Vegetation Survey of Two Scenic Reserves of Levin Township

The following notes are based on two short visits to Waiopehu Scenic Reserve on 4 and 7 September 1992 and one short visit to Prouse Scenic Reserve on 4 September 1992. The aims of the visits were to provide basic vegetation descriptions and an assesment of the ecological health of the reserves.

Both reserves preserve in very modified form examples of the original forest cover of the Horowhenua Plains. There are now only a few existing examples of the former extensive podocarp-broadleaf rainforests that stretched from the coastal sands to the Tararua Mountains. Frances Duguid describes these two stands of forest in her paper on the Botany of northern Horowhenua lowlands (Duguid 1990). Her knowledge of the forest remnants stretched over a 60 year period and from her observations it is obvious that there have been significant shifts in the importance and dominance of plant species in these reserves over this time period.

WAIOPEHU SCENIC RESERVE

The forest canopy is dominated by tawa and pukatea. Tawa dominates on the drier portions of the reserve along with hinau and rewarewa. Pukatea favours the wetter south-west portion of the reserve and also grows along the stream that bisects the reserve. However, both tawa and pukatea may be found throughout the reserve and there is no real distinction between the wetter and drier forest types. For descriptive purposes the forest may be described as a tawa-pukatea tall rain-forest.

Duguid (1990) described the forest as a relic of a rimu-northern rata forest. Only one pre-European rimu is growing in the forest now. The tree is on a lean and the western portion of the trunk is dead and hollowed out. There is, however, a good amount of canopy foliage and the tree may remain alive for some time yet. Some young rimu have been planted on the northern fenceline, but no natural regeneration of this species was noted in the reserve. Similarly, no naturally occurring northern rata was noted in the reserve, but it has been planted on the northern boundary. Duguid (1990) records that the last naturally growing northern rata died in the destructive 1936 gale that swept through this region.

The understorey is well developed. Small trees growing under the canopy include: mahoe, karaka, pate, kaikomako, small-leaved milk tree, pigeonwood, kanono, and to a lesser extent, lancewood, fivefinger and lemonwood.
The tree ferns, mamaku, ponga and wheki are also significant elements in the understorey. Wheki is distributed in groves alongside the stream.

Tall shrubs are also a feature of the understorey; kawakawa is the dominant species, but hangehange, karamu, and horopito are also present. Climbers abound in the understorey; supplejack and native passionfruit are common along with kiekie, bushlawyer, native jasmine, climbing ratas, pohuehue, and the climbing ferns, Blechnum filiforme, and Phymatosorus scandens.

For the most part the forest floor is in a good state, native vegetation dominates. Clumps of ferns such as Lastreopsis glabella, Lastreopsis hispida, hen and chicken fern, and shining spleenwort grow along with mats of Phymatosorus scandens, Blechnum filiforme, and Hymenophyllum demissum. Seedlings and small saplings of a number of tree and shrub species are plentiful. There is good regeneration of pukatea, but limited evidence of tawa replacement. Groves of karaka seedlings are a feature in places and saplings of this species are beginning to dominate on the margins of the reserve. It is probable that this species is regenerating at such a pace that it will come to dominate the understorey and ultimately the canopy of this forest remnant.

Parataniwha is found alongside the stream banks. The aggressive weed wandering willy favours the same habitat as parataniwha and threatens to choke out parataniwha in places.

A number of species that are not native to New Zealand or the Horowhenua lowlands have been planted on the eastern and northern boundaries of the reserve. Although this is a practice that is actively discouraged nowadays in existing forest remnants there seems to be no great need to remove these exotic plantings from this reserve as they are not regenerating in the interior of the forest. At present these trees form a very good shelter for the native forest in the interior. When the exotic trees become decadent and fall the resulting gap could be planted with tree species that are indigenous to the reserve. If all these exotic plantings were to be removed the native trees would suffer from wind exposure, the forest interior would dry out and most probably exotic weed species would become rampant on the margins of the reserve.

There is a rich bird life in this small reserve which is probably a reflection of the proximity of the reserve to the forested Tararua Range. Possum sign was evident on every large tree in the reserve and these animals are undoubtedly having a severe effect on the regeneration and growth of favoured plant species.

Recommendations for Reserve Management:

As this reserve appears to be in a fairly healthy state for its small size, a minimalist approach to any development in and around the reserve is advised.

1) Hand removal of all wandering willy growing close to Elatostema. It is essential that all portions of the wandering willy plant are bagged and removed from the reserve for disposal.

2) Removal of all wandering willy from along the stream bank. This will be a labour intensive job and should be undertaken by manual means. Sprays should not be used in this reserve as young tree, shrub and fern plants could be damaged, spray material could reach the stream waters and endanger animals therein and sprays may be toxic to the native landsnails that are found in this reserve.

3) Careful removal of banana passionfruit and Japanese honeysuckle from the northern fenceline of the reserve could be undertaken.

4) Karaka regeneration in this reserve should be monitored at intervals (e.g. every 5 years). If dense groves of karaka saplings begin to develop and threaten the regeneration of other native species then some thinning of this species should be undertaken.

5) There is the potential to re-introduce some of the former canopy species into this reserve. Rimu, northern rata, and kahikatea could be planted into canopy gaps. Totara should be used for plantings on the margin. No karaka should be planted.

6) Possum trapping should be undertaken. It is doubtful if the reserve will ever be possum free, so a regular programme of trapping should be initiated.

PROUSE SCENIC RESERVE

Prouse Scenic Reserve is a severely degraded stand of tawa-titoki forest located on the south-east outskirts of Levin. The reserve was described by Duguid (1990) as being originally "preserved as a sample of matai forest". Today no canopy matai grow in the reserve; one tall totara is present, otherwise karaka and rewarewa share the canopy with tawa and titoki.

There is an open understorey of small trees and shrubs like mahoe, pigeonwood, karaka, kaikomako, kawakawa, Melicope simplex, kanono and Coprosma areolata. The ground floor vegetation is dominated by a dense sward of wandering willy. Small clearings occur on the forest floor and here a few clumps of hen and chickens fern or Phymatoscrus scandens grow.

A number of trees of false acacia have been cut down on the southern margin of the reserve. Although a couple of rimu seedlings have been planted into the clearing this portion of the reserve will soon be overwhelmed by wandering willy and Japanese honeysuckle which are both rampant here.

Without a concerted weed control plan and a planting scheme this forest will continue to degenerate into a low scrub dominated by karaka, mahoe and kawakawa, and ultimately descend into an infestation of introduced weed species. It is not too late to save the inherent nature of this reserve if the suffocating growth of wandering willy is eliminated and natural regeneration of native species is permitted. To achieve this, it is necessary to control wandering willy, plant up cleared sites with native species and protect the boundaries of the reserve by planting up with hardy native species.

Recommendations for Reserve Management

1) Initiate a weed eradication and planting programme with a detailed timetable of achievable objectives.

a) Wandering willy should be cleared in patches by hand (all plant material should be bagged up and removed from the site for disposal). Cleared patches should be sprayed with a chemical known to be effective against wandering willy. Kelly & Skipworth (1984) found paraquat to be effective; Carol Leach of Otari Gardens intends to use grazon following its reported success on Stephens Island (See attached letter from Derek Brown, DoC, Havelock). As the regeneration of native plants has been seriously compromised by the wandering willy there is no real worry in this reserve that some native seedlings will be damaged by spray. It is essential that a follow-up programme of weed control is undertaken following the initial clearance and spraying.

b) Plant up cleared and sprayed sites with species native to the reserve. Mahoe, kawakawa, kanono, matai, tawa, titoki, nikau, kaikomako, totara, hangehange, rewarewa, lemonwood, Coprosma areolata, Melicope simplex, and poroporo could all be used.

2) Secure the boundaries of the reserve to prevent die-off of the existing canopy trees. This is a problem on the southern boundary where there has been removal of false acacia and the north-western edge where there is a large canopy gap overridden by adventive weeds. These exposed areas should be cleared of suffocating weed growth and planted up in totara, a very hardy species, suitable for exposed sites.

3) Plant up the eastern end of the reserve with shade-tolerant species in an effort to discourage over use of this area as a playground.

4) Undertake control methods for the adventive vines like Japanese honeysuckle and cup and saucer vine that are rampant in the reserve. For the most part this will involve hand-cutting of the major vines and removal of rooted portions. Follow-up control will also be required and the vine clearing operation should be undertaken in conjunction with the wandering willy clearance.

5) Landscape the entrance to the reserve and develop a single circular path through the reserve.

6) Place an interpretation sign at the entrance which explains the weed control and planting programme and describes the natural features of the reserve.

7) The noxious smells emanating from the nearby meat processing plant are very off-putting to any visitors to this reserve. It should be possible for this company to reduce the level of its objectionable odour and the local authority should instigate means whereby the company is forced to comply with accepted limits of odour pollution.

References:

Duguid, Frances, C. 1990: Botany of northern Horowhenua lowlands, North Island, New Zealand. New Zealand Journal of Botany 28: 381-437.

Kelly, David; Skipworth, J.P. 1984: Tradescantia fluminensis in a Manawatu (New Zealand) forest: II. Management by herbicides. New Zealand Journal of Botany 22: 399-402.

Derek Brown 1992: Letter to Carol Leach about Tradescantia eradication.

LEWIN

Vascular Plant Species List of Prouse (P) and Waiopehu (W) Scenic Reserves

Fern Ally
*Selaginella kraussiana (W)

Ferns
Asplenium bulbiferum ssp. bulbiferum (W,P), hen and chickens fern
A. flaccidum (W), hanging spleenwort
A. oblongifolium (W), shining spleenwort
A. polyodon (W)
Blechnum chambersii (W)
B. filiforme (W)
Cyathea dealbata (W,P), ponga, silver tree fern
C. medullaris (W), mamaku
Dicksonia squarrosus (W,P), wheki
Histiopteris incisa (P)
Hymenophyllum demissum (W)
H. flabellatum (P, extinct since 1973 according to Duguid)
Lastreopsis glabella (W)
L. hispida (W)
Phymatosorus diversifolius (W), hound's tongue fern
P. scandens (W,P)
Pneumatopteris pennigera (W)
Pteridium esculentum (W), bracken
Pyrrosia eleagnifolia (W)
Trichomanes venosum (W)

Trees and Shrubs
*Agathis australis (W, edge of P), kauri
Alectryon excelsus (W,P), titoki
Beilschmiedia tawa (W,P), tawa
*Berberis sp. (W), barberry
Brachyglottis repanda (W, some planted on northern boundary)
*Chamaecyparis lawsoniana (W), Lawson cypress Coprosma areolata (P)
C. grandifolia (W), kanono
C. rhamnoides (W)
C. robusta (W), karamu
Cordyline australis (W, planted on northern boundary; P, seedlings), ti, cabbage tree
Corynocarpus laevigatus (W,P), karaka
*Cupressus macrocarpa (W), macrocarpa
Dacrycarpus dacrydioides (W), kahikatea
Dacrydium cupressinum (W, P planted), rimu
Elaeocarpus dentatus (W), hinau
*Euonymus japonicus (W), spindle tree
*Eucalyptus sp. (W) gum
Fuchsia excorticata (W), tree fuchsia
Geniostoma rupestre (W,P), hangehange
Hedycarya arborea (W), porokaiwhiri, pigeonwood
Hoheria populnea (W, planted), lacebark
*Hydrangea macrophylla (W)
*Ilex aquifolium (W), holly

Knightia excelsa (W,P), rewarewa
Laurelia novae-zelandiae (W), pukatea
*Lycium ferocissimum (P), boxthorn
Macropiper excelsum (W,P), kawakawa
Melicope simplex (P)
Melicytus ramiflorus (W,P), mahoe, whitey-wood
Metrosideros robusta (W, originally present, now occurring as a planted specimen)
Myrsine australis (W), mapou
*Nothofagus menziesii (W), silver beech
Pennantia corymbosa (W,P), kaikomako
*Picea ?abies (W), Norway spruce
*Pinus radiata (P), radiata pine
Pittosporum eugenioides (W), tarata, lemonwood
P. tenuifolium (W), kohuhu
Podocarpus totara (W,P), totara
*Pomaderris (W)
Prumnopitys ferruginea (W,P), miro
P. taxifolia (P, originally present), matai
*Prunus laurocerasus (W), cherry laurel
Pseudopanax arboreus (W), five-finger
P. crassifolius (W), lancewood
Pseudowintera axillaris (W), horopito
Rhopalostylis sapida (W,P), nikau
*Robinia pseudacacia (P), false acacia
*Salix fragilis (W), crack willow
Schefflera digitata (W), pate
*Sequoia sempervirens (W), coastal redwood
Solanum aviculare (P), poroporo
*Solanum pseudocapsicum (P), Jerusalem cherry
Sophora microphylla (W, planted), kowhai
Streblus heterophyllus (W), small-leaved milk-tree
Syzygium maire (W, Duguid 1990), swamp maire

Lianes
*Cobaea scandens (P, Duguid 1990), cathedral bells
Freycinetia baueriana ssp. banksii (W), kiekie
*Hedera helix (W), ivy
*Lonicera japonica (W), Japanese honeysuckle
*L. periclymenum (P, Duguid 1990)
Metrosideros diffusa (W), climbing rata
M. fulgens (W), climbing rata
M. perforata (W), climbing rata
Muehlenbeckia australis (W), pohuehue
*Passiflora mollissima (W), banana passionfruit
Passiflora tetrandra (W), NZ passion vine
Parsonsia heterophylla (W), NZ jasmine
Ripogonum scandens (W), supplejack
Rubus cissoides (W), bush lawyer
*R. fruticosus (W), blackberry

Herbaceous Plants
*Allium triquetrum (W), onion weed
Astelia fragrans (W), bush lily
Bulbophyllum pygmaeum (P, Duguid 1990)
Cardamine debilis (W), native cress
Carex dissita (W), sedge
*Cirsium vulgare (W), Scotch thistle
Collospermum hastatum (W), perching lily
*Crocosmia xcrocosmiiflora (W), montbretia
*Digitalis purpurea (W), foxglove
*Duchesnea indica (W), Indian strawberry
Elatostema rugosum (W), parataniwha
*Euphorbia peplus (W), spurge
*Fumaria muralis (W), fumitory
*Geranium molle (W), dove's foot
Hydrocotyle heteromeria (W), pennywort
H. moschata (W), pennywort
*Lamiastrum luteum (P, Duguid 1990), aluminium plant
*Linum catharticum (W), purging flax
Microlaena avenacea (W), bush rice grass
*Oxalis spp.(W)
*Prunella vulgaris (W), selfheal
*Ranunculus repens (W), creeping buttercup
*Tradescantia fluminansis (W,P), wandering willy
*Verbena litoralis (P, Duguid 1990), blue vervain

*Plant species not native to the reserves.

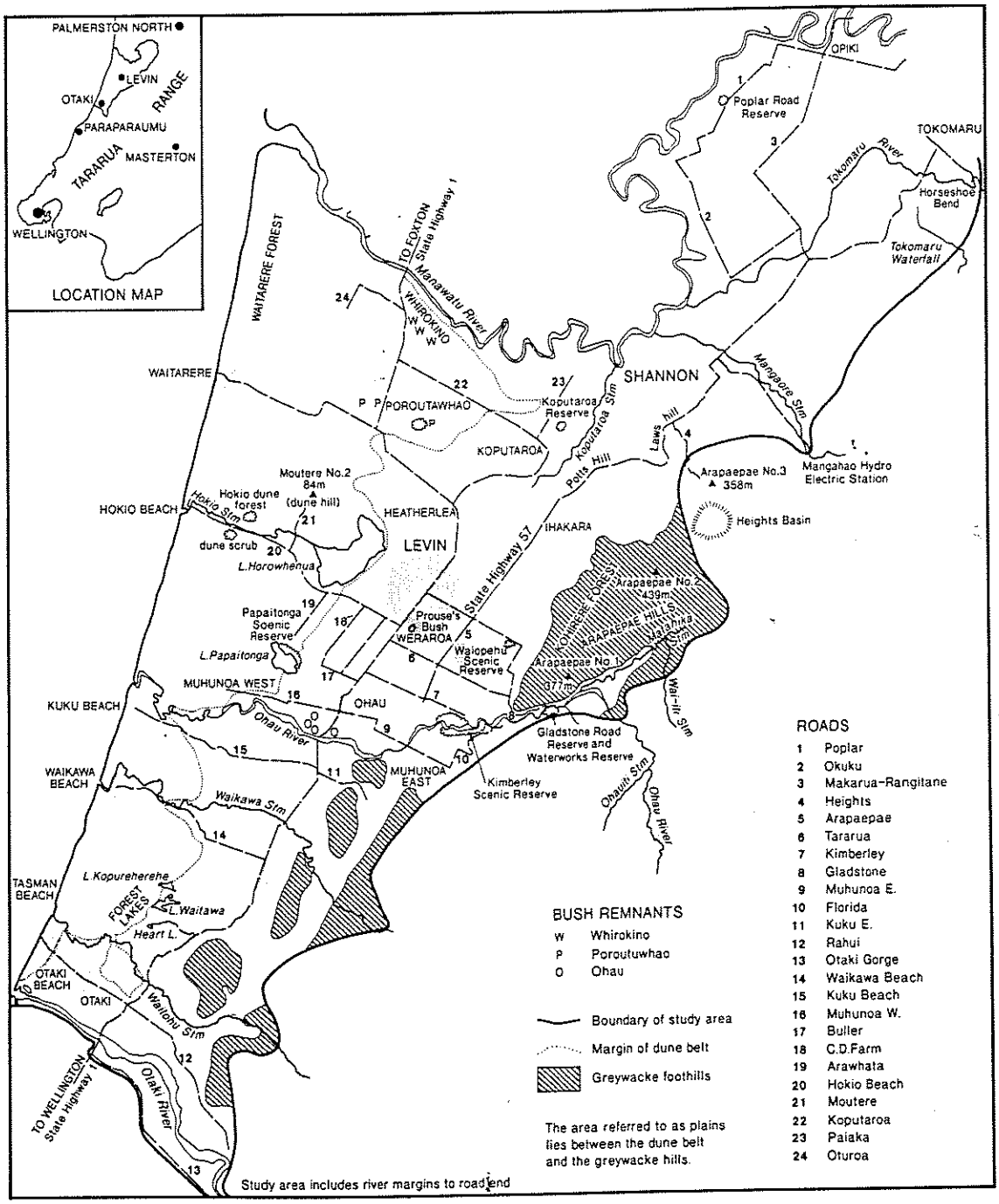

Fig. 1 Map of the northern Horowhenua lowlands. The eastern boundary is mostly under 350 m above sealevel. The plain (terraces, alluvium, and peatland) is bordered by the dune belt on the west and the greywacke hills to the east.