Field Trip to Hauturu, Little Barrier Island
6-7 March 2001
and a few observations of waiuatua, shore spurge *(Euphorbia glauca)*

Steve Benham

The arrival on 21 July 1999 of three *Euphorbia glauca* softwood cuttings collected from the single remaining specimen perching on the coastal cliffs of Motukorea (Brown's Island) marked the beginning of a chain of events.

On 19 April 2000 TV3 News reported the saving of the Brown's Island plant from possible extinction aided by the collection of material by DoC staff and the successful propagation by the Auckland Regional Botanic Gardens.

The Dominion newspaper published a snippet entitled 'Rare plant rescue bid pays off' in their 26 April edition and closer to home the Manukau Courier 2 May – 'Back from the brink' and the North Shore Times Advertiser 2 May 'Endangered medicinal plant gets lifesaving treatment.'

The current number of plants raised vegetatively from the original cuttings is now 66 (9 Mar 01). The first inflorescence correctly known as a pseudo-pleiochasium – (floral head composed of floral leaves and flower clusters) appeared in November 2000 and the first capsule in January 2001. Hand pollination and observations on pollinators has been an ongoing management practice for this *ex situ* collection. The plant on Motukorea has never been recorded as having flowered. It is envisaged that a batch of seed-raised plants will be used as a seed source to propagate plants for future restoration projects.

The next development emerged when John Wotherspoon (DoC) mentioned that a visit to Hauturu was planned for February 2001 to study the shore spurge in habitat.

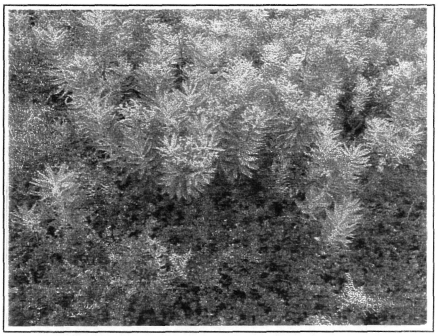
The field trip eventuated on Tuesday 6 March when Brent Torrens (ARC) John Wotherspoon and I sailed from Devonport on DoC's vessel the Hauturu at 9am. We were accompanied by Lance Te Hira who represented the Ngati Wai on Resource Management Act issues and researcher John Perrott from Massey University and his two team members who were researching the effects of the fungus *Aspergillus fumigatus* and *A. flavus* on the stitchbird, hihi (*Notiomystis cincta*). This species of fungus has the smallest known spore of all described fungi (J. Perrott pers. comm.).

Hauturu lies on latitude 36^0 12′ S and 175^0 7′ E longitude, is situated 50 km north of Auckland City and covers an area of 2,817 hectares. The island is characterised by its high coastal cliffs, deeply cut gullies, hanging valleys, knife-edged ridges, boulder banks and the landslide at Hingaia. It dates back to the mid-Pleistocene epoch and is a dissected andesitic volcanic cone.

Hauturu has a strong cultural heritage with Maori accounts of the island going back eight centuries. Originally settled by the descendants of the famous Maori ancestor and voyager Toi te Hatahi. Hauturu meaning 'The Wind's Resting Place' was the name bestowed by Toi on his arrival in Aotearoa in 1150 AD.

During the 14-16th centuries descendants of the Tainui settled there. From early 17th century Hauturu was conquered and settled by a wider tribal grouping known as Ngati Wai. Between 1860-1894 negotiations were being conducted between Ngati Wai and the Government to pass legislation in order to protect the island. It was during this period that one third of the island was disturbed and logged for kauri (*Agathis australis*).

After my experience of *mal de mer* on the ABS field trip to Repanga, Cuvier Island a couple of years ago now, I was surprised with myself at having pounced on the opportunity to risk the 6 hour sailing to Hauturu. However the temptation to visit this sanctuary far outweighed the minor problem of motion sickness!



Euphorbia glauca* among *Muehlenbeckia

My apprehensive fears eventuated when we were caught in the swell between Kawau and Hauturu. As the Island loomed as a silhouette in the distance my mind became pre-occupied with excitement and we arrived off the west coast at about 3.30pm. The view was awe-inspiring with the primeval-looking rounded canopies of kanuka and manuka masking the hillsides and Mt. Hauturu swathed in clouds.

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The luggage went by tractor and trailer to the bunkhouse as we tramped over the flat expanse of Te Maraeroa with *Cyperus ustulatus - Carex virgata* community heavily invaded by *Paspalum dilatatum*. This area was once grazed. Te Maraeroa was formed by the lowering of the sea-level about 4,500 years ago when the it was a couple of metres higher than now; the beach is formed of fine-grained alluvial silts and peats.

On the seaward side mahoe, manuka, kawakawa, *Coprosma rhamnoides* occurred with occasional patches of *Adiantum aethiopicum* as ground-cover. The kawakawa was noticeably distinct from the mainland *Macropiper excelsum*. The North Island saddleback (*Philesturnus carunculatus rufusater*) were busily feeding on the ripe fruits of fig (*Ficus carica*) near the bunkhouse as were kaka (*Nestor meridionalis)* who were also working away on the poroporo (*Solanum aviculare*).

After unpacking in the bunkhouse behind closed doors just in case any predators had smuggled themselves ashore in our luggage, we made good use of the remainder of the day by locating and studying one of the three populations of *Euphorbia glauca* on the littoral.

The first population of shore spurge to be studied lies a few hundred metres to the north of West Landing and was the second largest of the three discontinuous populations in the area between Te Titoki Point and the Waipawa Stream outlet. The shore spurge was present in the pohuehue (*Muehlenbeckia complexa*) community. Pohuehue forms a dense but open mat of interlacing wiry stems amongst the immobile boulders with the shore spurge emerging from this and spreading by underground rhizomes. Associated taxa included the occasional *Asplenium haurakiense, Blechnum oblongifolium, Conzya albida, Calystegia soldanella, Geranium homeanum, Leontodon taraxacoides, Metrosideros excelsa, Microlaena stipoides, Paspalum dilatatum, Phytolacca octandra, Senecio lautus, Solanum americanum, Tetragonia implexicoma.*

All stages of shore spurge growth were evident with dead biennial-flowered stems, inflorescences, fructescences, non-flowering vegetative shoots and 15 cm high immature suckering shoots. An occasional clump of stems had withered and died as sometimes happen in cultivation. No seedlings were observed. Overall there were far more non-flowering shoots than flowering ones and quantities of seed set was sparse when compared with the number of inflorescences. Having said that, seed capsules do mature quickly and have an explosion mechanism to distribute the seed. No pollinators were present at that time of day (4.45pm).

Demographical data is difficult to record with the stoloniferous habit, although there were concentrated patches of flowering stems which may indicate sources of an original parent plant.

After a phone call to Bec Stanley (DoC - Threatened Plants) a small number of seed capsules were collected from fifteen flowering stems and the global positioning satellite (GPS) grid reference was recorded – E2695047 N6551650. The seed will be stored at the Auckland Regional Botanic Gardens (ARBG) until such a time that research is required on the Hauturu genotype. The ARBG accession number is AUCK 20010160. Just before we left Hauturu at 2pm on the Wednesday we recorded the Asian paper wasp (*Polistes chinensis*) and two other unidentified insects visiting the inflorescences.

After evening meal John and Brent went fishing to find tomorrow's breakfast, which turned out to be snapper. However, I decided to go on an evening walk south eastwards towards Awaroa Point, hopping over lichen encrusted boulders, many exfoliating their outer shells like onion skins. Piles of sun bleached driftwood appeared ghost-like in the dusk, reduced to mere skeletons from the forests of Mother Earth. The ephemeral sunset flamed and sank rapidly into the western night sky.

As dawn was coming into being I slipped out of the bunkhouse in anticipation of seeing a North Island kiwi (*Apteryx australis* subsp. *mantelli)* and was soon startled by this relatively large specimen prodding the mown grass walkway a few yards ahead of me. Apparently the population is a large one, dense and some authorities say natural in origin. Hauturu is predator-free except for kiore (*Rattus exulans*).

The following day we headed out to Titoki Point where John and Brent had seen the shore spurge in half dusk the evening before. The habitat was the same but a larger population, covering an area measuring 21 m long and 5 m wide. Older stems were mottled red and stem length was an amazing 65 cm. All the taxa identified in the first location were present here, with the addition of *Pyrossia*

eleagnifolia growing on boulder rocks (rupestral) and two clumps of the majestic sedge *Cyperus ustulatus*. There was the occasional shore spurge spent flowering stem that had become vegetative again. One had sprouted four shoots and was starting to flower. All the flowering stems were held well above non-flowering shoots unlike those in cultivation which become partially hidden by masses of vegetative growths. Again no pollinators were observed bearing in mind that it was cool, overcast with threatening showers. Separated by a 3-4 m dense tangle of pohuehue another, smaller, area of shore spurge was found.

Heading north from Te Titoki Point and where the sea cliffs of weathered breccia rise sheer from the boulder beach another taxon from the Auckland's Threatened Plants List namely mawhai, native cucumber (*Sicyos australis*)* was found scrambling over the boulders and up into the lower branches of pohutukawa , kawakawa and a single plant of *Nestegis apetala*. From my initial glancing observation I wouldn't have identified this plant as mawhai when comparing it with the plants at the Otuataua Stonefields. This plant had large, relatively thick and dark glossy green leaf blades with large lobes, undulate and incurved. The small spiny fruits were typical. Whereas the Otuataua plants were thin-leaved, not shiny, bristly, toothed and not incurved. Further along the boulder beach we came across several plants of the more 'typical' mawhai in flower. Could I have been observing two distinct morphs of *Sicyos australis*?

Four other plants worthy of mention on the cliff face and on slip areas were *Hebe pubescens* s.str. with pale mauve spikes 14.5 cm long, *Melicytus novae-zelandiae*, the coastal brake *Pteris comans* with the characteristic leathery fronds and overlapping pinnae, and the rather commonly overlooked urticaceous herb *Parietaria debilis*.

Retracing our steps to the start of the cliffs we took the Waipawa track which climbed steeply traversing coastal forest with pohutukawa (*Metrosideros excelsa)*, taraire (*Beilschmiedia tarairi)*, puriri (*Vitex lucens)* and as the altitude increased the species mix changed abruptly to tanekaha (*Phyllocladus trichomanoides)*, kauri (*Agathis australis)* and hard beech (*Nothofagus truncata)*. On the banks of the Waipawa stream the large-leaved outlying island form of *Rhabdothamnus solandri* was noticeable with leaves measuring 6 cm in width and nikau (*Rhopalostylis sapida)* leaflets measured 7.5 cm.

Emerging from the coastal forest on either side of the path were rectangular pits which may have been Maori food storage pits (Brent Torrens pers. comm.) and further on were remains of trench-like fortifications. *Helichrysum aggregatum* was an abundant understorey on these drier slopes. Typical gumland taxa were present in the tanekaha - kauri forest, with *Toronia toru*, *Lepidosperma laterale*, *Lycopodiella volubile*, *L. deuterodensum*, *Astelia trinervia*, *A. solandri*, *Bulbophyllum pygmaeum*, *Gonocarpus incanus*, *Huperzia varia*, *Trichomanes reniforme*, *Hymenophyllum* spp. The latter three genera were all terrestrial. Filmy ferns became more abundant in the area where hard beech were predominant. On our return via Thumb Track the kauri appeared to be far more abundant and older on this ridge track; accompanied by drifts of *Astelia trinervia* and the occasional terrestrial *Collospermum hastatum,* and mixed with hard beech, *Dracophyllum traversii* and *Pittosporum tenuifolium.* A male North Island robin (*Petroica australis*) was spotted in the undergrowth. Great swathes of pukupuku (*Doodia australis*) with their flamboyant flamingo-pink young fronds greeted us as we emerged out into the sunlight.

The 2 hour 15 min sailing to Kawau Island was long enough considering the 1.5 m swell. Arrival on Kawau was in complete contrast to Hauturu with hillsides covered down to sea level in *Pinus radiata*, the occasional pencil-like New Caledonian *Araucaria columnaris* on the Momona peninsula to the right of Mansion House and clumps of the agavaceous Central American succulent *Furcraea foetida.* A warm and sunny evening walk on this peninsula revealed an understorey of almost purely South African taxa – thickets of *Polygala myrtifolia*, interspersed with *Melianthus major* and *Tecomaria capensis*! The inquisitive and flightless weka (*Gallirallus australis*) was scratching in the dry mulch of pine needles. The two historic plantings of Chilean wine palm (*Jubaea chilensis*) had their

***E. glauca* at Titoki Point.**

crowns epiphytically infested with Moreton Bay figs (*Ficus macrophylla*) which should be removed as soon as possible for the long term wellbeing of the palms.

We shared the bunkhouse that night with two weed team staff who were targeting kahili ginger (*Hedychium gardnerianum*), Madeira vine (*Anredera cordifolia*) and woolly nightshade (*Solanum mauritianum*).

Departing Kawau at 7.30am the final port of call

before arriving in Devonport was a brief stop on Tiritiri Matangi where there we met Barbara and Ray Walters who were very concerned with predations on the kokako (*Callaeas cinerea*) chicks by the harrier (*Circus approximans*). Apparently, control of the harrier is forbidden even when the long-term future of the kokako conservation programme is threatened!

Acknowledgements: I would like to thank Jack Hobbs, Manager/Curator of ARBG for supporting this study, Brent Torrens and John Wotherspoon for their good company in the field and John for making this trip possible. Lastly my thanks to Dr. Graham Robertson for his proof-reading.

References: W. M. Hamilton, Little Barrier Island (Hauturu) DSIR Bulletin 137, R. E. Owen, Government Printer, Wellington, New Zealand. 1961.

***Addendum:** Ian Telford is currently undertaking a taxonomic revision of the genus *Sicyos*. Results from phenetic analyses showed differences between the New Zealand and Australian plants.

Andrew Dakin 1939 to 2001

Andrew Dakin died, aged 60, at his home in Hunua on 12 June 2001, after a sudden heart attack. He was born in England on 30 September 1939 and came to New Zealand with his family when he was about twelve years old. Andrew was a registered, private forestry consultant, and was Treasurer of the Auckland Branch of the NZ Institute of Forestry (NZIF). He recently was instrumental in helping to organise the very successful NZIF Annual Conference, held in Auckland. From the mid 1960s to around 1992 he was a technical forester with the Auckland Regional Authority (ARA) Forestry Department at Hunua. Andrew was in charge of the ARA's Hunua nursery, which produced native trees for forestry trials and for revegetating the bare scars in the Hunua Ranges after the construction of the earth dams for reservoirs. During this time he developed some innovative vegetative propagation techniques for rimu and kauri, and qualified for the NZ Diploma in Horticulture. In 1986 he became Forester in charge of the Auckland Regional Council's Hunua forest.

Andrew made a study of the native vascular flora of the Hunua Ranges. He was also fond of lichens. During the 1970s with Ian Barton they built up the ARA Hunua Forestry herbarium of over 2300 specimens. In 1986 it was donated to the Auckland Museum, and contains some 1300 Dakin specimens, including 300 lichens. Andrew was a member of the Auckland Botanical Society from 1971 until 1992. From 1972 to 1983 he published 11 articles in the ABS *Newsletter*, mainly about plants from the Hunua Ranges, and observations of leaf morphology. In 1980 Andrew co-authored an account on the lichens of Hirakimata (Great Barrier Island) with David Galloway (*NZJBot 18*: 61-64). During the late 1980s he was involved in the Protected Natural Areas Programme for the Hunua Ecological District. In 1989 he co-authored the `Native vascular flora of the Hunua Ranges' (ABS *Bulletin 18*) with Rhys Gardner.

Andrew will be sadly missed by forestry and botanical colleagues alike.

Thanks to Ian Barton for his comments.

Ewen Cameron and Mike Wilcox