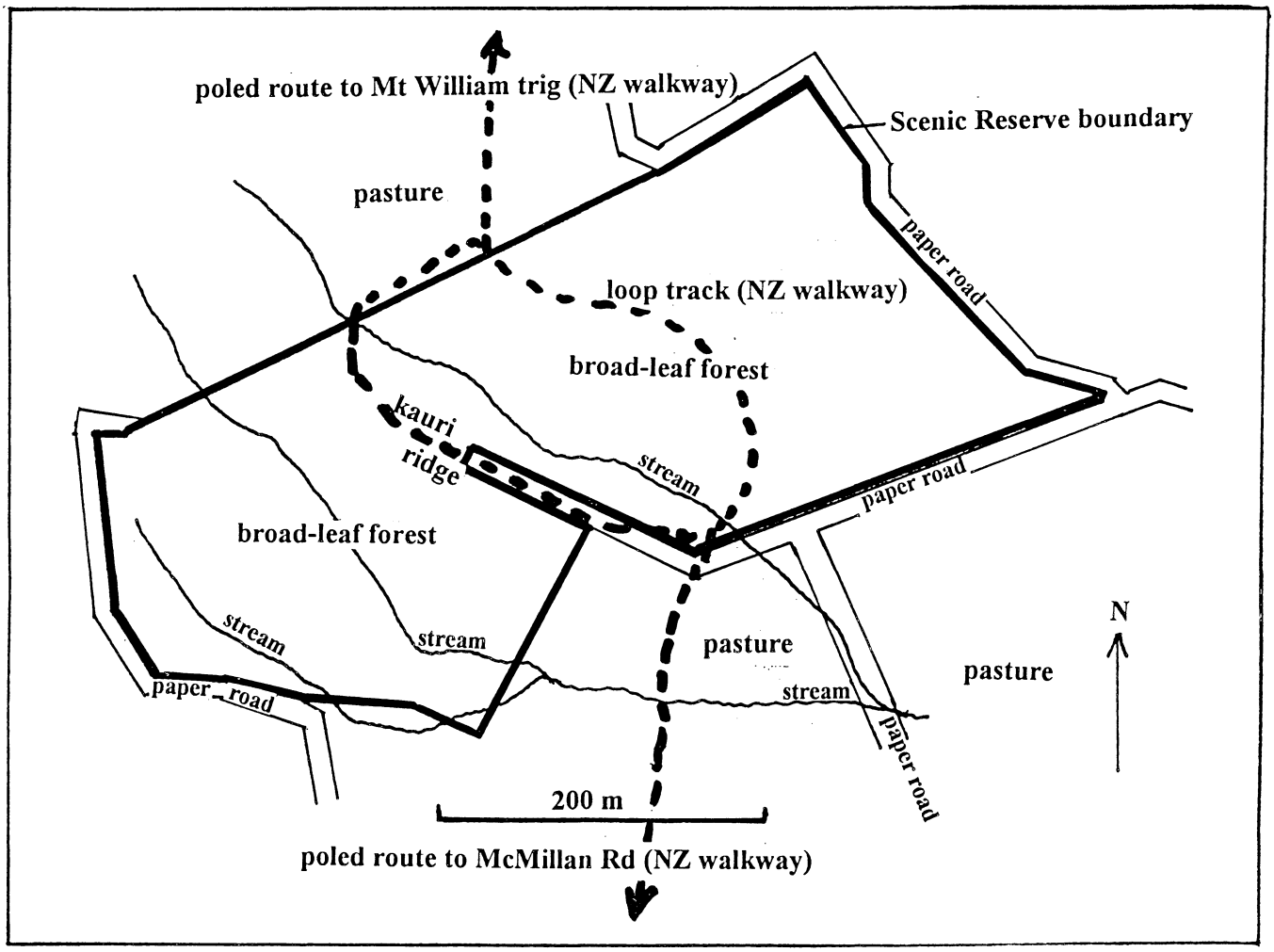
Vascular plants of Mt William Scenic Reserve

E.K. Cameron

The Auckland Botanical Society (ABS) visited the Mt William Scenic Reserve (47 ha), at the southern end of the Mt William walkway (see Cameron et al. 1997) on 20 February 1999 (for the trip report see Wilcox 1999) where the vascular plants and mosses were studied (Fig. 1). For an account of the mosses see Jessica Beever (1999). The list of vascular plants below is based on a Scenic Reserve survey in 1979 by Gardner (1981), two Auckland Botanical Society field trips, recorded by Jim Beever (1980) and Wilcox (1999), two extra visits by myself, and 19 existing voucher specimens in the Auckland Museum herbarium (AK) collected in the 1970s.

The reserve is in the south-west corner of the Hunua Ecological District in steep dissected hill country on the lower southern slopes of Mt William. Three main streams drain the area to the south. The vegetation is mainly an advanced regenerating broadleaf forest of taraire (*Beilschmiedia tarairi*), tawa (*B. tawa*), pukatea (*Laurelia novae-zelandiae*), rewarewa (*Knightia excelsa*), puriri (*Vitex lucens*), karaka (*Corynocarpus laevigatus*), kohekohe (*Dysoxylum spectabile*), pigeonwood (*Hedycarya arborea*), mahoe (*Melicytus ramiflorus*), nikau (*Rhopalostylus sapida*) and mangeao (*Litsea calicaris*). Tall podocarps of totara (*Podocarpus totara*), rimu (*Dacrydium cupressinum*) and kahikatea (*Dacrycarpus dacrydioides*) are occasional. A high, narrow central ridge, running NW-SE near the centre of the reserve, is clothed in dense regenerating kauri (*Agathus australis*), up to c. 0.5 m diameter, with associated hard beech (*Nothofagus truncata*) and tanekaha (*Phyllocladus trichomanoides*).

Fig. 1. Mt William Scenic Reserve (adapted from Gardner 1981).



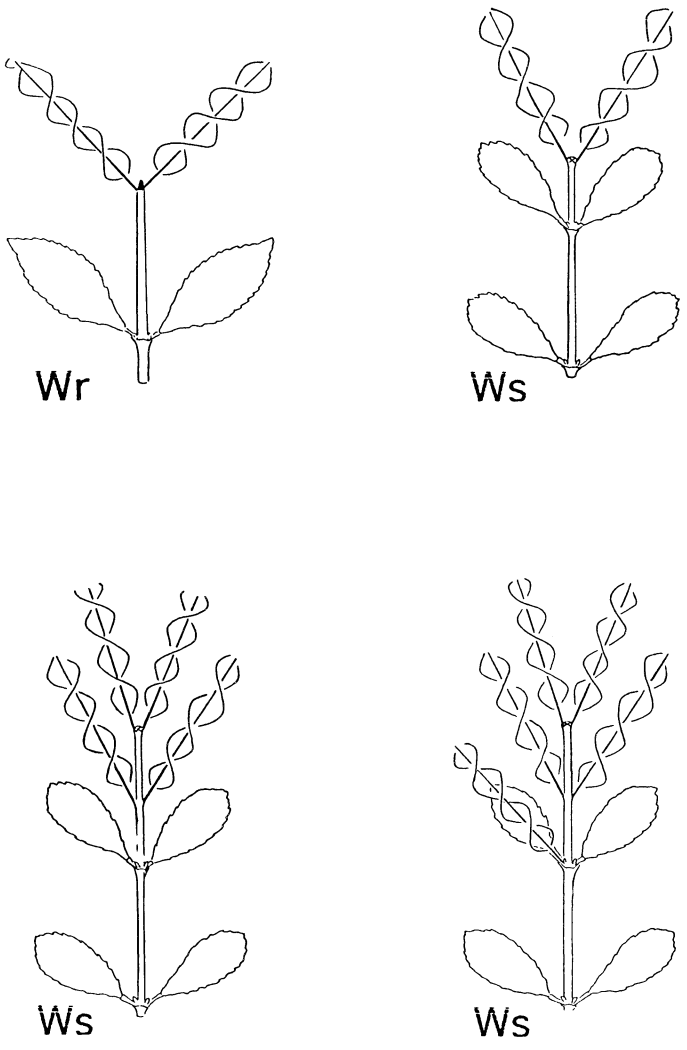


Fig. 1: Inflorescence architecture. Wr, *Weinmannia racemosa* (simplest mode; there may be another pair of infls before the next pair of leaves). Ws, *W. silvicola* (most common modes, in all note aborted apical bud).

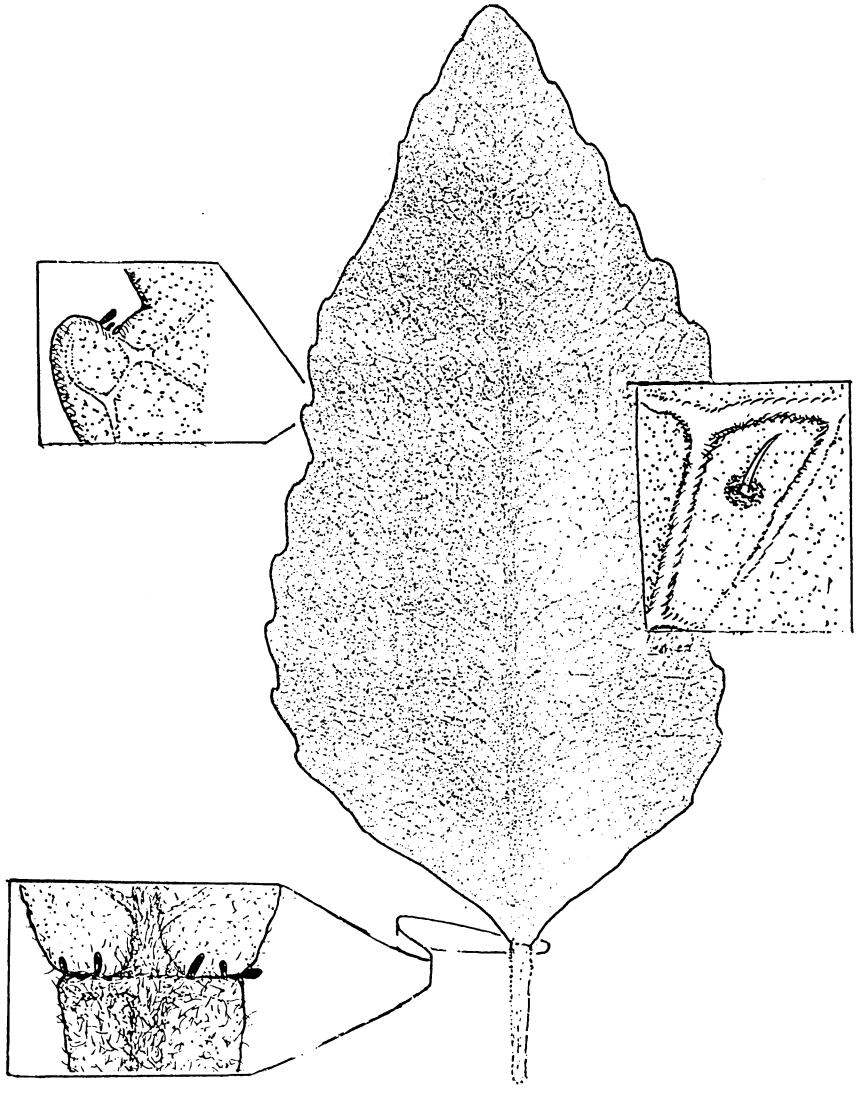


Fig. 2: Leaf of *W. racemosa*. Insets: tooth with colleters in sinus; lower surface of blade showing a punctate-based appressed hair; junction of petiole and blade, upper side, with colleters.

Vascular flora of Mt William Scenic Reserve

The total vascular flora is rich at 224 species and only 15% are adventive species (Table 1).

Table 1. Vascular flora totals of Mt William Scenic Reserve*

Plant group	Native	Adventive	Totals
Ferns	56	-	56
Conifers	8	1	9
Dicots	84	28	112
Monocots	42	5	47
TOTALS	**190**	**34**	**224**

*Note - exotic grasses around the reserve margins were excluded.

Key

Abundance ratings for plants seen during the 1999 ABS field trip:
a = abundant c = common o = occasional l = local s = scarce (< 5 plants seen)

ABS = new record from the Auckland Botanical Society February 1999 field trip: 21 native, 14 adventive
AJD = specimen collected by Dakin in February 1976 (specimen in AK); species not seen by ABS
AK = voucher specimen in Auckland Museum herbarium (collected by A. & W. Esler, S. Bowman &/or A. Dakin in February 1976, R. Gardner in February 1979, E. Cameron in May 1997 or February 1999)
JEB = recorded on Auckland Botanical Society 1980 field trip (see James Beever 1980); species not seen by ABS in 1999
ROG = recorded by Gardner in 1979 (see Gardner 1981); species not seen by ABS
* = adventive species

Ferns and fern allies (56 + 0) (= native total + adventive total)

Adiantum cunninghamii ROG
A. viridescens AJD, AK 214011 (? =*A.* ? *fulvum* of ROG)
Anarthropteris lanceolata o
Arthropteris tenella AJD, ROG, AK 149730, 207968
Asplenium bulbiferum o
A. flaccidum o
A. lamprophyllum la
A. oblongifolium o
A. polyodon o
Blechnum chambersii lc, AK 208407, 208409
B. discolor o-lc, AK 232940
B. filiforme o
B. fluviatile o
B. fraseri lc
B. membranaceum l
B. novae-zelandiae o
Cyathea cunninghamii s, ABS, AK 236961
C. dealbata c
C. medullaris c
Deparia petersenii o, ABS
Dicksonia squarrosa o-lc
Diplazium australe l, ABS
Grammitis aff. *rawlingsii* s, ABS, AK 236942
Histiopteris incisa JEB
Hymenophyllum demissum o
H. dilatatum o
H. flabellatum o
H. rarum o
H. sanguinolentum o
H. scabrum s
Hypolepis distans l, ABS, AK 232941
Lastreopsis glabella o
L. hispida o
L. velutina JEB
Leptopteris hymenophylloides o
Lindsaea trichomanoides l
Lycopodium deuterodensum ROG
L. varium o
L. volubile ROG
Lygodium articulatum c
Marattia salicina lc, AK 236969
Paesia scaberula o
Phymatosorus pustulatus o
P. scandens lc
Pneumatopteris pennigera o-lc
Pteridium esculentum o
Pteris macilenta o
Pyrrosia eleagnifolia o
Rumohra adiantiformis s, ABS
Sticherus cunninghamii ROG
Tmesipteris elongata o, ABS
T. lanceolata o, ABS
Trichomanes elongatum ROG
T. endlicherianum AJD, ROG, AK 207917
T. reniforme ROG
T. venosum lc

Conifers (8 + 1)

Agathis australis la
Dacrycarpus dacrydioides o
Dacrydium cupressinum o
Phyllocladus trichomanoides lc
*Pinus radiata** s, ABS
Podocarpus hallii l, ABS
P. totara o
Prumnopitys ferrugineus o
P. taxifolius s

Dicotyledons (84 + 28)

*Acacia longifolia** s, ABS
Acaena anserinifolia ROG
*Acmena smithii** lc, ABS, AK 236958
*Ageratina adenophora** JEB
Alectryon excelsus o, seedlings lc
Alseuosmia macrophylla o, ABS
A. x *quercifolia* o, AK 236968
Anagallis arvensis var. *arvensis** JEB
Aristotelia serrata ROG
Beilschmiedia tarairi o-lc
B. tawa c
*Berberis glaucocarpa** s, ABS
Brachyglottis kirkii ROG
B. repanda o
Callitriche muelleri lc
*C. stagnalis** l, ABS
Carpodetus serratus o
Centella uniflora ROG
*Cerastium glomeratum** JEB
*Cirsium arvensis** l, AK 218161
*C. vulgare** o
Clematis paniculata o
*Conyza albida** o
Coprosma grandifolia c
C. lucida o
C. rhamnoides o
C. robusta ROG
C. rotundifolia s, AK 236970
C. spathulata c, AK 236967
Corokia buddleioides s
Corynocarpus laevigatus o
*Crataegus monogyna** s, ABS
Cyathodes juniperina o
*Digitalis purpurea** o
Dysoxylum spectabile o-lc
Elaeocarpus dentatus o
Elatostema rugosum la
Epilobium nummulariifolium lc, ABS
E. rotundifolium ROG
Fuchsia excorticata o
Galium propinquum ROG
Gaultheria antipoda ROG
Geniostoma rupestre c
Gnaphalium gymnocephalum o
Griselinia lucida o
Haloragis erecta o

Hebe stricta ROG
Hedycarya arborea c
Hydrocotyle moschata l, ABS
*Hypericum androsaemum** s, ABS
*Ilex aquifolium** l ABS, AK 236959
Knighia excelsa o
Kunzea ericoides lc
Lagenifera pumila l ABS
Laurelia novae-zelandiae c
Leptospermum scoparium ROG, JEB
Leucopogon fasciculatus o-lc
*Leycesteria formosa** s
Litsea calicaris o
Lobelia anceps o
*Lonicera japonica** s, ABS
Macropiper excelsum o
Melicope simplex ROG
Melicytus macrophyllus s, AK 208440, 236960
M. ramiflorus c
Metrosideros ? *carminea* s, ABS
M. diffusa c, AK 236966
M. fulgens c
M. perforata c
M. robusta ROG, JEB
Myrsine australis c
Nertera depressa l, ABS
N. dichondrifolia o
Nestegis lanceolata s
Nothofagus truncata lc, AK 232942
Olearia furfuracea ROG
O. rani o
Parsonsia heterophylla o
Passiflora tetrandra s, ABS
Pennantia corymbosa o-lc, AK 236971
Peperomia urvilleana o
*Physalis peruviana** JEB
*Phytolacca octandra** s, ABS
Pittosporum cornifolium s
P. eugenioides lc, AK 236957
P. tenuifolium ROG
*Plantago lanceolata** JEB
*Polygonum hydropiper** l, ABS, AK 232938
*Prunella vulgaris** o
Pseudognaphalium luteoalbum s
Pseudopanax anomalus ROG
P. arboreus ROG
P. crassifolius o
Quintinia serrata ROG
Ranunculus reflexus ROG
*R. repens** la
Rhabdothamnus solandri ROG
*Rorippa nasturtium-aquaticum** l, ABS
Rubus cissoides ROG
R. fruticosus agg.* o
Schefflera digitata c, AK 232939
*Senecio bipinnatisectus** s
*S. jacobaea** o
S. minimus o, AK 218183
Solanum americanum o
S. aviculare ROG, JEB
Stellaria parviflora ROG
Streblus heterophyllus o
*Ulex europaeus** lc
*Veronica plebeia** JEB
Vitex lucens o
Wahlenbergia violacea l

Monocotyledons (42 + 5)
Astelia solandri o
A. trinervia ROG
Bulbophyllum pygmaemum lc
Carex dissita a
C. lessoniana lc, ABS
C. secta ROG, AK 211249
C. solandri l, AK 211252
C. virgata l
Collospermum hastatum o
Cordyline australis ROG
C. banksii o
C. pumilio ROG
*Cortaderia jubata** l, ABS
Corybas trilobus ROG
Cyperus ustulatus ROG
Deyeuxia avenoides Esler et al., AK 216389
Dichelachne crinita o
Drymoanthus adversus l, ABS
Earina autumnalis ROG
E. mucranata o
Eleocharis acuta AJD, ROG, AK 211238
Freycinetia banksii o
Gahnia lacera ROG
G. pauciflora lc
G. setifolia o
Isolepis prolifer AJD, AK 211289
I. reticularis o
*I. sepulcralis** ROG
Juncus australis AJD, AK 208923
*J. effusus** lc, ABS
J. pallidus l
*J. tenuis** lc ABS
Libertia grandiflora AJD, AK 208944
(? = *Libertia* ? *ixioides* of ROG)
Microlaena avenacea o, AK 216484
M. stipoides c-la, ABS
Morelotia affinis ROG
Oplismenus imbecillis c
Pterostylis banksii ROG
Rhopalostylis sapida lc
Ripogonum scandens c
Rytidosperma gracile lc, ABS, AK 237136
*R. racemosum** o
R. unarede o, ABS
Typha orientalis l
Uncinia banksii o
U. uncinata c, AK 211294, 211297, 217165, 236962
Winika cunninghamii AJD, ROG, AK 208960

Fungi (1 + 1)
*Favolaschia calocera** c
Laetiporus portentosus (=*Piptoporus portentosus*) x1 (on standing dead hard beech) ABS, voucher to PDD

Notes on interesting plant records

Coprosma rotundifolia – there were a few shrubs by the lower farm boundary, just east of the toilet, growing with kaikomako (*Pennantia corymbosa*) and turepo (*Streblus heterophyllus*). Although more common in Northland and also south of the Bombay Range, *C. rotundifolia* appears to be extremely local in the Auckland region. Apart from Mt William I can only find three other wild collections (or published records) from the region and these are all from the lower Mangatawhiri Valley in the southern Hunua Ranges, some 12-18 km to the east of Mt William (AK 208838-39 *I.L. Barton*, 1969; AKU 8789 *P. Blaschke & R.E. Uhe*, 1973). This species should be added to the Auckland Regional Threatened Plant List of de Lange & Cameron (1997).

Grammitis aff. *rawlingsii* - terrestrial on ridge under kauri, two clumps seen with erect fronds. It was first spotted by Harry Beacham in our group. Unable to key it satisfactorily to any described species I forwarded the small piece collected to Barbara Parris for expert comment who replied "It does not look like anything I have seen. It has aspects of *G. rawlingsii*, including ecology and small spore and sporangium size, but lacks the indumentum of that species. Its slender frond is like *G. magellanica* subsp. *nothofageti,* but the habitat is wrong and the spores and sporangium too small. Other populations of this taxon should be searched for in the Hunua Ranges." It should be added to the flora of the Hunua Ranges by Gardner & Dakin (1989).

Hypolepis distans - seen in the open at the start by the toilets (on the base of tree ferns) and on the track margin (sunny bank) up to the kauri ridge (north side). This fern has quite a local distribution in the Auckland region.

Marattia salicina (king fern) - recorded by Gardner (1981) in the steep, most western catchment. Some of the ABS party checked the lower part of this catchment where some 35 small (<50 cm tall) king ferns were found. The Cameron family later checked at least the lower half of the stream which flows out below the starting point (near the toilet) and only found one adult king fern by this stream and a small one mid-slope well above the stream. Some 20-30 mature specimens also grow by the stream running eastwards in the forest on private land just south of Mt William summit (S. McCraith pers. comm.).

Melicytus macrophyllus - only a few shrubs seen amongst shrubby vegetation at the upper pastoral boundary by the upper-eastern style. Gardner (1985) discusses the distribution of this species and later Gardner & Dakin (1989: 16) give Mt William as the most southern natural occurrence (accepting an early Kirk (WELT 29983) "Matakana" record as being from Rodney County and not the Bay of Plenty). It is interesting that there are no collections of this species from the Hunua Ranges proper in AK or AKU herbaria. The next closest natural population appears to be in the Waitakere Ranges and on the North Shore (Kauri Park). The records (AK 168424 *R. Gardner 4301*, 1984; AKU 18285 *P. Buchanan*, 1977; & Gardner 1985) from the native shrubbery at Middlemore Hospital, Otahuhu most likely arose from planted material. A past member of ABS, Arthur Farnell planted extensive native species from all over New Zealand in these grounds in the 1940s-1950s (J.A. Rattenbury pers. comm.).

Nothofagus truncata (hard beech) - reasonable-sized beech trees are locally common on the narrow central ridge of the reserve. Only a single tree to the east was seen off this ridge. They were mainly associated with regenerating kauri (*Agathis australis*). Because beech is fairly local in the Auckland region and that it has such a limited means of dispersal, outcrops of beech are always interesting to find in the region. One can only speculate how it reached here because the ridge has obviously been cleared (burned?) in the past. On the Auckland mainland the southern and eastern flanks of the Hunua Ranges are the stronghold for hard beech in the region. Possibly beech used to be nearly continuous along the southern Hunuas to Mt William.

Pennantia corymbosa (kaikomako) – occasional to locally common, mainly as shrubs with juvenile foliage, some semi-adults were also seen. Although widespread in the Auckland region it is quite local. The Hunua Ranges is a stronghold in the region for this species.

Schefflera digitata (pate) - a common understorey shrub to small tree. A single leaflet was collected (AK 232939) because of its large size: 325 mm long (including a petiolule of 22 mm) x 95 mm wide. The closest to this length in AK was 270 mm. Can anyone find a larger one?

Environmental weeds

Generally environmental weeds are absent, or very localised in their distribution. This is mainly a reflection of the proximity to a seed source, i.e. house gardens are not close to the bush. But if these new arrivals are not controlled/eradicated as they establish it is only a question of time until weeds will be widespread through the bush.

Of concern were two patches of Japanese honeysuckle (*Lonicera japonica*), one at the north boundary near stream and another on the southern boundary west of the toilet. Pampas grass (*Cortaderia jubata*) was similar with only two boundary patches seen, close to both the honeysuckle patches. The northern patch was not closely looked at and may have been *C. selloana*. The single adult Sydney golden wattle (*Acacia longifolia*) on the south side of the kauri ridge could easily be cut down.

Of particular concern were the weed seedlings on the main kauri ridge: acmena (*Acmena smithii*), holly (*Ilex aquifolium*) and barberry (*Berberis glaucocarpa*). The barberry is a common hedge plant in the area (i.e. by the carpark) and is probably of less concern because it does not establish in dense shade. But both acmena and holly are shade-tolerant, long-lived trees. The only way to remove this threat of invasion is to eliminate the (cultivated) adults in the general area. Native pigeons are frequent in the bush and no doubt feed on the exotic fruit outside the reserve and return to excrete the seeds from their favourite perch sites. Broadleaved trees with large fleshy fruit dominate much of the reserve and therefore should support a good pigeon population. Examples: taraire, tawa, puriri, karaka, kohekohe, titoki, pigeonwood and mangeao.

Holly is rather an uncommon cultivated tree in the Auckland region. On seeing how it can establish at Mt William I think this species should be considered for an addition to the Auckland Regional Plant Pest Management Strategy (Auckland Regional Council 1996) banning it from sale, distribution and propagation in the region. This would put it in the same category as some of the other weeds present at Mt William: acmena, blackberry (*Rubus fruticosus*

agg.), Himalayan honeysuckle (*Leycesteria formosa*), Japanese honeysuckle and pampas grasses.
Currently holly is not on any New Zealand Regional Plant Pest Strategy (L. Vervoort pers. comm.).

Fauna

Stream life
Some 100 m of the stream starting below the toilet, up through the forest was searched during the day for native fish. None were seen, although small koura were occasional. In places the stream was heavily silted. Unfortunately it flows through open pasture above and below the forested reserve.

Snails
A shell in good condition of the largish, carnivorous land snail *Rhytida greenwoodi* was seen in the broadleaf forest. This is the most widespread species in the genus occurring from Great Barrier Island south to Levin (Efford 1998). Jim Goulstone (1990) listed 37 species of land snails from this area.

Birds
The following were seen in or near the reserve during the February 1999 visit: chaffinch, grey warbler, harrier, kingfisher, magpie, myna, NZ pigeon, Paradise duck, pukeko, rosella, tui and welcome swallow.

Mammals
Although no goats were seen, there was plenty of evidence throughout the reserve of chewed plants (especially along track margins), droppings and scent. The absence of a shrubby understorey on the main kauri ridge suggests goats (or stock) have been more common in the past. Possum browsing was evident, especially on the kohekohe canopy. Most of the fencing was rather poor and stock damage was evident along some of the boundaries.

Discussion

The reserve contains a high number (190 spp.) of native vascular plant species and very few weeds. Some of the native species are regionally threatened (*Coprosma rotundifolia*), nationally threatened (king fern, possibly *Grammitis* aff. *rawlingsii*) or at their natural geographical southern limit (*Melicytus macrophyllus*). If the fencing could be improved, goats eliminated from the general area, possum numbers reduced, and some specific weeding carried out this fine reserve could remain relatively weed free. Effort should be made to locate and cut down the adult acmena and holly which the local pigeons are obviously visiting.

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