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Vascular Plants of Westland National Park (New Zealand) and Neighbouring Lowland and Coastal Areas

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ABSTRACT

An annotated list of vascular plants in Westland National Park and its vicinity includes about 620 native species, 22 varieties, 26 hybrids, and 114 adventive species. Ecological information is included and records are supported by herbarium specimens.

INTRODUCTION

This annotated species list is based on specimens collected in Westland National Park, and in the adjoining lowland and coastal district between the Karangarua River and the north end of the Okarito Lagoon. The area totals some 150 000 ha, of which 88 608 ha are within the National Park.

Geographical details are available from the following maps published by the Department of Lands and Survey: L & S 50/3 (Westland National Park); NZMS 1, Sheets 63 (Okarito), S70 (Gillespies), S71 (Waiho), S78 (Bruce Bay), S79 (Mt Cook), S88 (Landsborough).

Only representative specimens from the collection held in the herbarium at Botany Division (CHR) are cited. The list includes about 620 species and 22 varieties of native plants, 26 hybrids, and 114 adventive species. Native species marked with an asterisk do not appear to be within the present boundaries of the National Park. Adventive species occur mainly outside the National Park boundaries, and few have reached the more remote areas. Local concentrations, however, are found where supplies packed in straw have been air-dropped; such species are also marked with an asterisk. Appendices contain additional species recorded by earlier botanists but not confirmed by herbarium

specimens and other species doubtfully present in the study area. Appendix III lists native species collected in Westland between the Hokitika and Haast Rivers, but not within the study area, these mainly being species that reach their southern limits north of the Park, and eastern species that occur in the Landsborough catchment, which lies in the rain shadow of the Hooker Range. This category provides information on patterns of distribution in Westland, and a check on the adequacy of the National Park boundaries.

Nomenclature of indigenous species other than grasses follows Allan (1961) and Moore & Edgar (1970) except where stated otherwise.

Most habitat designations are self-explanatory, but the following require definition.

Altitudinal belts (very approximate limits):

High alpine: above 1 500 m; short, discontinuous vegetation

Low alpine: 1 200–1 500 m; tall grassland and low scrub

Subalpine: 800–1 200 m; low forest and tall scrub

Montane: 400–800 m; upper belt of tall forest

Lowland: below 400 m; lower belt of tall forest

Soils form a sequence of decreasing fertility. For the lowland and montane belts, they are designated as follows:

Recent soil: supporting pioneer vegetation or fast-growing small trees demanding fertile conditions.

Yellow-brown earth: with well-developed yellow-brown B horizon and supporting fully developed podocarp-hardwood forest.

Podzolised yellow-brown earth: with obviously leached A horizon and supporting less-demanding forest communities.

Gley podzol: severely leached, drainage impeded by hard pan, and supporting stunted forest, scrub, and herbaceous vegetation. The last is often fire-induced, and is known as *pakihi*.

Lowland swamps: form a similar sequence from fertile to infertile (Wardle 1974).

In alpine vegetation, *herbfield* is dominated by forbs rather than sedges and grasses, and *fellfield* has scattered plants among otherwise bare rock, talus, etc.

Piedmont: the area between the sea and the flanks of the Southern Alps, comprising mainly valleys and morainic hills rising to 450 m.

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Species	CHR No.
FERNS AND RELATED PLANTS	
<i>Adiantum cunninghamii</i> Hook.	191854
<i>Asplenium bulbiferum</i> Forst.f.	157779
<i>Asplenium falcatum</i> Lam.	185610
<i>Asplenium flaccidum</i> Forst.f.	152020
<i>Asplenium hookerianum</i> Col.	203456
* <i>Asplenium obtusatum</i> Forst.f. (incl. <i>A. lucidum</i> Forst.f.)	166538
<i>Asplenium richardii</i> Hook.f.	166541
* <i>Blechnum banksii</i> (Hook.f.) Mett. ex Diels	214883
<i>Blechnum capense</i> (L.) Schlecht.	179296
“minus” form	
“procerum” form	203693
“subalpine” form	123543
<i>Blechnum chambersii</i> Tindale (<i>B. lanceolatum</i> in Allan 1961)	208314
<i>Blechnum discolor</i> (Forst.f.) Keys	157778
<i>Blechnum fluviatile</i> (R.Br.) Salom.	208370-1
<i>Blechnum nigrum</i> (Col.) Mett.	166763
<i>Blechnum patersonii</i> (R.Br.) Mett.	157757
	157781
	125750

Comments

The only Park records are 120 m at McDonalds Creek and 550 m, Karanguru River, in forest under dry rock ledges, but it is abundant on coastal cliffs south of Paringa.

Abundant in forest on recent soils in lowland and montane forest. Coastal plants usually lack bulbils.

Collected sea level to 250 m, a common epiphyte in lowland forest. Epiphytic and rupestral, common lowland to subalpine.

Rock ledges at 950 m, at Flashing Creek (Copland valley) and Christmas Flat (Karanguru valley). Fronds of diverse shape.

Coastal forest and scrub; “lucidum” form in less-exposed places.

Rock crevice at 1200 m, Architects Creek. The same plant, with narrow, membranous pinnules, is common in Mount Cook National Park. Coastal banks.

Abundant from sea level to nearly 1 200 m. Three forms, which intergrade or grow in admixture.

Pinnae few, distant, dark green, up to 2.5 cm wide, lowest pair large. Typical of forest on podzolised soils.

Fronds light green, very long; pinnae becoming gradually smaller towards base. Steep lowland and montane banks, swamp margins.

Fronds light green, pinnae <1.5 cm wide, usually close-set but fewer than in “procerum” form, lowest pair large. Montane forest, subalpine scrub, and in fertile swamp.

Lowland and montane forest, mainly on moist banks. Plants on flat alluvial ground superficially resemble *B. membranaceum*.

Usually the main species of the understorey of lowland and montane forest on yellow-brown soils.

In lowland and montane forest, on recently deposited soil by streams and among rocks. Also on coastal banks, but not on as exposed places as *B. banksii*.

Lowland and montane forest, on dark, wet banks.

Lowland and montane forest, on steep banks.

<i>Blechnum pennamarina</i> (Poir.) Kuhn	Lowland to subalpine, abundant on recent, dry, gravelly soils in open or light shade.	166572
<i>Blechnum vulcanicum</i> (Blume) Kuhn	Rather local, on lowland and montane banks.	123536
<i>Cyathea colensoi</i> (Hook.f.) Domin	Upper montane forest, descending to lowlands on frosty sites.	123535
<i>Cyathea cunninghamii</i> Hook.f.	Common along the base of the outer ranges, and also coastal. Adult plants intermediate between <i>C. medullaris</i> and <i>C. smithii</i> : as tall as the former but less massive. Young plants have stems much more slender than other cyatheas, but are rarely encountered.	179101
<i>Cyathea medullaris</i> (Forst.f.) Swartz	In coastal forest. Also common in gorge of McDonalds Creek, and one or two plants near terminal faces of Franz Josef and Fox Glaciers.	166510
<i>Cyathea smithii</i> Hook.f.	Abundant in lowland and montane forest.	179098
<i>Cystopteris fragilis</i> (L.) Bernh.	Only records are 950 m at McKenna Creek, under dry rock; and at 850 m among rocks on moraine of La Perouse Glacier.	203402
* <i>Dicksonia fibrosa</i> Col.	A few plants at east end of Lake Wahapo, and one at Potters Creek.	152040
<i>Dicksonia lanata</i> Col.	More numerous in young forest on flats of Ohinetamatea River. Large colonies, but local, at 150-680 m on north slopes of piedmont hills, in forest.	166791
<i>Dicksonia squarrosa</i> (Forst.f.) Swartz	Abundant in lowland forest, especially in flat gullies and on river flats.	179099
<i>Gleichenia circinata</i> Swartz and <i>G. microphylla</i> R.Br.	Sea level to 600 m on gley podzol soils. Typical " <i>circinata</i> " is on open sites; plants keying to " <i>microphylla</i> " tend to be in stunted forest, but the two intermingle and there are clones difficult to refer to either species.	191971 208315 199227
<i>Gleichenia cunninghamii</i> Hew. ex Hook.	Usually lowland to montane, occasionally to 1050 m, in forest on podzolised soils.	166943
<i>Grammitis billardieri</i> Willd.	Lowland to 600 m, abundant as an epiphyte near the base of tree trunks. Fronds tufted, usually with hairs on stipes.	203691 157776 157754
<i>Grammitis heterophylla</i> Labill.	Common epiphyte in lowland and montane forest.	191834
<i>Grammitis pumila</i> J. B. Armst.	Rupestrial, mainly low alpine, but collected at 600 m at Roberts Point.	
<i>Grammitis</i> "species A"	Mainly upper montane and subalpine on dry or wet, shaded rock ledges, but descends to valleys of Franz Josef and Fox Glaciers. Stipes and sori usually ciliate, rhizomes more-or-less elongated.	214882

<i>Grammitis</i> "species B"	Collected at 250 m, Fox valley. A forest epiphyte, fronds tufted with hairs on margins and back.	157776
<i>Histiopteris incisa</i> (Thunb.) J. Smith	Abundant in damaged lowland and montane forest.	123529
<i>Hymenophyllum armstrongii</i> (Baker) Kirk	Lowland, on trunks of <i>Dacrydium cupressinum</i> trees; also collected from two steep, dry rock faces at 800 m in the upper catchment of Karangarua River.	218804
<i>Hymenophyllum demissum</i> (Forst.f.) Swartz	Lowland, mainly on forest floor.	185630
<i>Hymenophyllum dilatatum</i> (Forst.f.) Swartz	Epiphyte in lowland forest.	185632
<i>Hymenophyllum ferrugineum</i> Colla	Epiphyte in lowland and montane forest.	185628
<i>Hymenophyllum flabellatum</i> Labill.	Epiphyte in lowland forest.	203686
<i>Hymenophyllum flexuosum</i> A. Cunn.	Epiphyte in lowland forest. A plant with plane wings on stipes was collected at 370 m (152034).	185626
<i>Hymenophyllum lyallii</i> Hook.f.	Epiphyte in lowland and montane forest to 750 m, usually in rather dark, damp places.	203698
<i>Hymenophyllum malingii</i> (Hook.) Mett.	Epiphyte in lowland to subalpine forest, usually on dead trunks of <i>Libocedrus bidwillii</i> .	152012
<i>Hymenophyllum minimum</i> A. Rich.	Turf on exposed coastal rocks.	208329
<i>Hymenophyllum multifidum</i> (Forst.f.) Swartz	Lowland to nearly 1 200 m; abundant; epiphytic in forest and scrub, and rupestral especially at high altitudes.	191972
<i>Hymenophyllum peltatum</i> (Poir.) Desv.	Collected in glacial valleys of Fox and Franz Josef Glaciers, and at 1 300 m in Architects Creek. Usually in rock crevices.	133065
<i>Hymenophyllum pulcherrimum</i> Col.	Epiphyte in young forest on moraine of Fox Glacier, and at base of Cone Rock.	203663
<i>Hymenophyllum rarum</i> R.Br.	Epiphyte, two records in Franz Josef area.	203682
<i>Hymenophyllum revolutum</i> Col.	Epiphyte near base of tree trunks, in lowland forest.	208308
<i>Hymenophyllum rufescens</i> Kirk	Epiphyte in lowland and montane forest.	203697
<i>Hymenophyllum sanguinolentum</i> (Forst.f.) Swartz	Abundant epiphyte in lowland forest. Fronds usually flat, but some plants from more exposed sites and higher altitudes have small fronds with reflexed pinnae.	185735
<i>Hymenophyllum scabrum</i> A. Rich.	Epiphyte in lowland forest.	179010
<i>Hymenophyllum villosum</i> Col.	Epiphyte at 400 m, in frosty ravine; rupestral at 1 100–1 200 m, Copland Range and similar sites at Marks Flat.	185634
<i>Hypolepis millefolium</i> Hook.	Montane to low alpine, abundant on recent soils in forest and in open.	203699
<i>Hypolepis rufobarbata</i> (Col.) N. A. Wakefield	Lowland and lower montane, mainly on recent soils in forest.	191924
		157794
		166601

- **Hypolepis rugosula* (Labill.) J. Smith
Isoetes alpinus Kirk
- **Lastreopsis glabella* (A. Cunn.) Tindale
 (*Cientitis glabella* in Allan 1961)
Lastreopsis hispida (Swartz) Tindale
 (*Rumohra hispida* in Allan 1961)
Leptolepia novae-zelandiae (Col.) Kuhn
Lindsaea trichomanoides Dryand.
Lycopodium australianum (Heter) Allan
Lycopodium fastigiatum R.Br.
- Lycopodium ramulosum* Kirk
Lycopodium scariosum Forst. f.
Lycopodium varium R.Br.
- Stable dunes, usually among gorse.
 Two records; tarn at 1200 m on Mt Fox, and Lake Mapourika.
 Submerged aquatic.
 Rare in coastal *Meliccytus ramiflorus* forest, Waikowhai and Waiho bluffs.
 Common in lowland forest.
- Lowland, rather local, mainly by tracks through forest.
 Fairly common on floor of lowland *Dacrydium cupressinum* forest.
 Low alpine, in stony grassland; also on rock at 250 m near Franz Josef Glacier, and in swamp at 90 m, Lake Mapourika.
 Common in low alpine and subalpine short grassland, as short, lax plants with solitary or paired strobili; also among grass on lowland river flats, as tall fastigiate plants with clustered strobili.
- Piedmont, and at 600 m on upper Karangarua track. In stunted vegetation on bog and gley podzol.
 Lowland, mainly in open forest developing on moraine; also on banks.
 The plants in the Park fit three described species. They intergrade, and it is uncertain how much of the variation is habitat-induced.
 Lowland to montane, common.
 "varium." Usually rupestral. Stems ascending, but reflexed at tips. Strobili to 9 cm. tetragonous. Sporophylls densely imbricate, to 4 mm, long-pointed.
 "intermediate." Epiphytic, pendulous, strobili not as dense nor as distinctly tetragonous as in "varium".
 "novae-zelandicum." Epiphytic, pendulous. Leaves and sporophylls more or less distant, sporophylls to 4 mm, long-pointed.
 "billardieri." A rare, superficially distinct epiphyte. The proximal sporophylls are like those of "novae-zelandicum", but the distal ones are 1.5 mm, short-pointed, and aggregated into slender strobili to 11 cm long.
- Rather local; lowland to montane, scrambling through well-lighted forest.
 Among short grass on dry ground. Coastal to subalpine.
 Lowland to montane, mainly slips and cleared areas.
- 195141
 166826
 208339
 152022
 199222
 152021
 166902
 166903
 179068
 166517
 157775
 179082
 77765
 205257
 214910
 199217
 166949
 123522

- Phymatosorus diversifolius* (Willd.) Pic. Ser.
(*Phymatodes diversifolium* in Allan 1961) 157765
152041
- Pneumatopteris pennigera* (Forst.f.) Holttum
(*Thelypteris pennigera* in Allan 1961) 166834
- Polystichum cystostegia* (Hook.) Cheesem.
Polystichum vestitum (Forst.f.) Presl 199221
179163
- **Pteridium aquilinum* var. *esculentum* (Forst.f.)
Kuhn 166504
- **Pteris macilentata* A. Rich. 157802
- Pyrosia serpens* (Forst.f.) Ching 152019
- Rumohra adiantifolmis* (Forst.f.) Ching 191903
- Schizaea fistulosa* Labill. 152037
157753
- Tmesipteris tannensis* Bernh. 166773
- Todea hymenophylloides* A. Rich. 203678
- Todea superba* Col. 166771
- Trichomanes colensoi* Hook.f. 208301
203665
- Trichomanes reniforme* Forst.f.
Trichomanes strictum Menzies ex Hook.
et Grev.
Trichomanes venosum R.Br.
- CONIFERS**
- Dacrycarpus dacrydioides* A. Rich. 179005
- Dacrydium bidwillii* Hook.f. ex Kirk 199228
- Dacrydium bifforme* (Hook.) Pilger 199246
- Abundant as climbing epiphyte, and on ground in forest developing on moraine. Lowland, but occasional to 1 080 m among rocks of moraines.
- Occasional in lowland forest, on moist, recent soils.
- Alpine, among rocks.
- Abundant in upper montane and subalpine forest on recent soils. Occasionally alpine, to 1 600 m. Lowland plants generally small and sterile.
- Local pockets, mainly on old beach ridges.
- In scrub on coastal talus.
- Lowland and coastal, epiphyte on exposed branches.
- Climbing on tree trunks in lowland forest.
- Piedmont, in stunted vegetation on gley podzol soils; also to 1 100 m, in upper Karangarua valley.
- Epiphytic on tree fern trunks in lowland forest.
- Occasional in dry places in lowland forest.
- Common in humid forest with relatively recent soils. To 600 m, occasionally to 800 m.
- Covering rocks on forest floor on unstable slopes at base of outer ranges.
- Abundant on tree bases and fallen logs in lowland forest.
- Sea level to 1 400 ft, on shaded banks and bases of trees. Rather local.
- Epiphyte on tree ferns in lowland forest.
- Abundant on wet alluvial soils and swamps in lowlands; in Karangarua valley to Cassel Flat, and shorter distances up other mountain valleys.
- Piedmont. Between Cook and Waiho Rivers in stunted vegetation on gley podzol soils; and in boggy openings in *Dacrycarpus dacrydioides* forest, Ohinetamatea River.
- Piedmont, in stunted forest on gley podzols between Cook and Waiho Rivers, and on similar soils in the Karangarua catchment up to 1 000 m.

- Dacrydium colensoi* Hook. On gley podzols and infertile swamp in lowland forest, especially between Cook and Waikato Rivers; also in middle reaches of Karangarua and Regina valleys at 600 m. 191868
- Dacrydium cupressinum* Lamb. Abundant in lowland and lower montane forest, sometimes ascending to 600 m. 166970
- Dacrydium intermedium* Kirk Piedmont, in stunted vegetation on gley podzol soils between Cook and Waikato Rivers; also at 1 000 m in upper Karangarua valley. 125786
- Libocedrus bidwillii* Hook.f. Characteristic of lower subalpine forest, and also common in frosty lowland valleys. 166519
- Phyllocladus alpinus* Hook.f. Piedmont, abundant in stunted forest on gley podzols and bog between sea and mountains. 166501
- Lowland ecotype Subalpine in heads of valleys near Main Divide. The ecotypes mingle on boggy sites in the upper Karangarua and Regina valleys. 166736
- Timberline ecotype Typical form recorded only on piedmont moraine at Omoeroa Saddle and south of Omoeroa River. 203669
- Podocarpus acutifolius* Kirk Common to locally abundant through lowland and lower montane forests. 166503
- Podocarpus ferrugineus* G. Benn. ex D. Don Common in forest, lowland to lower subalpine. 166772
- Podocarpus hallii* Kirk Subalpine in heads of valleys near Main Divide. 179225
- Podocarpus nivalis* Hook. Fertile lowland soils; ascending Karangarua valley to Cassel Flat, and Copland valley to c. 350 m. 166789
- Podocarpus spicatus* R.Br. ex Mirbel Abundant on stony soils in lowland river valleys, and in swamps. Also at Cassel Flat and Welcome Flat (450 m). 166790
- Podocarpus totara* var. *waihoensis* Wardle

DICOTYLEDONS

- Abrotanella linearis* Bergg. Recorded from wet grassland on Alex Knob at 1 250 m and Mt Fox at 1 000 m. 166785
- Abrotanella linearis* var. *apiculata* Simpson et Thomson Recorded from wet ground on Mt Fox and Copland Range, 1 200 m and 1 300 m respectively. Clearly a species distinct from *A. linearis* and occurring also in Fiordland. 166895
- Acacia anserinifolia* (J. R. et G. Forst.) Druce Lowland to subalpine grassy places 166761
- Acacia anserinifolia* var. *sericeinitens* (Bitter) Allan (or *A. hirsutula* Bitter?) Subalpine stony ground. Douglas valley and upper Callery. Possibly intergrades with *A. anserinifolia*. 214868
- Acacia* cf. *novae-zelandiae* Kirk Occasional on sand dunes at Okarito Spit and Five Mile Lagoon. 218718
- Aciphylla crenulata* J. B. Armst. Common in low-alpine *Chionochloa* grassland. 203430

<i>Aciphylla horrida</i> W. R. B. Oliver	157763	Upper subalpine; mainly on outer ranges, but also recorded from head of Copland River.
<i>Aciphylla</i> cf. <i>multisecta</i> Cheesem. or <i>A. divisa</i> Cheesem.	166885	High alpine, in short grassland and fellfield. Stipules of <i>A. divisa</i> , other characters intermediate; smaller than typical plants of either spp.
<i>Aciphylla</i> cf. <i>similis</i> Cheesem.	214954	A male plant fitting the description of <i>A. gracilis</i> was collected from the west side of Neophyte (head of Callery River) at 1310 m in <i>Chionochoila pallens</i> grassland. However, on grounds of distribution it may be better regarded as a slender example of a plant collected in the Perth and Hokitika catchments, which seems closest to <i>A. similis</i> .
<i>Alseuosmia pusilla</i> Col.	157755	Occasional in lowland forest along foot of main ranges south to Fox Glacier. First found by J. Taylor in 1964.
<i>Anisotome aromatica</i> cf. var. <i>flabellifolia</i> (Simpson) Allan	166926 166575	Abundant in low-alpine grassland to 1300 m. Also occasional on piedmont, in stunted vegetation on gley podzol soils; the latter plants are rather variable, some plants having almost pinnatifid pinnae with narrow segments.
<i>Anisotome flexuosa</i> Dawson	218816	High-alpine short grassland and herbfield. Differs from preceding species in contracted inflorescence, well-developed lobes of leaf-sheaths, and lamina almost sessile.
<i>Anisotome haastii</i> (F. Muell. ex Hook.f.) Ckn. et Laing	166862 214918	Low alpine, mainly on steep bluffs and among scrub, but probably once more widespread; browse-susceptible.
<i>Anisotome imbricata</i> (Hook.f.) Ckn.	166870	High alpine, mainly in cushion-plant communities on ridges.
<i>Anisotome pilifera</i> (Hook.f.) Ckn. et Laing	179298	High alpine; occasional among rocks.
* <i>Apium filiforme</i> (A. Rich.) Hook.f.	166767	In salt-influenced vegetation on coastal cliffs.
<i>Archeria traversii</i> Hook.f.	166794	Common in subalpine scrub; descends to nearly 300 m on cold sites.
<i>Aristotelia fruticosa</i> Hook.f.	157770	Montane and subalpine, and in frosty lowland valleys; common on recent soils.
<i>Aristotelia serrata</i> (J. R. et G. Forst.) W. R. B. Oliver	166977	Lowland and montane, abundant on slips.
<i>Ascarina lucida</i> Hook.f.	195160	Lowland forest, mainly in wet gullies.
* <i>Callitriche muelleri</i> Sond.	107248	Two records from Okarito Spit; on flooded ground, and on cattle track.
* <i>Callitriche petriei</i> R. Mason	166896	Okarito Lagoon (R. Mason); also collected from mud on bank of Waitangiroto River.
<i>Caltha novae-zelandiae</i> Hook.f.	195161	Alpine, abundant in wet places in grassland.
* <i>Calystegia soldanella</i> (L.) R.Br.		Coastal, on unstable sand.

- 199264 Common in coastal scrub.
Common on high-alpine loose talus to 1 920 m; also collected in watercourse at 600 m, Lame Duck Flat. Leaves bright green, with 1-2 pairs of small lobes below the terminal leaflet. Capsules 10-12 mm long, subumbellate, and sunken among leaves through reduction of central peduncle.
Common on recent soils and disturbed ground, mainly coastal to montane, ascending to low alpine. Capsules 15-25 mm long, usually in lax racemes terminating leafy branches. Rare plants on alpine talus with simple, entire leaves and few capsules on long, slender pedicels appear to be a reduced form of this species (e.g., 214897).
Lowland, on river banks and in open swamp. Also Karangarua valley to beyond Cassel Flat on avalanche-swept slope at 300 m. Abundant in mountain valleys on river beds and slips; occasional in subalpine scrub, and on coastal slip at Galway Point. South Westland plants lie on a cline between *C. grandiflora* (type locality -Milford Sound) and *C. angustata* (type locality-Buller River). Occasional on river shingle; below Franz Josef terminal face; Fox valley; Cook River flats; Welcome Flat.
Lowland and montane, mainly on slips and in disturbed forest. Lowland to subalpine, occasional in scrub.
- 203435 Common in subalpine and low-alpine grassland, mainly on outer ranges, descending to 600 m at Architects Creek.
Damp crevices; on toches mountonnées below Franz Josef Glacier; 1 200 m at head of Callery River.
Common in openings in subalpine scrub and in subalpine grassland. Also near Skiffington Swamp on piedmont moraine, and in grassy areas below Franz Josef Glacier.
Subalpine and alpine; mainly among rocks.
Subalpine and alpine. Boggy grassland and bog.
Stony, well-drained places in subalpine and low-alpine grassland in the upper valleys of the Karangarua and Douglas Rivers.
Piedmont moraines, stunted vegetation on bogs and grey podzol.
High alpine, short grassland and herbfield.
High alpine, in late snow areas on Karangarua Saddle and the range between Karangarua and Douglas valleys. Northern limit?
- 179084
166953
166513
125729
123533
179069
166547
179104
166583
166917
166841
179247
166581
191802
191954
- **Calystegia tuguriorum* (Forst.f.) R.Br. ex Hook.f.
Cardamine "alpine"
- Cardamine debilis* Banks ex DC.
- Carmichaelia arborea* (Forst.f.) Druce
- Carmichaelia* cf. *grandiflora* (Benth.) Hook.f.
- Carmichaelia nigrans* Simpson
- Carpodetus serratus* J. R. et G. Forst.
- Cassinia vauvilliersii* (Homb. et Jacq. Hook.f.)
= *C. fulvida* var. *montana* Allan
- Celmisia armstrongii* Petrie
- Celmisia bellidiotoides* Hook.f.
- Celmisia coriacea* (Forst.f.) Hook.f.
- Celmisia* cf. *du-rietzii* Ckn. et Allan ex Martin
- Celmisia glandulosa* Hook.f.
- Celmisia gracilentula* Hook.f. sens. lat.
- Celmisia graminifolia* Hook.f.
- Celmisia haastii* Hook.f.
- Celmisia hectori* Hook.f.

- Celmisia petiolata* Hook.f. 185766
 Locally abundant in low alpine grassland; also on riverflat below Franz Josef Glacier. 166615
Celmisia sessiliflora Hook.f. 166914
 Alpine, abundant in short herbfield. 166898
Celmisia vespertina Given 179016
 High alpine, common in grassland and herbfield. 166867
Celmisia walkeri Kirk 179065
 Subalpine and low alpine, abundant in stony grassland, especially where depleted by grazing. 195182
 Mainly coastal, on dunes, rocks, and in infertile swamp; also on low-land river flats. 166923
 **Centella uniflora* (Col.) Nannf. 195191
 Mainly high alpine on damp rubble, but descending to 80 m on ground flooded by Karangarua River; also in lower Tātare gorge. 191944
Claytonia australasica Hook.f. 185787
 Occasional in lowland forest. 157795
Clematis paniculata Gmel. 179087
Colobanthus affinis (Hook.) Hook.f. 179183
 Alpine, stony ground. Some populations include plants with apiculate calyx lobes which approach *C. apetalus* var. *alpinus*.
Colobanthus canaliculatus Kirk 166516
 To 2 000 m in high-alpine fellfield. Distinguished from *C. monticola* by having both margins and dorsal midrib thickened, and it is more tolerant of late-lying snow. 203688
Colobanthus monticola Petrie 218574
 To 2 000 m in high-alpine fellfield, mainly in dry places. Only leaf margins thickened. 185797
Colobanthus strictus Cheesem. 179231
 One record; pioneer on moraines of La Perouse Glacier. 166777
Coprosma astonii Petrie 191813
 Montane and subalpine; recent soils in forest. 185736
Coprosma brunnea (Kirk) Ckn. ex Cheesem. 185736
 Lowland and montane river bed; sand dunes at Gillespies Beach. Leaves almost flat, 6–8 mm long.
Coprosma cf. *brunnea* 166516
 Lowland infertile swamp. Leaves tending triangular in cross section, 1–2 cm long. 203688
Coprosma cheesemanii W. R. B. Oliver 218574
 Subalpine and low alpine; among boulders in grassland and low scrub. 185797
Coprosma ciliata Hook.f. 179231
 Subalpine and low alpine; scrub, and among boulders. Leaf margins ciliate, drupes dark red. 166777
Coprosma colensoi Hook.f. 191813
 Montane forest on yellow-brown soils. Narrow-leaved plants keying to *C. banksii* are regarded as variant forms. 185736
Coprosma crenulata W. R. B. Oliver
 Subalpine, local on poorly drained sites.
Coprosma depressa Col. ex Hook.f.
 Subalpine, abundant in scrub and low forest on recent soils.

<i>Coprosma foetidissima</i> J. R. et G. Forst.	Lowland and montane, abundant in forest except where destroyed by browsing.	123526
<i>Coprosma lucida</i> J. R. et G. Forst.	Lowland and montane forest, coastal scrub.	123549
<i>Coprosma</i> cf. <i>parviflora</i> Hook.f.	Lowland and montane, mainly in successional scrub on river flats. Forms with red and white drupes.	125788
<i>Coprosma propinqua</i> A. Cunn.	Lowland and montane; successional scrub on river flats; succeeding burnt swamp forest; salt meadow.	199286
<i>Coprosma pseudocuneata</i> W. R. B. Oliver	Upper montane forest and subalpine scrub; abundant. Occasional on piedmont moraines.	185795
<i>Coprosma pseudocuneata</i> W. R. B. Oliver	Low alpine, usually procumbent among boulders. Distinct when growing beside "erect" plant, with smaller, more-crowded leaves.	185794
<i>Coprosma</i> "alpine"	Alpine, mainly in grassland.	185760
<i>Coprosma pumila</i> Hook.f.	Common in lowland and montane forest, especially on yellow-brown soils.	123537
<i>Coprosma rhamnioides</i> A. Cunn. (=C. polymorpha W. R. B. Oliver)	Common on lowland alluvial flats, including Cassel Flat.	218557
<i>Coprosma rigida</i> Cheesem.	Abundant in forest on recent alluvial soils, lowland to 450 m.	166795
<i>Coprosma rotundifolia</i> A. Cunn.	Mountain valleys, lowland to subalpine, abundant in successional scrub on river gravel, moraine, and slips. Also seen among rocks at 1 600 m.	185605
<i>Coprosma rugosa</i> Cheesem.	Subalpine, in scrub and shrubby grassland.	166788
<i>Coprosma serrulata</i> Hook.f. ex Buchan.	Lowland and montane valleys, ascending to 900 m. Usually in forest on recent soils. Tall shrub, with margins of shaded and juvenile l-aves ciliate. Drupe pearly white or with blue flecks, slightly didymous with one of the two pyrenes abortive. Identified by A. P. Druce.	125747
<i>Coprosma wallii</i> Petrie	Lowland and montane; abundant on moist slips, river banks, and ledges.	179078
<i>Coriaria arborea</i> Lindsay	Lowland to subalpine (occasionally low alpine) in mountain valleys. Slips and river banks.	203451
<i>Coriaria plumosa</i> W. R. B. Oliver	Lowland to subalpine in mountain valleys of Karangarua catchment. Slips and river banks.	203429
<i>Coriaria sarmentosa</i> Forst.f.	Loose ground below coastal bluffs.	185711
* <i>Cotula coronopifolia</i> L.	Coastal turf, from Okarito northwards.	208360
* <i>Cotula dioica</i> Hook.f. subsp. <i>dioica</i>	Alpine to 1 900 m, in short herbfield. Also on moraine of Douglas Glacier at 1 100 m.	179257
<i>Cotula pectinata</i> subsp. <i>willcoxii</i> (Cheesem.) Lloyd (C. <i>willcoxii</i> in Allan 1961)	Coastal to low alpine, abundant in grassy places, especially where grazed.	179105
<i>Cotula squalida</i> subsp. <i>mediana</i> Lloyd.		185707

<i>Craspedia lanata</i> var. <i>elongata</i> Allan	Lowland to lower montane, stony open river flats.	179134
<i>Craspedia</i> cf. <i>major</i> (Hook.f.) Allan	Alpine; crevices in bluffs and in flushes. Leaves to 6 × 2 cm; short, hispid hairs on lower surface; short, stiff, glandular hairs on margin. Young leaves also with somewhat inconspicuous fine hairs at right angles to margin. Heads to 2.5 cm across. Usually distinct from following species, but possibly intergrades.	214896
<i>Craspedia</i> cf. <i>minor</i> (Hook.f.) Allan	Low-alpine grassland; also Copland valley on bouldery river bank at 100 m and landslide at 750 m. Leaves to 3 × 1.2 cm; long pointed hairs on lower surface, marginal hairs not conspicuously glandular. Young leaves with dense band of hairs lying parallel to margin. Heads to 1.7 cm across.	166893
<i>Cyathodes empetrifolia</i> Hook.f.	Piedmont moraines, in stunted vegetation on gley podzol soils.	166521
<i>Cyathodes fraseri</i> (A. Cunn.) Allan	Flats of Cook and Waiho Rivers and on Okarito Spit. Also on knolls in low-alpine grassland, Burton Range.	166998
<i>Cyathodes junipertina</i> (J. R. et G. Forst.) Druce	Occasional in scrub on piedmont moraines. Also in scrub at 1 000 m, upper Karangarua valley.	199245
<i>Cyathodes pumila</i> Hook.f.	Low alpine; in short grassland on shallow soils. Fox Range, Copland Range, and Twain Col.	179200
* <i>Dichondra brevifolia</i> Buchan.	Coastal, in dune grassland. Okarito Spit and Lake Windermere.	185705
<i>Donatia novae-zelandiae</i> Hook.f.	Piedmont moraine; local in very stunted vegetation on gley podzol soils. Also forming "cushion bogs" on wet, shallow soil at 1 000–1 200 m on Bare Rocky Range and at 1 250 m at head of Wai-kukupu River.	199205
<i>Dracophyllum fiordense</i> W. R. B. Oliver	1 000–1 200 m at upper limits of tall subalpine scrub, usually sheltered by bluffs. Upper Karangarua River, Douglas River, Architects Creek, Mt Fox, Mt Moltke, Alex Knob.	191896
<i>Dracophyllum kirkii</i> Bergg.	Alpine; mainly on steep rocky slopes facing north.	166881
<i>Dracophyllum longifolium</i> (J. R. et G. Forst.) R.Br.	Subalpine scrub, abundant. Also in successions on moraine down to 200 m. In scrub on gley podzols on piedmont moraine (these plants are stunted with short leaves, and key to <i>D. oliveri</i>).	166554
<i>Dracophyllum menziesii</i> Hook.f.	Subalpine, fairly rare but distributed throughout Karangarua catchment on south aspects. One plant collected on Fox Range, above McKenna Creek.	166595
<i>Dracophyllum palustre</i> Ckn. ex W. R. B. Oliver	Piedmont moraines, in stunted vegetation on very wet areas.	179202
<i>Dracophyllum traversii</i> Hook.f.	Upper montane and subalpine, in forest and tall scrub. Also on piedmont moraine in frosty places above 300 m.	166522
		157764

- Dracophyllum uniflorum* Hook.f. 191967
Mainly subalpine and low alpine, abundant in low scrub. Occasionally down to 200 m in frosty places.
- Drapetes dieffenbachii* Hook. 228011
Occasional in low-alpine grassland on Fox Range, Alex Knob, and near Copland Pass. (Common in Landsborough catchment). 166846
- Drapetes lyallii* Hook.f. 191962
High alpine, abundant in low herbfield. Collected on Alex Knob and Mt Fox at 1 200 m, in shrubby grassland, and at 1 000 m on wet, shallow soils on the slopes of Bare Rocky Range. Southern extension of the range of a species found mainly in Nelson.
- Drosera arcturi* Hook. 199253
Mainly subalpine and low alpine, but also on piedmont moraines. Bog. 166638
- Drosera binata* Labill. 199207
Infertile swamp and pakihī, south to Lake Mapourika. Lowland and montane in low scrub and herbaceous vegetation on gley podzol soils and in bog.
- Drosera spathulata* Labill. 199210
Piedmont above 300 m, in tall scrub on gley podzol. Also in similar vegetation at 850 m in middle reaches of Karangarua valley.
- Elaeocarpus dentatus* (J. R. et G. Forst.) Vahl 166967
Very rare in lowland forest; two localities near Lake Mapourika, and at south end of Copland Range. 166971
- Elaeocarpus hookerianus* Raoul 195140
Lowland and montane forest, usually on poorly-drained sites. One record; on mud, usually under water, Okarito Spit.
- **Elatine gratioides* A. Cunn. 179251
Epilobium alsinoides subsp. *atriplicifolium* (A. Cunn.) Raven et Engel. Lowland to 1 500 m, grassland.
- Epilobium brunnescens* (Ckn.) Raven 228196
subsp. *tenuipes* (Hook.f.) Raven et Engel. Grassland on stony flat at Horace Walker River, 900 m. (Also in Landsborough valley).
- Epilobium brunnescens* (Ckn.) Raven 185737
Coastal to 1 500 m, abundant on open river beds, slips, and loose talus; also in shallow rivulets and on margins of tarns. Plants keying to the following entities have been collected, but so far it has not been possible to make convincing separations.
var. *brunnescens* The prevalent form at lower altitudes.
var. *minutiflorum* (Ckn.) Raven. Wet places, mainly above 1 200 m. Leaves tend to be more acute than in var. *brunnescens*.
- **Epilobium chionanthum* Hauss. 228071
Epilobium chloraeifolium Hauss. 107191
Epilobium glabellum Forst.f. (including *E. erubescens* & *E. rubro-marginatum*) 199287
Openings in subalpine scrub. One record; north of Havelock Creek (R. Mason & N. T. Moar). 166904
Lowland to 2 050 m; coramon on river bed, slips, alpine scree. 185740
191942

- Epilobium insulare* Hauss.
Epilobium komarovianum Lév. 214890
 580 m in swamp, top flat in Architects Crcek. Swamp, 1 200 m, Copland Range and Douglas Glacier. Distinguished from *E. brunnescens* by depressions between main veins in upper surface.
- Epilobium macropus* Hook. 228200
Epilobium melanocaulon Hook. 214941
 Shallow spring, 1 100 m, near head of Callery River. Subalpine and lower alpine; gravel flats and moraine close to Main Divide.
- Epilobium microphyllum* A. Rich. 179221
Epilobium nerterioides A. Cunn. 166997
 Lowland gravel flood plains. Upper Copland valley on landslide at 750 m; Cassel Flat, on river bank; 200 m; bouldery bank of Copland River at 100 m. Distinguished from *E. brunnescens* by distinct petiole, which can be nearly as long as lamina.
- **Epilobium pallidiflorum* Sol. ex A. Cunn. 179116
Epilobium pedunculare A. Cunn. 107189
 (= *E. linnaeoides* in Allan 1961)
Epilobium pernitens Ckn. et Allan 166780
 One record; north of Havelock Creek (R. Mason & N. T. Moar). Lowland, occasional in moist gravelly places.
- Epilobium pictum* Petrie 228041
Epilobium porphyrium Simpson et Thomson 203423
 On talus at high altitudes; also turfey depressions on summit of Alex Knob. Plants referred to this species have completely glabrous ovaries. One record; landslide in upper Copland valley at 750 m. High alpine on loose talus. Usually with *E. glabellum*, and distinguished from it by dull green or reddish leaves, earlier flowering, and upper internodes elongating as capsules ripen.
- Epilobium* cf. *porphyrium* 228042
 Scattered plants on loose moraine and scree about 1 200 m at Callery, Burton, and Fitzgerald Glaciers. Habit of *E. pycnostachyum* but leaves entire. Distinguished from *E. porphyrium* by light purplish coloration of plant, and close-set upper leaves and capsules.
- Epilobium pubens* A. Rich. 214929
 Unstable bank on Cook Bluff, 60 m; Copland valley, damp grassland at 450 m and landslides up to 750 m. Roadside through forest, Waiho glacial valley.
- Epilobium rotundifolium* Forst.f. 203422
 **Eryngium vesiculosum* Labill. 228174
 **Euphrasia disperma* Hook.f. 195149
 In stunted vegetation on gley podzols, and in bogs bordering coastal lagoons. Okarito and Five Mile.
- Euphrasia petriei* M. B. Ashwin 195155
 From Franz Josef Glacier to Fox Range, above 1 250 m in rocky places.
- Euphrasia revoluta* Hook.f. 191949
 1 200 m to 2 000 m in short grassland and herbfield. 191952

- Euphrasia* cf. *zelandica* Wettst.
Subalpine and lower alpine in grassland and on boggy ground. This is the commonest *Euphrasia* in the district. It may be closer to the Fiordland *E. australis* than to *E. zelandica*, but the pedicels are short. In the northern part of the Park some plants have the yellow of the corolla throat extending to the lobes, suggesting a transition to *E. cockayneanum*, which has not been definitely collected south of Arthur's Pass. The glandular hairs on the calyx, smaller flowers, and absence of adventitious roots distinguish this plant from *E. revoluta*.
166930
- Forstera* cf. *sedifolia* Forst.f.
Species A
Common in alpine grassland and herbfield. Plant relatively slender, with purple-backed leaves 4-5 mm long, corolla short (6-9 mm), sepals penicillate, bracts usually overlapping calyx. This plant is widespread on the South Island mountains, and is usually regarded as *F. sedifolia*, but probably incorrectly, as that name was first applied to plants collected in the south-western Fiords.
166879
- Species B
Occasional in low-alpine grassland from Mt Fox southwards. Plant stouter than the preceding species, with leaves 6-8 mm long and pale green dorsally. The corolla is 10-15 mm long, and the sepal tips nearly glabrous. This is the common species on the mountains of Fiordland and Stewart Island, and probably includes the types of both *F. sedifolia* and *F. sedifolia* var. *oculata* Cheesem.
191825
- Forstera tenella* Hook.f.
Wet openings in successional scrub in Waiho and Fox valleys below glaciers; montane to low alpine in grassland, usually in wet places. Distinguished from *F.* cf. *sedifolia* by absence of conspicuous midrib on lower leaf surface.
199202
- Fuchsia excorticata* (J. R. et G. Forst.) Linn.f.
Lowland and montane; damaged forest and wet gullies. Locally, it has been much diminished through browsing by opossums.
185728
- Fuchsia perscandens* (Ckn. et Allan)
Lowland, in forest margins and swampy glades from McDonalds Creek northwards.
185716
- Galium perpusillum* (Hook.f.) Allan
Galium tenuicaule A. Cunn. (*G. trilobum* Col.)
One record; wet ground under *Dacrycarpus dacrydioides* trees, Gillespies Beach.
179066
- Gaultheria antipoda* Forst.f.
Scattered occurrences, from sea level to 600 m; on rock, and in bog, grassland and openings in beech forest on gley podzol soils.
208333
- Gaultheria depressa* var. *novae-zelandiae*
Franklin
Mainly subalpine and alpine, to 1550 m in grassland and short herbfield, but also down to 300 m in stunted vegetation on piedmont moraines.
191976
- 191846

- Gaultheria rupestris* (Linn.f.) D. Don var.
rupestris
179079 Frosty lowland valleys to 350 m (especially near Franz Josef and Fox Glaciers) mainly in successional scrub.
- Gaultheria rupestris* var. *parviflora* Hook.f.
(*G. crassa* in Allan 1961).
166882 Subalpine and low alpine to 1600 m, in scrub and rocky places. Intermediates with var. *rupestris* occur at lower altitudes; distinction does not seem of specific rank.
- Gentiana*
Five distinct entities are recognisable, but the following names must be regarded as tentative until the genus is properly studied in New Zealand.
- Gentiana* cf. *bellidifolia* Hook.f.
166931 1200 m–1500 m, in grassland and low herbfield. Stoloniferous, forming small patches. The peduncles are <15 cm tall, and bear 1–3 large flowers.
- Gentiana* cf. *divisa* (Kirk) Cheesem.
166933 To 1600 m in alpine grassland, low herbfield, and sparsely vegetated areas. Rosettes simple, to 4 cm across; flowers densely massed on peduncles <10 cm tall.
- Gentiana* cf. *grisebachii* Hook.f.
179246 On grassy flats of Horace Walker River at 1000 m. A small plant with weak peduncles to 10 cm long, rising from a single rosette and each bearing one flower. Similar plants occur in comparable habitats at Marks Flat in the Landsborough catchment and at localities further south.
- Gentiana* cf. *patula* (Kirk) Cheesem.
166578
191877 Mainly in openings in subalpine scrub, but descending to 600 m at Architects Creek, and just reaching alpine grassland at 1300 m. Biennial with several flowering stems to 30 cm tall, terminating in umbels of up to 10 flowers.
- Gentiana* cf. *spenceri* Kirk
223986
166609 In herbaceous vegetation on piedmont moraines between Omoera and Cook Rivers. Resembles the preceding species, but rosette leaves with broad-ovate laminae abruptly narrowed to long, slender petioles. Leaves and stems reddish, corolla pinkish blue towards base.
- Geranium microphyllum* Hook.f.
Geranium sessiliflorum subsp.
novae-zelandiae Carolin
199211 Subalpine and low-alpine grassland. Grassland at 200 m on flats of Waikukupa River, also similar habitat in the Landsborough catchment. Differences from *G. microphyllum* do not seem clear cut.
- Geum parviflorum* Smith
179222 Mainly subalpine and low-alpine grassland, occasionally to floors of mountain valleys in moist, open places. Small plants from 1300 m, Mt Spencer, have some characters of *G. tetospermum* (228069).

- Gingidium montanum* J. R. et G. Forst.
(*Angelica montana* in Allan 1961)
- **Glossostigma elatinooides* Benth.
Gnaphalium audax subsp. *ruahinicum* Drury
- **Gnaphalium delicatum* Drury
Gnaphalium cf. *hookeri* Allan
- Gnaphalium involucreatum* Forst.f.
Gnaphalium cf. *keriense* A. Cunn.
- Gnaphalium limosum* Drury
Gnaphalium luteo-album L.
Gnaphalium paludosum Petrie
- Gnaphalium* cf. *paludosum*
- **Gnaphalium sphaericum* Willd.
Gnaphalium traversii Hook.f.
Gnaphalium trinerve Forst.f.
- Gratiola nana* Benth.
- **Gratiola sexdentata* R. Cunn. ex A. Cunn.
Griselinia littoralis Raoul
Griselinia lucida Forst.f.
Gunnera dentata Kirk
- 185693 Talus, alluvial gravel, and rock crevices to 1 250 m, commonest in
203476 mountain valleys of Fox and Waiho because of freedom from
browsing.
- 185724 Lowland and coastal fertile swamp.
179244 Coastal to 1 000 m in grassland, and as pioneer on dunes, slips, and
195158 alluvium.
- 179058 Collected in grassland on Okarito Spit.
195148 Damp stony places in narrow lowland valleys. Indistinguishable from
southern populations of *G. hookeri*, but it is possible that the
local plants are hybrids as they occur scattered among populations
of *G. trinerve* and *Heilichrysum bellidooides*. Also very similar to
G. cf. keriense, but distinguished, *inter alia*, by a distinct point on
the leaf tip.
- 179095 Collected from salt meadow on Okarito Spit.
157791 Banks of Karangarua and Copland Rivers below 200 m, reached by
166889 flood water.
- 191909 Lowland to 350 m, gravel banks, fans, and wet ground.
Coastal to 750 m, dunes and slips.
- 214988 Tarn margins and seepages, scattered localities from upper Karanga-
185727 rua valley to head of Waikukupa River, 800-1 300 m. Leaves
179245 folded, nearly glabrous on upper surface.
- 166536 Edges of alpine rivulets and tarns; Fritz Range to Horace Walker
Glacier. Leaves white and hairy above. Larger and much commoner
than *G. paludosum*. Fits "Example 3" in Drury 1972, p. 166.
- 218839 Coastal cliff, Okarito and on talus, Waikowhai Bluff.
203474 Collected in short grassland at 900 m, Horace Walker River.
166539 Coastal cliffs, and steep wet banks below Franz Josef and Fox
166540 Glaciers
- 191911 Grassland on Karangarua River flats, about 1.5 km up valley from
Rough Creek.
Coastal marshes.
Common in lowland and montane forest, occasionally subalpine.
Epiphyte in lowland forest.
Frequent pioneer on stony river flats and river banks, lowland to
1 000 m. Clones vary in leaf shape, and broader-leaved forms
match *G. arenaria* Cheesem.

- Gunnera* cf. *mixta* Kirk 214878
 A few patches on stream banks and grassy slopes in Karangarua valley upstream from Tui Creek, 300-600 m. The few inflorescences seen are bisexual, and the leaves match other herbarium material labelled *G. mixta*.
- Gunnera monoica* Raoul 166566
 Abundant pioneer on steep banks, slips, and river flats, from coast to mountain valleys.
- Gunnera prorepens* Hook.f. 90318
 Lowland silty alluvium, very local in this district (near Franz Josef airstrip; Karangarua River) although abundant in north Westland.
- Haloragis depressa* (A. Cunn.) Walp. 179192
 Coastal, lowland and montane. Mainly on grassy river flats.
- **Haloragis erecta* (Banks ex Murr.) Eichl. 185622
 Coastal, mainly on margins of salt-damaged forest.
- Haloragis micrantha* (Thunb.) R. Br. ex Siebold et Zucc. 166582
 Coastal in dune grassland, and in stunted vegetation on piedmont moraine.
- **Hebe canterburyensis* (J. B. Armst.) L. B. Moore 203696
 One record: small flats by creek draining piedmont moraine between Omoeroa and Waikukupa Rivers.
- **Hebe citiolata* (Hook.f.) Ckn. et Allan 166866
 Alpine, in rocky places to 2 000 m.
- **Hebe elliptica* (Forst.f.) Pennell 166634
 A major species in coastal scrub.
- Hebe macrantha* (Hook.f.) Ckn. et Allan var. *macrantha* 166907
 Common in low-alpine grassland.
- Hebe odora* (Hook.f.) Ckn. "Bog form" 191961
 Shrub <60 cm tall, with lamina c. 10 mm long, growing on poorly drained low-alpine grassland and shrubland. Recorded from Fox Range and head of Waikukupa River.
- "menziesii form" 191810
 Shrub about 1 m tall, with lamina 15-20 mm, growing on well-drained places in low-alpine belt. Recorded from Copland Range and Bare Rocky Range.
- Hebe salicifolia* var. *paludosa* (Ckn.) Ckn. et Allan 107058
 Swamp margins and coastal lagoons north of Cook River, but abundant only from Waitangiroto River northwards. In north Westland, appears to grade into *H. gracillima*.
- Hebe salicifolia* (Forst.f.) Pennell var. *salicifolia* 208380
 Coastal to montane. Common, mainly in successional scrub and on river banks.
- Hebe subalpina* (Ckn.) Ckn. et Allan 157767
 In scrub on recent stony soils, mainly subalpine, but descending to the valley floors downstream from the Franz Josef and Fox Glaciers.
- Hebe treadwellii* Ckn. et Allan 185775
 Local in stony alpine grassland from 1 150 m, to nearly 2 000 m on steep north aspects.
- 166869
 203412

- Hectorella caespitosa* Hook.f. 191838
 High alpine, abundant in low, stony herbfield and on rocky spurs. Also seen at 1000 m on moraine at head of Callery River.
- Hedycarya arborea* J. R. et G. Forst. 166635
 Common in lowland forest, especially towards the coast.
- Helichrysum bellidoides* (Forst.f.) Willd. 179118
 Lowland in mountain valleys to subalpine, common on open stony sites including river banks, talus, and depleted grassland.
- Helichrysum filicaule* Hook.f. 166989
 Lowland and montane grassy river flats; grassland on fixed coastal dunes.
- **Hemiphys suffocata* Hook.f. 199226
 Lowland, apparently very local in stunted vegetation on gley podzol soils and bog; between Omoeroa and Waikukupa Rivers, and between The Forks and Okarito.
- Hoheria glabra* Sprague et Summerhayes 166565
 Lowland in frosty valleys to widely dominant in subalpine; recent soils.
- Hydrocotyle moschata* Forst.f. 179165
 In scrub on dunes, Gillespies Beach; stream and track-side banks; lower Copland valley, 100 m.
- Hydrocotyle "novae-zelandiae"* 179115
 Three apparently distinct species key to the description in Allan (1961).
- "Pilose form" 179249
 Coastal to montane. In scrub and herbaceous vegetation on moist sites, and in swamp, sometimes as a submerged aquatic. Leaves 1-2.5 cm across, dull green and sparsely pilose.
- var. *montana* Kirk
 Lowland to low alpine, abundant in grassland which has been depleted by browsing; on recent soils. Leaves <1 cm across, bright green, glabrous lobes with subacute teeth.
- "Alpine flush form" 228050
 Recorded only in wet turf near head of Waikukupa River, 1300 m. Compared with *montana*, the leaves are more coriaceous, more deeply divided (i.e., $\frac{1}{4}$ way to petiole), and the lobes are rounded. This plant has been collected in similar habitats in other districts.
- **Hydrocotyle triparitita* R.Br. ex A. Rich. 195157
 Coastal salt meadow, and damp grassland on lowland river flats.
- Hymenanthera alpina* (Kirk) W. R. B. Oliver 179242
 Subalpine and low alpine. Occasional in rocky places. Recorded only from river bank scrub on Stony Creek (tributary of Tatare River). This form, a tall shrub with interlacing branchlets and very narrow leaves, occurs northwards to the Buller district and the North Island.
- **Hypsela rivalis* E. Wimm. 166956
 Salt meadow. Okarito Spit.
- Jovellana repens* (Hook.f.) Kranzl. 203475
 Local on moist rocky talus under forest, south to upper reaches of Karangarua River. Lowland and montane.
- 214807

- Lagenifera petiolata* Hook.f.
(*Lagenophora pumila* var. *multidentata* in Allan 1961).
Leptospermum scoparium J. R. et G. Forst.
- Leucogenes grandiceps* (Hook.f.) Beauverd
Lilacopsis cf. *novae-zelandiae* (Gand.) Hill
Linum monogynum Forst.f.
- Liparophyllum gunnii* Hook.f.
**Lobelia anceps* Linn.f.
- **Loranthus micranthus* Hook.f.
**Macropiper excelsum* (Forst.f.) Miq.
Mazus radicans (Hook.f.) Cheesem.
Meliclytus lanceolatus Hook.f.
Meliclytus ramiflorus J. R. et G. Forst.
- Mentha cunningghamii* Benth.
Metrosideros diffusa (Forst.f.) Smith
Metrosideros fulgens Sol. ex Gaertn.
Metrosideros perforata (J. R. et G. Forst.) A. Rich.
- Metrosideros umbellata* Cav.
Microseris scapigera (Sol. ex A. Cunn.) Sch. Bip. forma *linearis*
**Mimulus repens* R.Br.
Montia fontana L.
Muehlenbeckia australis (Forst.f.) Meissn.
Muehlenbeckia axillaris (Hook.f.) Walp.
Muehlenbeckia complexa (A. Cunn.) Meissn.
- Myosotis forsteri* Lehmann
Myosotis cf. *lyallii* Hook.f.
- Common in lowland and montane grassy places, especially on river banks.
- Mainly in primary and successional scrub on piedmont moraines, where it occurs in similar vegetation on the Karangarua catchment, mainly alpine, in fellfield.
- Lowland and coastal lagoons, ponds and lakes, mainly at margins. Coastal cliffs, only recorded at Blanchards Bluff in this area, but also south of Paringa.
- Piedmont; pools in infertile swamp.
On coastal cliffs within reach of spray, and in salt meadow at Okarito.
- Seen only on *Coprosma propinqua* at scattered lowland localities. A few plants on Okarito Bluff in places inaccessible to stock.
- Lowland grassy river flats to 300 m.
- Lowland and montane; very sporadic, mainly in forest margins. Abundant in lowland and montane forest on recent soils; and in places dominant on coastal talus.
- Lowland and montane, common in grassy vegetation on recent soils.
- Lowland and montane forest, abundant liane.
- Lowland and lower montane forest, abundant liane.
- Coastal scrub and lowland forest.
- Lowland to lower subalpine, abundant, often dominant.
Local; 800 m on wet ground on moraines of La Perouse Glacier; swamp at 540 m, Architects Creek.
- Intertidal mud at south end of Okarito Lagoon.
- Apparently local; lowland and coastal swamp, subalpine springs.
- Lowland and montane, liane mainly of forest margins.
- Lowland to low alpine; open stony river flats and talus.
- Lowland valley flats; forest margins and remnants. A large-leaved form.
- Lowland to subalpine, occasional on disturbed ground in shade. Scattered plants on high alpine talus in Karangarua catchment. Leafy branches crowded; cymes partly immersed among leaves; a few leafy bracts among flowers; flowers smaller but calyx relatively broader than in *M. suavis*; differs from description in Allan (1961) in that anthers are partly below corolla scales.

166951

166577

166833

191989

218709

179149

185601

191870

166637

179193

152031

166753

203458

123521

123525

123527

157773

166857

195165

191841

179103

166990

199263

166892

203436

<i>Myosotis macrantha</i> (Hook.f.) Benth. et Hook.f.	Subalpine, on recent moraine at heads of Copland and Landborough Rivers. To 30 cm tall, flowers blue, mauve, or yellowish.	203438
<i>Myosotis pygmaea</i> var. <i>drucei</i> L. B. Moore	Lowland, 750 m, upper Copland valley; 1 250 m on sparsely-vegetated talus, head of Architects Creek. Cymes bracteate throughout, lower flowers more or less distant.	203417
<i>Myosotis suavis</i> Petrie	Scattered plants on sparsely-vegetated talus and rock crevices, south to Architects Creek, 1 050-1 600 m. Rosettes solitary or a few together; retrorse hairs on lower leaf surface; peduncles few, erect, to 15 cm long; no bracts among flowers; calyx narrow.	166897
<i>Myriophyllum elatinoide</i> Gaud.	Montane and subalpine, pools and flowing water.	195197
* <i>Myriophyllum pedunculatum</i> Hook.f.	Salt marsh at Okarito and Five-Mile Lagoons.	195146
<i>Myriophyllum propinquum</i> A. Cunn.	Coastal in ponds of salt meadow, subalpine peaty tarns.	191890
<i>Myriophyllum robustum</i> Hook.f.	Common in Lake Matheson.	195156
<i>Myrsine australis</i> (A. Rich.) Allan	Common in lowland forest.	123557
<i>Myrsine divaricata</i> A. Cunn.	Lowland to subalpine, common in forest and scrub, usually on poorly drained sites.	185609
<i>Myrsine nummularia</i> Hook.f.	Subalpine; rocky places in low scrub.	166764
<i>Myrsine salicina</i> Hew. ex Hook.f.	In forest at 370 m, Mapourika Hill (discovered by A. Ure). Common further north in Westland.	11041
<i>Neomyrtus pedunculata</i> (Hook.f.) Allan	Lowland and montane forest, mainly on yellow-brown earths.	166972
<i>Nertera balfouriana</i> Ckn.	Wet turf at 1 100 m, on moraine of Douglas Glacier; bog at 900 m on moraine of La Perouse Glacier.	166778
<i>Nertera ciliata</i> Kirk	Lowland to subalpine, creeping among moss on rocks, usually in partly-shaded places. Leaf margins vary from conspicuously ciliate to nearly glabrous; in the latter case, the plants are difficult to distinguish from <i>N. depressa</i> .	203473
<i>Nertera depressa</i> Banks et Sol. ex Gaertn.	Lowland and coastal. Usually on moist banks in forest.	179119
<i>Nertera</i> cf. <i>dichondraefolia</i> (A. Cunn.) Hook.f.	Lowland and montane on forest floor. This is the common, large, hairy <i>Nertera</i> of the South Island, which is distinct from the type of <i>N. dichondraefolia</i> (R. Mason, pers. comm.).	152016
<i>Nertera scapanioides</i> Lange	Coastal and lowland infertile swamp, to 300 m.	166598
<i>Nertera setulosa</i> Hook.f.	Lowland and coastal grassy places, especially on valley flats.	166959
<i>Nothofagus menziesii</i> (Hook.f.) Oerst.	Karangarua valley from Cassel Flat to near head, 200-900 m. Locally dominant.	179191
<i>Olearia arborescens</i> (Forst.f.) Ckn. et Laing	Lowland and montane, occasionally subalpine, mainly successional scrub and river banks.	191965
		179055

- Olearia avicenniaefolia* (Raoul) Hook.f. 166633
 Coastal to montane, mainly in successional scrub, where it often dominates.
- Olearia colensoi* Hook.f. 166550
 Subalpine, widely dominant in scrub, especially on ranges nearest the sca. Descends to lowlands on frosty, poorly drained sites.
- Olearia ilicifolia* Hook.f. 166548
 Lowland in frosty valleys to subalpine. A major species in scrub and low forest on recent soils.
- Olearia lacunosa* Hook.f. 125730
 Subalpine scrub, and low forest.
- Olearia lineata* (Kirk) Ckn. (*O. virgata* var. *lineata* in Allan 1961) 166952
 Occasional in successional scrub on lowland valley flats. A small tree which is amply distinct from *O. virgata*.
- Olearia moschata* Hook.f. 203403
 Subalpine, mainly as low scrub on talus slopes.
- Olearia nummularifolia* Hook.f. 179228
 Common subalpine shrub on recent soils.
- **Olearia virgata* var. *laxiflora* (Kirk) Allan 166533
 Lowland swamps; usually sporadic, but abundant in an unburnt swamp east of Lake Mapourika.
- Oreomyrrhis colensoi* Hook.f. 166910
 Alpine grassland.
- Oreomyrrhis ramosa* Hook.f. 191923
 Montane grassy flats in Karangarua catchment.
- Orcostylidium subulatum* (Hook.f.) Bergg. 191858
 One locality; stunted vegetation on shallow soil, c. 680 m, upper Karangarua valley.
- Ourisia caespitosa* Hook.f. var. *caespitosa* 191816
 Alpine to 2000 m; steep, moist, rocky places.
- Ourisia crosbyi* Ckn. 185749
 Occasional on banks in scrub and forest, montane and subalpine.
- Ourisia macrocarpa* var. *calycina* (Col.) Ckn. 166553
 Subalpine, mainly on bluffs but probably restricted thereto by browsing. At 300 m on Omocroa Saddle.
- Ourisia sessilifolia* Hook.f. (var. *splendida* in Allan 1961) 191986
 High alpine fellfield.
- **Oxalis exilis* A. Cunn. (*O. corniculata* var. *microphylla* in Allan 1961) 191874
 Coastal; among grass at Okarito and Waikowhai Bluff.
- Oxalis lactea* Hook. 199234
 Coastal; among grass at Okarito and Waikowhai Bluff.
- Parahebe birleyii* (N. E. Brown) W. R. B. Oliver 166792
 Mainly subalpine grassland; also moist stream banks, Waioho valley below Franz Josef Glacier.
- Parahebe linifolia* (Hook.f.) W. R. B. Oliver 203434
 Rock spurs at Fitzgerald Pass, 2000–2100 m; the highest altitude recorded for a vascular plant in Westland National Park.
- Parahebe lyallii* (Hook.f.) W. R. B. Oliver 179089
 Mainly on stony river flats and stream banks in mountain valleys; but also on bluffs to 1500 m.
- Parahebe lyallii* (Hook.f.) W. R. B. Oliver 179083
 Stony river flats, moraine and stream banks, 200–1000 m.

- Parsonsia heterophylla* A. Cunn. 199257
Parsonsia is scattered through lowland and montane forest on alluvial sites; only fertile specimen definitely identified is from McDonalds Creek.
- Pennantia corymbosa* J. R. et G. Forst. 179143
 Abundant in forest on recent alluvial soils. Lowland to 450 m at Welcome Flat.
- Pentachondra pumila* (J. R. et G. Forst.) R.Br. 166891
 Subalpine and low alpine. Common in short grassland and herbfield on shallow soils.
- Pernettya alpina* Franklin 166843
 Alpine, short grassland and herbfield.
- Pernettya macrostigma* Col. 179077
 Mainly on lowland river flats, but also on Sentinel Rock.
- Phyllachne colensoi* (Hook.f.) Bergg. 166911
 Alpine, on damp ground.
- Pimelea oreophila* Burrows 191906
 Low-alpine grassland near Copland Pass, and at 870 m in stunted scrub, upper Karangarua valley; more common in Landsborough catchment.
- Pimelea prostrata* (J. R. et G. Forst.) Willd. 179001
 Pioneer on river flats, lowland to 450 m at Welcome Flat. Coastal on Waikowhai Bluff.
- Pittosporum colensoi* Hook.f. 166793
 Lowland and montane forest, mainly in successions.
- Pittosporum crassicaule* Laing et Gourlay 166555
 Primary scrub on piedmont moraines >300 m; subalpine scrub. 203656
- Plagianthus betulinus* A. Cunn. 179112
 Common, sometimes dominant, in forest on alluvial silts in valleys, lowland to 450 m at Welcome Flat.
- Plagianthus divaricatus* J. R. et G. Forst. 185712
 Salt meadow bordering coastal lagoons.
- Plantago lanigera* Hook.f. 195189
 High-alpine grassland and short herbfield, 1 200-1 800 m.
- Plantago* cf. *novae-zelandiae* L. B. Moore
 Alpine, at margins of tarns and in damp grassland, small rosettes forming patches. The leaves have scattered hairs on the upper surface, mainly near the margins, and the scapes bear 2-3 flowers. The plant cited has $2n=24$ (B. E. Groves, pers. comm.).
 On drier sites there are larger plants with more or less solitary rosettes, broader, hairier leaves, and 3-4 flowers per scape (e.g., 228081). These seem to approach *P. lanigera*, which however has $2n=12$ (Groves & Hair 1971).
- Plantago raouii* Decne 223997
 Montane and subalpine; successional scrub on river banks and moraine.
- **Plantago triandra* Bergg. 179236
 Grassland on lowland river flats; salt meadow on Okarito Spit.
- Plantago uniflora* Hook.f. 179141
 Recorded definitely only from the margin of a tarn on Fox Range, at 1 200 m. $2n=c. 60$ (B. E. Groves, pers. comm.). Leaves are glabrous, narrow elliptic, <2 mm across, and flowers are solitary. 223998

179114

Wet places on lowland river flats, including Cassel Flat.

Coastal to montane grassy places, and in forest severely damaged by browsing. Leaves 3–5 mm long, bluntly serrate, corolla predominantly white.

166564

Moist, rocky places in subalpine and low alpine grassland. Also growing with lowland form on river flats below Franz Josef Glacier. Leaves 7–10 mm long, sharply serrate, flowers somewhat larger, corolla with blue stripes running out along lobes.

166858

Alpine, stony herbfield and fellfield.

166868

Lowland and montane, usually in forest on poorly drained recent alluvium, on frosty sites.

166561

Lowland to subalpine, forest and scrub. North of the Cook River, locally dominant at the upper forest limit, but south of Cook River largely eliminated by deer.

152027

Common in lowland and montane forest.

179004

Sparingly in lowland forest below 400 m.

157801

Montane forest and subalpine scrub.

166765

Lowland to lower subalpine, forest and scrub, abundant at 600–900 m.

179046

Abundant in lowland and montane forest on recent soils.

166776

In high-alpine cushion plant communities on rock spurs, to 2 050 m. Plants generally fit var. *ciliolata*; but 203470 from Copland Pass has less-glossy leaves, and shorter, softer hairs, not confined to the leaf margins.

166880

Common in tall forest on piedmont moraines, and occasional in montane forest in mountain valleys south to Copland valley, and to as high as 900 m.

123528

Several browsed plants on crumbling schist on Twain Col (between Douglas and Karangarua Rivers) may represent the northern limit of the species.

191955

On south-facing bluffs southwards to Fox Glacier, 1 200–1 500 m. With reduction in numbers of browsing mammals seedlings are spreading on to adjacent talus.

60260

Lowland to montane; open gravelly places in forest, especially on tracks.

166597

Forms keying to several species are present, but it is not clear to what extent they are taxonomically distinct, or how much habitat-induced variation is involved.

Potentilla anserinoides Raoul
Pratia angulata (Forst.f.) Hook.f.
Lowland form

Mountain form

Pratia macodon Hook.f.
Pseudopanax anomalus (Hook.) Philipson
(*Neopanax anomalum* in Allan 1961)
Pseudopanax colensoi var. *ternatus* Wardle
(*Neopanax colensoi* in Allan 1961)

Pseudopanax crassifolius (A. Cunn.) C. Koch
Pseudopanax edgerleyi (Hook.f.) C. Koch
Pseudopanax lincarix (Hook.f.) C. Koch
Pseudopanax simplex (Forst.f.) Philipson
(*Neopanax simplex* in Allan 1961)
Pseudowintera colorata (Raoul) Dandy
Pygmaea ciliolata Hook.f.

Quintinia acutifolia Kirk

Ranunculus buchananii Hook.f.

Ranunculus godleyanus Hook.f.

Ranunculus hirtus Banks et Sol. ex DC.

Ranunculus lappaceus Smith complex

- "Alpine swamp forms"
- cf. *foliosus* Kirk
- cf. *lappaceus*
- Ranunculus lyallii* Hook.f.
- Ranunculus rivularis*: Banks et Sol. ex DC.
- Ranunculus sericophyllus* Hook.f.
- Raoulia glabra* Hook.f.
- Raoulia grandiflora* Hook.f.
- Raoulia hookeri* var. *laxa* Allan
- Raoulia subulata* Hook.f.
- Raoulia tenuiculis* Hook.f.
- **Rorippa islandica* (Oeder) Borbas
- **Rubus australis* Forst.f.
- Rubus cissoides* A. Cunn.
- Rubus parvus* Buchan.
- Rubus schmidtioides* A. Cunn.
- Rumex ficuosus* Sol. ex Hook.f.
- Samolus repens* (J. R. et G. Forst.) Pers.
- Schefflera digitata* J. R. et G. Forst.
- Schizilemma haasii* (Hook.f.) Domin var. *haasii*
- Schizilemma nitens* (Petrie) Domin
- Very small plants growing in flushes and swamp at 1180-1500 m vary in leaf shape and hairiness, and fit the descriptions of *R. lappaceus* var. *nanius*, *R. depressus* var. *stewartiae* Simpson et Thomson, and *R. maculatus* Ckn. et Allan.
- Lowland and montane, usually on wet ground at forest margin. Stems elongate, sometimes stoloniferous; scapes sometimes branched.
- Lowland and montane, on grassy river flats. Rosette plant with short, unbranched scapes.
- Subalpine and low alpine; grassland, herbfield, and low scrub. Wide-spread but now much reduced except in places inaccessible to animals. Descends to 580 m at Architects Creek.
- Coastal and lowland river flats; shallow water, wet grassland, and salt meadow.
- High alpine, fellfield where snow lies late.
- Montane and subalpine, occasional pioneer on moraine and river gravel. Coastal dune at Gillespies Beach.
- High alpine, abundant in short herbfield.
- Pioneer on lowland river flats; coastal dune at Gillespies Beach.
- High alpine, fine gravel where snow lies late.
- Abundant as pioneer on river flats and moraine, lowland to 1300 m.
- Only Westland record in CHR is from grassland on Okarito Spit, but it is a common ruderal species in other districts.
- Lowland, liane usually in swampy forest.
- Lowland and montane, abundant liane in forest.
- Local on river banks; Stony Creek, junction of Troyte and Karangarua Rivers.
- Lowland and montane forest on river flats.
- Lowland and montane grassy river flats.
- Coastal banks and cliffs, in reach of salt spray.
- Lowland and montane, a major species of forest in gullies and on coarse talus.
- Mainly high alpine in moist fellfield; occasionally descending to 600 m on moist, shaded stream banks.
- Lowland and montane; damp grassland on river flats, and in forest heavily damaged by browsing.
- 191889
223956
166754
179107
179223
107212
166835
179250
166847
166530
166875
179117
203651
185618
179072
166941
166994
203463
179295
182778
179260
191959

<i>Schizoclema trifoliolatum</i> (Hook.f.) Domin	Forest on talus slopes; 800 m in Karangarua valley, 900 m in Douglas valley.	195171
<i>Scleranthus brockiei</i> Williamson	Grassland on stony flat at Horace Walker River, 900 m. (Also in Landsborough valley).	228194
* <i>Scleranthus uniflorus</i> Williamson	One record: sand dune, Gillespies Beach.	179185
* <i>Selliera radicans</i> Cav.	Salt meadow, bordering coastal lagoons.	195151
* <i>Senecio bellidioides</i> Hook.f.	One record: stunted vegetation on piedmont moraine, at 400 m between Omoeroa and Waikukupa Rivers. The same form grows on pakihī in north Westland.	203694
<i>Senecio bennettii</i> Simpson et Thomson	Common in subalpine scrub; also Peter's Pool (Waiho valley) and Lake Matheson.	166552
<i>Senecio minimus</i> Poir. (<i>Erechtites minima</i> in Allan 1961)	Coastal to montane, on slips and disturbed ground.	166526
<i>Senecio scorzonerooides</i> Hook.f.	Subalpine and low alpine grassland; mature plants confined to bluffs because of browsing.	191801
<i>Senecio wairauensis</i> Belcher (<i>Erechtites wairauensis</i> in Allan 1961)	Lowland to subalpine; slips, roadsides, damaged subalpine scrub, etc.	185745
* <i>Solanum aviculare</i> Forst.f.	Okarito, scrub below Bluff and on spit.	199233
* <i>Sophora microphylla</i> Ait.	Shores of tidal creeks and lagoons (seed dispersed by coastal currents).	117500
<i>Stellaria parviflora</i> Banks et Sol. ex Hook.f.	Coastal and subalpine, occasional, mainly in forest and scrub.	203405
<i>Taraxacum magellanicum</i> Comm. ex Sch. Bip.	Mainly subalpine; common in stony or wet grassland.	185778
<i>Tillaea helmsii</i> Kirk	One record: damp ground on abandoned road, Okarito (R. Mason & N. T. Moar).	107265
<i>Tillaea kirkii</i> Allan	Waikowhai Lagoon beneath overhanging bank reached by tides.	218563
<i>Urtica ferox</i> Forst.f.	Common at foot of avalanche slope up-valley from Cassel Flat; other track-side records in Karangarua valley and Callery Gorge.	179109
<i>Urtica incisa</i> Poir.	Lowland to subalpine; local on disturbed ground.	179227
<i>Utricularia novae-zelandiae</i> Hook.f.	In pools in bogs on piedmont moraine; especially common near Okarito.	166641
<i>Viola cunninghamii</i> Hook.f.	Subalpine to low alpine; abundant in grassy places and herbfield; also on river flat below Franz Josef Glacier.	179123
<i>Viola filiculis</i> Hook.f.	Locally common in grassy places up to 300 m.	195183
<i>Viola lyallii</i> Hook.f.	Coastal and lowland swamp and damp grassland to 550 m. Long stolons and cordate leaves distinguish from <i>V. cunninghamii</i> , but influence of habitat needs to be studied.	179122
		214820

- **Wahlenbergia congesta* (Cheesem.) N. E.
Brown
Sand dune at Gillespies Beach. Scattered collections elsewhere on West Coast north of Greymouth. 179184
**Wahlenbergia gracilis* (Forst.f.) Schrad.
Gorse-covered dune, Gillespies Beach. 208335
Wahlenbergia pygmaea Col.
Alpine, occasionally subalpine; common in short herbfield and grass-land. 191945
Weinmannia racemosa Linn.f.
Lowland and montane: the most abundant tree in the district. 152044
- MONOCOTYLEDONS**
- Adenochilus gracilis* Hook.f.
Agropyrum scabrum Beauv.
191995
- Agrostis canina* L. (*A. dyeri* var. *delicata*
Hack. in Cheeseman 1925)
179238
- Agrostis dyeri* Petrie
Agrostis cf. *magellanica* Lam.
166905
185777
179278
191823
195190
- Aporostylis bifolia* (Hook.f.) Rupp et Hatch
Montane to low alpine; mainly in primary scrub on piedmont moraine, and low subalpine scrub and boggy grassland. 199209
Astelia fragrans Col.
157788
Astelia grandis Kirk
Lowland swamp forest, forming dense colonies on floor. 157786
Astelia linearis Hook.f. var. *linearis*
Piedmont moraines, occasional in primary scrub on wet ground. 199208
Astelia linearis var. *novae-zelandiae*
Subalpine and low alpine in wet grassland. 166899
Skottsbo.
- Astelia nervosa* Hook.f.
Lowland to subalpine in forest, scrub, and tall *Chionochloa* grassland. Plants in the open above the forest limits have striking silvery tomentum on their leaves. 157783
157785
166884
157790
151053
- Astelia nivicola* Cheesem. var. *nivicola*
Astelia petriei Ckn.
Local in alpine grassland. 218639
Astelia solandri A. Cunn.
Lowland forest; common epiphyte, and occasionally terrestrial. 179239
Baumea huttonii (Kirk) Blake
Bogs on islands and promontories in Okarito and Five Mile Lagoons.
- Baumea rubiginosa* (Spreng.) Boeck.
Baumea tenax (Hook.f.) Blake
Lowland infertile swamp, usually in standing water. Piedmont, in stunted or burnt vegetation on gley podzol soils, and in *Leptospermum* scrub on bog. 185697

<i>Baumea teretifolia</i> (R.Br.) Palla	Piedmont, in stunted or burnt vegetation on gley podzol soils, and in infertile coastal swamp. The most abundant species, recognised by the oval cross-section of its stems.	185698
<i>Bulbinella gibbsii</i> Ckn. var. <i>balanifera</i> L. B. Moore	Subalpine and low alpine grassland, not common.	166856
<i>Bulbinella modesta</i> L. B. Moore	Piedmont, in stunted vegetation on gley podzols, descending to sea level at Waikowhai Lagoon.	166579
<i>Bulbophyllum pygmaeum</i> (Smith) Lindl.	Inconspicuous epiphyte high in podocarp crowns, probably abundant near coast.	166982
<i>Carex acicularis</i> Boott	In short alpine grassland; Mt Spencer 1 400 m, Mt Myers, 1 260 m.	191829
<i>Carex carsei</i> Petrie	Wet peaty ground; records from piedmont moraine, and subalpine in Douglas-Régina area.	195186
<i>Carex cockayneana</i> Kük.	Montane to subalpine; tussocks on slips and tracks.	166831
<i>Carex comans</i> Bergg.	Stony alluvium and fixed dunes; near Fox and Franz Josef Glaciers, Okarito Spit.	166965
<i>Carex coriacea</i> Hamlin	Lowland and lower montane; the most abundant <i>Carex</i> of fertile swamp.	179108
<i>Carex dipsacea</i> Bergg.	Lax tussocks on lowland and montane grassy river flats.	191849
<i>Carex dissita</i> Boott	Lowland, occasional in swamp and on wet ground.	208355
<i>Carex echinata</i> Murr.	Infertile swamps on piedmont moraine and near coast; also subalpine at Marks Flat.	199247
<i>Carex</i> cf. <i>enysii</i> Petrie	Collected on grassy flat at junction of Horace Walker and Douglas Rivers, 1 000 m.	179248
* <i>Carex flagellifera</i> Col.	A dominant tussock on old sand dunes at Okarito Spit.	195122
<i>Carex flaviformis</i> Nelmes	Lowland and coastal; wet grassland and salt meadow.	179153
<i>Carex gaudichaudiana</i> Kunth	Lowland to subalpine; abundant in swamps at higher altitudes and in less fertile swamps at low altitudes.	185694
<i>Carex geminata</i> Schkuhr.	Collected on Omoeroa Saddle, near Okarito Forks and near Docherty Creek.	208400
* <i>Carex inversa</i> R.Br.	One record: between Potters Creek and Tatare in roadside ditch (R. Mason & N. T. Moar).	107050
<i>Carex lachenalii</i> Schkuhr.	Fringing a tarn at head of Waikukupa River, 1 300 m. Better material needed for firm identification.	228098
<i>Carex lessoniana</i> Steud.	Two collections from lowland swamp.	199255
<i>Carex maortica</i> Hamlin	<i>Leptocarpus</i> swamp at Waikowhai Lagoon; swamps at Lake Mapourika and Okarito Spit.	199262
<i>Carex petriei</i> Cheesem.	1 300 m in wet grassland, Pioneer Peak, Sierra Range.	195169

<i>Carex pumila</i> Thunb.	Coastal, locally dominant on loose dune sand.	195132
<i>Carex pyrenaica</i> var. <i>cephalotes</i> (F. Muell.) Kük.	High-alpine short herbfield, often dominant in hollows where snow lies late and on fringes of tarns. Recorded down to 1 200 m.	166864
<i>Carex secta</i> Boott	Lowland fertile swamp; also at Welcome Flat hot springs.	199261
<i>Carex sinclairii</i> Boott	Lowland to subalpine swamp; the upland equivalent of <i>C. coriacea</i> .	191938
* <i>Carex solandri</i> Boott	Coastal slopes, usually as tussocks on forest floor.	199239
<i>Carex testacea</i> Boott	Dense, reddish tussock on lowland river flats and old dunes.	179178
<i>Carex virgata</i> Boott	Swampy ground at McDonalds Creek.	199242
<i>Carpha alpina</i> R.Br.	Piedmont, in stunted vegetation on grey podzols; subalpine in bog and boggy grassland.	179207
<i>Centrolepis ciliata</i> (Hook.f.) Druce	Abundant in herbaceous bogs on piedmont moraine and on island in Five Mile Lagoon.	199252
<i>Chiloglottis cornuta</i> Hook.f.	One record; upper Waiho valley in successional scrub.	191996
<i>Chionochoa conspicua</i> (Forst.f.) Zotov ssp. <i>conspicua</i>	Coastal to 900 m; abundant on slips, river banks, and river flats.	166573
<i>Chionochoa crassiuscula</i> (T. Kirk) Zotov	Alpine, dominant on soils with impeded drainage.	166616
<i>Chionochoa</i> cf. <i>flavescens</i> Zotov	Subalpine and low alpine; mainly in low scrub on very steep, rocky slopes and bluffs. Leaves dark green, to 1 cm across, veins usually obscure.	166827
<i>Chionochoa oreophila</i> (Petrie) Zotov	High alpine, dominant grass in areas where snow lies late.	166837
<i>Chionochoa oreophila</i> var. <i>elata</i> (Petrie) Zotov	High alpine, a larger tussock tolerating less snow than <i>C. oreophila</i> . Seen only on Neophyte and at the head of the Landsborough River, but abundant east of the Main Divide. Either a distinct species or an interspecific hybrid.	218503
<i>Chionochoa pallens</i> Zotov	Low-alpine dominant grass; ascends to nearly 2 000 m.	166830
<i>Chionochoa</i> cf. <i>rigida</i> (Raoul) Zotov	Subalpine and low alpine on podzolised soils. Narrow, tough, more or less involute leaves, with 3-5 distinct veins.	166828
<i>Chionochoa rubra</i> Zotov	Piedmont moraines south of Ormoeroa Saddle, in herbaceous bog; also on flats of Landsborough River.	166576
<i>Cockaynea laevis</i> (Petrie) Zotov	Subalpine grassland on recent soils in Karangarua and Copland valleys.	179241
<i>Cordylone australis</i> (Forst.f.) Endl.	Coastal talus, lowland fertile swamp and river flats; also a few trees at Cassel Flat and Welcome Flat (550 m).	199244
<i>Cordylone indivisa</i> (Forst.f.) Steud.	Occasional in montane forest; also on road cuttings between Franz Josef Glacier and Fox Glacier.	191869
<i>Coriadaria richardii</i> (Endl.) Zotov	Lowland river flats and slips; forms dense communities on sand banks.	166574
<i>Corybas oblongus</i> (Hook.f.) Reichb.f.	Collected in upper Waiho valley, on bank.	191994

- Corybas orbiculatus* (Col.) L. B. Moore
Corybas rivularis (A. Cunn.) Reichb.f.
Corybas trilobus (Hook.f.) Reichb.f.
 **Cyperus ustulatus* A. Rich.
Dendrobium cunninghamii Lindl.
Deschampsia caespitosa Beauv.
Deschampsia chapmani Petrie
 **Desmoschoenus spiralis* (A. Rich.) Hook.f.
Deyetia aucklandica (Hook.f.) Zotov (=D. *seifolia* in Cheeseman 1925)
Deyetia avenoides var. *brachyantha* Hack.
Dianella nigra Col.
Dichelachne crinita Hook.f.
Earina autumnalis (Forst.f.) Hook.f.
Earina mucronata Lindl.
Eleocharis acuta R.Br.
 **Eleocharis gracilis* R.Br.
Eleocharis sphacelata R.Br.
Empodisma minus (Hook.f.) L. A. S. Johnson & Cutler (*Calorophus minor* in Moore & Edgar 1970)
Festuca matthewsii Cheesem.

Festuca rubra L.

Freyinetia banksii A. Cunn.
- Moist banks, etc., in lowland forest.
 Collected in upper Waiho valley, on bank.
 Collected in upper Waiho valley, on bank.
 Coastal in grassy places.
 Common epiphyte in lowland forest, and on rock bluffs.
 Salt meadow at Okarito Spit and occasional in subalpine swamps.
 Ground bared by erosion, old moraine of Horace Walker Glacier, 1000 m. (Also at Marks Flat.)
 Coastal; often dominant on unstable dunes.
 Subalpine and low alpine; grassland and openings in scrub.
 At head of Karangarua valley, at 950 m in browse-damaged grass-land. (Also on flats in Landsborough valley.)
 Lowland forest, well-lighted places on podzolised soils.
 Coastal talus and dunes; also on bank of stream up-valley from Cassel Flat.
 Abundant epiphyte in lowland forest, and on rock.
 Epiphyte in lowland forest, and on rock.
 Lowland valleys, up to Cassel Flat, on wet river sand; salt meadow on Okarito Spit and Waikowhai Lagoon; aquatic in Lake Pratt.
 Very local on leached, boggy soil. Track to Okarito Trig: near Lake Mapourika and The Forks (R. Mason & N. T. Moar).
 Local; Okarito Spit, between Okarito and The Forks, Lake Matheson. In standing water.
 Piedmont, widely dominant in stunted vegetation on gley podzols; subalpine in similar vegetation in upper Karangarua valley.
 Mountain valley flats to 1600 m on steep northerly slopes. Grass-land.
 Collected in heads of Cook, Copland, and Douglas Rivers, 800 m-1300 m, in grassland, usually on gravelly sites such as river bed and moraine. Seems distinct from the introduced *F. rubra* var. *commutata*, and accepted as native in the absence of contrary evidence.
 Lowland forest, especially abundant near coast and on north-facing slopes.
- 150782
191992
191993
166983
185603
195127
214983
123550
166878
191926
152014
191973
125784
125785
179047
107063
195134
166520
166832
166755
185786
203480
166762

- Gahnia procera* J. R. et G. Forst. 166523
Gahnia rigida Kirk 166524
Gahnia xanthocarpa (Hook.f.) Hook.f. 166969
Gastrodia cunninghamii Hook.f. 214851
Hierochloa cuprea Zotov 166605
Hierochloa novae-zelandiae Gandoger 166587
Hierochloa recurvata (Hack.) Zotov 191815
Hierochloa redolens R.Br. 166981
Juncus antarcticus Hook.f. 191902
Juncus gregiflorus L. Johnson 191983
 **Juncus maritimus* Lam. var. *australiensis* 185615
 Buch.
Juncus novae-zelandiae Hook.f. 191818
 **Juncus planifolius* R.Br. 185619
Juncus sarophorus L. Johnson 179294
Koeleria cheesemanii (Hack.) Petrie 214870
Lachnagrostis filiformis var. *semitlabra* (Hack) 203469
 Zotov
Lachnagrostis lyallii (Hook.f.) Zotov 166995
 195174
Lachnagrostis richardii Zotov 203431
 191936
Lachnagrostis sp. nov. (*Deyeuxia forsteri* var. 166962
humilior Hack. MS in Cheeseman 1925)
Lepidosperma australe (A. Rich.) Hook.f.
- Piedmont moraine, forest on gleyed or podzolised soils; montane forest on ridges.
 Piedmont moraine; infertile swamps.
 Near the sea, in forest on piedmont moraine and swamp forest.
 Rare in forest, Waiho valley and Dovetail Gorge (Karangarua River).
 Collections from openings in subalpine scrub on Alex Knob.
 Piedmont, stunted vegetation on gley podzol; low-alpine grassland on Alex Knob.
 Low-alpine grassland.
 Coastal and lowland swamp, scarce.
 Local in wet turf bordering tarns and seepages, 1 100–1 200 m.
 Lowland to montane damp grassy river flats and shallow swamp. The commonest leafless rush, often persistent in pastures.
 Okarito Lagoon, in salt marsh and shallow tidal water.
 Lowland to 1 300 m; wet turf and wet sand.
 Coastal and lowland; mainly on disturbed ground and recently burnt wet areas.
 Grazed lowland pastures of flats between Tātare River and Lake Wahapo.
 Rare in stony grassland; 1 300–1 950 m on Mt Moltke, 900 m on recent moraine of Horace Walker Glacier.
 Landslide at 750 m, upper Copland valley; 550 m, swamp, Architects Creek.
 The common *Lachnagrostis* of recent alluvial flats, but also in other grassy and pioneer vegetation, from coastal salt meadow to low-alpine grassland.
 Coastal, montane and subalpine moist places on river banks, gullies, cliffs, etc. Robust, with wide, soft leaves.
 1 200 m, west of Karangarua Saddle.
 Piedmont moraines, in stunted or burnt vegetation on gley podzol soils, and infertile swamp. Also in similar vegetation in upper Karangarua valley, and on fixed dune at Okarito Spit.

<i>Leptilaena bilocularis</i> Kirk	107240	Deeply submerged in lakes; Windermere (R. Mason & N. T. Moar), Mapourika, Pratt.
<i>Leptocarpus similis</i> Edgar	185614	Mainly coastal, standing in brackish water. Locally in infertile swamps, and on shore of Lake Mapourika.
* <i>Libertia ixioides</i> (Forst.f.) Spreng.	218767	A few plants by a tidal creek tributary to Saltwater Lagoon. Commoner near the mouth of Waitangiroto River.
<i>Libertia pulchella</i> (R.Br.) Spreng.	179150	Forest on podzolised soils on piedmont, and to 500 m in Karangarua valley.
<i>Luzula banksiana</i> Meyer var. <i>migrata</i> (Buch.) Edgar	166608	Low-alpine grassland, usually on eroding sites.
<i>Luzula colcnsoi</i> Hook.f.		Mainly high alpine, in stony herbfield. Less common than <i>L. pumila</i> , and distinguished from that species by inflorescence sessile among leaves even when capsules are ripe; tepals paler and broader, with wider scarious margins; and capsules brown, as opposed to very dark brown.
<i>Luzula crinita</i> Hook.f. var. <i>petriana</i> (Buch.) Edgar	166920 179265	Alpine, stony grassland and herbfield.
* <i>Luzula picta</i> A. Rich. var. <i>limosa</i> Edgar	107397	Three collections, all lowland (R. Mason & N. T. Moar).
<i>Luzula picta</i> A. Rich. var. <i>picta</i>	166752	Montane, pioneer on slips
<i>Luzula pumila</i> Hook.f.	179268	High alpine, common in short herbfield.
<i>Luzula rufa</i> Edgar var. <i>rufa</i>	191804	Swamp at 1 175 m, Copland Range; 1 020 m, upper Callery River among boulders; also Landsborough River.
<i>Luzuriaga parviflora</i> (Hook.f.) Kunth	166599	Basal epiphyte in lowland and montane forest.
<i>Lyperanthus antarcticus</i> Hook.f.	191968	Collected at 1 020 m in low scrub on shallow wet soil, upper Karangarua valley.
<i>Marsippospermum gracile</i> (Hook.f.) Buch.	166860	High alpine: often dominant on moist, south-facing talus slopes.
<i>Microlaena avenacea</i> Hook.f.		Lowland and montane forests, usually on loose soil deposited by rivulets during floods. Especially common where forest floor damaged by deer.
<i>Microlaena colensoi</i> (Hook.f.) Smith	166604	Alpine grassland, chiefly on shallow soils and areas depleted by browsing mammals.
<i>Microtis unifolia</i> (Forst.f.) Reichb.f.	166887	Lowland river flats, fans, and coastal talus in successional vegetation.
* <i>Notodanthonia buchanani</i> (Hook.f.) Zotov	150783	Pioneer on river silt, Cook River flats. Also on flats in Landsborough valley.
<i>Notodanthonia gracilis</i> (Hook.f.) Zotov	179159	Lowland to subalpine grassy places, especially common on recent alluvium and fans.
<i>Notodanthonia nigricans</i> (Petrie) Zotov	191851 166825	Coastal to low-alpine grassy places.

- Notodanthonia setifolia* (Hook.f.) Zotov
Often dominant in alpine grassland on shallow stony soils, especially where depleted by browsing animals. Also at 300 m on disturbed ground at Lake Gault. 166855
166871
- Oreobolus impar* Edgar
Oreobolus pectinatus Hook.f.
Low alpine, in grassland on shallow soil with impeded drainage. Subalpine and alpine; boggy grassland, margins of tarns. Also bog near Lake Mueller, 450 m. 166612
- Oreobolus strictus* Bergg.
Piedmont moraines, in stunted vegetation on grey podzols and bogs. Also in similar vegetation in upper Karangarua valley. 166947
- Phormium cookianum* Le Jolis
Subalpine forest, scrub, and grassland to 1400 m; descending on cold sites to 200 m. Coastal on solid-rock cliffs south of Paringa. 166824
- Phormium tenax* J. R. et G. Forst.
Abundant in coastal scrub and lowland fertile swamp; also at hot springs at Welcome Flat. 199243
- **Poa* cf. *anceps* Forst.
On coastal moraine bluffs; trailing down steep slopes, and as tussocks where less steep. 199241
- Poa breviglumis* Hook.f.
Subalpine scrub; especially common where vegetation damaged by browsing. 179230
- Poa cockayneiana* Petrie
Floors of mountain valleys to low alpine, often dominant on young alluvium and talus. Also collected on steep coastal slopes, and in this habitat not easily distinguished from *P. cf. anceps*. 195125
191922
- Poa colensoi* Hook.f.
Alpine grassland and low herbfield, especially abundant in high alpine. 166848
191839
179177
- Poa* cf. *kirkii* var. *collinsii* Hack.
Occasional in subalpine and low-alpine grassland. 214949
- **Poa laevis* R.Br.
Poa "firtitiana" (V. D. Zotov ined.)
Abundant on Cook and Waiho River flats. High alpine; sandy hollows on Neophyte, 1830 m (also head of Browning Creek, a tributary of Landsborough River). 179048
203657
- Poa novae-zelandiae* Hack.
Pioneer on gravel and rock near terminals of Franz Josef and Fox Glaciers. Alpine fellfield. A most variable grass. The following varieties were identified by Mr V. D. Zotov. 195185
214884
185744
- var. *desiliens* Zotov
900 m, in Douglas valley, as robust grass trailing on cliff in spray of waterfall; on Castle Rocks 1200 m. 195196
107213
203658
- var. *subvestita* Hackel
Poa pusilla Bergg.
760 m, rock in creek, near head of Architects Creek. Locally common on recent soils, coastal to 750 m. 195196
107213
203658
- Potamogeton cheesemanii* A. Benn.
Lowland and coastal ponds; also tarn at 1100 m, among Douglas Glacier moraines.
- Potamogeton ochreatus* Raoul
Potamogeton suboblongus Hagstrom
One collection: Lake Mapourika (R. Mason & N. T. Moar). Lowland swamps and pools.

- Prasophyllum colensoi* Hook.f. 150787
 Scattered occurrences in grassy or boggy places, from lowland to low alpine.
- Pterostylis australis* Hook.f. 177406
 Collected from successional forest and scrub below Franz Josef Glacier, and from Cook and Karangarua valleys to 850 m.
- Pterostylis banksii* A. Cunn. in Hook. 177405
 Collected from successional forest and scrub below Franz Josef Glacier, and from Canavans Knob.
- Pterostylis graminea* var. *rubricaulis* Cheesem. 192000
 Collected from successional forest below Franz Josef Glacier.
- Pterostylis isroniana* Hatch 199201
 Upper montane and subalpine vegetation on poor soils.
- Pterostylis venosa* Col. 214872
 Abundant liane in lowland forest, also ascending into mountain valleys.
- Ripogonum scandens* J. R. et G. Forst. 179292
 Coastal lagoons in c. 1 m of water.
- **Ruppia polycarpa* R. Mason 195154
 Grassy places and by roadside in Okarito district.
- **Schoenus masculinus* Roem. et Schult. 195145
 Lowland river flats and salt meadow.
- Schoenus nitens* var. *concinuus* (Hook.f.) Cheesem. 166991
- Schoenus pauciflorus* (Hook.f.) Hook.f. 166614
 Subalpine and low alpine, abundant on steep wet slopes; descending to valley sides of the Waicho and Fox Rivers below the glaciers.
- Scirpus aucklandicus* (Hook.f.) Boeck. 166872
 Mainly low alpine to 1 550 m but descending to 300 m on Omoeroa Saddle; bogs, wet grassland, margins of tarns.
- Scirpus caligenis* Cook 191914
 Collected from 1 050 m upper Karangarua valley in browse-damaged grassland, and from damp pasture near Lake Mapourika (R. Mason & N. T. Moar).
- Scirpus cernuus* Vahl 107197
 Foot of Okarito Bluff (R. Mason & N. T. Moar). (Also collected in adjacent districts).
- Scirpus habrus* Edgar 179092
 Wet ground, and grazed swamp, forest, and grassland; from coast and piedmont moraine to 800 m in Karangarua valley.
- **Scirpus inundatus* (R.Br) Spreng. 195143
 Salt meadow, Okarito Bluff to Lake Windermere.
- **Scirpus lacustris* L. 199288
 Lake Windermere and north end of Okarito Lagoon (i.e., less brackish part); standing in 0.6 m of water.
- **Scirpus nodosus* Rottb. 166976
 Coastal grassy places.
- **Scirpus prolifer* Rottb. 107227
 Swamps near the coast; only record from area is between Okarito and The Forks (R. Mason & N. T. Moar).
- **Scirpus pungens* Vahl (*S. americanus* in Moore & Edgar 1970) 195123
 Coastal lagoons, intertidal mud, and *Leptocarpus* marsh.
- Scirpus reticularis* (Col.) Edgar 199260
 Swamp at Lakes Wahapo and Mapourika; muddy track at junction of Karangarua and Copland Rivers.
- **Scirpus subtilissimus* (Boeck.) Blake 195144
 Collected from pakihī and salt meadow near Okarito.

- Thelymitra longifolia* J. R. et G. Forst. Recent gravels in Waiho and Fox valleys below the glaciers; coastal talus on Waikowhai Bluff. 150784
- Thelymitra venosa* R.Br. Piedmont moraines, in stunted vegetation on gley podzols; similar vegetation in upper Karangarua valley; on Sentinel Rock. 150780
- **Triglochin striatum* Ruiz et Pav. Salt meadow at Okarito and Five Mile Lagoons. 195152
- Trisetum antarcticum* Trin. Montane and subalpine grassland, on river flats, moraine, and talus; swamp at 600 m, Architects Creek. 179218
- Trisetum youngii* Hook.f. Subalpine and low-alpine grassland. 179229
- **Typha orientalis* C. B. Presl Lowland swamp; very local. 195133
- Uncinia affinis* (C. B. Clarke) Hamlin Grassy flats in mountain valleys of Karangarua and Landsborough Rivers. Dense tussocks with dark brown, sheathing leaf bases. 191921
- Uncinia clavata* (Kük.) Hamlin Lowland to 1 000 m, slips and track edges through forest. 203443
- Uncinia distans* Boott By tracks at 750 m, upper Copland valley and at Lake Matheson. 203442
- Uncinia divaricata* Boott Subalpine and low alpine in stony grassland; montane as pioneer on moraines and slips. 179264
- Uncinia drucei* Hamlin Alpine; collected at 1 500 m, on Burton Range, and at 1 200 m, by Castle Rocks near Franz Josef Glacier. Forms low, open turf. 214846
- Uncinia egmontiana* Hamlin Grassy flats in lowland and mountain valleys. Dense tussocks with light brown, sheathing leaf bases. 185607
- Uncinia ferruginea* Boott Lowland to 750 m, slips and track edges through forest. 228096
- Uncinia filiformis* Boott Mainly in forest on leached soils on piedmont moraines; also collected from subalpine forest, Alex Knob. 203692
- Uncinia fuscovaginata* Kük. Collected at 1 200 m, grassland on Copland Range near head of Rough Creek. "Very rare in Westland" according to Moore & Edgar (1970). 191887
- Uncinia gracilentia* Hamlin Montane and subalpine; slips, scrub, and forest; also collected once in grassland at 825 m. 203418
- Uncinia involuta* Hamlin Subalpine scrub, Alex Knob and Copland Range. 185734
- Uncinia longifractus* (Kük.) Petrie Rock crevice on Mt Spencer, 1 200 m. Also at Marks Flat, on rock in *Nothofagus menziesii* forest at 1 000 m. 228079
- Uncinia* cf. *nervosa* Boott Leached, boggy soil from 300–1 350 m; *Leptospermium* scrub, bog, and grassland, apparently local. 166562
- Uncinia rupestris* Raoul Piedmont and montane, in forest and scrub on gley podzols. 191867
- Uncinia sinclairii* Boott Subalpine, local in short grassland on stony river flats. 195194
- Uncinia uncinata* (Linn.f.) Kük. The common *Uncinia* of lowland and montane forest and successional scrub. 185748
- Uncinia viridis* (C. B. Clarke) Edgar Collected from alpine grassland and herbfield, Fox and Burton Ranges. 166913

- Uncinia zotovii* Hamlin
 **Zostera muelleri* Aschers. 185751
 **Zoysia minima* (Colenso) Zotov 195166
 179160
- HYBRIDS**
- + + *Aristotelia fruticosa* × *serrata* 157771
 + + *Asplenium bulbiferum* × *flaccidum* 214806
 + *Asplenium falcatum* × *flaccidum* 155793
 + + *Carmichaelia grandiflora* × *nigrans*
 + + *Celmisia armstrongii* × *coriacea* 179138
 + *Celmisia gracilenta* × *sessiliflora* 185792
 + + *Coprosma astonii* × *depressa* 214956
 + *Coprosma crenulata* × *serrulata* 166739
 + + *Coprosma propinqua* × *robusta* 191812
 + *Coriaria plumosa* × *sarmentosa* (= *C.*
 “*lurida*”) 208392
 + + *Daerydium intermedium* × *laxifolium* 203452
 + + *Epilobium alsinoides* subsp. *atriplicifolium*
 × subsp. *tenuipes* 199249
 + + *Fuchsia excorticata* × *perscandens* (= *F.*
 “*colensoi*”) 228197
 + + *Gautheria depressa* × *rupestris* var.
parvifolia
 + + *Gautheria rupestris* × *Pernettya*
macrostigma 166632
 + + *Muehlenbeckia australis* × *axillaris* 203461
- Lowland and montane on somewhat leached soil in forest. More tufted and robust than the turf-forming *U. rupestris*, with which it apparently hybridises.
 Okarito Lagoon, permanently submerged at southern (more saline) end.
 Coastal dunes at Gillespies Beach and Okarito Spit.
- + + Indicates that parentage assigned is almost certainly correct.
 + Indicates some doubt as to either parentage or hybrid origin.
 Collected in Waiho valley below Franz Josef Glacier.
 Waiho valley below glacier.
 Waiho valley below glacier.
 A mixed population below Fox highway bridge contains intermediate, although Simpson (1945) places parents in different subgenera.
 Hybrid clone among parent plants. Moraines of La Perouse Glacier.
 Scattered plants in alpine grassland, upper Callery valley and Douglas Pass.
 900 m in forest in upper Copland valley; putative parents present.
 1 200 m south end of Copland Range. Putative parents present, but plant may be reduced *C. serrulata*.
 Solitary plants in swamp at head of Lake Wahapo, and on Okarito Spit. *C. robusta* not seen nearer than Kumara.
 Clones intermediate in leaf characters between putative parents. Either a hybrid, or less likely, a good species.
 Semi-succulent in scrub on the piedmont moraines. Quinn & Rattenbury (1972) discuss putative origin.
 Grassland on stony flat at Horace Walker River, 900 m.
 Hybrid plants occur where the parents grow together from McDonalds Creek northwards.
 975 m, under scrub regenerating after fire, Horace Walker moraines.
 Occurs with parents in Waiho valley below glacier.
 Clones in two localities where putative parents meet; 850 m in upper Copland valley; up-valley from Cassel Flat, 250 m. Flowers, but probably sterile.

- + + *Olearia arborescens* × *titicofolia* 208348
 + + *Olearia arborescens* × *lacunosa* 228082
 + + *Olearia avicenniaefolia* × *moschata* 203404
 + + *Olearia titicofolia* × *lacunosa* 191864
 + + *Olearia moschata* × *nummularifolia* 185791
 + + *Ourisia caespitosa* × *macrocarpa* (= *O.*
"cockayneana") 191948
 + + *Podocarpus hallii* × *nivalis* 203477
 + + *Podocarpus nivalis* × *totara* 203670
 + *Polystichum cystostegia* × *vestitum* 125782
 + + *Pseudopanax anomalum* × *simplex* 214955
 125778

Collected near Franz Josef Glacier, 200 m and 1 000 m.
 Collected from summit of Alex Knob by A. Ure.

With putative parents on moraines of Balfour Glacier, 840 m; and
 at Castle Rocks, 1 000 m and 1 200 m.

Occasional seedlings with parents, rarely adult plants.

Occasional plants among parents, pioneer on moraines.

One plant seen on Fox Range, 1 540 m.

Hybrids common where parents meet on mountains near Main
 Divide; also occasional hybrids on piedmont moraines where *P.*
nivalis absent.

Possible parentage of a large shrub on Omoeroa Saddle, 300 m.

1 200 m, hole between rocks, Neophyte.

Occasional plants in lowland and montane forest.

ADVENTIVE SPECIES

- **Achillea millefolium* L. 214860
Agrostis stolonifera L. 166986
Agrostis tenuis Sibth. 191856
Aira caryophyllea L. 166625
Aira praecox L. 228179
Alopecurus geniculatus L. 191807
Ammophila arenaria (L.) Link 218717
Anagallis arvensis L. 214823
 **Anthoxanthum odoratum* L. 228083
Barbarea intermedia Bor. 214810
Bellis perennis L. 218794
Bromus mollis L. 214829
Bromus racemosus L. 179190
Callitriche stagnalis Scop. 203675
Calystegia sepium (L.) R.Br. 218796
Carex ovalis Good. 179100

Christmas Flat, beside hut, 750 m. Common on lowland valley flats.
 Only collected on gravel beach at Waihapi Creek mouth; but prob-
 ably common around brackish lagoons.

Common on river flats, up to 300 m. Locally common on higher
 flats, including Christmas Flat at 750 m.

Stony river flats.

Collected on gravel in Waiho glacial valley at 200 m.

Lowland wet pasture and swamp; also collected in swamp at 1 200 m
 on Copland Range.

Five Mile and Okarito. Dominant on sand dunes.

Okarito; talus behind the beach.

Common in grassland on lowland and montane river flats.

Franz Josef; roadside at motor camp.

Lawn, Franz Josef.

Okarito, coastal talus; Five Mile, sand dune; roadside, Franz Josef.
 Collected on sand dune at Gillespies Beach.

Common in lowland pools and small streams.

Garden weed and on roadsides, in Franz Josef district.

Open grassy places, up to Cassel Flat (200 m), Skiffington Swamp
 (300 m), and Architects Creek (565 m).

- Carex vulpinoidea* Michx. 107642
 **Cerastium holosteoides* Fries 203450
Cirsium arvense (L.) Scop. 214858
Cirsium vulgare (Savi.) Ten. 203410
 214822
 203446
 228106
- Collected from ditch between Potters Creek and Tataré (R. Mason & N. T. Moar).
 Stony places; the most widespread exotic, occurring to above 900 m. Common on lowland river flats. Patch at 905 m at Horace Walker-Douglas junction.
 Gravelly places, especially landslides, to heads of mountain valleys (highest altitude 750 m).
 Okarito, talus just above beach.
 Collected on landslide at 750 m, upper Copland valley.
 Roadsides and disturbed ground, spreading by corns.
- Crocsmia* × *crocsmiiflora* (Nichols.) Brown
- Cuscuta epithymum* Murr. 179018
Cynosurus cristatus L. 228084
 **Dactylis glomerata* L. 218725
Deutzia scabra Thunb. 228167
Digitalis purpurea L. 208334
Elodea canadensis Michx. 228105
Epilobium adenocaulon Hausskn. 203421
Festuca arundinacea Schreb. 208387
Festuca rubra var. *commutata* Gaud. 179125
Gallium palustre L. 166954
Glyceria declinata Breb. 179128
Gnaphalium spicatum Lam. 208359
Hieracium pilosella L. 228198
- Hieracium prealtum* Gochnat.
- Holcus lanatus* L. 185723
Hordeum murinum L. 166624
Hydrangea macrophylla (Thunb.) Ser. ex DC. 218722
- Hypericum androsaemum* L. 218737
- Hypericum hookerianum* Wright et Arn. 107396
- Hypericum humifusum* L. 107055
Hypericum perforatum L. 208306
 218802
- Cook River flats, parasitic on *Raoulia tenuicaulis*; lawn, Franz Josef. Lowland pastures.
 Coastal and lowland grassland.
 Roadside at MacDonalds Creek, probably persisting from cultivation.
 Gillespies Beach, gorse-covered dunes.
 Found in Lake Mapourika in 1974.
 Mainly gardens and waste ground. Also at Welcome Flat.
 Wet lowland places.
 Common on river flats, to above 600 m.
 Lowland, wet ground and swamps.
 Wet pasture.
 Bulldozer track through scrub, Waiho glacial valley, 215 m.
 Stony grass flat at Horace Walker River, 900 m; 2 patches seen in 1975.
 Grass flats; confluence of Horace Walker and Douglas Rivers, middle flat at Architects Creek. Christmas Flat; and since 1970 has become abundant in upper reaches of Copland valley.
 Pasture and river flats, including Architects Creek at 550 m.
 Five Mile, on sand dunes.
 Fixed dunes; Five Mile, and a few other places near old settlements. Scarcely naturalised.
 Collected between Lake Mapourika and Tataré River (R. Mason & N. T. Moar).
 Collected between Potters Creek and Tataré River (R. Mason & N. T. Moar).
 Roadside bank at Gillespies Beach.
 Collected by G. Rennison, on roadside north of Fox Glacier.

- Hypochoeris radicata* L.
Impatiens glandulifera Royle
Juncus acuminatus Michx.
Juncus articulatus L.
Juncus bufonius L.
Juncus bulbosus L.
Juncus canadensis Gay
Juncus effusus L.
Juncus tenuis Willd.
Leontodon taraxacoides (Viel.) Merat.
Lepidium ruderale L.
Leycesteria formosa Wall.
Lolium multiflorum Lam.
 **Lolium perenne* L.
Lonicera periclymenum L.
Lotus pedunculatus Cav.
Lupinus arboreus L.
Luzula congesta (Thuill.) Lej.
Mimulus moschatatus Doug.
Montia verna Necker
Myosotis caespitosa Schultz
Nasturtium microphyllum (Boenn.) Rchb.
Nasturtium officinale R.Br.
Ornithopus perpusillus L.
Oxalis articulata Savigny
Parentucellia viscosa (L.) Cäruel
Parochetus communis Hamilt.
Paspalum dilatatum Poir.
 **Phleum pratense* L.
Plantago hirtella H. B. K.
Plantago lanceolata L.
- Grassy river flats.
 Around Franz Josef village and on roadside between Franz Josef and Lake Mapourika.
 Wet pasture, lower Tatare River; in tidal river, Waitangitoto.
 Lowland, abundant on wet ground and in shallow swamps. Architects Creek, 600 m.
 Lowland grassland, abundant; also Lame Duck Flat at 600 m.
 Lowland, submerged in lakes and pools.
 Disturbed ground; to 600 m in upper Karangarua valley.
 Grassy river flats; to 600 m in upper Karangarua valley, and at 1 000 m, damp ground on moraine of Horace Walker Glacier.
 Grassy river flats, especially on tracks; follows Copland track to 900 m.
 In grassland as pioneer on river flats, lowland moraine, dunes, etc.
 Coastal talus at Waikowhai Bluff and Waiho Bluff.
 Spreading along roadsides through lowland forest.
 Collected as pioneer on river silt, Cassel Flat.
 River flats.
 Between Potters Creek and Tatare River (R. Mason & N. T. Moar); also persisting from cultivation at Five Mile.
 Pioneer on river flats.
 Five Mile and Okarito Spit, on sand dunes.
 Lowland river flats.
 Collected south of Lake Mapourika (R. Mason & N. T. Moar).
 Shallow streams, roadside water tables.
 Shallow streams on river flats, including Cassel Flat and Architects Creek at 600 m.
 Between Potters Creek and Tatare River (R. Mason & N. T. Moar).
 Shallow water, lowland.
 Floor of shingle pit by road, Lake Mapourika.
 Garden escape at Okarito.
 Stony, open grassland, Cook and Waiho River flats.
 Roadsides in Waiho and Fox valleys, below the glaciers.
 Collected at Okarito Lagoon (R. Mason & N. T. Moar).
 Lowland pastures.
 Lowland and coastal grassy places.
 Lowland grassland.
- 179145
 205247
 214999
 125789
 123558
 179139
 191981
 191984
 179102
 166544
 208338
 179051
 179127
 179179
 107053
 179022
 218723
 179144
 107060
 203674
 179017
 107056
 203673
 218807
 185714
 228163
 179007
 107256
 228085
 199212
 179023

- Poa annua* L.
 Lowland grassland and waste places; also at 750 m on landslide in upper Copland valley, and at 1 000 m at Horace Walker River at bivouac site.
 203466
- Poa pratensis* L.
 On sand dune at Gillespies Beach; flats of Waiho glacial valley; swamp at 1 200 m on Copland Range.
 179166
 191808
 228164
 208368
 195167
 218808
 208385
 214813
 214861
 195137
 183672
 179024
- Poa trivialis* L.
 Roadside through forest, Waiho glacial valley.
 218562
- Polycarpon tetraphyllum* L.
 Coastal sand, Okarito.
 228164
- **Polygonum persicaria* L.
 Wet pastures.
 208399
- Prunella vulgaris* L.
 Lowland grassy places.
 185715
- Ranunculus flammula* L.
 Flat at head of Lake Wahapo, pool in swamp; Waikukupa flats.
 179181
- Rubus fruticosus* L. aggr.
 Abundant on roadsides and rough pasture.
 228059
- Rumex acetosella* L.
 Coastal sand, Okarito; beside hut at Christmas Flat, 750 m.
 179188
- Rumex crispus* L.
 Salt meadow at Okarito Lagoon.
 228086
- **Rumex obtusifolius* L.
 Pasture; up to 200 m at Cassel Flat.
 179142
- Sagina procumbens* L.
 Grassland and coastal banks; to 950 m in Landsborough valley.
 218561
- Salix capraea* L.
 Clump persisting in wet hollow, at end of Waiho Bridge, surrounded by young forest.
 218711
- Salix fragilis* L.
 Mouth of Macdonalds Creek and adjacent shores of Lake Mapourika.
 203409
- Sarothamnus scoparius* (L.) Wimmer
 One shrub on grass flat, Waiho River.
 179186
- Scilla non-scripta* L.
 Okarito, persisting from old gardens.
 218559
- Scirpus setaceus* L.
 Wet hollows, Cook River flats and Lake Windermere.
 107208
- Senecio jacobaea* L.
 Lowland, among pioneer vegetation and grassland on river flats and fans.
 214825
- Senecio sylvaticus* L.
 Collected on sand dune at Gillespies Beach.
 179176
- **Sisymbrium officinale* (L.) Scop.
 Recorded only where supplies air-dropped, 950 m, junction of Horace Walker and Douglas Rivers.
 228086
- Sisyrinchium "chilense" Hook.*
 Collected in grassland on Cook River flats.
 179142
- Solanum nigrum* L.
 Occasional on disturbed ground.
 218561
- Soliva pterosperma* Less.
 On gravel at Franz Josef Motor Camp.
 218711
- Sonchus asper* (L.) Hill
 Mainly coastal, on disturbed ground, cliffs, and talus; also at 750 m on landslides in upper Copland valley.
 203409
- Sonchus oleraceus* var. *integrifolius* Walb.
 Collected on sand dune at Gillespies Beach.
 179186
- Spergula arvensis* L.
 Gravel on roadside, Franz Josef.
 218559
- Spiraea japonica* L.
 Collected near The Forks and between Potters Creek and Tatare River. (R. Mason & N. T. Moar).
 107208
- Stellaria alsine* Grimm
 Coastal talus, Okarito.
 214825
- Stellaria graminea* L.
 Wet grassland.
 179176

<i>Stellaria media</i> (L.) Vill.	214824
<i>Taraxacum officinale</i> Weber	199293
<i>Trifolium dubium</i> Sibth.	179170
<i>Trifolium pratense</i> L.	214859
* <i>Trifolium repens</i> L.	228087
<i>Ulex europaeus</i> L.	
<i>Veronica arvensis</i> L.	214815
<i>Veronica serpyllifolia</i> L.	179169
<i>Vicia angustifolia</i> L.	166756
<i>Vulpia myuros</i> (L.) Gmel.	179050
	179175

Coastal talus. Okarito.
 Stony river flats; to 1 000 m at McKenna Creek.
 Pioneer on river flats.
 Cassel Flat, 200 m in *Agrostis tenuis* grassland.
 Lowland pastures.
 Common on lowland river beds (especially of Waiho), and along coastal cliffs.
 Collected on sand dune at Gillespies Beach.
 Damp grassland, roadsides.
 Collected in roadside ditch north of Lake Mapourika.
 Sand dune, Five Mile; stony river flats, Cook River and Christmas Flat.

APPENDIX I

SPECIES LISTED BY COCKAYNE, 1930, BUT NOT COLLECTED DURING PRESENT SURVEY (Modern names in brackets)
FERNS AND RELATED GROUPS

<i>Azolla rubra</i>	According to Miss R. Mason, has never been collected in Westland.
<i>Botrychium australe</i>	Searched for without success.
<i>Dryopteris</i> (= <i>Ctenitis</i>) <i>decomposita</i>	Probably stunted plants of <i>G. circinata</i> .
<i>Gleichenia alpina</i>	Common on forest floor in north Westland, but not collected south of Lake Kanieri.
<i>Hymenophyllum bivalve</i>	
<i>Hypolepis punctata</i>	
<i>Hypolepis tenuifolia</i>	
<i>Ophioglossum pedunculatum</i>	

DICOTYLEDONS

<i>Acena sanguisorbac</i> var. <i>pilosa</i>	<i>A. caesiola</i> var. <i>pilosa</i> in Allan 1961.
<i>Acena sanguisorbac</i> var. <i>pusilla</i>	<i>A. pusilla</i> in Allan 1961.
<i>Angelica decipiens</i>	Probably = <i>C. graminifolia</i> .
<i>Celmisia alpina</i>	
<i>Celmisia discolor</i>	
<i>Celmisia laricifolia</i>	
<i>Coprosma robusta</i>	Not seen south of Kumara.

- Coriaria angustissima*
Cotula pyrethrifolia
Dichondra repens
Drapetes villosus
Epilobium junceum
Epilobium nimumularifolium
Epilobium westlandicum
Erechtites arguta
Euphorbia glauca
Euphrasia cockayneana
Euphrasia laingii
Galium propinquum
Gentiana montana
Geum uniflorum
Gunnera albocarpa
Itaasia sinclairii
Hebe haastii var. *macrocalyx*
Hydrocotyle dissecta
Limosella lineata
Myoporum laetum
Myriophyllum voitschii
Olearia cymbifolia
Parsonsia capsularis
Ranunculus macropus
Scleranthus biflorus
Senecio bidwillii var. *viridus*
Senecio lautus
Senecio lyallii
Spergularia marginata
Wahlenbergia albomarginata
- Possibly = *C. plumosa*.
 Probably = *C. pectinata* var. *willcoxii*.
 Possibly = *D. brevifolia*.
 Possibly = *D. multiflorus*.
 Either = *E. billardierianum* var. *cinereum* or *E. hirtigerum* (neither collected).
 According to Dr P. H. Raven (pers. comm.), native only in North Auckland.
 Nomen nudum?
 Shore, Okarito (Cockayne 1912).
 See comment under *E. zelandica*.
 Outside range. Probably = *E. petrici*.
 Possibly = our *G. tenuicaule*.
 See Appendix III.
 Probably = our *G. monoica*.
 See Appendix III.
- Possibly = our *M. pedunculatum*.
 Not known from Westland.
- Probably = *S. uniflorus*.
 Specimen at CHR is labelled Franz Josef, but probably in error.
- Probably = *W. pygmaea*.
- Probably = our *Cockaynea laevis*.

MONOCOTYLEDONS

- Asperella gracilis*
Caladenia lyallii
Carex buchanani
Carex diandra

Carex forsteri
Carex subdola
Carex wakatipu
Cordyline banksii
Deschampsia novae-zelandiae
Deyeuxia quadrifida
Festuca novae-zelandiae
Juncus holoschoenus
Lemna minor
Luzula traversii
Danthonia (= *Notodanthonia*) *pilosa*
Poa astonii
Spiranthes sinensis
Trisetum subspicatum
Uncinia banksii

See Appendix III.

Certainly = *F. mathewsii*.
 Westland National Park not within known range.
 Probably refers to another species such as *N. gracilis*.
 Westland National Park well outside known range.

HYBRIDS - FERNS

Asplenium adiantoides (= *hookerianum*) ×
bulbiferum

Asplenium adiantoides × *flaccidum*

Asplenium adiantoides × *lucidum*

Asplenium lucidum × *bulbiferum*

Asplenium lucidum × *flaccidum*

Asplenium obtusatum × *bulbiferum*

Hymenophyllum peltatum × *tunbridgense*

(= *revolutum*)

Hypolepis tenuifolia × *punctata*

Hypolepis tenuifolia × *rugosula*

Leptopteris (= *Todea*) *hymenophylloides* ×
superba

Species not found in proximity.

Species grow together, but variation in *A. hookerianum* would make hybridism difficult to substantiate.

Species not found in proximity.

Parent species not seen in district.

HYBRIDS - CONIFERS

Podocarpus acutifolius × *hallii*

Podocarpus acutifolius × *nivalis*

Hybrids with *P. acutifolius* would be indistinguishable from those with *P. totara* var. *waihoensis* as a putative parent.

HYBRIDS – DICOTYLEDONS

- Anisotome haastii* × *pilifera*
Celmisia cortacea × *petiolata*
Celmisia discolor × *walkeri*
Celmisia longifolia (= *vespertina?*) × *coriacea*
Celmisia sessiliflora × *longifolia*
Coprosma colensoi × *foetidissima*
Coprosma ramulosa (= *depressa*) × *pseudocuneata*
Coriaria angustissima × *C. lurida*
Coriaria angustissima × *sarmentosa*
Coriaria arborea × *sarmentosa*
Coriaria arborea × *lurida*
Coriaria lurida × *sarmentosa*
Craspedia minor × *major*
Dracophyllum kirkii × *longifolium*
Dracophyllum longifolium × *uniflorum*
Dracophyllum uniflorum × *kirkii*
Epilobium pubens × *glabellum*
Euphrasia cockayneana × *zelandica*
Gaultheria antipoda × *rupestris*
Gaultheria perplexa (= *Pernettya macrostigma*) × *depressa*

See notes under *E. zelandica*.

HYBRIDS – MONOCOTYLEDONS

- Astelia nervosa* (= *fragrans*) × *cockaynei* (= *nervosa*)
Astelia cockaynei × *petriei*
Danthonia (= *Chionochoila*) *crassiuscula* × *flavescens*
Danthonia flavescens × *cunninghamii* (= *conspicua*)

C. discolor was not found in present survey.

The wide variation within *A. nervosa* in different habitats may account for this report.

Probably these reported *Chionochoila* hybrids would now be regarded as distinct species.

Danthonia flavescens × *raoulii* var. *rubra*
 (= *C. rubra*)
Phormium tenax × *colensoi*
Uncinia caespitosa × *filiformis*

Celmisia sinclairii
Clematis parviflora var. *trilobata*
Coprosma arcolata
Danthonia semiannularis
Dracophyllum urvilleanum var. *montanum*
Epilobium confertifolium subsp. *tasmanicum*
 (Hauss.) Raven et Engel.

Euphrasia monroi
Fagus solandri
Fagus (= *Nothofagus*) *fusca*
Gaimardia setacea Hook.f.
Laurelia novae-zelandiae

Lycopodium laterale

APPENDIX II

OTHER SPECIES RECORDED OR POSSIBLY PRESENT

Probably = *C. du-rictzii*
 Hamilton 1879.
 Cockayne 1910 (See Appendix III).
 Cockayne 1912.
 Three sheets collected from sparse vegetation at 1600–1650 m
 include material identified by P. H. Raven as *E. tasmanicum*.
 Most, if not all, of this is reduced plants of *E. alsinoides* and *E.*
porphyrium.

Cockayne 1912. Westland National Park outside range of species.
 Hamilton 1879 (Holloway 1954, p. 384 records a stand of *Nothofagus*
solandri var. *cliffortioides* on Bald Hill south of Paringa).
 Hamilton 1879.
 CHR 120139 is annotated as collected on Alex Knob by G. Simpson,
 but likely sites searched without success.
 Holloway (1957) cites Douglas as reporting a single tree in Copland
 valley; on the grounds of known ecology and distribution, this
 is an extremely unlikely record.
 Hamilton 1879. Probably confined to western Nelson.

APPENDIX III

FURTHER INDIGENOUS SPECIES COLLECTED IN WESTLAND BETWEEN THE HOKITIKA AND HAAST RIVERS

Acacna fissiitipula Bitter 223936
Acacna inermis Hook.f. 214992
 950 m, in open scrub on moraine, Marks Flat.
 450 m, in grassland on a stony flat at the junction of Landsborough
 River and Zora Creek.

179271
 179262
 214939

- Acianthus fornicatus* R.Br. 107283
Agrostis parviflora R.Br. 214967
Asplenium trichomanes L. 223943
Carmichaelia cf. *arborea* (Forst.f.) Druce 218506
 218509
Carmichaelia cf. *violacea* Kirk 218508
Coprosma arcolata Cheesem. 218972
Coprosma atropurpurea (Ckn. et Allan) 223926
 Moore (*C. petrei* var. *atropurpurea* in Allan 1961)
Cordylinc banksii Hook f. 181729
Cotula perpusilla Hook f. 223973
Deschampsia cf. *chapmani* Petrie 223960
Eleocharis pusilla R.Br. 223916
Geum uniflorum Buchan. 223915
Glossostigma submersum Petrie 256902
Gnaphalium mackayi (Buchan.) Ckn. 223964
Haastia Sinclairii Hook f. 223883
Hebe cockayneana (Cheesem.) Ckn. et Allan 223913
Hebe pauciramosa (Ckn. et Allan) Moore 214976
Herpirlirton novae-zelandiae Hook f. 191907
 Bog, north of Poerua River (R. Mason & N. T. Moar).
 450 m, turf at the margin of *Nothofagus menziesii* forest, junction of
 Landsborough River and Zora Creek.
 460 m. In shelter of boulders, near terminal of Strachan Glacier
 (Landsborough catchment).
 275 m, greywacke bluff by Landsborough River, below Brodrick Pass.
 Plant lax, 0.5 m tall, and one of specimens has pods smaller than
 those of *C. arborea*.
 450 m. In grassland on a stony flat at junction of Landsborough River
 and Zora Creek. Stiff, closely branched shrub 0.3–0.5 m tall which
 seems identical to Canterbury material of *C. violacea*, but material
 sterile except for a few persisting replums.
 Swampy ground at junction of Waitaha and Kakapotahi Rivers.
 Southern limit on West Coast?
 950 m, well-drained grassland on moraine, Marks Flat.
 South bank of Whataroa River, by main highway. Southern limit?
 450 m, grassland, Hinds Flat in Landsborough valley.
 1 500 m, seepage at head of Browning Creek, an eastern tributary of
 Landsborough River.
 950 m, mud of temporary pool, Marks Flat.
 Low-alpine grassland of Hokitika catchment. Wardle 1968.
 950 m, mud of temporary pool, Marks Flat.
 Seepage at 1 500 m at head of Browning Creek, and Marks Flat,
 both in Landsborough catchment.
 1 800 m, rocky ridge on Landsborough side of Mt Clarke; greywacke
 screes at headwaters of Hokitika River.
 1 000–1 050 m, talus slopes above Marks Flat. Northern limit?
 950 m, *Chionochoila rubra* swamp, Marks Flat.
 350 m, *Chionochoila rubra* grassland, Kea Flat in Landsborough
 valley.
 Wet ground among boulders, Makawhio River. Possibly intergrades
 with *L. petiolata*, from which it differs in its glabrous leaves with
 few teeth, one pair of which is below the lamina proper.

<i>Lagenifera strangulata</i> Col. (<i>Lagenophora petiolata</i> in Allan 1961)	215001
<i>Liberita peregrinans</i> Ckn. et Allan	146916
<i>Luzula rufa</i> var. <i>albicomans</i> Edgar	214973
<i>Metrosideros robusta</i> A. Cunn.	199283
<i>Ourisia macrophylla</i> var. <i>lactea</i> Moore	
<i>Paratrophis microphylla</i> (Raoul) Ckn.	185731
<i>Peraxilla colensoi</i> (Hook.f.) Tiegh (<i>Elytranthe colensoi</i> in Allan 1961)	214966
<i>Peraxilla tetrapetala</i> (Linn.f.) Tiegh (<i>Elytranthe tetrapetala</i> in Allan 1961)	214979
<i>Phymatosorus scandens</i> (Forst.f.) Pic. Ser. (<i>Phymatodes scandens</i> in Allan 1961)	218875
<i>Poa lindsayi</i> Hook.f.	179131
<i>Scirpus sulcatus</i> var. <i>distigmatosa</i> C. B. Clarke	223888
<i>Senecio lyallii</i> Hook.f.	107362
<i>Sparganium subglobosum</i> Morong.	223902
<i>Stellaria gracilentia</i> Hook.f.	208383
<i>Tillaea sinclairii</i> Hook.f.	215000
	223914

Common in *Nothofagus menziesii* forest of Landsborough valley, mainly near margins.

500 m, pioneer on landslip, Toaroha tributary of Hokitika River. 450 m, grassland on stony flat, junction of Landsborough River and Zora Creek.

Two large trees of epiphytic origin at Lake Mahinapua, severely damaged by opossums. Southern limit?

Hokitika catchment (no details of habitat). Wardle 1968.

Dacrycarpus dacrydioides forest near mouth of Waitangiroto River. Southern limit on West Coast?

Parasitic on *Nothofagus menziesii* at junction of Landsborough River and McLennan Creek.

Parasitic on *Nothofagus menziesii* at junction of Landsborough River and McLennan Creek.

On trunk of *Dacrycarpus dacrydioides*, near mouth of Waitangiroto River.

North bank of Totara River (near Ross), beside main highway. Southern limit on West Coast?

950 m, on open patches in grassland, Marks Flat.

Collected north of Haast (H. Talbot) and at Shearers Swamp south of Mikonui River (R. Mason & N. T. Moar).

950 m, wet bluff above Marks Flat.

Occasional with *Baumea ieritifolia* in the large swamp between Waitangitona and Waitangiroto Rivers. Southern limit?

Bare, stony places throughout Landsborough catchment, montane to low alpine.

950 m, mud of temporary pool, Marks Flat.

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