

- 6k, kohekohe-dominated mature forest  
 1. 10-12 (-14) m; 0-30% cover; tawa, with scattered hinau and rewarewa.  
 2. 6-8 (-10) m; 50-100% cover; kohekohe with scattered pigeon wood, rewarewa, titoki and mahoe; also on ridges and forest margins are mapou and *Coprosma areolata*.  
 3. 1-3 m; up to 80% cover; kawakawa, with hangehange and raureka; sapling kohekohe, mahoe and titoki.  
 4. < 0.5 m; up to 70% cover; ground cover of ferns, especially *Asplenium bulbiferum*, *Blechnum filiforme* and *Phymatodes scandens*; on drier sites *Lastreopsis hispida*, *Phymatodes diversifolium* and *Uncinia uncinata* are common; seedling kohekohe, mahoe, kaikomako and *Coprosma areolata*.  
 Climbers are abundant in strata 1 and 2, particularly supplejack and ratas (largely red climbing rata). Also in these strata are abundant epiphytic ferns and occasional astelias, but no epiphytic orchids.  
 6t, tawa-dominated mature forest  
 1. 10-12 (-18) m; 40-95% cover; tawa, with scattered rewarewa, hinau and kahikatea; pukatea in gullies.  
 2. 6-8 (-10) m; 5-60% cover; kohekohe, with scattered titoki and mahoe.  
 On the upper ridges strata 1 and 2 are not distinguishable and are at c. 6 m ht.  
 3 & 4 Refer type 6k.  
 Climbers and epiphytes as for type 6k.  
 P, planted macrocarpa  
 1. 8-10 m; 100% cover; macrocarpa.  
 2. sparse ground cover of small herbs and grasses.

#### APPENDIX 2 — LIST OF VASCULAR PLANT SPECIES RECORDED FROM MATURE FOREST OF REDWOOD BUSH

Species growing only on the forest margins are not included. Common names are shown in parentheses; \* = exotic species; g = present only in canopy gaps; d = recorded only from the Judgeford Silt Loam; t = recorded by Atkinson (1972) but not seen in the present study; the figure is the frequency percent in 50 circular plots of 2 m radius. Except where authorities are cited, nomenclature follows Allan (1961), Moore and Edgar (1970), New Zealand Weed and Pest Control Society (1969), and Edgar (1971), the last taking priority.

1. TREES AND SHRUBS  
*Alectryon excelsus* (titoki) 30%  
*Aristotelia serrata* (wincherry) d 0%  
*Beilschmiedia tawa* (tawa) 30%  
*Brachyglottis repanda* (rangiora) 24%  
*Carpodetus serratus* (putaputaweta) 2%  
*Coprosma areolata* 56%  
*Coprosma australis* (raureka) 28%  
*Coprosma rhomboides* 36%  
*Coprosma robusta* (karamu) g 12%  
*Coprosma propinqua* x *C. robusta* g 2%  
*Corynocarpus laevigatus* (karaka) 4%  
*Cotoneaster* sp. \*  
*Dacrycarpus dactyloides* *rydoides* (kahikatea) 2%  
*Dysoxylum spectabile* (kohekohe) 94%  
*Elaeocarpus dentatus* (hinau) 14%  
*Eugenia mairei* (swamp maire) 1%
- Fuchsia excorticata* (fuchsia) 3%  
 most trees have died in recent years  
*Geniostoma ligustrifolium* *strifolium* (hangehange) 88%  
*Griselinia lucida* (puka) 0%  
*Hedyocarya arborea* (pigeon wood) 22%  
*Knightia excelsa* (rewarewa) 8%  
*Laurelia novae-zelandiae* (pukatca) 2%  
*Lycyesteria formosa* (Himalayan honeysuckle) \* g  
*Lophomyrtus bullata* (ramarama) 2%  
*Macropiper excelsum* (kawakawa) 92%  
*Meliccytus ramiflorus* (mahoe) 66%  
*Myrsine australis* (mapou) 84%  
*Olearia rani* (heketa) 12%  
*Paratrophis microphylla* (turepo) 0%  
*Pemanitia corymbosa* (kaikomako) 46%  
*Podocarpus ferrugineus* (miro) 4%

- Podocarpus totara* (totara) t  
*Pseudopanax arboreus* (five finger) 8%  
*Pseudopanax crassifolius* (lancewood) 2%  
*Sambucus nigra* (elder) \* d 2%  
*Schefflera digitata* (pate) 0%  
*Solanum aviculare* (poroporo) g 2%  
*Solanum laciniatum* (poroporo) t  
*Ulex europaeus* (gorse) \* g 0%  
 2. LIANES  
*Clematis paniculata* (clematis) 4%  
*Freycinetia banksii* (kiekie) t  
*Hedera helix* (ivy) \* 0%  
*Metrosideros diffusa* (climbing rata) 34%  
*Metrosideros fulgens* (red climbing rata) 40%  
*Metrosideros perforata* (climbing rata) 22%  
*Muehlenbeckia australis* (bush pohuehue) 20%  
*Muehlenbeckia complexa* (coastal pohuehue) 2%  
*Parsonia heterophylla* (parsonsia) 88%  
*Ripogonum scandens* (supplejack) 60%  
*Rubus cissoides* (bush lawyer) 2%  
*Tetrapathaea tetrandra* (native passion flower) 26%  
 3. FERNS  
*Asplenium bulbiferum* 70%  
*Asplenium bulbiferum* x *A. hookerianum* 10%  
*Asplenium falcatum* 16%  
*Asplenium flaccidum* 26%  
*Asplenium hookerianum* 14%  
*Asplenium lucidum* 52%  
*Botrychium australe* var. *millifolium* d 2%  
*Blechnum chambersii* Tindale 16%  
*Blechnum filiforme* 94%  
*Blechnum membranaceum* 4%  
*Blechnum dealbata* (ponga) 34%  
*Cyathea medullaris* (mamaku) 0% most plants are dead  
*Dicksonia squarrosa* (whēki) t  
*Histiopteris incisa* g d 0%  
*Hymenophyllum demissum* 22%  
*Hymenophyllum sanguinolentum* t  
*Hypolepis tenifolia* 2%  
*Lastreopsis decomposita* d 2%  
*Lastreopsis glabella* 26%  
*Lastreopsis hispida* 52%  
*Lastreopsis velutina* d 2%  
*Pellaea rotundifolia* 12%  
*Phymatodes diversifolium* 30%  
*Phymatodes scandens* 72%  
*Polystichum richardii* 4%
- Pteridium aquilinum* var. *excidentum* (bracken) g 4%  
*Pteris maculata* (8%)  
*Pteris tremula* d 0%  
*Pyrosia serpens* 28%  
*Ramohra adiantiformis* 2%  
*Thelypteris pennigera* d 4%  
*Todea hymenophyloides* 10%  
 4. GRASSES AND SEDGES  
*Anthoxanthum odoratum* (sweet vernal) \* g d 0%  
*Carex diandra* d 0%  
*Carex forsteri* g d 0%  
*Dactylis glomerata* (cocksfoot) \* g 8%  
*Holcus lanatus* (Yorkshire fog) \* g d 0%  
*Juncus pallidus* d 0%  
*Juncus seraphorus* d 0%  
*Lolium perenne* (perennial ryegrass) \* g d 2%  
*Microlaena stipoides* (meadow rice grass) 16%  
*Poa annua* \* g d 2%  
*Schoenus nagehalinus* d 2%  
*Scirpus profler* d 0%  
*Uncinia banksii* (hook grass) 6%  
*Uncinia uncinata* (hook grass) 62%  
 5. IRISES, LILIES, ORCHIDS  
*Astelia solandri* 2%  
*Callaspermum hastatum* 0%  
*Iris* sp. \* d 2%  
*Microris unifolia* d 0%  
*Pterostylis banksii* 24%  
*Pterostylis graminea* d 2%  
*Thelymitra longifolia* d 0%  
 6. OTHER HERBS AND SUB-SHRUBS  
*Cardamine debilis* 4%  
*Carduus tenuiflorus* (winged thistle) \* g d 2%  
*Ceratium glomeratum* (annual mouse-ear chick weed) \* g d 2%  
*Cirsium vulgare* (scotch thistle) \* g 8%  
*Digitalis purpurea* (foxglove) \* g 4%  
*Erigeron* sp. (heabane) \* g 12%  
*Gadium aparine* (cleavers) \* g 24%  
*Geranium robertianum* (herb robert) \* g 2%  
*Hydrocotyle americana* 23%  
*Hydrocotyle novae-zelandiae* 0% strongly hispid form with leaves 8-25 mm diam.  
*Hypericum androsaemum* (tutsan) \* g 4%  
*Hypochaeris radicata* (catsear) \* g 8%  
*Myceles muralis* (wall lettuce) \* d 2%  
*Myosotis sylvatica* (wood forget-me-not) \* d 0%  
*Oxalis corniculata* (oxalis) \* g 2%  
*Plantago lanceolata* (plantain) \* g d 2%  
*Prunella vulgaris* (self heal) \* g 4%  
*Ranunculus hirtus* 2%

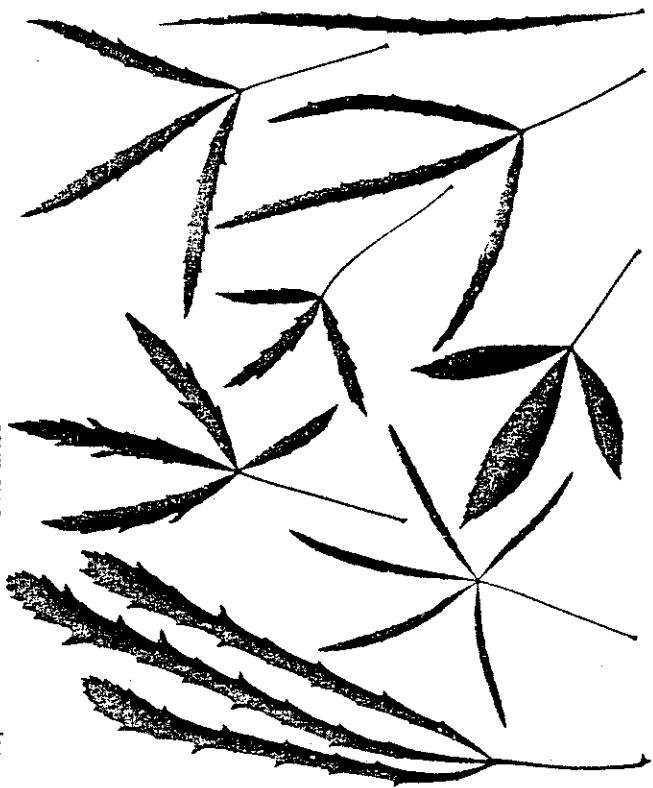
- Ranunculus repens* (creeping buttercup) \* g 0%
- Senecio jacobaea* (ragwort) \* g 6%
- Senecio sylvaticus* (wood groundsel) \* g 0%
- Solanum nigrum* (black nightshade) \* g 12%
- Sonchus oleraceus* (sow thistle) \* g 6%
- Stellaria media* (chickweed) \* g d 4%
- Stellaria parviflora* (native chickweed) 4%
- Taraxacum officinale* (dandelion) \* g d 4%
- Trifolium repens* (white clover) \* g d 2%
- Urtica incisa* (stinging nettle) d 2%
- Vicia hirsuta* (hairy vetch) \* g d 2%
- Vicia sativa* (including *V. angustifolia*) (vetch) \* g d 2%

APPENDIX 3 — BINOMIALS FOR COMMON NAMES USED IN THE TEXT AND APPENDIX 1

Botanical nomenclature follows that in Appendix 2. For mammals, Wodzicki (1936) is followed, and for birds, the Ornithological Society of New Zealand (1970).

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|-----------------------|---|
| PLANTS                | <i>Astelia solandri</i> and <i>Collospermum hastatum</i>              |
| astelias              |   |
| barley grass          | <i>Hordeum murinum</i>  |
| bracken               | <i>Pteridium aquilinum</i>  |
| browntop              | <i>Agrostis tenuis</i>  |
| bush lawyer           | <i>Rubus cissoides</i>  |
| bush pohuehue         | <i>Muehlenbeckia australis</i>  |
| Cape ivy              | <i>Senecio angulatus</i>  |
| coastal pohuehue      | <i>Muehlenbeckia complexa</i>   |
| cobaea                | <i>Cobaea scandens</i>  |
| cocksfoot             | <i>Dactylis glomerata</i>   |
| dandelion             | <i>Taraxacum officinale</i>   |
| dove's foot           | <i>Geranium molle</i>   |
| fiddle dock           | <i>Rumex pulcher</i>  |
| five finger           | <i>Pseudopanax arboreus</i>   |
| fuchsia               | <i>Fuchsia excorticata</i>  |
| German ivy            | <i>Senecio mikanoides</i>   |
| gorse                 | <i>Ulex europaeus</i>   |
| hangehange            | <i>Gentostoma ligustrifolium</i>                                      |
| hinau                 | <i>Elaeocarpus dentatus</i>   |
| honeysuckle           | <i>Lonicera japonica</i>  |
| ivy                   | <i>Hedera helix</i>   |
| kahikatea             | <i>Dacrydium dacrydioides</i>   |
| kaikomako             | <i>Pennantia corymbosa</i>  |
| karaka                | <i>Corynocarpus laevigatus</i>  |
| karamu                | <i>Coprosma robusta</i>   |
| kawakawa              | <i>Macropiper excelsum</i>  |
| kohekohe              | <i>Dysoxylum spectabile</i>   |
| lancewood             | <i>Pseudopanax crassifolius</i>                                       |
| macrocarpa            | <i>Cupressus macrocarpa</i>   |
| mahoe                 | <i>Melicope ramiflora</i>   |
| mamaku                | <i>Cyathochaeta nectularis</i>  |
| mapou                 | <i>Myrsine australis</i>  |
| native passion flower | <i>Tetrapathaea tetrandra</i>   |
| nikau                 | <i>Rhopalosiphum sapida</i>   |
| northern rata         | <i>Metrosideros robusta</i>   |
| pate                  | <i>Schefflera digitata</i>  |
| perennial ryegrass    | <i>Lolium perenne</i>   |
| pigeon wood           | <i>Hedycarya arborea</i>  |
| putaputaweta          | <i>Laurelia novae-zelandiae</i>                                       |
| rangiora              | <i>Carpodetis serratus</i>  |
| ratas                 | <i>Brachyglottis repanda</i>  |
| raureka               | <i>Metrosideros diffusa</i> , <i>M. fulgens</i> , <i>M. perforata</i> |
| red climbing rata     | <i>Coprosma australis</i><br><i>Metrosideros fulgens</i>              |

- |                 |                                 |
|-----------------|---------------------------------|
| rewarewa        | <i>Knighthia excelsa</i>        |
| rimu            | <i>Dacrydium cupressinum</i>    |
| scotch broom    | <i>Cytisus scoparius</i>        |
| sheep's sorrel  | <i>Rumex acetosella</i>         |
| supplejack      | <i>Ripogonum scandens</i>       |
| sweet vernal    | <i>Anthoxanthum odoratum</i>    |
| tauhinu         | <i>Cassinia leptophylla</i>     |
| tiawa           | <i>Heilschmidia lawa</i>        |
| titoki          | <i>Alectryon excelsus</i>       |
| totara          | <i>Podocarpus totara</i>        |
| traveller's joy | <i>Clematis vitalba</i>         |
| wandering Jew   | <i>Tradescantia fluminensis</i> |
| Yorkshire fog   | <i>Holcus lanatus</i>           |
- BIRDS
- |              |  |
|--------------|--|
| Blackbird    | <i>Turdus merula</i>                   |
| fantail      | <i>Rhipidura fuliginosa placabilis</i> |
| grey warbler | <i>Gerygone igata</i>                  |
| kingfisher   | <i>Halcyon sancta</i>                  |
| silvereye    | <i>Zosterops lateralis</i>             |
- MAMMALS
- |         |                              |
|---------|------------------------------|
| cattle  | <i>Bos taurus</i>            |
| opossum | <i>Trichosurus vulpecula</i> |
| sheep   | <i>Ovis aries</i>            |



Leaves from volunteer seedlings of a putative *Pseudopanax* hybrid in a Palmerston North garden. A leaf from the parent tree is shown centre bottom. Seedlings appear frequently, despite the apparent isolation of the parent, and show the range of leaf form seen in these selected examples.