOSAE	50
GRISELINIACEAE	53	<i>Hypericum</i>	46	<i>Lemna</i>	77
GROSSULARIACEAE	53	<i>Hypochaeris</i>	35	LEMNACEAE	77
ground ivy	54	<i>Hypolepis</i>	23	lemonwood	60
groundsel	38	<i>Iberis</i>	42	<i>Leontodon</i>	35
gully fern	26	ICACINACEAE	54	<i>Lepidium</i>	42
<i>Gunnera</i>	53	ice plant family	29	<i>Lepidosperma</i>	75
GUNNERACEAE	53	<i>Ileostylus</i>	56	<i>Lepilaena</i>	84
gymnosperms	27	<i>Ilex</i>	32	<i>Leptinella</i>	36
hairy fern	23	inaka	49	<i>Leptocarpus</i>	83
hairy vetch	52	Indian knotweed	61	<i>Leptolepia</i>	23
Hall's totara	27	Indian strawberry	64	<i>Leptopteris</i>	25
HALORAGACEAE	54	IRIDACEAE	75	<i>Leptospermum</i>	57
<i>Haloragis</i>	54	<i>Iris</i>	75	lesser canary grass	82
hanging spleenwort	21	iris family	75	lesser suckling clover	51
harakeke	79	<i>Ischnocarpus</i>	42	<i>Leucanthemum</i>	36
harebell	43	<i>Isolepis</i>	74	<i>Leucopogon</i>	49
haresfoot trefoil	51	ivy	32	<i>Leycesteria</i>	44
harestail	81	ivy family	32	<i>Leymus</i>	81

<i>Libertia</i>	75	Mercury Bay weed	47	necklace fern	21
lilac oxalis	59	<i>Metrosideros</i>	57	<i>Nemesia</i>	68
<i>Lilaeopsis</i>	31	<i>Microlaena</i>	81	<i>Neomyrtus</i>	58
LILIACEAE	77	<i>Microsorium</i>	25	<i>Neopaxia</i>	62
lily family	77	<i>Microtis</i>	78	<i>Nepeta</i>	55
<i>Limosella</i>	68	mikoikoi	75	<i>Nertera</i>	66
LINACEAE	55	milfoils	54	nettle	70
<i>Linaria</i>	68	milk tree	57	nettle family	70
<i>Lindsaea</i>	23	milkweed	50	nettle-leaved fathen	46
<i>Linum</i>	55	<i>Mimulus</i>	68	New Zealand flax	79
little hard fern	22	mingimingi	65	New Zealand musk	68
lobelia family	55	mint family	54	ngaio	57
LOBELIACEAE	55	miro	27	niggerhead	73
<i>Lobularia</i>	42	mistletoe	56	nightshades	69
<i>Lolium</i>	81	mistletoe family	56	Nile lily	77
Lombardy poplar	67	monkey musk	68	nipplewort	35
<i>Lonicera</i>	44	Monocotyledons	72	nodding thistle	33
<i>Lophomyrtus</i>	57	montbretia	75	NOTHOFAGACEAE	58
LORANTHACEAE	56	<i>Montia</i>	62	<i>Nothofagus</i>	58
<i>Loranthus</i>	56	Montpellier broom	51	oat	79
<i>Lotus</i>	50	MORACEAE	57	oioi	83
lowland ribbonwood	56	moth mullein	68	old man's beard	62
lucerne	50	mountain akeake	36	OLEACEAE	58
<i>Lunaria</i>	42	mountain flax	78	<i>Olearia</i>	36
<i>Lupinus</i>	50	mountain holly	36	ONAGRACEAE	58
<i>Luzula</i>	76	mouse-ear chickweed	44	one rowed watercress	43
<i>Lycium</i>	69	mouse-ear hawkweed	35	Onehunga weed	38
LYCOPODIACEAE	25	mousetail	62	ongaonga	70
<i>Lycopodium</i>	25	mudwort	68	onion orchid	78
lyme grass	81	<i>Muehlenbeckia</i>	61	OPHIOGLOSSACEAE	25
maakoako	62	mulleins	68	<i>Ophioglossum</i>	25
macrocarpa	27	<i>Muscari</i>	77	opium poppy	59
<i>Macropiper</i>	60	musk	68	orache	45
mahoe	71	musky storksbill	52	orchid family	77
maidenhair fern	26	mutton-bird scrub	33	ORCHIDACEAE	77
maikaika	78	<i>Mycelis</i>	36	<i>Oreomyrrhis</i>	31
male fern	23	MYOPORACEAE	57	oriental mustard	43
mallow	56	<i>Myoporum</i>	57	OROBANCHACEAE	59
mallow family	56	<i>Myosotis</i>	40	<i>Orobanche</i>	59
<i>Malus</i>	64	<i>Myosurus</i>	62	osier	67
<i>Malva</i>	56	<i>Myriophyllum</i>	54	OSMUNDACEAE	25
MALVACEAE	56	MYRSINACEAE	57	<i>Osteospermum</i>	37
manuka	57	<i>Myrsine</i>	57	oval sedge	73
manuka family	57	MYRTACEAE	57	OXALIDACEAE	59
mapou	57	narrow-leaved cress	42	<i>Oxalis</i>	59
marble leaf	44	narrow-leaved lacebark	56	oxalis family	59
marguerite daisy	33	narrow-leaved mahoe	71	oxeye daisy	36
marigold	33	narrow-leaved plantain	60	oxygen weed family	75
maritime pine	27	<i>Nasturtium</i>	43	<i>Ozothamnus</i>	37
marram grass	79	native aniseed	30	<i>Paesia</i>	23
<i>Marrubium</i>	55	native bedstraw	66	pale flax	55
marsh gentian	52	native bittercress	41	pampas	80
marsh yellow cress	43	native broom	50	panakenake	55
matai	28	native celery	30	<i>Papaver</i>	59
<i>Matricaria</i>	36	native chickweed	45	PAPAVERACEAE	59
<i>Matthiola</i>	42	native ice plant	29	<i>Parahebe</i>	68
meadow grass	82	native iris	75	parani	35
<i>Medicago</i>	50	native jasmine	31	<i>Parapholis</i>	82
<i>Melanoselinum</i>	31	native pelargonium	53	<i>Paraserianthes</i>	51
MELIANTHACEAE	56	native sow thistle	38	<i>Paratrophis</i>	57
<i>Melianthus</i>	56	native spinach	29	<i>Parentucellia</i>	68
<i>Melicope</i>	67	native starwort	43	<i>Parietaria</i>	70
<i>Melicytus</i>	71	native stinging nettle	70	parsley	31
<i>Mentha</i>	55	<i>Navarettia</i>	60	parsley piert	64

parsnip	31	<i>Polygala</i>	61	raupo	84
parsnip palm	31	POLYGALACEAE	61	raupo family	84
<i>Parsonsia</i>	31	POLYGONACEAE	61	rayless chamomile	36
<i>Passiflora</i>	59	<i>Polygonum</i>	61	red clover	51
PASSIFLORACEAE	59	POLYPODIACEAE	25	red dead nettle	54
passionfruit	59	<i>Polypogon</i>	82	red escallonia	49
passionfruit family	59	<i>Polystichum</i>	23	red hot poker	72
<i>Pastinaca</i>	31	pondweed	83	red tussock	80
pate	32	pondweed family	83	reflexed salt grass	82
patotara	49	ponga	22	remuremu	53
pea family	50	poplars	67	restiad family	83
pearlwort	44	poppy family	59	RESTIONACEAE	83
peka-a-weka	78	<i>Populus</i>	67	<i>Ribes</i>	53
<i>Pelargonium</i>	53	porcupine shrub	71	rimu	27
<i>Pellaea</i>	26	poroporo	69	ripgut brome	79
<i>Pennantia</i>	54	Portugal laurel	64	RIPOGONACEAE	83
pennyroyal	55	PORTULACACEAE	62	<i>Ripogonum</i>	83
<i>Pentaglottis</i>	40	<i>Potamogeton</i>	83	rock fern	26
pepper family	60	POTAMOGETONACEAE	83	rohutu	57
peppermint	55	potato	69	rohutu	58
peppertree	71	potato family	69	<i>Rorippa</i>	43
perennial ryegrass	81	potato vine	69	<i>Rosa</i>	64
<i>Pericallis</i>	37	<i>Potentilla</i>	64	ROSACEAE	63
periwinkle	31	prairie grass	80	rose family	63
<i>Pernettya</i>	49	<i>Pratia</i>	55	rose of Sharon	46
<i>Petasites</i>	37	prickly mingimingi	49	roses	64
<i>Petroselinum</i>	31	prickly shield fern	24	rough tree fern	23
<i>Phalaris</i>	82	prickly sow thistle	38	RUBIACEAE	65
<i>Phleum</i>	82	Pride of Madeira	39	<i>Rubus</i>	65
PHORMIACEAE	78	primula family	62	<i>Rumex</i>	61
<i>Phormium</i>	78	PRIMULACEAE	61	<i>Rumohra</i>	24
phormium family	78	protea family	62	<i>Ruppia</i>	83
<i>Phymatosorus</i>	25	PROTEACEAE	62	RUPPIACEAE	83
<i>Physalis</i>	69	<i>Prumnopitys</i>	28	rush family	76
pikao	74	<i>Prunella</i>	55	rushes	76
<i>Pimelea</i>	69	<i>Prunus</i>	64	Russian comfrey	40
PINACEAE	27	<i>Pseudognaphalium</i>	37	Russian vine	61
pincushion grass	79	<i>Pseudopanax</i>	32	RUTACEAE	67
pine family	27	<i>Pseudowintera</i>	71	<i>Rytidosperma</i>	83
pingao	74	PSILOTACEAE	25	<i>Sagina</i>	44
<i>Pinus</i>	27	PTERIDACEAE	26	SALICACEAE	67
pinwheel aeonium	47	<i>Pteridium</i>	23	<i>Salicornia</i>	46
PIPERACEAE	60	<i>Pterostylis</i>	78	<i>Salix</i>	67
pirita	56	puawhananga	62	saltmarsh ribbonwood	56
PITOSPORACEAE	60	<i>Puccinellia</i>	82	saltmarsh rush	76
<i>Pittosporum</i>	60	puha	38	SALVINIACEAE	26
pittosporum family	60	purging flax	55	<i>Sambucus</i>	44
<i>Plagianthus</i>	56	purple groundsel	37	<i>Samolus</i>	62
PLANTAGINACEAE	60	purple linaria	68	sand buttercup	62
<i>Plantago</i>	60	pussy willow	67	sand coprosma	65
plantain family	60	<i>Pyrrosia</i>	25	sand daphne	69
plume grass	80	<i>Racosperma</i>	51	sand sedge	74
<i>Pneumatopteris</i>	26	radiata pine	27	sand spurrey	45
<i>Poa</i>	82	radish	43	<i>Sarcocornia</i>	46
POACEAE	79	ragwort	38	scabweed	37
poataniwha	67	rangiora	33	<i>Scandia</i>	31
podocarp family	27	RANUNCULACEAE	62	scarlet pimpernel	62
PODOCARPACEAE	27	<i>Ranunculus</i>	62	scentless chamomile	39
<i>Podocarpus</i>	27	<i>Raoulia</i>	37	<i>Schedonorus</i>	83
pohuehue	61	<i>Raphanus</i>	43	<i>Schefflera</i>	32
pohutukawa	57	rauhua	55	<i>Schizeilema</i>	31
pokaka	49	<i>Raukaua</i>	32	<i>Schoenoplectus</i>	75
POLEMONIACEAE	61	raukawa	32	<i>Schoenus</i>	75
<i>Polycarpon</i>	44	raupeka	78	<i>Scleranthus</i>	44

Scotch thistle	34	Spanish broom	51	THYMELAEACEAE	69
Scots pine	27	Spanish heath	49	ti	72
scrambling fumitory	52	<i>Spartium</i>	51	timothy	82
scrambling speedwell	68	spearmint	55	<i>Tmesipteris</i>	25
SCROPHULARIACEAE	67	speedwells	68	toad rush	76
sea blite	46	<i>Spergula</i>	45	toetoe	80
sea clubrush	73	<i>Spergularia</i>	45	<i>Torilis</i>	31
sea couch	80	spider orchids	77	totara	27
sea primrose	62	spike sedge	74	<i>Tradescantia</i>	72
sea rocket	41	spindle tree	45	tree daisies	36
sea spurrey	45	spotted bur medick	50	tree fuchsia	59
seagrass	84	spur valerian	70	tree lucerne	50
seagrass family	84	spurge family	50	tree lupin	50
sedge family	72	spurrey	45	tree mallow	56
<i>Sedum</i>	48	square sedge	75	tree nettle	70
<i>Selaginella</i>	26	St Lucie cherry	64	tree tutu	47
SELAGINELLACEAE	26	<i>Stachys</i>	55	<i>Trichomanes</i>	25
selfheal	55	staggerweed	55	<i>Trifolium</i>	51
<i>Selliera</i>	53	starweed	60	<i>Triglochin</i>	77
<i>Senecio</i>	37	starwort	43	trigonel	51
seven-finger	32	<i>Stellaria</i>	45	<i>Tripleurospermum</i>	39
sheep's sorrel	61	Stewart Island forget-me-not	40	<i>Triticum</i>	83
shepherd's purse	41	stinking iris	75	TROPAEOLACEAE	70
<i>Sherardia</i>	66	stinkwood	65	<i>Tropaeolum</i>	70
shield fern	23	stitchwort	45	<i>Tupeia</i>	56
shivery grass	79	stock	42	turf speedwell	68
shore bindweed	46	stonecrop	48	tutsan	46
shore dock	61	stonecrop family	47	tutu	47
shore hebe	67	strawberry tree	49	tutu family	47
shore spleenwort	21	<i>Streblus</i>	57	twiggy mistletoe	71
shore stonecrop	47	striated clover	51	twin cress	41
shrubby stonecrop	48	<i>Suaeda</i>	46	twitch	80
sickle grass	82	subclover	51	<i>Typha</i>	84
sickle spleenwort	21	suckling clover	51	TYPHACEAE	84
<i>Silene</i>	44	sun orchid	78	<i>Ulex</i>	52
silver beech	58	sun spurge	50	ULMACEAE	70
silver tree fern	22	sundew family	48	<i>Ulmus</i>	70
silver tussock	82	supplejack	83	UMBELLIFERAE	30
silver wattle	51	swamp hypericum	46	umbrella sedge	74
silverweed	64	sweet brier	64	<i>Uncinia</i>	75
silvery hair grass	79	sweet vernal	79	upright hedge-parsley	31
<i>Silybum</i>	38	sycamore	29	<i>Urtica</i>	70
<i>Sisymbrium</i>	43	<i>Symphytum</i>	40	URTICACEAE	70
<i>Sisyrinchium</i>	75	tall fescue	83	VALERIANACEAE	70
slender clubrush	74	tall oat grass	79	variegated thistle	38
slender everlasting	35	tall willow-herb	58	velvety nightshade	69
small kiokio	22	<i>Tanacetum</i>	39	<i>Verbascum</i>	68
small onion orchid	78	Tangier pea	50	<i>Veronica</i>	68
small-flowered buttercup	63	tansy	39	vetch	52
small-leaved mahoe	71	tarata	60	<i>Vicia</i>	52
small-leaved wireweed	61	<i>Taraxacum</i>	39	<i>Vinca</i>	31
soft brome	79	tarweed	68	<i>Viola</i>	71
soft rush	76	Tasmanian blackwood	51	VIOLACEAE	71
soft tree fern	22	Tasmanian blue gum	57	violet family	71
SOLANACEAE	69	tauhinu	37	violets	71
<i>Solanum</i>	69	taupata	65	viper's bugloss	40
soldier's button	34	<i>Teline</i>	51	VISCACEAE	71
<i>Soliva</i>	38	<i>Tetragonia</i>	29	<i>Vittadinia</i>	39
<i>Sonchus</i>	38	<i>Thelymitra</i>	78	vulpia hair grass	83
<i>Sophora</i>	51	THELYPTERIDACEAE	26	<i>Vulpia</i>	83
sourgrass	59	thousand-leaved fern	23	<i>Wahlenbergia</i>	43
southern beech family	58	three-cornered garlic	77	wall cress	40
southern heath family	49	three-finger	32	wall lettuce	36
sow thistle	38	three-square	75	wall rocket	41

wallflower	41
wandering Jew	72
wart cress	41
water buttercup	63
water fern	22
water forget-me-not	40
water milfoil	54
water pepper	61
watercress	43
watermeal	77
wavy bittercress	41
waxweed	30
wharariki	78
wheat	83
wheki	23
whipcord daisy	35
white climbing rata	57
white clover	51
white fuzzweed	39
white mistletoe	56
white poplar	67
white stonecrop	48
white violet	71
white willow	67
white-edged nightshade	69
whiteywood	71
whitlow grass	42
wild cabbage	41
wild cherry	64
wild parsley	31
wild turnip	41
willow family	67
willow weed	61
willow-herbs	58
willow-leaved hebe	68
willows	67
wineberry	48
winged thistle	33
<i>Winika</i>	78
winter cress	40
winter heliotrope	37
WINTERACEAE	71
wirevine	61
wireweed	61
wiry matipo	57
wiry snowberry	49
<i>Wolffia</i>	77
wood groundsel	38
woodrush	76
woolly mullein	68
yarrow	32
yellow lupin	50
yellow oxalis	59
yellow-wood	65
Yorkshire fog	81
<i>Zannichellia</i>	84
ZANNICHELLIACEAE	84
zonal pelargonium	53
<i>Zostera</i>	84
ZOSTERACEAE	84