

Fig. 8 The main Paleozoic rock belts of Northwest Nelson. Inset shows distribution of lower Paleozoic rocks in the South Island. (From Cooper 1984)

DISTRIBUTION OF MAFIC AND ULTRAMAFIC ROCKS

Areas surveyed:

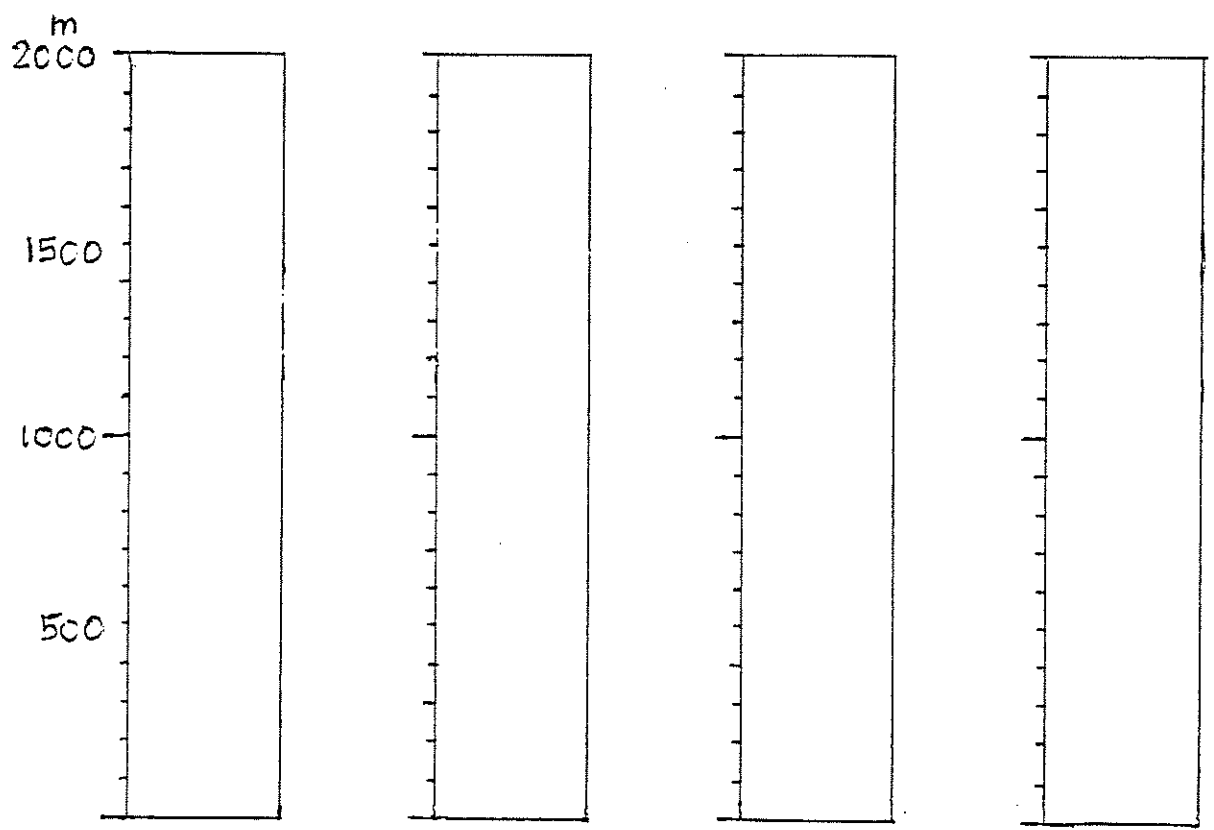
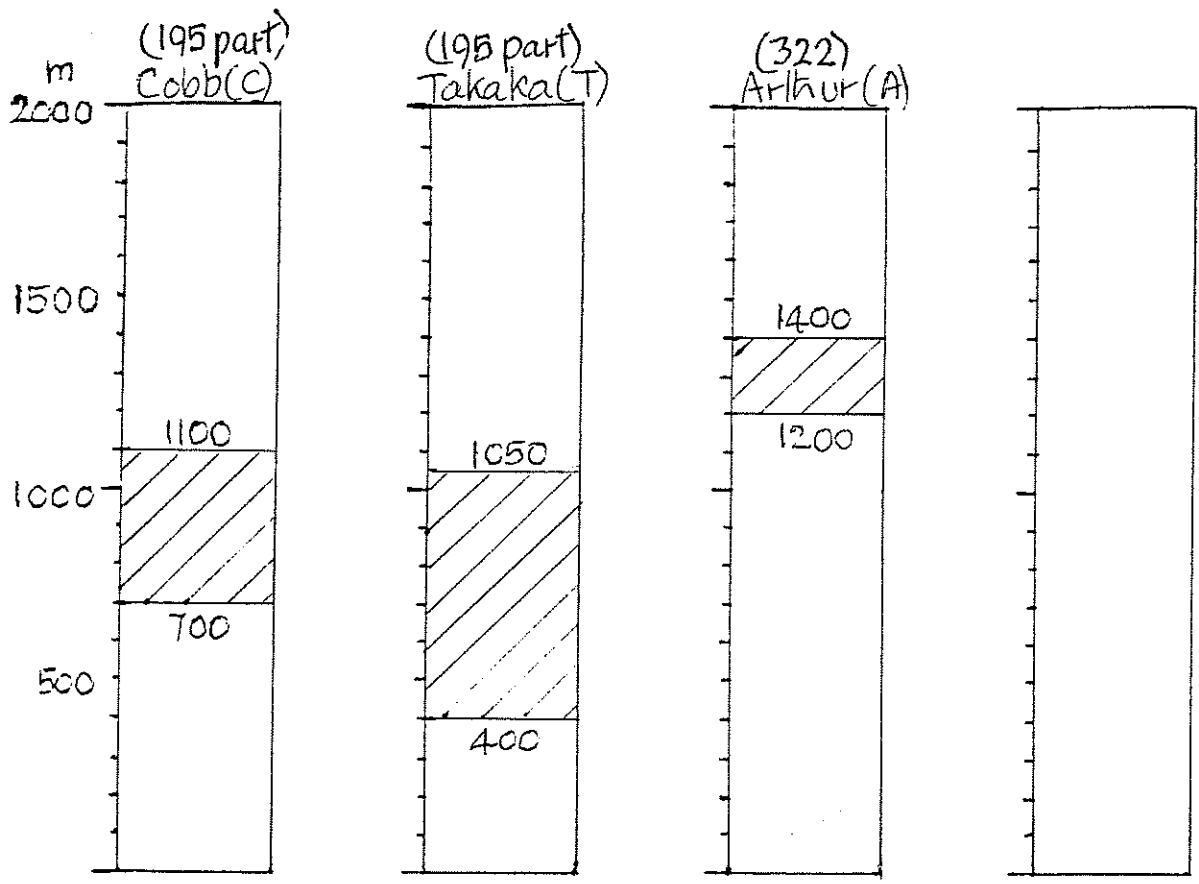
- C - Cobb area (lower Cobb V.)
- T - Takaka area (upper Takaka V.)
- A - Arthur area (S Arthur Ra.)

✓ for det. details see Fig.

GENERAL LOCATION AND GEOLOGY OF EACH AREA

(Grid refs on Infomap 262-9 are for the centre of each area) (Geology from Grindley 1980)

Area-Location	Geology	Grid ref.
Cobb area (C), lower Cobb V.	Paleozoic: Cobb Igneous Complex — talc-magnesite and quartz-magnesite derived from serpentinite; layered gabbro, epidiorite, and basalt dikes; sheared serpentinite derived from harzburgite	483013
Takaka area (T), upper Takaka V.	— as for Cobb area, plus coarse layered pyroxen- ite and websterite	485010
Arthur area (A), S Arthur Ra. (NW of Loveridge PK)	— talc-magnesite and quartz-magnesite derived from serpentinite	478995



ALTITUDINAL RANGE OVER WHICH PLANTS WERE RECORDED
IN EACH AREA

The numbers in brackets refer to lists of plants compiled for each area and filed at Landcare Research

Field work in the mafic and ultramafic mountains totalled 8 days between 1977 and 1991. The separate areas were visited at the dates indicated below.

Cobb area (C)	1 day in January 1977
	1 day in November 1979
	1 day in March 1980
	1 day in November 1980
Tamaka area (T)	1 day in November 1979
	1 day in April 1989
	1 day in December 1991
Arthur area (A)	1 day in February 1991

The following participated in the field work: Warren Butke, Shannel Courtney, Tony Druce, Arnold Heine, Jan Heine, Roland Heine, Barbara Simpson, Neil Simpson, Barry Snedden, Peter Williams

INDIGENOUS PLANTS (231 SPECIES)

C - seen Cobb Valley

T - seen Takaka Valley

A - seen Southern Arthur Range

GYMNOSPERM TREES AND SHRUBS

Halocarpus biformis (unc C) [Dactyidium biforme]

Lepidothamnus laxifolius (unc C, unc T) [Dactyidium laxifolium]

L. intermedius X L. laxifolius (unc C, unc T)

Libocedrus bidwillii (unc C, unc T)

Phyllocladus sp. (a) (C, T) (aff. P. alpinus; "lowland" ecotype of Wardle 1969) [P. alpinus in part]

Podocarpus hallii (unc T)

P. nivalis (A)

DICOTYLEDONOUS TREES AND SHRUBS

Archeia traversii s.l. (incl. A. traversii var. australis) (A)

Aristotelia fruticosa var. (a) (A)

Brachyglottis rotundifolia var. (a) (incl. B. buechananii and B. cedaynei) (A seedlings only) [Senecio bennettii]

Cassinia vauvilliersii (A)

Coprosma cheesemani s.s. (A)

C. ciliata ssp. ciliata (unc C, A)

C. colensoi s.s. (unc C) [C. colensoi and C. banksii]

C. crenulata (A)

C. depressa (A)

C. foetidissima (unc C, unc T)

C. microcarpa (C)

C. perpusilla ssp. perpusilla (A) [C. pomila in part]

C. propinqua ssp. propinqua (C, T)

- C. pseudocuneata ssp. (a) (A) (lvs narrower than in ssp. pseudocuneata)
- C. thamnoides s.l. (incl. C. polymorpha) (unc c)
- C. robusta (unc T)
- C. setulata (A)
- C. sp. (a) (unc c) (described as C. parviflora var. dumosa by Choëseman 1966, non C. parviflora var. dumosa sensu Allan 1961; lf undersurface not minutely hairy as is usual in C. parviflora; drupes usually unpigmented, occasionally purplish red) [C. parviflora in part]
- C. sp. (d) (unc c) (aff. C. pseudocuneata; low-growing shrubs with small, thick arcuate lvs) [C. pseudocuneata in part]
- C. sp. (e) (A) (aff. C. colanisei; low-growing shrubs with trailing branches) [C. colanisei in part]
- C. sp. (h) (C, A) (prostrate shrubs; lvs plano-convex, linear; drupes orange)
- C. propinqua X C. robusta (T)
- Coriaria arborea (unc T)
- C. plumosa (A)
- C. sarmentosa (C, T)
- Corokia cotoneaster (unc C, unc T)
- Cyathodes sp. (a) (C, T) (C. juniperina agg.; lvs small, usually < 1 cm x < 1 mm)
- Diacophyllum longifolium var. (a) (incl. D. filifolium and D. oliveti) (C, T, A)
- D. longifolium var. (b) (C, T) (sprawling to suberect shrubs up to 1 m tall or more, often with trailing branches which may reach 4 m in length; lvs ± glaucous, ± spreading, 2.5-5 cm long)
- D. longifolium var. (a) ⇌ var. (b) (C, T)
- D. pubescens var. pubescens (unc C, unc T)
- D. traversii s.l. (incl. D. pyramidale) (unc C, A)
- D. uniflorum (A)

- D. longifolium X D. pubescens (unc C, unc T)
Elaeocarpus hookerianus (unc T)
Exocarpus bidwillii (unc C, unc T)
Gaultheria antipoda (unc C, unc T)
G. crassa (A)
G. depressa s.s. (A)
G. sp. (a) (C, T, A) (described as G. depressa var. novae-zelandiae by Franklin 1962) [G. depressa in part]
Griselinia littoralis (unc C, unc T)
Hebe albicans var. albicans (C, T, A)
H. canterburiensis (A)
H. gracillima (unc C)
H. mactantha var. brachyphylla (A)
H. topiaria (A)
H. sp. (a) (incl. Leonohabe masoniae) (unc C) [Hebe pauciramosa var. masoniae]
H. sp. (r) (C) (aff. H. glaucophylla)
H. albicans X H. gracillima (unc C)
Helichrysum intermedium var. (a) (A) [H. selago var. intermedium in part]
Hohelia lyallii var. (a) (incl. H. glabrata) (A)
Kunzea ericoides agg. (C, T) [Leptospermum ericoides]
Leptospermum scoparium (C, T)
Leucopogon fasciculatus var. (a) (T) (juvenile lvs not much broader than adult lvs) [Cyathodes fasciculata]
Melicope simplex (unc T)
Melicytus obovatus var. obovatus (unc C) [Hymenanthera obovata]
M. sp. (f) (C, T, A) (aff. M. alpinus; shrubs taller than in M. alpinus, up to 2.4m; spiny shoots point in all directions with average branch angle of c. 70°, whereas in M. alpinus they tend to point in one direction with an average branch angle of c. 50°; lvs broader than in M. alpinus) [Hymenanthera alpina in part]

Metrosideros umbellata (unc C, unc T)

Myrsine divaricata s.s. (C, T, A)

M. nummulata (A)

Nothofagus fusca (C)

N. menziesii (C, A)

N. solandri (C, T)

Oleaia arborescens (unc C, unc T, A)

O. avicenniifolia (unc C, unc T)

O. colensoi var. colensoi (A)

O. lacunosa var. lacunosa (A)

O. nummulatifolia var. (a) (unc T, A) (lvs oval, rather than suborbicular as in var. nummulatifolia)

Peraxilla tetrapetala (unc C) [Elytranthe tetrapetala]

Pimelea oreophila (C, T) [P. pseudolyallii in part]

Pittosporum dallii (C)

P. divaricatum (C) [P. divaricatum and P. linearis]

P. patulum (unc C)

Pseudopanax colensoi s.s. (unc C)

P. crassifolius (unc C, unc T)

P. linearis (unc T)

P. simplex s.l. (incl. P. simplex var. sinclairii) (unc C) [Neopanax simplex]

P. sp. (a) (unc C, A) (described as P. colensoi var. ternatus by Wardle 1968) [Neopanax colensoi in part]

Pseudowintera colorata (A)

Wainmannia racemosa var. racemosa (unc T)

DICOT LIANES AND RELATED TRAILING PLANTS

Clematis forsteri (unc C) [C. australis, C. forsteri, C. hookeriana, C. petrici]

Muehlenbeckia axillaris (A)

Rubus cissoides var. (a) (unc C) ("form c" of Allan 1961; lfts broader than in var. cissoides)

R. schmidelioides var. schmidelioides (C, T)

LYCOPODS

Lycopodium australianum (unc C, A)

L. varium (unc C, unc T)

L. scariosum (A)

L. volubile (T)

FERNS

Asplenium flaccidum (unc C, unc T)

A. hookerianum (C, A)

A. lyallii (A)

A. richardii (unc C, A)

A. terrestre ssp. terrestre (unc C)

Blechnum fluviatile agg. (C, T, A)

B. penna-marina (unc C)

B. procerum (unc C, unc T)

B. sp. (b) (A) (mountain sp.; lower pinnae not reduced in length; "The Dunedin-Cass Variety" of Crookes 1963) [B. sp. 3]

Cyathea colensoi (C)

Cystopteris tasmanica (A)

Grammitis billardierei (unc C, unc T, A)

G. ciliata (unc C)

G. patagonica (A)

Hymenophyllum multifidum (unc C, A)

H. pulcherrimum (unc C)

H. rarum (C)

H. villosum (C, T)

Phymatosorus pustulatus (unc C, unct) [P. diversifolius]

Polystichum vestitum (A)

Pteridium esculentum (T, A)

Rumohra adiantiformis (C)

MONOCOTYLEDONOUS HERBS

ORCHIDS

Caladenia lyallii (unc C)

Corybas trilobus s.s. (A)

C. sp. (C. macranthus or C. tivulatis s.s.) (A)

Genoplesium nudum (unct)

Mictotis sp. (unc T)

Prasophyllum colensoi (A)

Thelymitra longifolia s.s. (T)

T. pauciflora agg. (T)

T. pulchella (T)

GRASSES

Agrostis sp. (b) (A) (aff. A. dyeri but panicle not contracted)

[A. dyeri in part]

Chionochloa australis (A) [Danthonia australis]

C. conspicua ssp. conspicua (unc C, A) [Danthonia cunninghamii]

C. defracta (C, T)

C. pallans ssp. pallans (A) [Danthonia raoulii in part]

C. sp. (a) (A) (C. flavescens auct. South Island, non C. flavescens Zotov; lf blade green on abaxial surface, wide, strap-like, without midrib, or with faint midrib on abaxial surface)

only) [Danthonia raculii var. flavescens in part]

C. australis X C. pallens (unc A)

Elymus sp. (a) (A) (aff. E. tectisetus; plants usually glaucous; lf blade usually flat, up to 5mm wide; awns 4-6cm long)
var. (a) (culms erect or ascending) [Agropyron scabrum in part]

Hierochloa novae-zelandiae (A)

Lachnagrostis lyallii s.l. (incl. L. filiformis var. semiglabra)
(A) [Dexauxia forsteri var. semiglabra]

Microlaena avenacea (T)

M. colusei ss. (A) [Ehrharta colensoi]

M. stipoides (unc T)

Poa colusei (C, T, A)

P. imbecilla (A)

P. maia? (A)

Rytidosperma clavatum (T) [Danthonia pilosa in part]

R. gracile (T, A) [Danthonia semiannulatis in part]

R. setifolium (C, A) [Danthonia semiannulatis var. setifolia]

Trisetum sp. (b) (A) (described as T. antarcticum ssp. tenellum by Petrie 1912) [T. antarcticum var. tenellum]

T. sp. (h) (C, T) (aff. T. antarcticum; lf sheath densely hairy, with both long and short hairs, especially in the lower two-thirds)

SEDGES

Baumea tenax (T)

Carex breviculmis (T)

C. devia (C, T)

C. libera (A)

Gahnia procera (unc C, unc T)

Lepidosperma australe (T)

Schoenus pauciflorus s.s. (T, A)

Uncinia divaricata (A)

U. fuscovaginata var. (a) (C, T, A) (plants glaucous)

U. silvestris s.l. (incl. U. affinis) (A)

U. uncinata (unc T)

RUSHES AND ALLIED PLANTS

Juncus novae-zelandiae (A)

Luzula migrata (unc C, A) [L. banksiana var. migrata]

L. picta s.s. (unc C)

L. subclavata (unc C) [L. picta var. pallida]

L. sp. (a) (A) [L. picta var. limosa]

L. sp. (i) (C) (aff. L. rufa; lvs up to 2.5 mm wide, channelled, strict; heads 6-9-(12) mm diam.; tepals slightly > capsules)

MONOCOTYLEDONOUS HERBS OTHER THAN ORCHIDS, GRASSES, SEDGES, RUSHES, AND ALLIED PLANTS

Arthropodium candidum (A)

Astelia graminea (T)

A. nervosa s.s. (A)

A. petrici (A)

A. skottsbergii (A)

A. sp. (b) (T, A) (aff. A. nervosa but lvs broader and not conspicuously white adaxially) [A. nervosa in part]

Dianella nigra (T)

Libertia peregrinans (unc T, A)

L. pulchella (unc T)

Luzuriaga parviflora (unc C)

DICOTYLEDONOUS HERBS

COMPOSITES

Anaphalis sp.(a)(A) [Helichrysum bellidioides s.s.]

Brachyglottis lagopus var.(a)(A) (cottony hairs on both surfaces of lf, dense at first, but becoming sparse; the undersurface, though with more tomentum than the upper, at no stage appears white, and may end up almost glabrous) [Senecio lagopus]

B. sp.(a)(A) (included in B. bellidioides, as var. crassa, by Nord-
enstam 1978) [Senecio bellidioides in part]

Celmisia dallii (unc C)

C. gracilentata ssp.(a)(C,T) (plants tufted; lvs narrowly linear, with recurved margins)

C. incana s.l. (incl. C. discolor) (A)

C. montei (ssp.a or ssp.b)(A)

C. spectabilis ssp. spectabilis (unc C, A)

C. traversii (unc C, A)

C. sp.(a)(A) (aff. C. gracilentata; plants tufted; lvs linear to linear-lanceolate, up to 45 x 1.2 cm) (ssp.a or ssp.b) [C. gracilentata in part]

C. spectabilis X C. traversii (unc C)

Craspedia sp.(w)(A) (summer-green plants on cliffs and in well-drained hotfields; lvs up to 18 cm long, with short broad petiole merging into lamina; both surfaces densely clad in short glandular hairs, with or without longer, multicellular non-glandular hairs with cottony tips; margins conspicuously white with cottony hairs; fls white)

Gnaphalium polylepis (A) [Gnaphalium paludosum in part]

G. ruahinicum (A) [G. collinum in part]

Lagenifera pumila (A)

L. strangulata (A) [L. petiolata]

Leptinella pyraethriifolia agg. (A) [Cotula pyraethriifolia]
Leucogenes grandiceps (A)
Pseudognaphalium sp. (b) (A) (aff. P. luteoalbum; lvs mostly oblong-spathulate to narrowly oblong, rounded) [Gnaphalium luteoalbum in part]
Raoulia glabra (unc T, A)
R. tanvicaulis s.l. (incl. R. tanvicaulis var. dimorpha and R. tanvicaulis var. pusilla (T))
Senecio glaucophyllus ssp. glaucophyllus (A)
S. waitauensis (A) [Erechtites waitauensis]

DICOTYLEDONOUS HERBS OTHER COMPOSITES

Acaena profundeincisa (A) [A. anserinifolia var. seticeinitens and A. anserinifolia var. paucidens]
Aciphylla ferox (A)
Anisotome aromatica (A) [A. aromatica vars aromatica, flabellifolia, incisa, major, obtusa, and pinnatisecta]
A. filifolia (c)
A. haastii (A)
Cardamine sp. (s) (unc C) (C. debilis agg.)
C. sp. (undetermined) (A) (C. debilis agg.)
Colobanthus canaliculatus s.s. (A)
C. sp. (f) (c, T) (aff. C. wallii, but usually not cushion-forming and often resembling Sagina procumbens)
Drosera spathulata (T)
Epilobium gracilipes (A)
E. matthewsii (A)
E. pubens (unc T) [E. pubens and E. pubens var. strictum]
E. sp. (a) (A) (included in E. brunnescens, as ssp. minutiflorum, by Raven and Engelman, 1971) [E. pedunculata var. minutiflorum]
Forstera mackayi (A)
Gentiana bellidifolia (A)

G. tenuifolia (unc C)

Gaum sp. (a) (A) (G. parviflorum agg.; stock short; terminal flt about as long as broad; fls up to 13mm diam.)

[G. parviflorum in part]

Gingidia decipiens (A) [Angelica decipiens]

G. montana (A) [Angelica montana]

G. decipiens X G. montana (unc A)

Gonocarpus micranthus ssp. micranthus (unc T) [Haloragis micrantha]

G. montanus (unc T) [Haloragis procumbens]

Hydrocotyle moschata (A)

Myosotis brockiei (C)

M. petiolata s.s. (unc T)

Nertera depressa s.l. (incl. N. cunninghamii) (A)

N. sp. (c) (A) (aff. N. depressa, but lvs larger and more fleshy)

Notothlaspi sp. (b) (C, T, A) (N. australe auct., non Thlaspi australe Hook f.) [N. australe]

Oreomythis sp. (d) (A) (aff. O. ramosa) [O. ramosa in part]

Oreoporanthera alpina (A) [Poranthera alpina]

Oursia lactea ssp. lactea (A) [O. macrophylla var. lactea]

Parahabe linifolia ssp. linifolia (A)

P. lyallii (A)

Plantago raoulii (A)

Pratia angulata agg. (A)

Psychrophila novae-zelandiae (A) [Calltha novae-zelandiae]

Ranunculus insignis (A) [R. insignis, R. lobulatus, and R. montei]

R. membranifolius (A) [R. hirtus in part]

R. verticillatus (A) [R. clivalis]

Stellaria decipiens s.l. (incl. S. parviflora) (unc C)

Urtica incisa (A)

Viola cunninghamii (A)

Wahlenbergia albomarginata var. albomarginata s.l. (incl. W. brockiei and W. pygmaea var. laxa) (A)

No. of indigenous species listed for each area:

Cobb (C) : 93

Takaka (T): 78

Arthur (A) : 134

ADVENTIVE PLANTS (5 SPECIES)

MONOCOTYLEDONOUS HERBS

GRASSES

Anthoxanthum odoratum (A)

DICOTYLEDONOUS HERBS

COMPOSITES

Hypochoeris radicata (A)

DICOTYLEDONOUS HERBS OTHER THAN COMPOSITES

Cerastium fontanum ssp. vulgare (A)

Rumex acetosella (A)

Sagina procumbens (A)

(adventive spp. were not listed for C or T)

VOUCHER SPECIMENS FOR UNNAMED TAXA

Phyllocladus sp. (a)

Aristotelia fruticosa var. (a)

Coprosma pseudocuneata ssp. (a)

C. sp. (d)

C. sp. (e)

C. sp. (h)

Cyathodes sp. (b)

Dracophyllum longifolium var. (b)

Hebe sp. (r)

Leucopogon fasciculatus var.(a)

Meliccytus sp.(f)

Olearia nummulariifolia var.(a)

sp. sp. d >

Rubus cissoides var.(a)

Blechnum sp.(b)

Agrostis sp.(b)

Chionocheila sp.(a)

Elymus sp.(a)

Trisetum sp.(h)

Uncinia fuscovaginata var.(a)

Luzula sp.(i)

Astelia sp.(b)

Brachyglottis lagopus var.(a)

Celmisia gracilentia var.(a)

C. sp.(a)

* Craspedia sp.(w) (CHR)

Pseudognaphalium sp.(b)

Cardamine sp.()

sp. sp. d >

Colobanthus sp.(f)

Gaum sp.(a)

Nerteta sp.(c)

Notothlaspi sp.(b)

Oreomyrthis sp.(d)

* voucher not from mafic or ultramafic areas, but from elsewhere in NW Nelson mountains

