THE ORINI KAHIKATEA FOREST, TAUHEI — WHITIKAHU ROAD

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INTRODUCTION

The Orini Kahikatea forest (NZMS 260 S14/185-976) is the largest of the more northly forested remnants of the Hamilton Basin*. The remnant has been fenced ever since the area was cleared of bush in the early 1900s (Smith pers. comm.). Since the forest is of close proximity (less than 1 kilometre distant) to the Hapukohe Range which has largely remained bushed (until recently) the author was interested to see what the influence of the nearby ranges was; and which of the more northerly species typical of that range had reached the Hamilton basin lowlands (less than 90 a.s.l.). In addition this forest had been visited by Gudex, who collected several specimens (lodged in the University of Waikato Herbarium Gudex collection), although no further notes were made of it and his collection is now very fragmentary.

I visited the remnant on the 18th January 1987 to investigate the indigenous flora and determine how strong the influence of the nearby ranges on the forests flora was.

THE FOREST

The Orini remnant is on the property of the Smith family who have owned the farm since the land was first cleared in the early 1900s. The remnant was fenced relatively early on and has remained in this state until the present. The forested area is small (c. 7 Ha) and narrow, sited on a series of low rolling hills surrounded by river alluvium of the Hinuera Formation. It is quite unlikely that the forest was of a very swampy nature for this reason, and so it probably cannot be compared to the forested areas further south in the basin which are developed on the ridge/swale relief typical of the Hinuera Formation. In character the remnant is more comparable to the Koromatua Bush (de Lange, 1985a) although the lower relief has increased the dominance of kahikatea (Dacrycarpus dacrydioides) above that noted at Koromatua.

The fenced part of the remnant contains a thick understorey of Coprosma species notably Coprosma rhamnoides and C. areolata; mahoe (Melicytus ramiflorus ssp. ramiflorus), and hangehange (Geniostoma rupestre var.) are also abundant. The ferns Asplenium lamprophyllum, Hypolepis ambigua, Diplazium australe and Pneumatopteris pennigera are the dominant fern species of the forest floor, although the Asplenium is restricted to the centre of the forest.

The north eastern edge of the forest floor is dominated by large specimens of the kauri sedge Gahnia xanthocarpa, a species now quite local in the Hamilton basin area. Together with this sedge were found scattered plants of Coprosma arborea a species recorded for the first time in the basin flora. Very occasional specimens of Alseuosmia x quercifolia were also noted in the more shaded parts of the forest. This species has recently become extinct at the only other known lowland site in the Hamilton basin, Claudelands Bush, where it was last reported

* The Hamilton Basin being here defined as all the lowlands below 300 ft (c. 90 m).

by Boase (1985) when Hamilton City Council weed spraying killed the plants. This makes the Orini forest very important since this species has not yet been found elsewhere in the basin proper.

A small area of adjoining unfenced forest was examined also. This remnant has developed in a marked swale on the edge of the main Orini forest and as such has a canopy dominated by kahikatea, only one small matai (Prumnopitys taxifolia) was discovered here but a nearby remnant contained totara (Podocarpus totara) illustrating the relationship between soil drainage and topography with kahikatea/matai/rimu on the gleyed soils of the swales and totara on the free draining sandy loams of a tributary of the Komakorau stream. Tawa (Beilschmiedia tawa) and tanekaha (Phyllocladus trichomanoides var. trichomanoides) becoming important on the smaller hills of the Orini forest proper. This sequence is seen throughout the basin, although drainage of wetter kahikatea remnants has seen a gradual increase in tawa as the forest floor becomes drier, e.g. Whewell's Nature Reserve, Matangi.

A single lancewood (Pseudopanax crassifolius) was discovered in one of these associated remnants with foliage similar to the rarer Pseudopanax ferox. This heavily toothed form of lancewood seems especially common in the Hamilton basin and the eastern Pakaroa ranges but there is no clear trend between toothed and heavily toothed specimens since both forms will often occur together. It was once thought the heavily toothed form was the genetic race confined to the Waikato lowlands but detailed observations show this to be untrue.

THE NORTHERN ELEMENT OF THE ORINI FOREST

Despite the close proximity of the Hapukohe ranges (less than 1 kilometre distant) the "northern hill flora" was less well developed than further south at Koromatua (de Lange, 1986) and in remnants near Gordonton (de Lange, 1985b, 1985c). The following species; Coprosma spathulata, king fern (Marattia salicina), kauri (Agathis australis), Bulbophyllum tuberculatum, kawaka (Libocedrus plumosa), and Lastreopsis velutina were searched for but not found. Since all these species occur within 1 kilometre of the remnant or have been recorded from the Hamilton basin elsewhere (see de Lange, 1986) one can only assume their absence from the Orini remnant is a factor of its size, aspect and past history.

Despite this a small northern range flora was located containing Coprosma arborea, Asplenium lamprophyllum, Alseuosmia x quercifolia and Nertera dichondrifolia s.s.

The Asplenium, Alseuosmia, Coprosma and Nertera are species which are distributed throughout the ranges either side of the Waikato lowlands and are normally associated with warmer coastal forests in this area of the western North Island. Coprosma arborea is common throughout the nearby Pakaroa ranges in the east but in the west it is very rare south of Mt Pirongia, being known to the author from Te Kauri Scenic Reserve, Kihi Road Junction, Kawhia, Hangatiki Scenic Reserve, Waitomo and Mangapu Kahikatea Forest, Te Kuiti. The Alseuosmia although common in the Hakarimata ranges (records of A. x quercifolia from this area are often based on Alseuosmia sp. "Hakarimata") is doubtfully recorded from Pirongia, since neither Druce nor the author have found it there, (see Druce, 1978) and I have collected it from the Awaroa Scenic Reserve, Hauturu. The northern race of Nertera dichondrifolia (with hooked

hairs) is widely distributed in the western ranges of the Waikato but is progressively replaced by the southern race N. spp aff. dichondrifolia (straight hairs) around Kawhia. The Asplenium has a peculiar distribution, occuring in moist gullies in the ranges with kauri and tanekaha and yet ranging throughout the western King Country on calcareous rocks. In this area it is widely distributed as far south as Awakino (c.f. Brownsey, 1977 and Druce and Ogle, 1986), often occurring in dolines and cave entrances.

In the Hamilton basin it is true that these species tend to be restricted to forested remnants near the ranges and are quite locally distributed in the southern part of the basin. Other species with distributions seemingly controlled by the ranges are; Coprosma rhamnoides, Asplenium gracillimum and Gahnia xanthocarpa. The Orini forest is interesting because it contains several species not recorded elsewhere of this northern range flora. Whether it can be said that this is a natural pattern is now impossible, in the mean time these remnants serve the useful purpose of providing a scenario for the past flora of the Hamilton basin.

Note: Alseuosmia x quercifolia is known from Mt Kakepuku (> 90 m a.s.l.) where it was recorded in error as Pseudowintera axillaris by Boase (1985); this was corrected later (see Corrigenda, 1986). Asplenium lamprophyllum is also recorded from Kakepuku, where it is common (Wright, 1985).

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APPENDIX Indigenous vascular species recorded from the Orini Forest

\+ = uncommon or local within forest remnants surveyed
WAIK = specimen lodged in the University of Waikato Herbarium.

Gymnosperms

Dacrycarpus dacrydioides
Dacrydium cupressinum
Phyllocladus trichomanoides var. trichomanoides +
Podocarpus totara +
Prumnopitys ferruginea + WAIK 7237
P. taxifolia + WAIK 7235

Psilopods & lycopods

Lycopodium varium (incl. L. billardieri) +
Tmesipteris elongata +

Ferns

Asplenium bulbiferum s.s
A. flaccidum ssp. flaccidum
A. gracillimum + WAIK 7238
A. lamprophyllum WAIK 7089
A. polyodon
A. bulbiferum s.s. x flaccidum ssp. flaccidum
Anarthropteris lanceolata
Blechnum chambersii
B. discolor
B. filiforme
B. fluviatile
B. bembranaceum +
B. minus
B. sp (B. capense sensu Allan, 1961) +
Cyathea dealbata
C. medullaris +
Deparia petersenii ssp. congrua + WAIK 7086
Dicksonia fibrosa +
D. squarrosa +
Diplazium australe
Doodia media ssp. australis +
Histiopteris incisa
Hymenophyllum demissum +
H. flabellatum +
Hypolepis ambigua
H. distans
H. lactea +
Lastreopsis glabella
L. microsoria ssp. pentangularis +
Leptopteris hymenophylloides
Paesia scaberula
Pellaea rotundifolia +
Phymatosorus diversifolius
P. scandens
Pneumatopteris pennigera
Pteridium esculentum
Pteris pendula (auct. macilenta) +
P. tremula
Pyrrosia serpens
Rumohra adiantiformis +
Trichomanes venosum +

Dicot trees

Alectryon excelsus var. excelsus
Aristotelia serrata +
Beilschmiedia tawa
Carpodetus serratus
Elaeocarpus dentatus +
E. hookerianus + WAIK 7236
Fuchsia excorticata +
Hedycarya arborea +
Melicytus ramiflorus ssp. ramiflorus
Myrsine australis
Nestegis cunninghamii +
N. Lanceolata +
Paratrophis microphylla
Pittosporum tenuifolium var. tenuifolium + WAIK 7087
Pseudopanax crassifolius + WAIK 7234

Knightia excelsa
Laurelia novae-zelandiae
Macropiper excelsum var. excelsum +
Schefflera digitata + WAIK 7088
Sophora microphylla +

Dicot shrubs
Alseuosmia x quercifolia + WAIK 7085
Brachyglottis repanda var. repanda +
Coprsoma arborea + WAIK 7092
C. areolata WAIK 7091
C. rhamnoides WAIK 7090
C. rigida
C. rotundifolia +
Geniostoma rupestre? WAIK 7093
Melicope simplex +
Melicytus micranthus

Monocot trees & shrubs
Cordyline australis +
Rhopalostylis sapida

Dicot lianes
Freycinetia baueriana ssp. banksii +
Ripogonum scandens

Dicot lianes
Calystegia sepium agg.
Metrosideros diffusa
M. perforata +
Muehlenbeckia australis
Parsonsia heterophylla
Passiflora tetrandra

Grasses
Echinopogon ovatus
Ehrharta diplax var. diplax
E. stipoides
Oplismenus hirtellus ssp. imbecillus

Orchids
Drymoanthus adversus +
Earina mucronata

Rushes
Juncus sarophorus
Luzula picta var. picta

Sedges
Baumea tenax +
Carex inversa
C. lambertiana
C. lessoniana
C. sp. (C. geminata agg. cmn sp.; lvs 2-2.5 cm wide) +
C. virgata
Gahnia xanthocarpa
Uncinia uncinata

Monocot herbs (other than grasses, orchids, rushes & sedges)
Astelia solandri +
Collospermum hastatum +

Dicot herbs
Dichondria repens
Nertera dichondrifolia s.s. +

Total species (incl. hybrids) = 110.

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