Auputa — a Striking Bush Remnant, Mangaweka

G. M. Rogers, Wellington

INTRODUCTION

Travellers on the tortuous gravel road from Rangiwahia to the Kawhatau Valley who have an appreciation for landscapes enriched with natural diversity could not fail to be impressed by Auputa Reserve. This splendid relictual example of the pre-European forest cover of south-east Taihape has justifiably featured on a number of past Botanical Society excursions to the region (fig. 1). It is strikingly dominated by a mosaic of lofty podocarps with attenuated conical profiles. Foliage drapes these trees from apex to basal bulge (fig. 2). At 25.7 ha, Auputa is of modest proportions. It is administered by the Lands and Survey Department as a scenic reserve.

HISTORICAL SIGNIFICANCE

Curiously, this remnant bush pocket has been spared the logger's axe. A reconstruction of past events and settlement practices provides an insight into the reserve's historical significance. In original land surveys about the year 1900, provisional farming lots of two hundred acres were delineated. Auputa, in Hautapu Block XVI, part section 6(6), has had but one private owner who constructed a whare above the partly-formed road that skirts the western boundary. Still intact in the 30's, this whare provided welcome lodgings for sundry swaggers in the depression. The original holding is now substantially reduced to Auputa Reserve with the sale of separate upper and lower portions to adjoining neighbours. Contributing to an apparent lack of pastoral attractiveness may have been the cold, damp, and steep aspect of this block. Incentives for rapid conversion to arable units were ensured by a stipulation that settlers must clear 30 acres and erect a dwelling within 2 years. The corollary was that provision for future timber supplies was provided in remaining forest cover.

Auputa was witness to the pioneer farmer influx to the upper Kawhatau Valley. In this region, drainage systems are characterised by cavernous river gorges which act as transport barriers. Accordingly, pioneer settlers gained access to the upper Kawhatau Valley via the Ruahine Valley and Auputa Saddle. In order to traverse the northernmost stream, a 'giant' Auputa kahikatea[1] was felled to function as an elementary bridge.

TOPOGRAPHY

Topographically, the reserve occupies a catchment created by rapidly downcutting streams. An irregular pattern of dissected ridges (with subsidiary spurs developed on the flanks) symbolises the directionally

1 Common names used in the text are given with their formal names in the appendix.

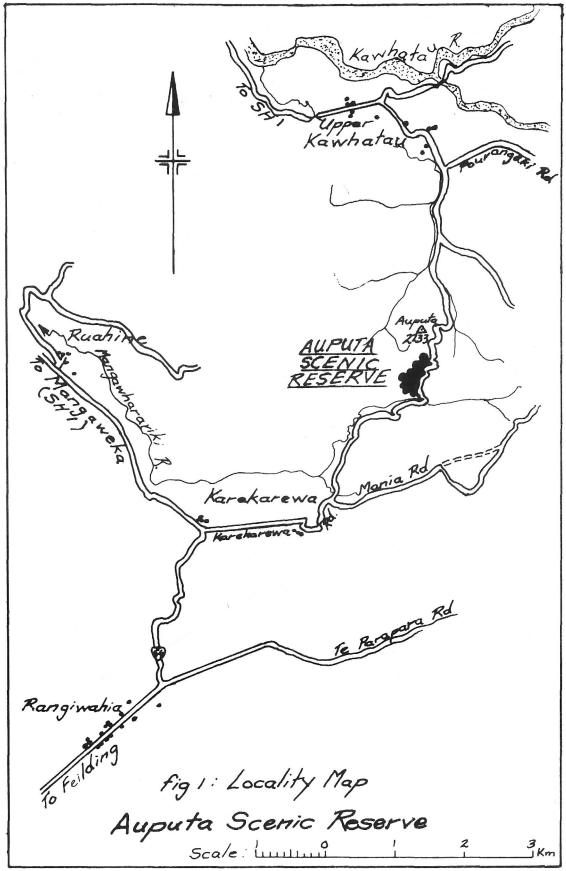

fig 1: Locality Map

Auputa Scenic Reserve

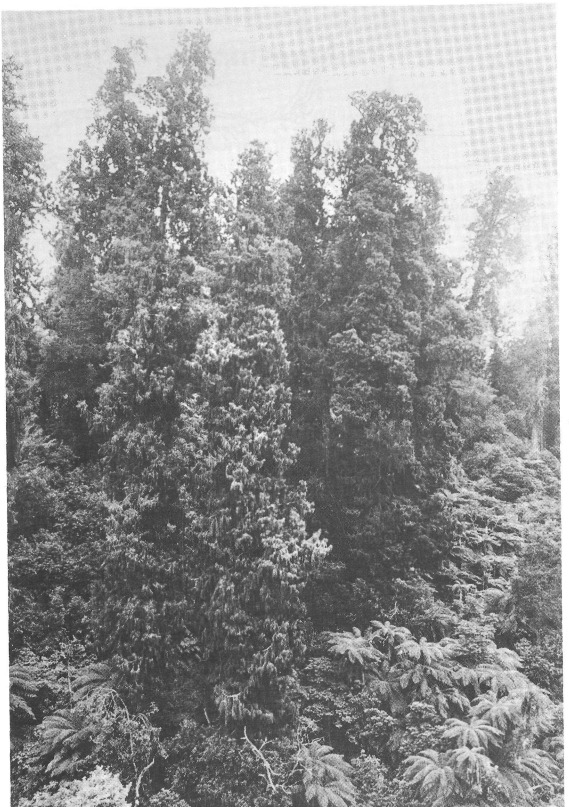

Fig. 2
Uninterrupted light levels, a function of steep slope and the low stature of surrounding vegetation, allow this rimu-dominated stand to support foliage to near ground level. The flanking skirt of *Dicksonia squarrosa* occupies the damp gully intermittently awash with stormwater runoff.

confusing drainage patterns of the district. Surface configurations suggest a geologically active environment with steep-sided ridges and streams mostly secluded in deep ravines. Mass movement and slumping is an inevitable consequence of blue-grey siltstone and sandstone papa and steep relief. In addition, fossiliferous limestone lenses often appear in embankments.

VEGETATION

Nature has 'landscape gardened' this complex of spurs and gullies with vegetation stands, largely a reflection of the physical environment. Any naturalist with an interest in vegetation would readily recognise, delineate and label the vegetation associations clothing these slopes.

Vegetation of the ridges

On steep spurs, rimu dominates, with sporadic matai and totara. Where spurs steepen into deep ravines, rimu is resplendent, draped in a deep skirt of foliage developed in the absence of a competititve understorey. At higher elevations, a diverse understorey mix occurs of black and white maire, miro, rewarewa, pokaka, mahoe, heketara and toro. Two ubiquitous North Island forest components, tawa *(Beilschmiedia tawa)* and kamahi *(Weinmannia racemosa)* are absent; significantly this enables expression of a wide range of competitive broadleaf species. On gentler, more stable ridge tops red beech is the physiognomic dominant. In addition to *Leucopogon fasciculatus,* numerous miro seedlings, silver tree ferns and the occasional mapou occur where light levels allow. Steep valley sides see tarata, hinau, *Hoheria populnea* var. and black maire dominating the canopy.

Vegetation of the alluvial terraces

At lower elevations in the catchment, scattered kahikatea and red beech frequently occupy restricted river terraces, accompanied by *Melicytus lanceolatus,* black maire, lancewood and kaikomako *(Pennantia corymbosa).*

Vegetation of the gullies

In contrast to the ridge communities, gully vegetation is largely devoid of tall podocarps and beeches. This is not unexpected in a habitat intermittently subjected to surface scouring by stormwater runoff and periodic slumping. Recently-colonised slipfaces testify to this dominant force. Here, scrub and shrublands have dense groves of *Dicksonia squarrosa* alternating with *Pseudowintera colorata* at lower elevations. Also common are raurekau, pate, kotukutuku and five finger. In the deep, dank valley bottoms, low illumination and a reliably moist atmosphere suit a diverse fern flora among which are *Blechnum chambersii, B. colensoi, B. fluviatile, Adiantum cunninghamii, Leptopteris hymenophylloides, Phymatosorus diversifolius* and numerous species of *Hymenophyllum.*

SOME DISTINCTIVE SPECIES DISTRIBUTIONS

Closely related species, typically ecologically separated by altitudinal preferences, have reversed distributions at Auputa. *Cordyline indivisa, Pseudowintera colorata* and Hall's totara all occur at low but colder elevations in the catchment while their normally lower altitude equivalents, *C. australis, P. axillaris* and totara, prefer the warmer and sunnier higher elevations.

VEGETATION DYNAMICS

In the course of an Easter 1983 visit to the reserve, members of the Society undertook an observational survey of the regeneration trends on two ridges and in an intervening valley. It must be stressed that while future disturbance influence such as slumping and windthrow cannot be predicted from this survey, some insight into the possible structure of some species populations is possible.

Few rimu are being recruited to the population. Seedlings, saplings and poles are all limited to six or fewer. A similar population structure exists for matai, while kahikatea regeneration is confined to low alluvial flats. Only three red beech seedlings were observed, but broadleaf regeneration is prominent. Black and white maire and rewarewa are marked by numerous juveniles in the understorey. Likewise for miro, which possesses a different regeneration biology to other members of the podocarp family, with a comparative tolerance of low illumination levels. The inference is obvious. Is the broadleaf component of this forest to increase at the expense of podocarps in the future?

INFLUENCE OF BROWSING ANIMALS

As A. P. Druce (1949, p. 8) mentions, no piece of indigenous vegetation can be studied these days without cognisance of the effects of browsing animals. As with numerous other scenic reserves in New Zealand, Auputa is periodically browsed by sheep and cattle. The overt influence of such browsers in the past may have contributed substantially to an increased incidence of a number of unpalatables, such as mingimingi and *Pseudowintera colorata.* Fire has encroached on northern and southern extremities of the reserve in the past. *Hoheria populnea* var., putaputaweta and makomako have exploited this disturbance.

CONCLUSION

In our fertile, lowland-to-montane, privately-owned, pastoral districts ecological diversity is disappearing at an accelerated pace. Among the host of benefits accruing from vegetation preservation our natural heritage is considerably enhanced by these small vestiges of native ecosystems. In the aggregate, they aid the biologist in reconstructing pre-European vegetation patterns and benefit society by enriching our natural landscapes. Inland Mangaweka is fortunate in this respect, when compared with the psychological disenchantment that can be experienced in the bland pastoral vistas of Hawke Bay or Canterbury provinces.

ACKNOWLEDGEMENTS

The helpful assistance of members of the Wellington Botanical Society is appreciated. I also thank A. P. Druce for the appended species list. I am also indebted to Ted Abraham and Colin Beard of Mangaweka who supplied valuable historical information.

REFERENCE

Druce, A. P. 1949. Fiordland expedition. *Bulletin of the Wellington Botanical Society No. 21:* 8-10.

APPENDIX: INDIGENOUS VASCULAR PLANTS OF AUPUTA BUSH
(unc) — uncommon

GYMNOSPERMS

Dacrycarpus (Podocarpus) dacrydioides (unc) [kahikatea]
Dacrydium cupressinum [rimu]
Podocarpus hallii (unc) [Hall's totara]
P. totara var. *totara* [totara]
Prumnopitys ferruginea (Podocarpus ferrugineus) [miro]
P. taxifolia (Podocarpus spicatus) [matai]

MONOCOT TREES AND SHRUBS

Cordyline banksii
C. indivisa (unc)
C. banksii X *C. indivisa* (unc)

DICOT TREES AND SHRUBS

Aristotelia serrata [makomako]
Brachyglottis repanda s.s.
Carpodetus serratus [putaputaweta]
Coprosma grandifolia [raurekau]
C. lucida s.s. (incl. *C. australis*)
C. rhamnoides ssp. *rhamnoides* (incl. C. *polymorpha*)
C. rigida (unc)
C. robusta
C. tenuifolia
C. propinqua ssp. *propinqua* X *C. tenuifolia* (unc)
Coriaria arborea var. *arborea*
Elaeocarpus dentatus (incl. *E. d.* var. *obovatus*) [hinau]
E. hookerianus (unc) [pokaka]
Fuchsia excorticata [kotukutuku]
Gaultheria antipoda
Geniostoma rupestre var. *(G. ligustrifolium* var. *ligustrifolium)*
Griselinia littoralis
Hebe stricta var. *stricta*
Hoheria populnea var. *lanceolata*
Knightia excelsa [rewarewa]
Leptospermum scoparium
Leucopogon fasciculatus (Cyathodes fasciculata) [mingimingi]
Melicytus lanceolatus (incl. *M.l.* var. *latior*) (unc)
M. ramiflorus ssp. *ramiflorus* [mahoe]
Myrsine australis [mapou]
M. salicina [toro]
Neomyrtus pedunculata (unc)
Nestegis (Olea) cunninghamii [black maire]
N. (O.) lanceolata [white maire]
Nothofagus fusca [red beech]
Olearia rani [heketara]

Pennantia corymbosa [kaikomako]
Pittosporum eugenioides (unc) [tarata]
P. cornifolium (unc)
Pseudopanax arboreus var. *arboreus* [five finger]
P. crassifolius [lancewood]
P. edgerleyi (unc)
Pseudowintera axillaris
P. colorata
Schefflera digitata [pate]

DICOT LIANES

Clematis foetida
C. paniculata
Metrosideros colensoi (incl. *M.c.* var. *pendens*)
M. diffusa
Muehlenbeckia australis
Parsonia capsularis
P. heterophylla
P. capsularis X *P. heterophylla* (unc)
Rubus cissoides var. *cissoides*
R. schmidelioides var. *schmidelioides*

PSILOPSIDS, LYCOPODS, AND FERNS

Tmesipteris elongata (incl. *T.e.* ssp. *robusta*) (unc)
Lycopodium varium (incl. *L. billardieri* and *L. novae-zelandicum*) (unc)
Adiantum cunninghamii
Alsophila (Cyathea) smithii
A. tricolor (Cyathea dealbata) [silver tree fern]
Asplenium bulbiferum s.s.
A. *flaccidum* ssp. *flaccidum*
A. hookerianum
A. oblongifolium (A. lucidum)
A. polyodon (A. falcatum)
A. bulbiferum X *A. flaccidum* (unc)
Blechnum chambersii (B. lanceolatum)
B. colensoi (B. patersonii)
B. discolor
B. fluviatile
B. sp. (unnamed; *B. capense* agg.) (common sp; lower pinnae reduced in length)
Ctenopteris (Grammitis) heterophylla
Dicksonia fibrosa
D. squarrosa
Histiopteris incisa
Hymenophyllum bivalve (unc)
H. demissum
H. ferrugineum
H. flabellatum
H. revolutum (unc)
H. sanguinolentum agg.
H. scabrum
Leptopteris (Todea) hymenophylloides
L. (T.) superba (unc)
Paesia scaberula
Phymatosorus diversifolius (Phymatodes diversifolium)
Pneumatopteris (Thelypteris) pennigera
Polystichum silvaticum
P. vestitum
Pteridium esculentum
Pyrrosia serpens
Trichomanes venosum

ORCHIDS

Corybas macranthus
Earina autumnalis
E. mucronata
Microtis unifolia
Thelymitra longifolia

GRASSES, SEDGES, AND RUSHES

Cortaderia fulvida
Dichelachne crinita
Ehrharta diplax (Microlaena avenacea)
Poa anceps var. *anceps*
Rytidosperma clavatum
R. gracile
Carex geminata s.s.
C. solandri
Isolepis (Scirpus) pottsii
Machaerina sinclairii
Uncinia banksii
U. uncinata
U. zotovii
Juncus gregiflorus

OTHER MONOCOT HERBS

Astelia fragrans
A. solandri
Collospermum microspermum
Phormium cookianum

COMPOSITE HERBS

Craspedia minor var. *minor* (incl. *C. major*)
Gnaphalium audax s.s. (*G. collinum,* in part)
G. involucratum
G. keriense
G. subrigidum
G. sp. (*G. luteo-album* agg.) (lvs mostly linear-spathulate to linear, acute)
Senecio minimus (Erechtites minima)

OTHER DICOT HERBS

Acaena anserinifolia
Cardamine sp. (*C. debilis* agg.) ("Narrow Petal" of Pritchard 1957)
Epilobium nummularifolium
E. pubens
E. rotundifolium
Gunnera monoica (incl. *G. albocarpa* and *G. strigosa*)
Hypericum japonicum
Nertera depressa (incl. *N. cunninghamii*)
Ourisia macrophylla var. *robusta*
Ranunculus hirtus s.s.
Stellaria parviflora (incl. *S. minuta*)
Viola filicaulis
Wahlenbergia marginata

REFERENCE

Pritchard, G. G. 1957. Experimental taxonomic studies on species of *Cardamine* Linn. in New Zealand. *Transactions of the Royal Society of N.Z. 85:* 75-89.