Alectryon excelsus
Ascarina lucida[P]
Beilschmiedia tarairi
Beilschmiedia tawa
Betula sp. *[P]
Brachyglottis repanda
Callitriche muelleri
Carmichaelia australis
Carpodetus serratus
Centella uniflora
*Cirsium vulgare**
*Citris limon**[P]
Clematis paniculata
*Conyza sumatrensis**
Coprosma arborea
Coprosma grandifolia
Coprosma lucida
Coprosma rhamnoides
Coprosma robusta
Coriaria arborea
Corynocarpus laevigatus
Dodonaea viscosa[P]
*Dovyalis caffra**[P]
Dysoxylum spectabile
Elaeocarpus dentatus
Elatostema rugosum
Epilobium nerteroides
Epilobium pedunculare
*Eucalyptus ficifolia**[P]
*Ficus carica**[P]
Fuchsia excorticata
*Galium aparine**
Geniostoma ligustrifolium
Geranium homeanum
Griselinia lucida
Haloragis erecta
Hebe stricta
Hedycarya arborea
Hoheria sexstylosa[P]
Hydrocotyle elongata
Knightia excelsa
Kunzea ericoides
Leptospermum scoparium
Leucopogon fasciculatus
*Leycesteria formosa**
*Lotus pedunculare**
Melicytus macrophyllus
Melicytus ramiflorus
Metrosideros diffusa
Metrosideros fulgens
Metrosideros perforata
Metrosideros robusta x *M. excelsa*[P]
Myrsine australis
*Nasturtium aquaticum**
Nertera dichondrifolia
Nestegis lanceolata
*Nymphaea alba**[P]
*Olea europaea**[P]
Olearia furfuracea
Olearia rani
Persicaria decipiens
*Phytolacca octandra**
Pittosporum tenuifolium
Pittosporum cornifolium[P]
Pouteria costata[P]
*Prunella vulgaris**
*Prunus persica**[P]
Pseudopanax arboreus[P]
Pseudopanax crassifolius
*Psidium cattleianum**[P]
*Quercus canariensis**[P]
*Ranunculus repens**
Rhabdothamnus solandri
Ripogonum scandens
Rubus cissoides
Schefflera digitata
*Senecio jacobea**
Solanum americanum
*Solanum nigrum**
Sophora microphylla[P]
Sophora tetraptera[P]
Streblus heterophyllus
*Tradescantia fluminensis**
Virgilia sp. *[P]
Vitex lucens

Monocotyledons

Acianthus sinclairii
Astelia solandri
*Butia capitata**
Carex geminata
Carex lambertiana
Carex solandri
Carex virgata
Collospermum hastatum
Cordyline australis
Cordyline banksii
Corybas rivularis
Corybas sp.
Cyperus ustulatus
*Dactylis glomerata**
Dianella nigra
Drymoanthus adversus
Earina mucronata
Freycinetia banksii
Gahnia lacera
Gahnia setifolia
Gahnia xanthocarpa
*Holcus lanatus**
Juncus sarophorus
Libertia sp.
*Livistona australis**[P]
*Livistona chinensis**[P]
Microlaena avenacea
Microlaena stipoides
Microtis ?unifolia
Oplismenus hirtellus
*Phoenix canariensis**[P]
*Phoenix reclinata**[P]
Phormium tenax[P]
Pterostylis sp.
Rhopalostylis sapida
Thelymitra sp.
Typha orientalis
Uncinia uncinata
*Wachendorfia thyrsifolia**[P]

Vegetation and vascular flora of southern Ponui Island, Hauraki Gulf – a return visit. 16/10/05.

Ewen K. Cameron and Peter J. de Lange

Because of boat troubles, the previous Auckland Botanical Society (ABS) day trip to southern Ponui Island on 20 November 1999 ended up being a rushed visit with only three hours ashore (Cameron 2000). A return visit occurred on 16 October 2005 with 47 members on the Department of Conservation boat *Hauturu* skippered by Lionel Brock, which departed in drizzle from Maraetai Wharf on a falling tide at 8.50am and arrived at Motunau Bay on southern Ponui Island. There we were met by David Chamberlin on his motorized cattle barge. After a single transfer of passengers (Fig. 1) the barge was run up onto the beach with its full human load and we were all ashore with dry feet by 9.50am.

Fig. 1. Loading the cattle barge to go ashore at Motunau Bay, Ponui Island. Photos by EKC except where indicated, all taken 16 October 2005.

Participants of the trip: Doug & Jane Ashby, Chris & Noel Ashton, Jessica Beever, Duncan Benzie, Jonathan Boow, Jan Butcher, Ewen Cameron (trip organiser), Paul Cashmore, Lisa Clapperton, Leonie Clunie, Colleen Crampton, Pam Dale, Peter de Lange, Frances Duff, Ngaire & Robin Dunlop, Jo Fillery, Alan Foubister, John Galilee, Rhys Gardner, Shelley Heiss-Dunlop, Veronica Herrera, Fran Hintz, John Hobbs, Pete Holloran, Peter Hutton, Hilda & Ian Jones, Sandra Jones, Mei Nee Lee (trip bookings), Helen Lindsay, Elaine Marshall, Benjamin & Steve McCraith, Cara, Doug & Ros Nicholson, Helen Preston-Jones, Juliet Richmond, Josh Salter, Shirley Tomlinson, Mike, Nancy & Pam Wilcox and Maureen Young. David, Ros and Pat Chamberlin of southern Ponui Island were our guides.

This appears to be the fourth visit by ABS to southern Ponui Island: 18-20 February 1955 (Hynes 1955), 24-26 February 1956 (Hastings 1956), 20 November 1999 (Cameron 2000) and 16 October 2005 (this account). Herbarium collections made during our visit included: mosses by Jessica Beever, reported on separately (Beever 2006); and vascular plants by EKC and PdL (Fig. 2). Previous Ponui Island collections held in the Auckland Museum herbarium (AK) totalled 240 specimens and many have been referred to and included in this report.

After a short introduction to the island by David in the local hall, we divided into two groups for: a short loop walk (c.3km) led by Pat Chamberlin; or a longer walk (c.9.5km) led by David and Ros Chamberlin. The short walk followed the route of the 20 November 1999 visit up "First Bush Gully", while the second group headed up the main valley ("Raupo Valley") behind Motunau Bay, along the eastern margin of a long wetland, flanked by grazed pasture on the east side. We entered the forest at the northern end to a wonderful steep valley with king fern (*Marattia salicina*), "King Fern Gully", and decided it was also a good lunch stop. Then up a forested steep slope, along a major ridge to the local high point: Ponui Trig (173m). Two of the party took the direct southern route back from this point, the rest swung north and east following a farm track, looked over the northern coastal cliffs, before heading south along an open farm ridge, where the party divided in two with half heading directly back to Motunau Bay and the other half dropping down through a forested valley to the northern end of Third Bay on the east coast. The tide was low enough to allow easy access down the beach before cutting up at the southern end, arriving last back at Motunau Bay only 15 minutes late for our 4pm rendezvous. A reverse of the morning boating routine by David had us all back on *Hauturu* at 4.30pm and back on the Maraetai Wharf by 5.30pm. See the map (Fig. 3) for place names.

Fig. 2. Peter de Lange collecting *Earina mucronata* on a horizontal branch of pohutukawa amongst *Astelia solandri* and a *Collospermum hastatum* by north end of Third Bay.

Brief History

Ponui Island has had many centuries of Maori occupation; Matthews (1979) reported on a considerable density of archaeological sites on the island, similar to that found on other Hauraki Gulf islands. There is a splendid pa site just north of Motunau Bay. Elizabeth Brown (1979a) summarised the history, geology of the island, and Sandra Gorter (2002) recorded the island farming life of David and Ros on Ponui Island. David's great-great-grandfather bought the island in 1853 for £2130, and cleared much of it for farming. Around 1900 the farm was divided into three roughly equal parts and around that same time kauri (*Agathis australis*) was milled first around the Trig area. One of the biggest logs was so big it was rolled down to the beach (by Peach Tree Gully), but it went end on end and finished up standing on its butt reduced to splinters (Peter Chamberlin pers. comm. (from his father Fred Chamberlin)). After the logging many of the kauri heads were later salvaged.

Today the island is owned by John Spencer (north part), Richard and Averill Chamberlin (mid part), and Peter and Pat Chamberlin, managed by David and Ros Chamberlin (south part). Some two-thirds of the island is in pasture, while the rest is mainly secondary forest,

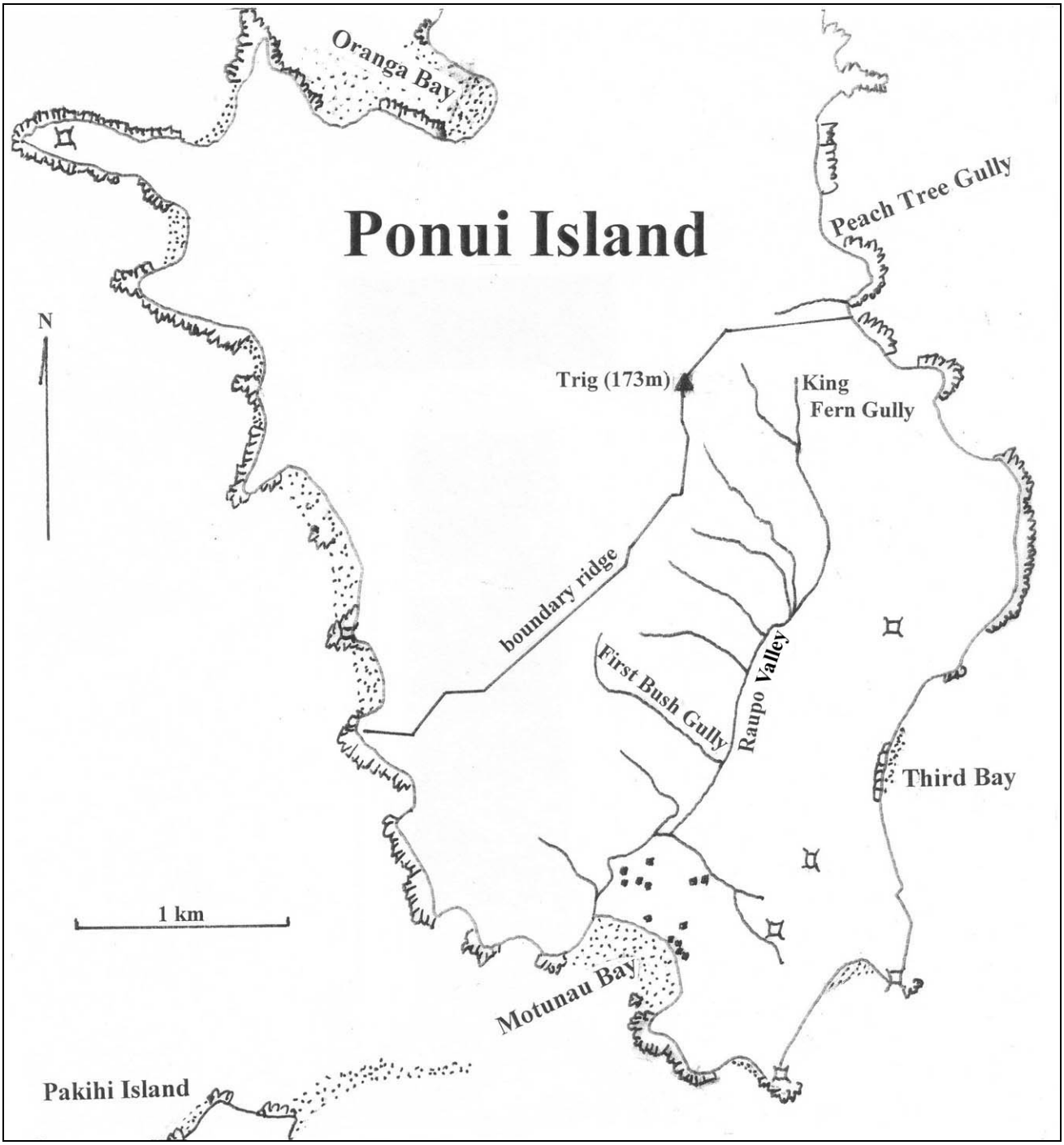


Fig. 3. Formal and informal place names for southern Ponui Island.

kanuka (*Kunzea* aff. *ericoides*) is especially dominant. The island covers 1795 ha, the highest point is 173m asl which is on the boundary ridge of the mid and south properties. The southern farm supports some 4000 stock units, with 1300 in-lamb ewes, 800 hoggets, 500 weaner calves and cattle, and a herd of c.20 wild donkeys (dating back to the 1800s). There is another wild donkey herd on the northern Ponui farm.

The great flood

In his introduction to the island David mentioned the great flood of 1966 which EKC later followed up with David's father, Peter Chamberlin. There was torrential rain during the night in early autumn 1966 – a 14" kerosene can filled to over-flowing between 11pm and 5am – and the stream behind Motunau Bay flowed under the lower section of the raupo (*Typha orientalis*) wetland and floated some 2 acres of material (c.1km long x 25m across x 2.4-3.0m thick) out into the bay. It is unknown where this raupo-raft ended up, unlike a similar event that occurred a few years earlier at Oranga Bay**,** mid-western Ponui Island, where the raupo-raft ended up on the beach. After the Motunau flood, the mud-filled wetland had to be fenced from stock and a channel reinstated – Peter and a contractor worked for 6 weeks balancing on planks above the 1.2m deep mud to achieve this and farming practices had to be changed to avoid this soft section of the farm.

The vegetation

Much of the island would have been cleared and burnt during Maori occupancy, followed by clearing for farming, gum-digging, kauri logging and periodic firing of the danthonia (*Rytidosperma* spp.) pastures (Brown 1979a, b). Today the southern farm of some 587ha is 52% in pasture and contains the largest remaining contiguous piece of forest on the island. The forest is dominated by tall kanuka, but the valley bottoms include some impressive broadleaf forest, and good kauri regeneration dominates some of the upper ridges. The last time the tea tree (*Kunzea* & *Leptospermum*) was burnt was c.1950, and some of the bare ridges at that time are now covered in low tea tree. Although the bush areas are not fenced, the young stock now being farmed are not so adventurous, however, throughout the bush the effects of stock grazing is evident.

Some plant communities

1. The wetland in "Raupo Valley" which is over 1.5km long and some 20-40m across fills the bottom of the valley, with grazed pasture on the east side, and bush – generally tall kanuka on the west. Some six steep-sided forested gullies feed in from the west. The lower part of this wetland was rafted into the sea in 1966 (see above under 'The great flood'). The wetland is dominated by raupo, with grey willow trees (*Salix cinerea*) (to c.16m tall) scattered along the margins to locally dense at the northern end (Fig. 4). Brown (1979b), based on field work 26 August-2 September 1978, recorded raupo as absent here (just died down/burnt?); and *Cyperus ustulatus* as the dominant species, the latter of which we saw only locally. Raupo being absent and *C. ustulatus* being dominant at that time appear to be incorrect (David Chamberlin pers. comm.). Although we only ventured into one small piece of this habitat, the following species were commonly associated with the raupo: *Baumea rubiginosa, Isachne globosa*; tussocks of *Carex secta* and *C. virgata*; patches of *Blechnum minus*, and *Eleocharis acuta*; occasional plants of karamu (*Coprosma robusta*), *Carex maorica, Epilobium pallidiflorum, Isolepis prolifer, Bidens frondosa*; cabbage trees (*Cordyline australis*) were local and a single maire tawake (*Syzygium maire*) was present. On the eastern margin where there was a small area of open water native azolla (*Azolla filiculoides*) and *Lemna minor* were common, flanked by abundant bright green stems of *Isolepis prolifer* and scattered bluish stems of *Schoenoplectus tabernaemontani* amongst the raupo.

2. Broadleaf forest in "King Fern Gully"

The dense forest canopy was 16-20m tall and dominated by taraire (*Beilschmiedia tarairi*) and kohekohe (*Dysoxylum spectabile*) (30-50cm dbh), with occasional tawa (*Beilschmiedia tawa*), karaka (*Corynocarpus laevigatus*), puriri (*Vitex lucens*) and rewarewa (*Knightia excelsa*); nikau (*Rhopalostylis sapida*) and tree ferns, especially wheki (*Dicksonia squarrosa*), were a locally common in the understorey (Fig. 5). The ground appeared unnaturally bare (possibly due to stock damage in combination with the naturally unstable, steep sided greywacke slopes and their associated poorly developed soils) with scattered fern species, occasional shrubs of hangehange (*Geniostoma ligustrifolium*) and locally kiekie (*Freycinetia banksii*). *Collospermum hastatum* was a common epiphyte. The deeply (4-5 m) eroded stream trench containing the majority of the king fern, physically protects them from the occasional farm stock that may venture this far. Frequent mamangi (*Coprosma arborea*) and scattered white maire (*Nestegis lanceolata*) were present on the upper sides of this valley.

Fig. 4. The large wetland, "Raupo Valley" with grey willow, and the forested slopes to the right. Looking southwest, Motunau Bay top left-hand corner.

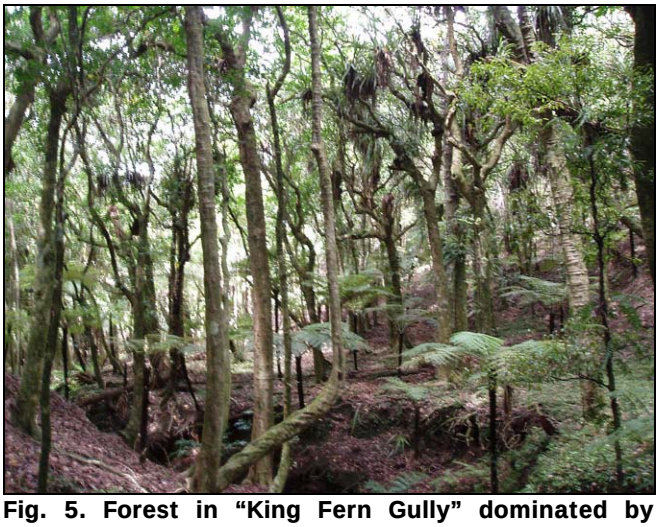


Fig. 5. Forest in "King Fern Gully" dominated by taraire, kohekohe, nikau and tree ferns (especially wheki) with a bare understorey.

3. Some of the upper ridges are locally dominated by good-sized ricker kauri 30-80cm dbh, especially along the main ridge (Fig. 6) where the kauri logging occurred first. Although we botanised little of this habitat, kauri grass (*Astelia trinervia*) appeared to be missing (possibly eaten out?), and the only one that we saw was a single tussock at the bottom of "King Fern Gully". The largest kauri seen was above "King Fern Gully" on a mid-slope, it was >1m dbh, and only

a small side branch was alive – presumably left because it was hollow. Brown (1979b) described good kauri forest regeneration and associated species on a ridge south of the Trig with most remaining kauri 0.7-1.0m dbh (not visited by us).

Fig. 6. Kauri regeneration flanking the main ridge and farm road c.350m north of the Trig.

4. The shrubby bush at the north end of the main ridge by the farm track was a north-facing slope dominated by kanuka and manuka (*Leptospermum scoparium*), but associated with mamangi, mingimingi (*Leucopogon fasciculatus*), prickly mingimingi (*Leptecophylla juniperina),* akepiro (*Olearia furfuracea*), Spanish heath (*Erica lusitanica*) and clematis (*Clematis paniculata*).

The vascular flora

Hynes (1955) and Hastings (1956) commented on the first two ABS trips to southern Ponui Island in the 1950s. Atkinson (1959) mentions the occurrence of a single stand and some scattered trees of hard beech (*Nothofagus truncata*) on the southern slopes of the island. During the Auckland University Field Club trip to the island in 1978, Elizabeth Brown (1979b) recorded 201 vascular plant species for the whole island (which 88% were indigenous spp.), this excluded pasture and garden species. During the brief 1999 ABS visit to southern Ponui Island, 192 wild vascular plant species were recorded (50% were indigenous) (Cameron 2000), this included pasture species, but excluded garden species. The combined 1999 and 2005 ABS visits, recorded 363 wild species (61% were indigenous), garden species excluded, for southern Ponui Island. This brings the total recorded flora for the whole island to 420 species (66% indigenous), which more than doubles the earlier published account by Brown (1979b); 43% of the records are vouchered in the AK herbarium (see Table 1 and Appendix 1).

Threatened and uncommon vascular plants

Sixteen regionally threatened and uncommon vascular species (cf. Stanley et al. 2005) were recorded for the southern part of Ponui Island during the two ABS surveys: "Regionally Critical" – *Senecio scaberulus*; "Regionally Endangered" – *Azolla filiculoides*; "Regionally Chronically Threatened/Serious Decline" – *Marattia salicina, Pouteria costata, Syzygium maire*; "Regionally at Risk/Sparse" – *Blechnum norfolkianum, Bromus arenarius, Dicksonia fibrosa, Grammitis rawlingsii, Hypolepis dicksonioides, Libocedrus plumosa, Metrosideros carminea, Olearia albida, Tmesipteris sigmatifolia, Wahlenbergia littoricola*; and "Data Deficient" – *Galium propinquum*. Six other regionally threatened and uncommon vascular species have been recorded or collected on the island previously: "Regionally Endangered" – *Pimelea tomentosa, Scleranthus biflorus*; "Regionally Chronically Threatened/Gradual Decline" – *Myoporum laetum*; and "Regionally at Risk/Sparse" – *Asplenium hookerianum, Pomaderris rugosa* and *Pteris comans*.

Comment on some specific species

Blechnum norfolkianum – present on rocky stream bank (Fig. 7) in the shaded "King Fern Gully" by the king ferns. As pointed out by Brownsey and Smith-Dodsworth (2000) this is a poorly defined species is not readily distinguished from large mainland forms of *B. chambersii*, and where they occur together they may hybridise. However, Carrick Chambers pointed out to EKC (pers. comm.) many years ago that one of the best ways to distinguish between these two species is that *B. norfolkianum* has a much shorter fertile frond compared with the sterile one – and the Ponui Island plants certainly possessed this character. From the Inner Hauraki Gulf *B. norfolkianum* has only been collected on Ponui, Waiheke (*C.D. Kilgour*, May 2002, AK 257657) and Motuihe (*P.J. de Lange 3960 & G.M. Crowcroft*, Feb 1994, AK 252142) Islands.

Fig. 7. *Blechnum norfolkianum* on the stream bank in "King Fern Gully".

King fern or para (*Marattia salicina*) – a narrow, deeply eroded rocky "trench" (4-5m deep × 4-5m across × >200m long) curving northwards in a steep, dark, forested gully contained several hundred king fern specimens in all size classes, with fronds to 2.5m long

(Figs. 8 & 9). They were commonly associated with nikau, and the forest canopy was locally dominated by taraire and kohekohe. Some 20-25 years ago some large specimens were washed out during a flood. King fern also exists in 1-2 adjacent gullies to this main population (David Chamberlin pers. comm.). Apart from a single 1953 collection from Rocky Bay on Waiheke Island (*M.E. Sexton*, AK 295568), the Ponui Island population is the only one known in the Inner Hauraki Gulf and because of its size it is one of the species regional strongholds. It should be noted that the Whakanewha Regional Park king fern on Waiheke Island is planted (Wilcox et al. 2002), though it was sourced from the single-known wild population on Waiheke Island (Andy Spence, pers. comm.).

Fig. 8. King fern (*Marattia salicina*) and David Chamberlin in "King Fern Gully".

Fig. 9. King fern in the eroded "trench", King Fern Gully". [photo J Boow]

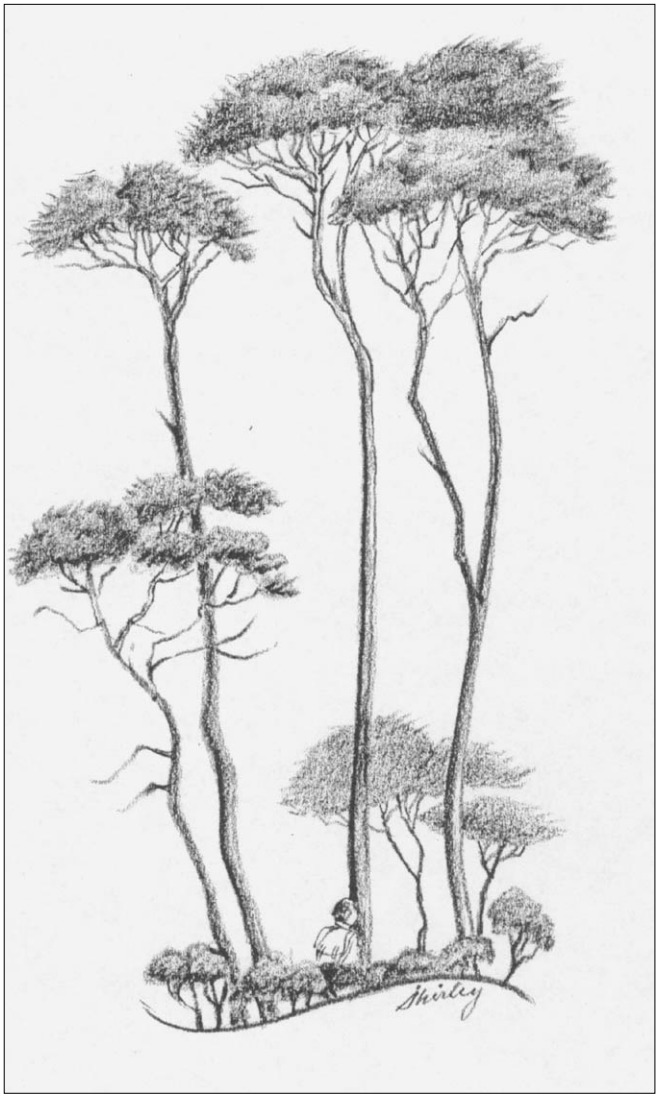
Maire tawake (*Syzygium maire*) – in November 1999 ABS saw c.12 fruiting trees to 15m tall in the lower swampy bottom of the most southern forested side gully, "First Bush Gully", behind Motunau Bay. In the recent survey we saw one maire tawake in the main raupo wetland in "Raupo Valley", and several trees in the lower "King Fern Gully". In all cases they were in swampy habitats and it is likely that more trees exist in the bottoms of other side gullies feeding into the main wetland in "Raupo Valley". Maire tawake is also known from Waiheke Island (3 collections).

The indigenous azolla (*Azolla filiculoides*) – it was pleasing to see this species by the raupo reedland because for most of Auckland and Northland regions this native azolla is being replaced by the exotic ferny azolla (*A. pinnata*). Notably *A. pinnata* has yet to be recorded from the island.

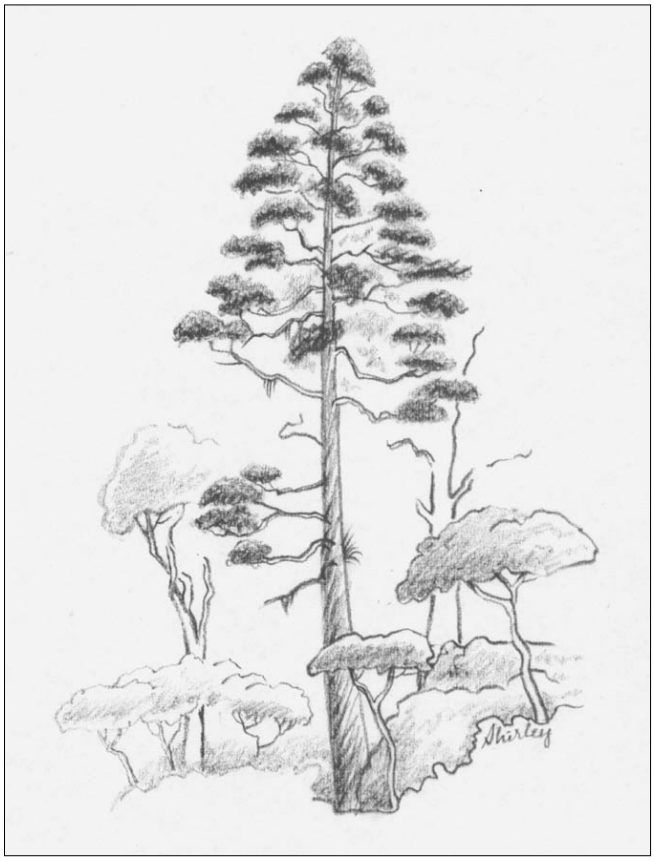
Senecio scaberulus – we discovered a local small population on the coastal cliffs of Third Bay. At a national level it is regarded as "Acutely Threatened/Nationally Endangered" (de Lange et al. 2004), and its find on Ponui was especially pleasing as it appears to have gone recently extinct at most of its previously known Auckland locations. The only secure site in the region being, apparently Goat Island near Leigh (*E.K. Cameron 12372*, Apr 2004, AK 291016).

Wheki-ponga (*Dicksonia fibrosa*) – two small trunkless plants were present on the edge of a small channel, under tall kanuka near the southwest end of the raupo wetland in lower "Raupo Valley" amongst several other fern species (Fig. 10). This is a new record for the Inner Hauraki Gulf. Wheki-ponga appears to be colonising parts of the Auckland region with recent populations collected from: Waitakere Ranges (1980), Rangitoto Id (1987), Great Barrier Id (2002) and Woodhill Forest (1994). The earliest wild collection for the Auckland region in the AK herbarium is in 1969: Hunua Range, Kuripaka Saddle, Upper Wairoa Road, *I.L. Barton*, AK 207924. But there are regional collections from presumed cultivated plants and one pre-dates the wild collections, e.g. Auckland Domain fernery in 1957 (*P. Hynes*, AK 48803); Le Roy's Bush on the North Shore in 1975 (*A.E. Wright*, AK 220080); and Goodfellow property, Waitakeres in 1981 (*R.O. Gardner 2973*, AK 153747) – perhaps these cultivated specimens are the spore source of these recent discoveries?

Fig. 10. Young wheki-ponga (*Dicksonia fibrosa*) growing with wheki (*D. squarrosa*) and other ferns by a small creek under kanuka.



Sketches by Shirley Tomlinson during the Bot Soc visit to Ponui Island. Above: pohutukawa at Motunau Bay. Right: Jessica Beever amongst the kanuka (and mosses) behind Motunau Bay. Below: the sole kawaka (*Libocedrus plumosa*) seen, c.35cm diameter, main boundary ridge west of First Bush Gully.



Weeds

The pastoral weeds managed by the Chamberlin's were recorded by Cameron (2000) along with some of the environmental weeds. Environmental weeds that should be controlled, excluding many of the wetland weeds because of control difficulties, include: blackberry (*Rubus fruticosus* agg.), boxthorn (*Lycium ferocissimum*), grey willow, hawthorn (*Crataegus monogyna*), Mexican daisy (*Erigeron karvinskianus*), Mexican devil (*Ageratina adenophora*), moth plant (*Araujia sericifera*), pampas grass (*Cortaderia selloana*), Spanish heath, woolly nightshade (*Solanum mauritianum*); and three species only seen near the buildings: periwinkle (*Vinca major*), *Arum italicum* and arum lily (*Zantedeschia aethiopica*). Note – most of these species exist in low numbers and several were not seen by us, but pampas grass and grey willow were locally common.

Woody cultivated plants by the buildings

Cultivated woody plants recorded by Mike Wilcox during both ABS trips near the buildings at Motunau Bay included: *Chamaecyparis obtusa, Cupressus macrocarpa, Pinus densiflora* (several)*, P. nigra* (also wild)*, P. pinea, P. radiata* (also wild)*, Acacia melanoxylon,* barberry (*Berberis glaucocarpa*) (a hedge)*,* camphor laurel (*Cinnamomum camphora*)*,* hawthorn (a hedge)*, Eucalyptus botryoides, E. leucoxylon, E. pilularis, E. sideroxylon, Ficus carica,* boxthorn (a hedge), cherry laurel (*Prunus laurocerasus*)*,* English oak (*Quercus robur*) and Chinese fan palm (*Trachycarpus fortunei*). In "The Glade" on the east side of Motunau Bay we observed planted examples of *Casuarina ?cunninghamiana*, rimu (*Dacrydium cupressinum*), totara (*Podocarpus totara*), lacebark (*Hoheria populnea*) and tarata (*Pittosporum eugenioides*) – the latter two so far are unrecorded wild on the island.

Fauna

Birds seen during the trip on the island: blackbird, skylark, kingfisher, paradise duck, pied stilt, rosella, galah (1 pr), grey warbler, NZ pigeon, welcome swallow, magpie, chaffinch, North Island brown kiwi and pied shag. The kiwi was seen sheltering in a deeply shaded, rocky hollow in the forested "King Fern Gully". The successful 1964 liberation of kiwi on the island, a fuller bird list, and feral mammals present on the island was covered in the account of the previous visit by Cameron (2000). Auckland and Massey Universities have jointly established a recent kiwi study site on the island looking at kiwi ecology/behaviour and phenology (Sandra Jones pers. comm.). Two species of Australian frogs were present in the "Raupo Valley" wetland: *Litoria aurea* and *L. raniformis*.

Discussion

Ponui Island contains a large number of native vascular species (276 spp.) and is regionally significant for the number of regionally threatened and uncommon species found there (22 spp.). Most of these occur in the southern area where the islands most extensive wetland and forest remain. Although the biodiversity of these regenerating habitats is high, fencing out stock would greatly improve the forest health and would also make them less susceptible to weed invasion. Stock grazing is having a major impact on the remaining native vegetation and some palatable species were only seen in low numbers (e.g. kauri grass, *Phormium tenax,* two large-leaved coprosmas (*Coprosma repens, C. robusta*)), or records by earlier workers were unconfirmed by this present, though admittedly briefer survey (e.g. *Alseuosmia macrophylla, Carmichaelia australis, Fuchsia excorticata, Hebe stricta, Pteris comans,* two large-leaved coprosmas (*C. grandifolia, C. macrocarpa*)). The number of weed species recorded is quite low, and most appear to be present in low numbers. These recent two rather brief visits by the ABS show that there is still much to discover botanically about Ponui Island, particularly along the coastal cliffs, the extensive forest areas and within the large wetland. A comparison of the flora totals with the predominantly forested area and wetland of Whakanewha Regional Park, on the adjacent Waiheke Island, show higher totals for a smaller area (Table 1). This indicates the totals that can be expected to be found on southern Ponui Island when it is more fully botanically known, as long as the species currently present in apparently low numbers are not lost altogether.

Table 1. Wild vascular plant species totals divided into plant groupings for: southern Ponui Island (David & Ros Chamberlin managed property) recorded during the two ABS visits; the whole of Ponui Island; Whakanewha Regional Park, Waiheke Island (from Wilcox et al. 2002). Hybrids are excluded.

Plant groupings	South Ponui Id (587 ha)	Total Ponui Id (1795 ha)	Whakanewha (274 ha)
Native ferns & fern allies	56	75	56
Native conifers	6	8	8
Native dicots	91	109	112
Native monocots	70	84	75
Naturalised ferns & fern allies	-	-	2
Naturalised conifers	3	3	-
Naturalised dicots	93	96	115
Naturalised monocots	44	45	64
Totals (% native)	**363 (61%)**	**420 (66%)**	**432 (58%)**

Acknowledgements
David and Ros Chamberlin for welcoming us to visit their part of the island and to further record the botany, to them and David's mother Pat Chamberlin for guiding us so admirably; David, Ros and Peter Chamberlin (David's father), for information about the island; David for his gratis barge services; Lionel Brock (skipper of *Hauturu*) and the Department of Conservation for the excellent boat service; Mike Wilcox for his additional cultivated tree records, and other ABS members for their field comments.

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Appendix 1. Ponui Island vascular plant list.

S Ponui: South Ponui Island block with abundance rankings (a = abundant, c = common, o = occasional, l = local, s = scare (<5 individuals seen)) recorded during the 1999 & 2005 Bot Soc trips.
Ponui: other Ponui Island records for the whole island based mainly on EB (Brown 1979) and augmented by a few other records (see below)
Vouchers: Ponui Island voucher specimens (AK herbarium no.), AK numbers >242600 are from the two recent ABS trips

* = naturalised species
D&RC = currently present on south block (D&R Chamberlin pers. comm.) but not seen by us
EB = recorded by E.A. Brown (1979b)
EB† = collected by E.A. Brown in 1978, but only later determined as this species
EB†† = mentioned in the text by Brown (1979b) but omitted from the species list
EC = recorded by E.K. Cameron (2000)
GAT = collection by GA Taylor from Scully Reef (NE Ponui Id), Oct 1988
IA = recorded by I.A.E. Atkinson (1959)
PH = record from Phyllis Hynes notebook, or Hynes (1955), or a Hynes herbarium specimen
VH = recorded by V.E. Hastings (1956)

	S Ponui	Ponui	Voucher
Ferns & fern allies (75 + 0)			
Adiantum cunninghamii	lc	EB	214813
Adiantum fulvum	lc	EB	214778
Adiantum hispidulum	l	PH	
Arthropteris tenella		EB	214678
Asplenium bulbiferum	o	EB	294106
Asplenium flabellifolium		PH	
Asplenium flaccidum	o	EB	214974
Asplenium haurakiense	l		294120
Asplenium hookerianum		PH	
Asplenium lamprophyllum	lc	PH, EB†	275660
Asplenium oblongifolium	o	EB	214860
Asplenium obtusatum ssp. *northlandicum*		EB	
Asplenium polyodon	o	EB	214895
Azolla filiculoides	lc		295653
Blechnum chambersii	l	EB	219999
Blechnum filiforme	o	EB	219965
Blechnum fluviatile	s		
Blechnum fraseri		EB	219986
Blechnum membranaceum	l	EB	219910
Blechnum minus	l		
Blechnum norfolkianum	l	PH, VH	295647
Blechnum novae-zelandiae	o	EB	219897
Ctenopteris heterophylla	l	EB	220008
Cyathea dealbata	lc	EB	220132
Cyathea medullaris	lc	EB	220154
Deparia petersenii	l	EB	214924
Dicksonia fibrosa	s		294043
Dicksonia squarrosa	lc	EB	220109
Diplazium australe		EB	214913
Doodia australis	lc	EB	223042
Grammitis ciliata	l	EB	294032
Grammitis rawlingsii	s		294034
Histiopteris incisa	s		293939
Huperzia varia		EB	220203
Hymenophyllum demissum	l	EB	144525
Hymenophyllum flabellatum	l	EB	294041
Hymenophyllum multifidum		EB	
Hymenophyllum rarum	l	EB	223190
Hymenophyllum revolutum		EB	222997
Hymenophyllum sanguinolentum		EB	223218
Hymenophyllum scabrum		PH	223240
Hypolepis ambigua	l		

	S Ponui	Ponui	Voucher
Hypolepis dicksonioides	l		295651
Hypolepis distans		PH	
Lastreopsis glabella	lc	EB	118402
Lastreopsis hispida	o	EB	223316
Lastreopsis microsora	l	EB	223328
Leptopteris hymenophylloides	o	EB	223362
Lindsaea linearis	l	EB	223367
Lindsaea trichomanoides	l	EB	223398
Lycopodium deuterodensum		EB	220246
Lycopodium volubile		EB	220364
Lygodium articulatum	lc	EB	223384
Marattia salicina	la	EB	223661
Microsorum pustulatum	o	EB	223115
Microsorum scandens	o	EB	223088
Paesia scaberula	l	PH	
Pellaea rotundifolia	l		
Pneumatopteris pennigera	l	EB	223178
Polystichum neozelandicum	l	EB	295662
Pteridium esculentum	lc	EB	220221
Pteris comans		EB	220265
Pteris macilenta	o	EB	118389
Pteris saxatilis	l		294116
Pteris tremula	o	EB	220296
Pyrrosia eleagnifolia	o	EB	220321
Schizaea fistulosa		EB	220345
Tmesipteris elongata (incl. both subsp.)	l	EB	220377
Tmesipteris lanceolata		EB†	275678
Tmesipteris sigmatifolia	l		295657
Tmesipteris tannensis		EB	220384
Trichomanes elongatum	l	EB	220399
Trichomanes endlicherianum	l	PH	
Trichomanes reniforme	l	EB	220078
Trichomanes venosum		EB	223160
Conifers (8 + 3)			
Agathis australis	lc	EB	151200
*Cupressus macrocarpa**	l	EB	
Dacrycarpus dacrydioides		EB	
Dacrydium cupressinum		EB	
Libocedrus plumosa	x1		
Phyllocladus trichomanoides	lc	EB	150585
*Pinus nigra**	lc		221526
*Pinus radiata**	lc	EB	
Podocarpus totara	x1		
Prumnopitys ferruginea	o	EB	
Prumnopitys taxifolia	s	EB	150587
Dicotyledons (109 + 96)			
Acaena anserinifolia	l	EB	
Acaena novae-zelandiae	o		
*Ageratina adenophora**	l		
Alectryon excelsum	s		
Alseuosmia macrophylla		EB	150572
Alseuosmia ×quercifolia	o	EB	228087
*Amaranthus deflexus**	l		247093
Anagallis arvensis var. *avensis**	o	EB?	
Anagallis arvensis var. *coerulea**	lc		
*Aphanes inexspecta**	l		
Apium prostratum	l	EB	
*Araujia sericifera**	D&RC		
*Atriplex prostrata**	l	EB	150576
Avicennia marina	lc	EB	151193
Beilschmiedia tarairi	lc	EB	
Beilschmiedia tawa (incl. *B. tawaroa*)	o	EB	151191
*Bellis perennis**	o		
*Bidens frondosa**	l		
Brachyglottis kirkii var. *angustior*		EB††	
Brachyglottis repanda	o	EB	
Callitriche muelleri	o		
*Callitriche stagnalis**	lc	EB	

	S Ponui	Ponui	Voucher
Calystegia sepium subsp. *roseata*	lc		
Calystegia ?sylvatica (or hybrid)*	o		
*Capsella bursa-pastoris**	l		
*Carduus pycnocephalus/tenuiflorus**	D&RC		
Carmichaelia australis		EB	
Centella uniflora		EB	
*Cerastium glomeratum**	lc		
*Cerastium semidecandrum**	l		247094
*Cirsium nutans**	D&RC		
*Cirsium vulgare**	o		
Clematis paniculata	o	EB	151180
*Conyza sumatrensis** (syn. *C. albida*)		EB	
Coprosma arborea	lc	EB	
Coprosma grandifolia		EB	
Coprosma macrocarpa		EB	
Coprosma repens	s	EB	
Coprosma rhamnoides	c	EB	150582
Coprosma robusta	l		
Coprosma spathulata	s		295659
Coriaria arborea	o	EB	150574
Corynocarpus laevigatus	o-lc	EB	150590
Cotula australis	l		
Cotula coronopifolia	l		
Crassula sieberiana	l		
*Crataegus monogyna**	o		
*Crepis capillaris**	o		
Dichondra repens	o	EB	151194
Disphyma australe	l	EB	150575
Dodonaea viscosa	l	EB	
Drosera auriculata	l	EB	275680
Dysoxylum spectabile	o-lc	EB	
Elaeocarpus dentatus	s	EB	294107
Entelea arborescens	l	EB	151183
Epilobium pallidiflorum	l	EB	
*Erica lusitanica**	l	EB	
*Erigeron karvinskianus**	s		
*Erodium moschatum**	lc		
Euchiton collinus	o		
Euchiton involucratus	o		
*Euphorbia peplus**	o		
Fuchsia excorticata		EB	151199
*Fumaria muralis**		EB	151204
*Galium aparine**	l		
Galium propinquum	l		
*Gamochaeta coarctata**	o	EB?	
*Gamochaeta simplicicaulis**	o		
Geniostoma ligustrifolium	l	EB	151182
*Geranium dissectum**	o		247084
*Geranium gardneri**	o	EB?	247076
Geranium homeanum	o		
*Geranium molle**	lc		
Gonocarpus incanus	l		
Haloragis erecta	o	EB	
Hebe stricta var. *stricta*		EB	
Hedycarya arborea	o	EB	150591
Hydrocotyle moschata	l		
*Hypericum humifusum**	l		
Hypericum japonicum	l		247092
*Hypochoeris radicata**	o		
Knightia excelsa	o	EB	151184
Kunzea aff. *ericoides* (b)	a	EB	131188
Lagenifera pumila	l		
Laurelia novae-zelandiae	x1, D&RC		
*Leontodon taraxacoides**	l		
*Lepidium didymum** (= *Coronopus didymus*)	l		
Leptecophylla juniperina	lc	EB	151185
Leptospermum scoparium	lc	EB	150589
Leucopogon fasciculatus	lc	EB	151174
*Linum bienne**	o		
*Linum trigynum**	lc		

	S Ponui	Ponui	Voucher
*Lotus angustissimus**	l		
*Lotus pedunculatus**	lc		
*Lotus suaveolens**	lc		
*Ludwigea palustris**	lc		
*Lycium ferocissimum**	l	EB	150583
Macropiper excelsum	o	EB	151179
*Malva parvifolia**	l		242612
*Medicago lupulina**	l		242614-15
Melicope ternata	o		
Melicytus ramiflorus	o	EB	
*Mentha pulegium**	l	EB?	
Metrosideros carminea	l		294129
Metrosideros diffusa	o	EB	275675
Metrosideros excelsa	lc	EB	280370
Metrosideros excelsa × *M. robusta*	s		
Metrosideros fulgens	o		
Metrosideros perforata	lc	EB	
Metrosideros robusta	s		295658
Mida salicifolia	l	EB	150578-79
*Modiola caroliniana**	l		
Muehlenbeckia complexa	o	EB	150570
Myoporum laetum		EB	151201
*Myosotis discolor**	l		
*Myosotis laxa**	lc		
*Myosotis sylvatica**	lc		
Myrsine australis	lc	EB	151181
*Nasturtium officinale**	l		
Nestegis lanceolata	o	EB	
Nothofagus truncata		IA, EB	150576-77
Olearia albida	s		295655
Olearia furfuracea	lc	EB	118383
Olearia rani	o	EB	
*Oxalis corniculata**	l	EB	
Oxalis exilis	o		
Parsonsia ? *heterophylla*	o	EB	
Peperomia urvilleana	l	EB	
Pericallis × *hybrida**	l		294105
Persicaria decipiens	lc		
*Phytolacca octandra**	o	EB	150573
Pimelea tomentosa		EB	151196
Pittosporum cornifolium	s		
Pittosporum crassifolium	o	EB	150586
Pittosporum ? hybrid		EB†	275674
*Plantago coronopus**	l		
*Plantago lanceolata**	lc	EB	
*Plantago major**	o		
Plantago raoulii			151197
*Polycarpon tetraphyllum**	l		
*Polygonum aviculare**	l		
Pomaderris aff. *phylicifolia*		EB	160753
Pomaderris rugosa		VH, EB	269451
*Portulacca oleracea**	l		
Pouteria costata	s		295649
*Prunella vulgaris**	o		
Prunus ? *persicaria**	s		
Pseudognaphalium luteoalbum	o		
Pseudopanax arboreus	s		
Pseudopanax crassifolius	o	EB	151176
Pseudopanax crassifolius × *P. lessonii*	s	VH	
Pseudopanax lessonii	o	EB	151186
Quintinia serrata		EB	
*Ranunculus parviflorus**	lc		
Ranunculus reflexus	l	EB	
*Ranunculus repens**	lc		
*Ranunculus sardous**	o		
*Ranunculus sceleratus**	l	EB	151177
*Rosa rubiginosa**	o		247072
Rubus cissoides	o	EB	151203
Rubus fruticosus agg.*	D&RC		
*Rumex brownii**		EB	
*Rumex crispus**	l		
*Rumex obtusifolius**	o		
*Rumex pulcher**	o		
*Salix cinerea**	lc		293952
Samolus repens	lc	EB	
Sarcocornea quinqueflora		EB	
Schefflera digitata	o	EB	
Scleranthus biflorus		GAT	229607
*Senecio bipinnatisectus**	o		
Senecio glomeratus	s		
Senecio hispidulus	o	EB	
*Senecio jacobaea**	o		
Senecio lautus	lc		
Senecio minimus	s		
Senecio scaberulus	l		294029
*Sherardia arvensis**	o		
*Sisymbrium officinale**	s		
Solanum americanum	o	EB	
Solanum aviculare	x1	EB	
*Solanum linnaeanum**	D&RC		
*Solanum mauritianum**	D&RC		
*Solanum nigrum**	o	EB	151202
*Soliva sessilis**	l		
*Sonchus asper**	s		
*Sonchus oleraceus**	o	EB	151178
Sophora chathamica		EB	151192
Sperularia media	l		
*Stellaria media**	l		
Syzygium maire	l		242616
*Taraxicum officinale**	l		
*Trifolium dubium**	o		
*Trifolium glomeratum**	l		
*Trifolium pratense**	o		
*Trifolium repens**	lc		
*Trifolium subterraneum**	lc		
*Ulex europaeus**	o	EB	
*Veronica arvensis**	l	EB	
*Veronica plebeia**	o	EB	247088
*Veronica serpyllifolia**	l		247082
Vicia sp.*	s		
*Vinca major**	l		
Vitex lucens	o	EB	151175
Wahlenbergia littoricola	l		294119
Wahlenbergia violacea	l		
Weinmannia silvicola	l	EB	
*Xanthium spinosum**	D&RC		
Monocotyledons (84 + 45)			
Acianthus sinclairii	l	EB	275661
*Agrostis capillaris**		EB	
*Aira caryophyllea**	lc		
*Anthoxanthum odoratum**	o	EB	
Apodasmia similis		EB	150594
Arthropodium cirratum	l	EB	
*Arum italicum**	l		
Astelia banksii	l	EB	
Astelia solandri	o		
Astelia trinervia	s		293980
Austrostipa stipoides		EB	151188
*Avena barbata**	l		
Baumea juncea		EB	
Baumea rubiginosa	lc		
Baumea teretifolia	l		
Bolboschoenus medianus	l		
*Briza minor**	l		
Bromus arenarius	s		295648
*Bromus hordeaceus**	s		
*Bromus lithobius**	l		
*Bromus willdenowii**	o		
Carex dissita	o	EB	247090
*Carex divisa**	l		
*Carex divulsa**	l		
Carex aff. *geminata*	o		295656

	S Ponui	Ponui	Voucher
Carex inversa	l		
Carex lambertiana	o		247097
Carex lessoniana	l		
Carex maorica	l		
Carex ochrossacus	l		
Carex secta	l		293945
Carex solandri	o		
Carex spinirostris	l		
Carex virgata	o	EB	131190
Carex "raotest"	o		
*Catapodium rigidum**	l		
Collospermum hastatum	lc	EB	151173
Cordyline australis	o	EB	
Cordyline pumilio	s		
*Cortaderia selloana**	lc		
Corybas cheesemanii	s		
Critesion murinum ssp. *murinum**	l		247079
*Cynodon dactylon**	l		
Cyperus brevifolis	l		
Cyperus ustulatus	o	EB	131191
Cyrtostylis oblonga		EB	275662
*Dactylis glomerata**	o	EB	
Deyeuxia avenoides	l		
Dianella nigra	o	EB	
Dianella aff. *nigra*	l		295541
Dichelachne crinita	o		
*Dichelachne rara**	l		282544
Diplodium alobulum		EB†	275652
Diplodium brumalium		EB	
Diplodium trullifolium		EB†	275665
sDrymoanthus adversus	l	EB	275659
Earina mucronata	lc	EB	295650
Echinopogon ovatus		EB	151195
Eleocharis acuta	lc		
Ficinia nodosa		EB	150592
Freycinetia banksii	lc	EB	
Gahnia lacera	o	EB	150584
Gahnia setifolia		EB	151189
*Glyceria declinata**	l		247085
*Glyceria maxima**	lc		
*Holcus lanatus**	o		
Ichthyostomum pygmaeum	l	EB	275656
Isachne globosa	lc		
Isolepis cernua	o		
Isolepis inundatus	l		
Isolepis prolifera	lc		295652
Isolepis reticularis	o		
*Isolepis sepulcralis**	o		295660
*Isolepis tenella**	l		295661
*Juncus acuminatus**	o		242613
*Juncus articulatus**	l		
Juncus australis	o		
*Juncus bufonius**	l		
*Juncus dichotomus**	l		247081
Juncus edgariae	l	EB	131186
*Juncus effusus**	o		131006
*Juncus flavidus**	o		247083

	S Ponui	Ponui	Voucher
Juncus kraussii	l		131007
Juncus pallidus	o		
Juncus sarophorus	o		
*Juncus tenuis**	l		
Juncus usitatus	o		
Lachnagrostis billardierei		EB	
Lemna minor	lc		295654
Lepidosperma australe	l	EB	151190
*Lolium perenne**	la		
*Lolium rigidum**	o		282542
*Luzula congesta**	l		247087
Microlaena stipoides	la		
Microtis unifolia	l	EB	
Morelotia affinis		EB	150593
Nematoceras triloba	l	EB?	
Oplismenus hirtellus	o	EB	
*Parapholis incurva**	l		278589
*Paspalum distichum**	lc		
*Pennisetum clandestinum**	l		
Petalochilus chlorostylus	l		247091
*Phalaris aquatica**	l		
Phormium cookianum	l		
Phormium tenax	l	EB	
Poa anceps	l	EB	
*Poa annua**	lc		
*Poa trivialis**	o		
*Polypogon monspeliensis**	l		
Pterostylis banksii	l		
Rhopalostylis sapida	lc	EB	275672-73
Ripogonum scandens	o	EB	294115
*Rytidosperma racemosum**	o		
*Rytidosperma pilosum**	o		
Rytidosperma unarede	lc		282804
Schoenoplectus tabernaemontani	l		
Schoenus maschalinus	l		
Schoenus tendo	l	EB	
*Sporobolus africanus**	lc	EB	
*Stenotaphrum secundatum**	l	EB	
Thelymitra longifolia	o	EB	
Thelymitra ? intermedia (autogamous)	l	EB	
Typha orientalis	la	EB	
Uncinia banksii	o	EB	
Uncinia uncinata	o		
*Vulpia bromoides**	o		
Winika cunninghamii		EB	
*Zantedeschia aethiopica**	l		
Zostera muelleri s.l.		EB	

Excluded doubtful records (require confirmation)	
Cortaderia ? jubata	EB, EC
Cyathea smithii??	PH
Grammitis billardierei	EB
Nestegis cunninghamii	PH

Ponui Island, Hauraki Gulf – the Mosses Revisited

Jessica Beever

An opportunity to further study the mosses of Ponui Island was provided by Auckland Botanical Society's day trip to the island, on 16 October 2005. For accounts of an earlier Botanical Society visit, in 1999, see Cameron (2000) and Beever (2000), and for an update of the vegetation and vascular plant flora see Cameron (2006).

During the 2005 visit the author traversed essentially the same route as on the previous occasion, namely a