TRIP REPORT: LAKE OKATAINA, ROTORUA, 24-28 JAN. 2008

Mike Wilcox (editor)

The Auckland Anniversary Weekend trip for 2008 was based at the Okataina Education and Recreation Trust's Camp, Lake Okataina, Rotorua. Our objective was to check out the diverse botany of the Rotorua area, taking in the environs of Lake Okataina, and further afield at Hinehopu, Kaharoa, as well as the Waikite hot springs as an example of Rotorua's special thermal flora. The Camp was opened in 1975, and sits in a large opening in the forest known as Puihu's Clearing at 420 m asl.

Those attending were: Enid Asquith, Paul Asquith, Hilary Bosher, Colleen Brewer, Warren Brewer, Jan Butcher, Colleen Crampton, Brian Cumber, Leslie Haines, John Hobbs, Peter Hutton, Helen Lyons, Alistair MacArthur, Elaine Marshall, Barrie McLeay, Gretta McLeay, John Millett, C.J. Ralph, Carol Ralph, John Rowe, Stella Rowe, Alison Wesley, Mike Wilcox, Tony Williams, Ian Wilson, June Wilson and Maureen Young. In addition, Richard Hursthouse joined the group for the visit to Onaia Gorge.

The main direct reference to the plants of the Lake Okataina area is the paper by Hobbs (2001), which has a species list for the Lake Okataina Scenic Reserve and the Waione Block Scenic Reserve enclosed within the former and includes Lakes Rotoatua and Rotongata. Although not visited by us, the highest point is Whakapoungakau (758 m).

Lake Rotongata (Mirror Lake)

Mike Wilcox, Maureen Young, Colleen Crampton and Brian Cumber

Our camp advance party of four descended steeply from the Lake Okataina Road down into the picturesque crater lake of Lake Rotongata (Fig. 1) for a brief botanical explore. It has been described as a "small gem of a lake" by Shaw & Beadel (1989), with which we heartily agree. Once through the tawa forest, we approached the wetland fringe of the lake which we found to comprise a thicket of swamp coprosma (*Coprosma tenuicaulis*), with some manuka (*Leptospermum scoparium*), and a few small trees of rimu (*Dacrydium cupressinum*) and kahikatea (*Dacrycarpus dacrydioides*). *Rubus schmidelioides* scrambled over the vegetation, and there were clumps of toetoe (*Cortaderia fulvida*) and *Juncus effusus*.

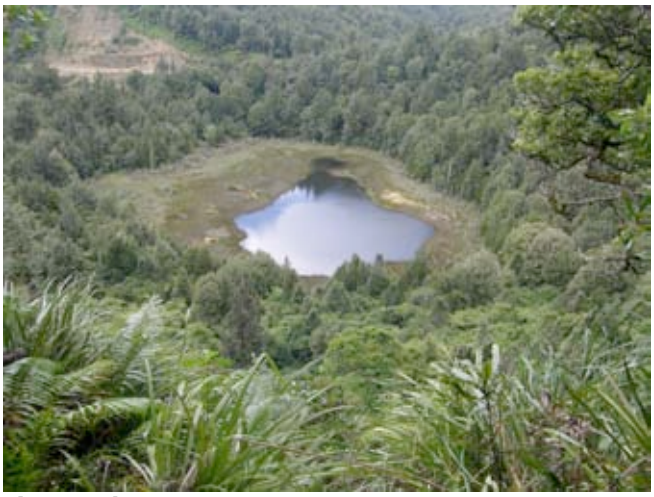


Fig. 1. Lake Rotongata, 25 Jan. 2008.

Further in we encountered a narrow "carex zone" featuring *Carex maorica*, *Carex secta*, *Carex lessoniana* and *Carex virgata*, and with plentiful burr reed (*Sparganium subglobosum*) in flower, and some *Cyperus ustulatus* and water fern (*Histiopteris incisa*). The creeping herb *Pratia angulata* abounded and there were plants of *Ranunculus amphitrichus*, *Hydrocotyle pterocarpa* and *Eleocharis gracilis*. Next came extensive stands of *Baumea rubiginosa* and *B. arthrophylla*, with patches of raupo (*Typha orientalis*), *Eleocharis sphacelata* and *E. acuta*. Introduced plants of note were a few seedlings of grey willow (*Salix caprea*) and some plants of beggar's ticks (*Bidens frondosa*), water purslane (*Ludwigia palustris*) and spearwort (*Ranunculus flammula*). A small island had an impressive patch of *Sphagnum* moss with a fine crop of capsules, together with umbrella fern (*Gleichenia microphylla*), manuka and *Lycopodium volubile*. Further species found at Lake Rotongata have been documented by Shaw & Beadel (1989) and include pokaka (*Elaeocarpus hookerianus*), *Juncus bulbosus* and *Epilobium pallidiflorum*. John Hobbs has recorded the orchid *Drymoanthus adversus* here, epiphytic on *Coprosma tenuicaulis*.

As a footnote, we found *Uncinia ferruginea* growing in the open (with *U. uncinata*) on our approach to Lake Rotongata, and along the Lake Okataina Road we found *Epilobium pubens* and *E. rotundifolium* in good numbers on banks, and plentiful *Rytidosperma unarede* and herb Robert (*Geranium robertianum*). Buddleia (*Buddleja davidii*) in full flower was common on roadsides and disturbed sites on the edges of clearings. We also found a robust, flowering plant of old man's beard (*Clematis vitalba*). John Hobbs has reported it to DoC for instant removal. On our return to camp we followed the Rongimai Track, where *Carex solandri* was plentiful.

Ngahopua Track or Twin Lakes Track

John Millett

From our base camp at the Okataina Education and Recreation Trust Outdoor Centre, 27 Auckland botanists started punctually to walk the loop track which skirts the two small volcanic crater lakes of Rotoatua and Rotongata. At first we followed the Anaha Track, commencing some 100 m down the Okataina Road from the Camp entrance. This was an old logging track, and is lined with putaputaweta and wineberry. After 200 m, turning to the left, we were now on the Ngahopua or Twin Lakes Track. It passes 100 m above the twin lakes Rotongata and Rotoatua, which were formed about 3500 years ago. We exited on the Okataina Road, directly opposite the Camp entrance.

Right from the start we were cautioned by Maureen that these reserves, gifted to the Crown 100 years ago by the local tribes, were a great place to sort out the tree ferns – and we would be tested, especially telling *Cyathea cunninghamii* from *C. medullaris*!

Field identification characters for the 6 species of tree fern seen at Okataina

Genus *Cyathea*: has scales at base of frond

1. *Cyathea cunninghamii* gully tree fern
Inclined to be a slighter tree fern than mamaku. (Maureen Young comments that the 'slender trunk' is a 'myth') Untidy, unsymmetrical crown, with stipes and rachis lighter and less robust than those on mamaku. Pinnae closer together, joining with crown.

2. *Cyathea dealbata* ponga, silver fern
Bases of stipes remain on trunk as "pegs". Silver/grey stipes and rachis.

3. *Cyathea medullaris* mamaku, black tree fern
Trunks to 20 m, black, covered with hexagonal stipe scars. Symmetrical crown, with arching fronds. Strong black stipes and rachis.

4. *Cyathea smithii* soft tree fern
Fronds soft to touch. Frond scales golden. Midrib of fronds persistent as "skirt" around trunk.

Genus *Dicksonia*: has hairs at base of frond

5. *Dicksonia fibrosa* wheki ponga
Thick, very fibrous trunk with very solid appearance. Retains complete dead fronds as "skirt" around trunk.

6. *Dicksonia squarrosa* wheki
Slender trunk clothed with vertical stipe bases. Fronds stiffly harsh to touch. Fronds dark green above and paler below.

As we entered the bush the flowers of tawa (*Beilschmiedia tawa*) were noticed – tiny and yellow, but low enough to be greatly admired through a lens. While the damp track remained sunny enough, downcast eyes stayed alert for flowering herbs such as native cress (*Cardamine debilis*), *Hydrocotyle heteromeria*, scarlet pimpernel (*Anagallis arvensis* var. *arvensis*), centaury (*Centaurium erythraea*), and *Pratia angulata.* But the first circle of "bums up" worshippers was down to *Gratiola sexdentata* – lenses and cameras on macro settings flashing in triumph. *Carex forsteri* was also seen here.

It is convenient to mention here an insect that caught our attention during our walks through the bush. Several of the tracks follow old overgrown logging tracks, these being frequently lined by pole stands of putaputaweta (*Carpodetus serratus*), and as Mike pointed out, now New Zealand's only member of the family Rousseaceae. Many of these trees bore signs of infestation by the grubs of the puriri moth (*Aenetus virescens*) of the family Hepialidae. This is New Zealand's largest moth, and is only found in the North Island (Dugdale 1994). The main evidence that puriri moth grubs are present is the velum-like cover over the entrance hole. The young larvae initially start life by feeding on bracket fungi, and then locate and bore into a host tree where they may remain in their "7"-shaped burrows for up to five years before pupating, and eventually emerging as adult moths. I once got into a panic with my crops of blackwood and eucalypts being similarly affected, until the Forest Service told me that, since the grub's depredations were only in the pith and core wood, the holes would be occluded by new growth of outer wood, and good timber production would not be lost.

As we ascended the narrow ridge which took us high above the two lakes, and while being serenaded by the strident screech of invisible long-tailed cuckoos, the following species of interest were noted: heketara (*Olearia rani*); native iris (*Libertia grandiflora*); *Clematis cunninghamii*; *Gahnia pauciflora*; juvenile pigeonwood (*Hedycarya arborea)* and pukatea (*Laurelia novae-zelandiae*), distinguished by feeling the stems – the former flattened and the latter squared; the fine-fronded *Leptolepia novae-zelandiae* with the hare's foot rhizome showing; and *Urtica incisa*, the small native stinging nettle. I photographed Mike's "only nikau at Okataina" with a monster rata (*Metrosideros robusta*), alas dead, behind it. John Hobbs corrected Mike's claim, saying there were a few other nikau in the vicinity.

The camp's advance party had skirted the botanically interesting Lake Rotongata's apron of wetland the previous day, but too much destruction would have ensued if we had all done likewise. So we could only look down on it, and glare our frustration at the purple *Buddleja davidii* which grew on a slip and spoiled the otherwise pristine scenery. However, on the way down, a fallen tawa had let in a similarly opportunistic poroporo (*Solanum aviculare*), resplendent in lilac flowers with golden centres shimmering in the sun. There were also a few *Fuchsia excorticata*.

Down at the road level again we swapped the upland canopy of tawa, rata and the odd Hall's totara (*Podocarpus hallii*), for monolithic stands of rimu (*Dacrydium cupressinum*), kahikatea (*Dacrycarpus dacrydioides*), matai (*Prumnopitys taxifolia*), pukatea and abundant mangeao (*Litsea calicaris*), which is near its southern limit.

As darkness fell at 9 pm on our first night at the camp we headed into the bush along the Te Auheke or Cascades Track. There was movement in the undergrowth and our torches revealed three Dama wallabies (*Macropus eugenii*). This marsupial has been present around Lake Okataina for many years (Warburton 1986; Graeme & Graeme 1981). The main damage it does to the bush is in eating out palatable shrubs, notably hangehange (*Geniostoma ligustrifolium*), karamu (*Coprosma robusta*), kanono (*Coprosma grandifolia*), mahoe (*Melicytus ramiflorus*), tree fuchsia (*Fuchsia excorticata*), pate (*Schefflera digitata*) and five-finger (*Pseudopanax arboreus*). Judging by their abundance as seedlings and saplings, mangeao (*Litsea calicaris*), tawa (*Beilschmiedia tawa*), pigeonwood (*Hedycarya arborea*), pukatea (*Laurelia novae-zelandiae*) and rewarewa (*Knightia excelsa*) are unpalatable to wallabies.

A little stream track took us to a pumice cliff, spangled like a galaxy, for here, near the Cascades we encountered a spectacular display of the New Zealand glow-worm or titiwai (*Arachnocampa luminosa*). The larvae (glow-worms) of this fungus gnat reside in colonies on shady banks, the glow coming from the abdomen of the larvae as they lie in wait for prey to be attracted to their silky fishing line traps. On the way back Alison and Leslie were down on their knees viewing through their lenses the threads of glow worms, and even the fly itself in its own light. This little venture into another kingdom had proved well worthwhile.

Tarawhai Track, Okataina Scenic Reserve

Tony Williams

This was a wonderful introduction to the local ecology. Two minutes from the camp and we were enjoying a delightful walk through mature forest back-lit by early morning sunshine (8.00 o'clock by the sun). This first section is unlogged forest, characterised by huge trees – hinau, tawa, rimu, mangeao, pukatea, matai, kahikatea – with an under-storey of rewarewa, pigeonwood, and kamahi. Also of large size were the 'vines' – *Griselinia lucida*, white rata vine (*Metrosideros perforata*), *Parsonsia heterophylla* – with supplejack in abundance. The forest floor had large carpets of the filmy fern *Hymenophyllum demissum*. Many of the trees were in fruit and the identification of fruit on the ground, while easy for some, meant another opportunity for learning for others. One's first impression in the sunlight was of a fairly open forest, and wallabies having been seen in the bush the previous night the question immediately arose 'is there a connection?' There was some agreement that the forest seemed reasonably typical of North Island mixed forest (especially given the free-draining pumice soils of the area) with no obviously missing species. It was also recalled that pukatea is unpalatable to wallabies. However, towards the end of the track there was a fenced exclosure for wallabies, deer and possums erected by the N.Z. Forest Service in 1984 – and, yes, there were species that had not been observed up till then: *Schefflera digitata* and *Coprosma grandifolia* and a much denser growth of seedlings (Graeme & Graeme 1991).

Fig. 2. Icicle Fungus (*Hericium coralloides*), (Alistair MacArthur, 25 Jan 2008)

The interactions between and among plant species, insects, birds and mammals, to say nothing of fungi and viruses are obviously complex and one does wonder in such cases what triggers or inhibits a particular gene expression in the plant being examined. A striking example of variability was a 6-trunked tawa of considerable height, with the remnant of a similar sized original trunk in the centre. At one point on the track there was some excitement in the discovery of a fine example of the icicle fungus (*Hericium coralloides*) (Fig. 2), and there were several beautiful patches of the umbrella moss, *Hypopterygium filiculaeforme*.

Birds seen or heard in the first hour included house sparrow, swallow, magpie, rosella, starling, (these more so in open areas) tui, rifleman, tomtit, robin, bellbird, fantail, long-tailed cuckoo, chaffinch and blackbird.

Lake Okataina Track

Ian Wilson

Entering the area of forest that had been logged in the past the change in the character of the forest was immediately obvious. The height of the canopy was about 10 m as opposed to the 30 m canopy we had just left. Wheki (*Dicksonia squarrosa*) was abundant as was putaputaweta (*Carpodetus serratus*). Ground cover was greater with a large number of seedlings, with pukatea especially abundant. On the side of the track grew a lone poroporo (*Solanum aviculare*), and ongaonga (*Urtica ferox*) occurs here, also. After about half an hour we came to a large clearing known as Waipungapunga Clearing, occupied as farmlets by several Maori families until the early 1950s (Nicholls 1990). Until relatively recently wallabies had kept the vegetation very short but in the years since they were heavily reduced in numbers bracken (*Pteridium esculentum*) has covered most of the area with pink bindweed (*Calystegia sepium*) and pohuehue (*Muehlenbeckia australis*) climbing up the stems. The white-backed lawyer (*Rubus schmidelioides*) was also noted. Several large clumps of toetoe (*Cortaderia fulvida*) stood out along with a large area of Spanish heath (*Erica lusitanica*) which appears to be spreading.

Maureen showed the group the first kaikomako (*Pennantia corymbosa*) we had seen and demonstrated how hard the stems supporting the small juvenile leaves were to break compared to the stems of the large adult leaves that break very easily. This is argued to be an added defence against browsing by moa. Also in the clearing were some outstanding specimens of wheki-ponga (*Dicksonia fibrosa*) and a greater number of kohuhu (*Pittosporum tenuifolium*) than had been seen earlier. Several patches of *Hypolepis ambigua* grew on the track-side as well as bidibidi (*Acaena novae-zelandiae*) and *Pratia angulata*. At the far end of the clearing an attractive bush of the cold-tolerant coprosma (*Coprosma tenuifolia*) was growing near a karamu (*Coprosma robusta*). The track passed through a dense stand of kiokio (*Blechnum novae-zelandiae*) as it re-entered the forest and descended down to Lake Okataina. The main thing of note was a fallen branch covered with pygmy orchid (*Ichthyostomum pygmaeum*) and a single *Drymoanthus adversus*. *Lastreopsis glabella* was seen as opposed to *L. hispida* which we had been seeing earlier and *Pteris tremula* gave way to *Pteris macilenta*.

Lake Okataina to Te Koutu Pa

Alison Wesley

After lunch was eaten sitting on the grass viewing Lake Okataina our group set off to walk to Te Koutu Pa site prior to taking a boat trip to the end of the lake. This deserted pa site on Te Koutu Peninsula is the most accessible evidence of the achievement of a remarkable people, the Ngati Tarawhai of Okataina (Gray, no date). Okataina is an unstable lake and there have been many changes in its level and therefore the appearance of the peninsula pa site. with consequent changes in the vegetation of the area. On either side of the peninsula there are currently relatively low-lying areas where kanuka predominates. The area is also dominated by the appearance of the exposed rhyolite cliffs. The group bushcrashed as close to the cliff as possible in order to determine whether there was any unique vegetation features but this did not appear to be the case. Kawakawa (*Macropiper excelsum*) was observed along the face of the cliff and the first of many pohutukawa (*Metrosideros excelsa*) were seen. A single kohekohe (*Dysoxylum spectabile*), apparently the most southern individual tree was encountered. Significant possum damage was noted on some mamaku (*Cyathea medullaris*).

The pa site was separated from the surrounding bush by a wallaby-proof fence. Within this fence was a significant cluster of totara (*Podocarpus totara*) which had not previously been particularly common; these were estimated to be about twenty years old. The track to the summit of the pa was notable for a number of caves of varying sizes. There are three distinct types of caves on this point, shelter and storage caves, food storage caves and embalming or mummification caves each distinctly different but not clear to the casual observer which were which. Some 47 caves have been counted in various stages of preservation. Alistair took a picture inside one of the caves, but was unaware at the time that he had photographed a big colony of cave wetas on the roof.

The most common trees on the summit of the pa site were rewarewa and kanuka, and in the immediate area were the totara, mangeao and kawakawa. Also observed on the summit was the concrete crypt provided by the staff of Auckland Museum to protect the bones the Maori buried in the caves in this area.

Unfortunately this was vandalised soon after it was provided and the bones were subsequently removed for burial elsewhere. The group returned then after a refreshing bathe in the lake to undertake a boat cruise to the southern end of the lake.
A sandy beach on the north side of the peninsula was fringed with kanuka and *Cyperus ustulatus*, with a few akeake and bushes of *Buddleja davidii*, and a couple of plants were found of *Geranium potentilloides*, while the main beach of Lake Okataina (with the jetty) had a very vigorous colony of gypsywort (*Lycopus europaeus*).

Lake Okataina and Otangimoana Track

Mike Wilcox

We chartered *MV Waiora* (Fig. 3) from the Okataina Lodge to take us to Otangimoana Bay at the head of the lake. We travelled close to the eastern shore, with the Makatiti Dome Scenic Reserve flanking the slopes. Several tried their hand at trolling for rainbow trout, but without so much as a nibble. Pohutukawa, northern rata and hybrids were abundant all along the shore, with the lower and middle slopes very much dominated by kanuka and rewarewa (Fig. 4), and with tawa and kamahi in gullies. This seral vegetation is considered to be a result of Maori fires, not the 1886 Tarawera eruption (Nicholls 1980). Some enormous rata trees (one 4.3 m in diameter) have recently been discovered on the slopes below Makatiti Dome, and are considered to have survived Maori fires and the Tarawera eruption (van Praagh 2007).

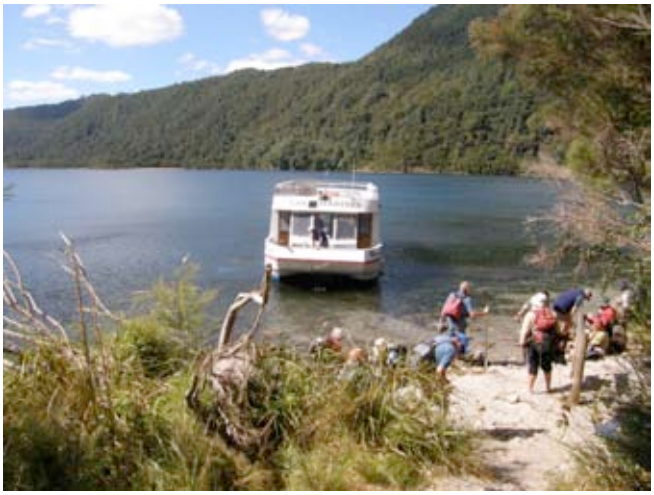


Fig. 3. MV Waiora, Lake Okataina (Mike Wilcox, 26 Jan 2008)

The Otangimoana Track crosses the isthmus between Otangimoana Bay on Lake Okataina and Humphries Bay on Lake Tarawera. It was a steady half-hour walk, each way. The first part from Otangimoana Bay goes through rather scrubby vegetation, which in one section is dominated by snowberry (*Gaultheria antipoda*), with occasional *Gaultheria oppositifolia*, and considerable patches of tutu (*Coriaria arborea*), wineberry (*Aristotelia serrata*), manuka and kanuka, and with several lancewood (*Pseudopanax crassifolius*).

Fig. 4. Rewarewa forest, Lake Okataina (Mike Wilcox, 26 Jan 2008)

The "heathland" appearance was reinforced by the presence of *Leucopogon fraseri*, *Pomaderris amoena*, Spanish heath, shining karamu (*Coprosma lucida*), *Dianella nigra*, *Morelotia affinis* and *Lepidosperma australe*. Several patches of *Wahlenbergia violacea* were seen, and sedges such as *Carex testacea* and *C. virgata* were common.

The descent to Humphries Bay on Lake Tarawera is through much taller vegetation, dominated by 20 m kamahi (*Weinmannia racemosa*), kanuka, with rata and pohutukawa on the lake shore. At the camping site were numerous fine specimens of akeake (*Dodonaea viscosa*). The bay is an attractive spot, with a commanding view of Mt Tarawera.

Onaia Gorge, Kaharoa

Warren Brewer

For this particular visit we were being led by John Hobbs from the Rotorua Botanical Society. He took us outside the Rotorua district into the Bay of Plenty to the Onaia Gorge (Fig. 5), part of the Kaharoa Conservation Area (Shaw 1991, Anon. 2007). Our prime objectives were to find two special ferns *Hymenophyllum atrovirens* and *Lindsaea viridis* in the morning and later on to see the mistletoe *Ileostylus micranthus* and perhaps get a sighting of the North Island kokako *Callaeas cineria wilsoni*. This is a warmer environment than Rotorua and the rock of the gorge is ignimbrite, of volcanic origin.

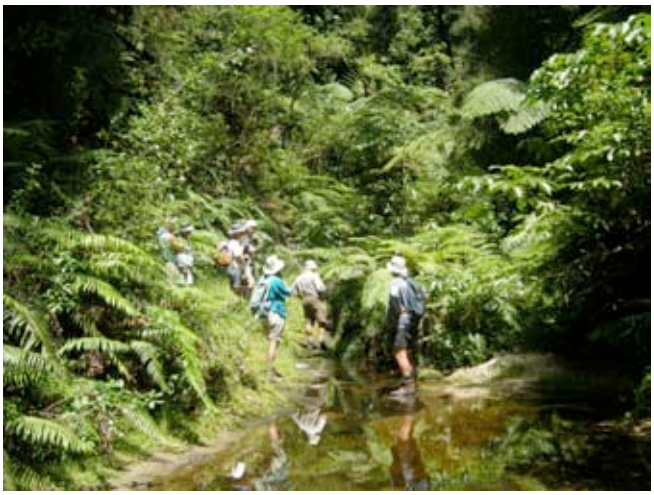


Fig. 5. Onaia Gorge (Mike Wilcox, 27 Jan 2008)

The Onaia Stream rises in the Kaharoa Plateau north of Lake Rotorua, and eventually joins the Mangaorewa Stream and in turn the Kaituna River southeast of Te Puke. Our descent into the Onaia Gorge was from Kapukapu Road. Our party arrived at the Kaharoa Conservation Area at 10 am and set off to find the entrance to the Kokako Track down into the gorge. This part of the Kaharoa Conservation Area is known as Onaia West. We initially passed along the road a fine timber woodlot of *Eucalyptus regnans*, *E. fastigata* and *E. saligna* then an extensive grove of sweet chestnuts (*Castanea sativa*), and some *Paulownia* trees. Although of interest this all proved to be a false start causing us to turn back and look for the track in the opposite direction. We soon found its entrance and started down to the floor of the gorge. The track is sometimes known as the "Pack Track" or "The Hollows Track" (Dare *et al*. 1983). A large miro (*Prumnopitys ferrugineus*) was noted plus an abundance of mangemange (*Lygodium articulatum*) suggesting some possum control was in place. Initially the forest was dominated by tawa and rewarewa, with also kohekohe, hinau and rimu. Next of note was a very large tanekaha (*Phyllocladus trichomanoides*) whose lowest branches looked about 10 m above ground. We passed through a luxuriant glade of *Blechnum discolor*, with tawari (*Ixerba brexioides*) growing beside another tanekaha. An impressive, dense understorey of toropapa (*Alseuosmia macrophylla*) (Fig. 6), some having ripe berries, bordered the track. We also noted here several specimens of *Mida salicifolia*. At this point we were briefly visited by a North Island robin (*Petroica longipes*). Pate was beginning to be seen and *Lindsaea trichomanoides* beside the track reminded us of the other *Lindsaea* we were hoping to find later.

Fig. 6. Toropapa (*Alseuosmia macrophylla*), Onaia Gorge (Mike Wilcox, 27 Jan 2008).

Almost at the bottom of the gorge *Hymenophyllum lyallii* was found on a rock wall (an unusual substrate), together with *Hymenophyllum ferrugineum* and *Trichomanes elongatum*. Finally reaching the Onaia Stream, caution was urged due to the slippery surface of some of the rock platforms. *Lindsaea viridis* was found growing in the lush swathes at several sites. For those specialising in bryophytes and small herbs the gorge floor was like an enchanted garden. The ground cover species of *Hydrocotyle heteromeria*, *Pratia angulata*, *Nertera depressa*, *Cardamine debilis*, *Oxalis exilis*, marsh bedstraw (*Galium palustre*), stinging nettle (*Urtica incisa*), water forgot-me-not (*Myosotis laxa*), water speedwell (*Veronica anagallis-aquatica*), *Isolepis inundata*, river daisy (*Anaphalioides trinervis*), *Carex ochrosaccus* and umbrella moss *Hypnodendron marginatum* were all keenly observed. We had lunch, choosing several sunny spots beside the stream. Afterwards we explored further downstream for just a short distance to where our second special fern *Hymenophyllum atrovirens* was found on a large rock in the stream bed. Its conspicuously winged stipe made it not unlike *H. flexuosum* in general appearance, though the wing was generally flat rather than crinkled. As pointed out by Rhys Gardner (1989), both *Hymenophyllum atrovirens* and *Lindsaea viridis* are rare New Zealand examples of rheophytic ferns – growing and adapted for life near, and sometimes inudnated by swift river water. Also here were some impressive colonies of the orchid *Nematoceras rivulare*. On our climb back up to the top we were

again rewarded with the sight of white flowering rata *(Metrosideros perforata)* in flower and kohia *(Passiflora tetrandra)* bearing ripe fruit.

We walked further along Kapukapu Road in search of kokako, but with no success. Maureen spotted king fern (*Marattia salicina*) down a bait-line off the road, but otherwise we did not see much of note here apart from a particularly fine large 27 m tall specimen of titoki (*Alectryon excelsus*) and some handsome weeds in flower – wild basil (*Clinopodium vulgare*), water figwort (*Scrophularia auriculata*) and hedge woundwort (*Stachys sylvatica*). Other common plants here were foxglove (*Digitaria sanguinalis*) and Himalayan fairy grass (*Miscanthus nepalensis*).

On our return trip back we stopped briefly to view a remarkable population of the mistletoe *Ileostylus micranthus* growing on tawa trees on farmland adjacent to Kaharoa Road (see Hobbs 2004).

Hongi's Track (Hinehopu Scenic Reserve)

Stella Rowe

When we had gathered at the eastern end of Lake Rotoiti, Mike pointed out the remains in the lake of the old log-landing used for shipping rimu, matai and kahikatea logs. His late uncle, Bramwell Robinson of Ngongotaha, used to work for the Rotoiti Timber Company, which transported these logs by punt across Lake Rotoiti and thence across Lake Rotorua to the sawmill. Many logs sank. School holiday visits to his uncle's place first sparked Mike's interest in forestry. H.B. Dobbie (1928) gives a very interesting account of a visit to this area.

Four interesting plants caught our attention at the start of the track beneath the towering Matawhaura Bluffs at Hinehopu, Lake Rotoiti. John Hobbs pointed out American fireweed (*Erechtites hieraciifolia*), now moving into the Rotorua area (see Cameron & de Lange 2002), and nearby, an unusually prickly, thick-leaved *Olearia* – we eventually decided just *Olearia rani* – and beside it fine examples of *Lophomyrtus obcordata* and *L. bullata*.

Then, at a quick trot, a most unbotanical pace, we explored yet another forest type between Lakes Rotoiti and Rotoehu. The overall impression was of a tall canopy of kohekohe (*Dysoxylum spectabile*), strung high with a network of intricate vines of supplejack (*Ripogonum scandens*). Other components of the canopy were pukatea (*Laurelia novae-zelandiae*) of which this reserve boasts some magnificent large specimens and abundant seedlings and saplings, tawa (*Beilschmiedia tawa*), rewarewa (*Knightia excelsa*), with emergent rimu (*Dacrydium cupressinum*) and matai (*Prumnopitys taxifolia*). Mike commented on the pockets of nikau (*Rhopalostylis sapida*) which appeared to have a more spreading habit than their Auckland counterparts. Tree fuchsia (*Fuchsia excorticata*) appeared at the Rotoehu end of the track, and there were occasional trees of turepo (*Streblus heterophyllus*). We did not have time to explore the lake edge, and returned the way we had come.

Hinehopu Mire

Stella Rowe

We came out from the cool green gloom of Hongi's Track directly into the bright sunshine of the Hinehopu Mire (Fig. 7), both conveniently adjacent to the carpark. The botanical features of this privately-owned 12 ha wetland were first brought to light by Bruce Clarkson (1987), with several species present there being otherwise unknown in the Rotorua district. It is also briefly mentioned by Shaw & Beadel (1989).

Time constraints (getting back to camp for lunch and the clean-up) limited our foray to the northern end of the mire. Here the margin of kahikatea swamp forest is contiguous with the forest of Hongi's Track Scenic Reserve. In such a dry summer, water barely came up to our ankles as we waded out through a sea of *Baumea arthrophylla*, interspersed with patches of pakihi rush (*Baumea teretifolia*), *B. rubiginosa* and sparse raupo (*Typha orientalis*), together with bamboo spike sedge (*Eleocharis sphacelata*) and its two lesser cousins – sharp spike-sedge (*E. acuta*) and slender spike-sedge (*E. gracilis*) – and "islands" of manuka (*Leptospermum scoparium*), tangle fern (*Gleichenia dicarpa*) and *Sphagnum cristatum* (some of which were bearing capsules). A highlight was seeing lady's tresses (*Spiranthes sinensis*) in full flower. In the sedge department *Schoenus carseii* and *S. brevifolius* deserve special mention, as this is the only place in the Rotorua district where these species are known to occur. *Schoenus carseii* here grew in clumps around the base of manuka bushes, whilst *S. brevifolius* was interspersed amongst *Baumea* in the open.

Several dicot herbs caught our attention: swamp hypericum (*Hypericum japonicum*), bog nertera (*Nertera scapanioides*), swamp willow herb (*Epilobium pallidiflorum*), spearwort (*Ranunculus flammula*), pennywort (*Centella uniflora*), beggar's ticks (*Bidens frondosa*), sundew (*Drosera binata*), *Potamogeton cheesemani* and *Pratia angulata*. Brian appeared triumphantly from the eastern edge of the mire with a

piece of a large monocot, which we think was yellow flag (*Iris pseudacorus*).

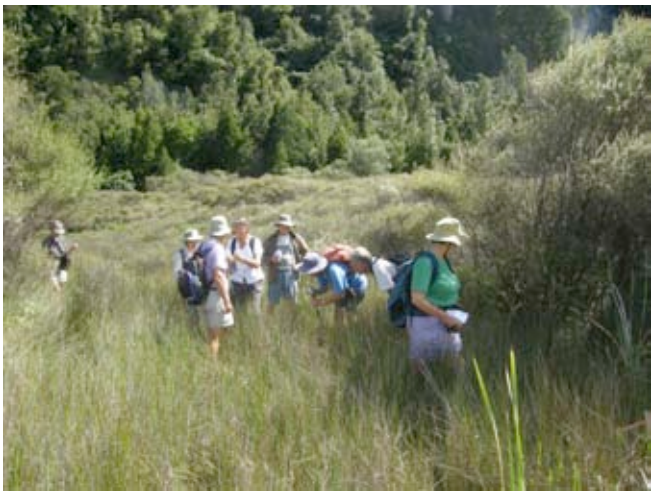


Fig. 7. Hinehopu Mire (Mike Wilcox, 27 Jan 2008)

There were some woody weeds there, too, notably goat willow (*Salix caprea*), blackberry (*Rubus fruticosus*) tutsan (*Hypericum androsaemum*) and silver birch (*Betula pendula*), with some thickets of swamp coprosma (*Coprosma tenuicaulis*) and patches of flax (*Phormium tenax*) and the swamp version of kiokio (*Blechnum novaezelandiae*). We did not see burr reed (*Sparganium subglobosum*), tamingi (*Epacris pauciflora*), *Baumea tenax*, *Thelymitra formosa* or *Tetraria capillaris*, all recorded previously here.

We reluctantly left this fascinating and botanically significant mire which dates back to before the Kaharoa Ash eruption (from Mt Tarawera, c. 700 year ago). Before heading back to camp Maureen presented John Millett with his almost–namesake flower, a delicate bouquet of swamp millet (*Isachne globosa*) which was in fact one of the most prominent plants in the mire.

Thermal ferns at the Waikite Hot Springs

Mike Wilcox

Our final group field trip was to the Waikite Hot Springs (Fig. 8) 9 km west of Waiotapu, again under the guidance of John Hobbs who has previously reported on the interesting ferns found in this area (Hobbs 2003). Other accounts of Rotorua-Taupo-Waikato thermal plants are those of Given (1977) and Ecroyd (1991).

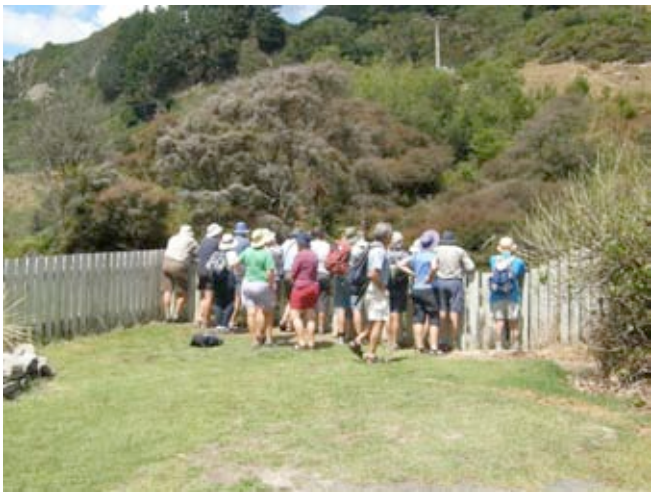


Fig. 8. Waikite Hot Springs (Mike Wilcox, 28 Jan 2008)

We had excellent viewing of water fern (*Histiopteris incisa*), tuberless sword fern or native ladder fern (*Nephrolepis flexuosa*), *Lycopodiella cernua*, and *Dicranopteris linearis*. With a bit more searching we spotted *Christella* sp. 'thermal'.

John Hobbs (2003) has described the ferns of the Waikite Valley more comprehensively, including populations besides thermal streams running through private farm land, notably of giant hypolepis (*Hypolepis dicksonioides*) and *Cyclosorus interruptus* which we did not see at the commercial hot springs.

Nephrolepis flexuosa was featured as the New Zealand Plant Conservation Network's "Plant of the month" for July 2007. In New Zealand it is only found in the Rotorua-Taupo thermal region, but otherwise it occurs on Raoul Island and several of the Pacific Islands. In the same NZPCN July 2007 Newsletter there is a very pertinent article (Beadel & Bycroft 2007) who at Waikite, as well as the aforementioned ferns have recorded *Thelypteris confluens*. Their article discusses the conservation issues with these ferns, some of which are vulnerable to weed competition and stock damage.

The Camp ended with hot swims for some, coffee and ice creams for others, and all departed well satisfied with our introduction to the botanical wonders of Rotorua.

Plate 1: Mosses and ferns

1. *Hypnodendron marginatum*, Onaia Gorge

2. *Hypopterygium filiculaeforme*, Tarawhai Track

3. *Cyathea cunninghamii*, Lake Okataina Road

4. *Leptolepia novae-zelandiae*, Twin Lakes Track

5. *Lindsaea viridis*, Onaia Gorge

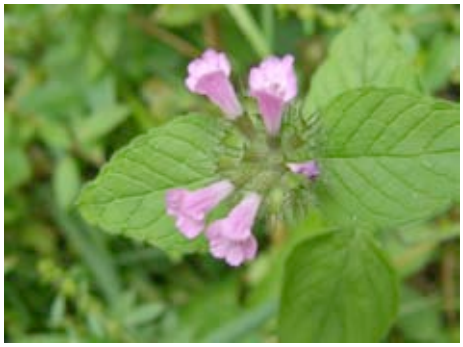
6. *Dicksonia fibrosa*, Lake Okataina Track

7. *Dicranopteris linearis*, Waikite

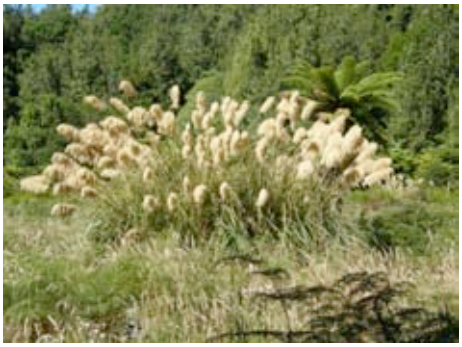
8. *Hymenophyllum atrovirens*, Onaia Gorge

Plate 2: Other plants

9. *Uncinia ferruginea*, Lake Rotongata



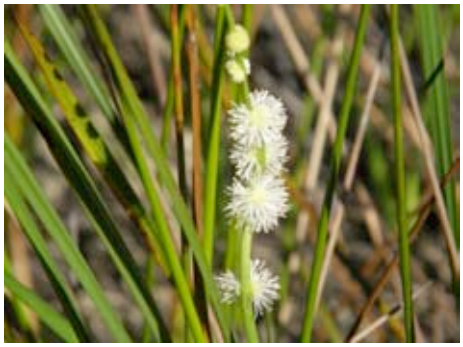
10. *Clinopodium vulgare*, Kapukapu Rd, Kaharoa



11. *Cortaderia fulvida*, Lake Okataina Track

12. *Laurelia novae-zelandiae*, Hongi's Track

13. *Gratiola sexdentata*, Anaha Track



14. *Sparganium subglobosum*, Lake Rotongata

15. *Tupeia antarctica*, Spencer Rd, Lake Tarawera

16. *Urtica ferox*, Lake Okataina Track

Mistletoes at Lake Tarawera and the Blue Lake

Mike Wilcox, John Millett and Maureen Young

A brief check was made of populations of *Ileostylus micranthus* and *Tupeia antarctica*. John Hobbs (2002) has made a thorough survey of these species in the Bay of Plenty. Along Spencer Road, Lake Tarawera, we found *Tupeia antarctica* in good numbers, invariably only on one host, five-finger (*Pseudopanax arboreus*). Several *Tupeia* plants had abundant developing fruit. Our observations of *Ileostylus micranthus* were confined to the Blue Lake Holiday Park, where we found a spectacular population on a claret ash tree (*Fraxinus angustifolia* 'Raywood'). We also found *Tupeia* there, as usual on five-finger.

Hobbs (2002) notes that five-finger is the only significant host of *Tupeia* in the Rotorua district, while *Ileostylus* parasitises numerous trees and shrubs, both native and introduced, the most frequent being mahoe (*Melicytus ramiflorus*), kohuhu (*Pittosporum tenuifolium*), silver birch (*Betula pendula*) and hawthorn (*Crataegus monogyna*).

In addition to the *Tupeia*, Spencer Road, Lake Tarawera, had some other notable botanical subjects, namely a large population of naturalised Japanese hill cherry (*Prunus serrulata*), and roadside occurrences of climbing spindle berry (*Celastrus orbiculatus*).

Birds

Paul Asquith

A Botanical Society trip with almost as many keen birders as botanisers must be unusual, but this was the case on the January 2008 Anniversary Weekend trip to Rotorua and Lake Okataina. Many were the times the call came through from people gazing skywards into the high forest canopy : "Oh what was that that just flitted across?"

Without a doubt there will not be any member of the group on the trip that doesn't now know both the calls and flight of the long-tailed cuckoo – they seemed to be everywhere we visited every day and in great abundance at times, especially around the open area of Lake Okataina Outdoor Recreation Centre where we lodged.

A total of 43 bird species was recorded as seen or heard with a strong possible 44th with a single ringing kokako call from high up above whilst we were on the Onaia Stream walk.

Nearly everybody took great delight in seeing and hearing both North Island robins and tomtits in quite good numbers on most days. Obviously some of the predator control activities are bearing fruit. Bellbirds too were regularly heard and seen especially around Lake Okataina. On the walk from the lodge to the lake through the tall tawa trees Stella heard and then spotted a group of about 6 rifleman high in the canopy and Paul, just a little way behind her was lucky enough to see one as they moved away.

There was much debate trying to sort out the juveniles of little and little black shags but by the end of the trip we reckon most of us had got them sorted out - at least till next time!!

Noticeable absentees were skylarks and pipits but then the area was not particularly suitable habitat for them. A good weekend birding along with some great botanising.

Acknowledgements

Our thanks to Maureen Young for organising the provisions; to John Hobbs of the Rotorua Botanical Society for his congenial company and local knowledge; to the Okataina Education and Recreation Trust for our accommodation; to Willie Shaw and Martin Kinder for facilitating our access to the Hinehopu Mire; and to Graeme Jane for a species list for the Kaharoa Conservation Area.

References

Anon. 2007: *Kaharoa Kokako Trust Ten Year Plan 2007-2017*.

Beadel, S.; Bycroft, C. 2007: Surveys of the distribution and density of threatened ferns at geothermal sites in the Waikato region. *New Zealand Plant Conservation Network Electronic Newsletter* No.44, July 2007: 3-5.

Cameron, E.K.; de Lange, P.J. 2002: American fireweed (*Erechtites hieraciifolia*) moves north. *Auckland Botanical Society Journal* 57:102-103.

Chapman, V.J. (ed.) 1980: *Handbook of the Rotorua Lakes District*. The Guardians of the Rotorua Lakes, Rotorua.

Clarkson, B. 1987: Hinehopu Mire: a regionally significant wetland in the Rotorua Lakes District. *Rotorua Botanical Society Newsletter* 11: 23-28.

Clarkson, B.D.; Smale, M.C.; Ecroyd, C.E. 1991: *Botany of Rotorua*. Forest Research Institute, Rotorua.

Clarkson, B.R.; Clarkson, B.D. 1991: Mires. *in* Clarkson, B.D.; Smale, M.C.; Ecroyd, C.E. *Botany of Rotorua*. Forest Research Institute, Rotorua: 59-64.

Dare, P.; Davis, P.; Moore, A. 1983: *Bay of Plenty-Rotorua walks*. Wilson & Horton Ltd, Auckland.

Dobbie, H.B. 1928: Lake Rotoiti. *American Fern Journal* 18:115-119.

Dugdale, J.S. 1994: Hepialidae (Insecta: Lepidoptera). *Fauna of New Zealand 30*.

Ecroyd, C.E. 1991: Vegetation of thermal areas. *in* Clarkson, B.D.; Smale, M.C.; Ecroyd, C.E. *Botany of Rotorua*. Forest Research Institute, Rotorua: 65-72.

Ecroyd, C.E.; Clarkson, B.D.; Wilcox, M. 1990: Annotated list of vascular plants in the Rotorua Lakes Ecological District. *Rotorua Botanical Society Special Issue No. 1*: 1-67.
Gardner, R.O.1989: Rheophytes in New Zealand. *Auckland Botanical Society Journal* 44: 22-24.
Given, D.R. 1977: Tropical ferns and fern allies of thermal areas. *Forest & Bird* No. 205: 5-8.
Graeme, B.; Graeme, A. 1991: War on wallabies. *Forest & Bird* 220: 43-45.
Gray, L. (no date): A brief history of Okataina. 9 pp.
Hobbs, J.F.F. 2001: Vascular plants of the Lake Okataina and Waione Block Scenic Reserves. *Rotorua Botanical Society Newsletter* 36: 5-31.
Hobbs, J.F.F. 2002: A resurvey of the mistletoes *Ileostylus micranthus* and *Tupeia antarctica* in the Bay of Plenty. *Rotorua Botanical Society Newsletter* 38: 12-31.
Hobbs, J.F.F. 2003: Waikite Valley field trip. *Rotorua Botanical Society Newsletter* 40:17-19.
Hobbs, J.F.F. 2004: A note on the mistletoe *Ileostylus micranthus* in the Kaharoa area. *Rotorua Botanical Society Newsletter* 43:31-34.
Nicholls, J.L. 1980: Native forests of the Rotorua Lakes District. *in* Chapman, V.J. (ed.) *Handbook of the Rotorua Lakes District*. The Guardians of the Rotorua Lakes, Rotorua: 46-51.
Nicholls, J. 1990: The occurrence of lowland ribbonwood (*Plagianthus regius*) in the Rotorua Lakes Ecological District. *Rotorua Botanical Society Newsletter* 21: 22-25.
Shaw, W.B. 1991: The vegetation and flora of Kaharoa Conservation Area. *Rotorua Botanical Society Newsletter* 24: 21-37.
Shaw, W.; Beadel, S.M. 1989: Three notable Rotorua wetlands. *Rotorua Botanical Society Newsletter* 16:18-20.
van Praagh, S. 2007: Giant rata tramp*. The Phantom* 7, Lake Tarawera Ratepayer's Association Inc.
Warburton, B.1986: Wallabies in New Zealand: history, current status, research, and management needs. *FRI Bulletin No. 114*, Forest Research Institute, Christchurch.

Field Trip to Tomarata Lakes, 16 February 2008

Maureen Young & Mike Wilcox

There are few dune lakes on the east coast of Northland, but the three Tomarata Lakes are an exception. The dunes between the lakes and the coast are occupied by the Mangawhai Forest – a 1200 ha block of *Pinus radiata*, originally planted 1963-1984, and now being progressively harvested, with large areas replanted in second rotation trees. Mangawhai Forest was originally planted by the New Zealand Forest Service to stabilise drifting sands and prevent them spreading onto neighbouring farms. It was subsequently purchased in 1990 by Carter Holt Harvey Ltd, and in 2005 sold on to The Rayonier Deutsches Bank consortium. The soils are sandy, some very podsolised and impoverished.

Fig. 1. Tomarata Lake, Mangawhai (Mike Wilcox, 8 Dec 2004)

All three lakes have a sorry history of degradation, by having the surrounding vegetation cleared right down to the lake edges then being grazed, and in the case of Tomarata Lake itself (Fig. 1), of being planted inappropriately, and being used, or misused, as a recreational area. The illegal release of the fresh-water fish, rudd, has ensured that the natural values of the underwater vegetation are similarly degraded (P.D. Champion, pers. comm.).

Slipper Lake, the most northern of the three, was not visited by us. The largest, Spectacle Lake, has a small marginal area on the point separating the two "lenses" of the "spectacles" that is fenced and administered by the Department of Conservation. By kind permission of the neighbouring farmer we were able to drive down a long farm race and park near the point. The vegetation comprised *Eleocharis sphacelata* and *Typha orientalis* on the outer edges, moving inwards through *Baumea articulata* to a tangle of rushes and sedges tied together with pink bindweed, *Calystegia sepium* subsp. *roseata.* Also abundant were water fern (*Histiopteris incisa),* swamp millet (*Isachne globosa),* reed sweet grass (*Glyceria maxima),* alligator weed (*Alternanthera philoxeroides)* and *Carex longii*. *Coprosma tenuicaulis* was quite common and on the drier land were some totara trees (*Podocarpus totara*). At the northern end were attractive bright green mounds of *Hypolepis distans,* and thickets of *H. ambigua*. In the damp pasture grew *Isolepis prolifer,* and water pepper, *Persicaria hydropiper,* with very peppery tasting leaves. Farming lore has it that once the water pepper has finished seeding it loses the hot taste and stock can eat it. Sand mining is taking place on the eastern edge of this lake, and an application has lately been lodged for consent to mine below groundwater level, thus forming a new lake.

Lunch was to be a picnic in the shade of the trees bordering Tomarata Lake, but as luck would have it, a heavy shower passed over at that time, so the vehicles provided shelter. A walk around the NE side of the lake revealed a narrow border of native species. Kanuka was common, and the silky leaves caused us