Lapsana communis * (A, B, HC, K, WG)
Leontodon saxatilis * (B, HC, HR, WG)
Leptinella tenella (WG)
Limonium perezii * (HC cult.)
Linaria purpureum * (HC)
Linum bienne * (HC)
Lobelia anceps (A, B, G, HB, HC, HR, K, WB, WG)
Lobelia angulate (WG)
Lobelia cardinalis 'Queen Victoria' * (HC cult.)
Lobularia maritima * (HC cult.)
Lotus angustissimus * (HC)
Lotus pedunculatus * (A, G, K)
Lotus suaveolens * (HR)
Leucanthemum vulgare * (HC, HR)
Ludwigia palustris * (B)
Lythrum hyssopifolia * (HB, HC, HR)
Medicago nigra * (HC)
Medicago lupulina * (HC, HR)
Melilotus indica * (HC)
Mentha pulegium * (HC, HR)
Modiola caroliniana * (A, HC)
Myosotis arvensis * (HR)
Myosotis laxa * (B)
Oenanthe pimpinelloides * (B, HC)
Oxalis corniculata (HC)
Oxalis incarnata * (HB, WB)
Peperomia urvilleana (WG)
Pericallis ×hybrida * (G, HB, WB)
Persicaria decipiens (HR)
Persicaria maculosa * (HR)
Plantago australis * (HR)
Plantago lanceolatus * (HC)
Plantago coronopus (HB)
Plantago major * (HC, T)
Plectranthus ciliatus * (K, W)
Portulaca oleracea * (A, HC)
Potentilla indica * (A, B)
Potentilla reptans * (B, HB)
Prunella vulgaris * (G, HC, HR)
Pseudognaphalium luteo-album (HC)
Ranunculus reflexus (G)
Ranunculus repens * (A, B, HC)
Rorippa nasturtium-aquatica * (B)
Rumex crispus * (HC)
Rumex flexuosus * (HC)
Sagina procumbens * (K, WG)
Salvia uliginosa * (HC)
Samolus repens (G, HB, K, WB, WG)
Sarcocornia quinqueflora (HB, T, WB)
Selliera radicans (K)
Senecio bipinnatisectus * (HR)
Senecio esleri (B, HC)
Senecio hispidulus (HC, HR)
Senecio skirrhodon * (HC)
Senecio vulgaris * (HC)
Sherardia arvensis * (HC)
Silene gallica * (HR)
Solanum nigrum * (B, HC, HR)
Solanum nodiflorum (A, B, HR)
Sonchus oleraceus * (HB, HC)
Trachelium caerulea * (WG)
Trifolium dubium * (HC)
Trifolium pratense * (HR)
Trifolium repens * (A, HC, T)
Verbena bonariensis * (fragrant) (HC cult.)
Verbena incompta * (HC)
Veronica arvensis *
Veronica persica * (B)
Veronica plebeian (G)
Vicia sativa * (B, HC)
Vicia tetrasperma * (HR)
Wahlenbergia violacea (B)

Field Trip to Awhitu's Northern Pohutukawa Forest 18 March 2017

P. (Tricia) A. Aspin

Participants: *Jenny Andrew, Tricia Aspin (leader), Ewen Cameron, David Court (visiting spider expert from Singapore), Frances Duff, Shelley Heiss-Dunlop, Wendy John, Alistair MacArthur, Peter Moosberger, Dhahara Ranatunga, Joshua Salter, Jenni Shanks, Adrienne Stanton, Sam Sutherland, Lara May Thorne.*

Our plan was to visit what is locally referred to as Awhitu's northern pohutukawa forest in John Burrill's property. We met at the end of Hamilton Road on a fine and near windless morning. An easy walk took us across paddocks to overlook the near-pure open forest of large old pohutukawa trees (*Metrosideros excelsa*) (Fig. 1) established on old high-level stable sand dunes. There is rough pasture underneath and the area is open to light grazing by cattle. However a previous landowner had grazed the land very hard and many of the old trees suffered damage from

Figs. 1–10: **1.** Tricia at the edge of the open pohutukawa forest. Photo: EKC. All photos except Fig. 5 taken 18 March 2017, by Ewen Cameron (EKC), Alistair MacArthur (AM), or Joshua Salter (JS). **2.** Pohutukawa trees under threat of burial by shifting sand dune. Photo: JS. **3.** One of New Zealand's largest pohutukawa trees has suffered damage in the past. Photo: JS. **4.** The totara. Is it a single tree partially buried by sand over time or a copse? Photo: AM. **5.** The native banded tunnelweb spider, *Hexathele hochstetteri*. Photo: David Court. **6.** Webs of the native tunnelweb spider, *Hexathele hochstetteri*, were often seen as little pencil-sized holes in the pohutukawa trunks. Photo: AM. **7.** The old waterhole with a portion of the pohutukawa forest in the background. Photo: AM. **8.** An active sand dune is burying these pines. David Court ascended the dune to look for spiders in the canopy. Photo: JS. **9.** Heading towards the knoll above the coastal cliffs. Photo: JS. **10.** Retreat to the shelter of the wind-stunted grove of *Cupressus leylandii*. Photo: JS.

Figs. 11–19: 11. Ascending the knoll. Photo: JS. **12.** Looking NW from the knoll, down the gully to the coast. Photo: JS. **13.** *Leucopogon fraseri* with a few late flowers, on the north face of the knoll. Photo: JS. **14.** We skirted the top of the gully to head further north along the coast. Photo: JS. **15.** Lunch on the brink among *Coprosma acerosa* colonising the crumbling sandstone cliff edges. Photo: JS. **16.** Colourless fruits of *Coprosma acerosa* were found on a single plant. Photo: JS. **17.** *Astelia solandri* on pohutukawa. Photo: JS. **18.** Lush growth in the gully, Matakawau Reserve, Awhitu Central. Photo: JS. **19.** The trunk of *Syzygium maire*, locally common in the swamp to the west of the lower Matakawau Reserve track. Photo: JS.

stock stripping the bark. The whole area is open to wind erosion and "sand blows" are part of the ever-changing topography. The ridge to the south of where we walked is an active sand blow and many pohutukawa trees are becoming engulfed (Fig. 2).

Three trees in the area have been noted for persistently good flowering with exceptional colour and have been successfully propagated by horticulturalists. One is at the end of a large dune and the other two are on the steeper cliff section. They are the source of the cultivars: 'Spin Drift', 'Regency Red' and 'Royal Crimson'.

Within the grove is one of the largest pohutukawa trees in the country. (Measured in Dec 2002 by Mike Wilcox and Graeme Platt: height 19m, diameter 4.7m, spread 53m). Sadly it has suffered significant

stock damage but is now fenced and seems to be holding its own despite losing several large limbs to rot (Fig. 3). (See also Ewen Cameron's article on p. 46 of this issue).

We began in the eastern part of the forest and noted a totara (*Podocarpus* totara). It appears as a small copse and we wondered if it was indeed just a single tree that became partially buried by shifting sands over time before a pasture cover was established (Fig. 4). The only other tree species noted among the pohutukawa trees was a single karaka (*Corynocarpus laevigatus*). Wandering amongst the humps and hollows we also noted a number of apple of Sodom (*Solanum linnaeanum*) in all stages of growth. David, our spider expert, brought a new dimension of interest by pointing out several tunnelwebs, of both native and Australian species, living in the bark of the pohutukawa trees. The native banded tunnelweb spider (*Hexathele hochstetteri*) (Fig. 5) has a finer web (Fig. 6) than that of the Australian species. Another arachnid, the introduced long-legged European harvestman (*Phalangium opilio*) was also brought to our notice, scurrying amongst the ground cover.

Next we stopped by the old water hole and noted willow weeds (*Persicaria maculosa* and *P. punctata*) and *Myriophyllum propinquum* in abundance, some duckweed (both *Lemna dispersa* and *Landloltia punctata*) and a *Glyceria* species later positively identified by Ewen as *G. declinata*. Usually dry for most of the year, today it was full after the recent very heavy rain experienced in the Auckland area (Fig. 7).

We then walked along to the end of the active sand dune and viewed the vain efforts of trying to contain the forces of nature. In the past marram grass (*Ammophila arenaria,*) pine trees (*Pinus radiata*) and Leyland cypress (*Cupressus leylandii*) had been planted to stop wind erosion. Today we were standing on top of some of the pines completely engulfed by sand (Fig. 8) and gazing down into another actively eroding area. Some marram, a few lupins (*Lupinus arboreus*), *Ficinia nodosa* and several large specimens of *Senecio skirrhodon* are holding on gallantly.

We skirted the plantation of stunted *Cupressus leylandii* and began to make our way to the cliff area (Fig. 9). However a shower came in from the coast and we retreated to the shelter of the cypresses for a snack until it passed (Fig.10).

Once onto the steep section we entered the area previously grazed but now excluded from livestock. Deep swards of kikuyu grass (*Cenchrus clandestinus*) made for hard walking but we pushed on to the top of the small promontory-like knoll (Fig. 11). Some pre-European workings by Maori are evident. From here we had good views into the gully leading down to the eroding coastal cliff edge far below (Fig. 12). Although bush areas in this gully are botanically interesting it is now very hard to access them and it was beyond our scope today. Away to the south we could see the southern pohutukawa forest and comments were made on the actively eroding cliffs in that part.

Botanising began in earnest. While much of the southern side of the knoll has a heavy cover of flax (*Phormium tenax*), the steeper north face has carpets of *Leucopogon fraserii* (in flower, Fig. 13), the pretty coastal oxalis (*Oxalis rubens* also in flower) some *Coprosma acerosa*, *Austroderia splendens* and patches of the small native grass *Zoysia pauciflora*. On a small damp shelf off to the south side Shelley observed *Samolus repens,* a species not noted here before. Old cattle tracks enabled us to access easily the southern side below the flax. Here we noted *Mentha cunninghamii* (a few flowers) and several fern species including a bank of *Adiantum cunninghamii*. One of the few bryophytes seen was a sand-filled liverwort cushion clinging to a large weathered dead pohutukawa limb. John Braggins later identified it as *Chiloscyphus novae-zealandiae* var. *meridionalis* (J.E. Braggins, pers. comm. to JS). We looked in vain for *Wahlenbergia vernicosa* but it was not seen today.

We retraced our steps to the grazed area at the head of the gully and skirted the bush-covered cliff tops northwards (Fig. 14). Among the common *Pseudopanax lessonii* and karamu species (*Coprosma macrocarpa* and *C. robusta*) we noted tutu (*Coriaria* arborea) and *Hebe stricta* in flower. Lunch was enjoyed on the brink overlooking another gully area (Fig. 15) with views north to where Whatipu sands were just visible along the coast. One question was how come there was no pohutukawa established in this gully? *Coprosma acerosa* was locally common where we sat and after much searching some colourless fruits were found on one plant (Fig. 16). *Austroderia splendens* was common with many seedlings here, *Zoysia pauciflora* formed a small meadow, and directly below us on a shelf too dangerous to access we could see a small mat of *Pimelea urvilleana* in flower and a single bush of *Ozothamnus leptophyllus*.

We returned to the cars via the pohutukawa forest and stopped to ascertain the identity of an asteliad growing up in the branches of one the trees. Was it *Astelia banksii* as one would assume in a coastal situation or was it *A. solandri* ? A leaf was obtained and Ewen demonstrated that by bending the leaf back and forth one can determine the species by seeing if a cellophane-like layer (a clear pellicle) lifts off. No layer was present and so, surprisingly, this was *A. solandri* (Fig. 17).

The afternoon finished with the return to Matakawau where we cleansed our footwear because of kauri die-back and completed the longest loop of the bush walk in the Matakawau Reserve. This track took us right down to the bottom of the forested gully and we all enjoyed the diversity of species present (Fig. 18). Of special note was the presence of swamp maire (*Syzygium maire*) at all stages of growth in the swampy area to the west of the track as we began the return climb (Fig. 19). Generally considered uncommon in the Auckland Region, it is frequently found in the swampy forest remnants of the Awhitu District from Karioitahi northwards.

Acknowledgements: Many thanks to landowner, John Burrill, for ready access to his property, Ewen Cameron for assistance with this report and species list; Ewen Cameron, Joshua Salter, Alistair MacArthur and David Court for photographs. Joshua Salter thanks John Braggins for the liverwort identification.

Appendix. Plants of the coastal property of J. Burrill, end of Hamilton Road, Awhitu. Original list (unpublished), P. A. Aspin 6 Dec 2006; covers a greater area than that visited on the Bot Soc fieldtrip. Contains pohutukawa forest and one of the largest known specimens (severely damaged by previous owner's livestock). NZ Topo50 BB31 395905.

= Added by Bot Soc 18 Mar 2017 * = exotic
\+ = seen 6 Dec 2006, not seen on 18 Mar 2017 Pl = Planted

FERNS			
Adiantum cunninghamii			common maidenhair
Asplenium appendiculatum subsp. *maritimum*	+		
Asplenium flaccidum		#	hanging spleenwort
Asplenium oblongifolium			shining spleenwort
Blechnum filiforme			thread fern
Blechnum membranaceum	+		
Blechnum novae-zelandiae			kiokio
Cyathea medullaris			mamaku/black tree fern
Doodia australis			rasp fern
Microsorum pustulatum			hound's tongue fern
Paesia scaberula	+		hard fern
Pneumatopteris pennigera			gully fern
Polystichum neozelandicum subsp. *neozelandicum*			shield fern
Pteridium esculentum			rahurahu /bracken
Pteris macilenta	+		sweet fern
Pteris tremula	+		shaking brake
Pyrrosia eleagnifolia			leatherleaf fern
GYMNOSPERMS			
Cupressus leylandii *		#Pl	
Pinus radiata *		#Pl	
Podocarpus totara			totara
DICOTYLEDONS			
Brachyglottis repanda			rangiora
Callitriche stagnalis *		#	starwort
Calystegia soldenella	+		sand convolvulus
Carmichaelia australis	+		NZ broom
Cerastium fontanum *		#	mouse-ear chickweed
Cirsium vulgare *		#	Scotch thistle
Conyza sumatrensis *		#	broad-leaved fleabane
Coprosma acerosa			sand coprosma
Coprosma macrocarpa			coastal karamu
Coprosma robusta			karamu
Coriaria arborea		#	tutu
Corynocarpus laevigatus			karaka
Daucus carota *		#	wild carrot
Disphyma australe	+		ice plant
Gamochaeta sp. *		#	cudweed
Geniostoma ligustrifolium		#	hangehange
Hebe stricta			hebe
Hypochaeris radicata *		#	catsear
Leucopogon fasciculatus			mingimingi
Leucopogon fraserii			patotara
Lobelia anceps	+		native lobelia
Lupinus arboreus *		#	tree lupin
Melicytus ramiflorus			mahoe/whiteywood
Mentha cunninghamii			NZ mint
Metrosideros excelsa			pohutukawa
Modiola caroliniana *		#	creeping mallow
Muehlenbeckia australis	+		pohuehue
Muehlenbeckia complexa			pohuehue
Myriophyllum propinquum		#	milfoil
Nasturtium officinale *		#	watercress
Orobanche minor *		#	broomrape
Oxalis exilis			native creeping oxalis
Oxalis rubens			native oxalis
Ozothamnus leptophyllus		#	tauhinu
Parietaria debilis	+		pellitory
Parsonsia heterophylla			kaihua
Persicaria maculosa *		#	willow weed
Persicaria punctata *		#	willow weed
Pimelea urvilleana		#	
Piper excelsum			kawakawa
Portulacca oleracea		#	purslane
Prunella vulgaris *		#	selfheal
Pseudopanax lessonii			houpara
Pseudognaphalium luteoalbum			
Ranunculus reflexus	+		maruru/NZ buttercup
Ranunculus repens *		#	creeping buttercup
Rumex acetosella *		#	sheep's sorrel

Samolus repens		#	maakoako
Senecio lautus	+		
Senecio skirrhodon *		#	gravel groundsel
Silene gallica *		#	catchfly
Solanum linnaeanum *		#	apple of Sodom
Sonchus oleraceus *		#	sow thistle
Stellaria media *		#	chickweed
Tetragonia implexicoma			coastal spinach
Trifolium pratense *		#	red clover
Trifolium repens *		#	white clover
Wahlenbergia vernicosa	+		hare bell
MONOCOTYLEDONS			
Ammophila arenaria *		#Pl	marram grass
Astelia banksii		#	wharawhara
Asteila solandri		#	kowharawhara
Austroderia splendens			coastal toetoe
Briza minor *		#	shivery grass
Carex lessonii	+		
Carex "raotest"			
Carex solandri			
Cenchrus clandestinus *		#	kikuyu grass
Collospermum hastatum			kahakaha/perching lily
Cortaderia jubata *		#	purple pampas grass
Cyperus eragrostis *		#	umbrella sedge
Cyperus ustulatus	+		giant umbrella sedge
Ficinia nodosa			wiwi, knobby club rush
Glyceria declinata *		#	glaucus sweetgrass
Lachnagrostis billardierii	+		wind grass
Landloltia punctata *		#	purple-backed duckweed
Lemna dispersa		#	duck weed
Microlaena stipoides			field rice grass
Oplismenus hirtellus	+		bush oat grass
Phormium tenax			harakeke/flax
Poa pusilla		#	
Rhopalostylis sapida			nikau
Thelymitra longifolia	+		sun orchid
Zoysia pauciflora			

Botanical camp at Pokaka, National Park, 26–31 March 2017

Mike Wilcox (compiler)

Introduction

Taylor Memorial Lodge (Fig. 1) beside the main trunk railway line at Pokaka was the venue for this late summer camp in the central North Island. It was a comfortable and convenient base for our botanical explorations in and around Tongariro National Park where we explored a number of localities not previously visited during the Auckland Botanical Society's 1986, 2006 and 2010 central North Island camps. Our group is shown in Fig. 2.

The sites visited were: Pokaka environs, Ohakune Old Coach Road to Hapawhenua Viaduct, Ohakune Lakes Reserve, Tupapakurua Falls Track (Erua Conservation Area) from Fishers Trail, Mangahuia Track, Mangawhero Forest Walk (including Rimu Loop Track), Mangawhero Falls, and Tukino Skifield Road. Our objectives were to get familiar with the plants at these places, and to contribute to an update of the master species list for Tongariro Ecological District being compiled by Mike Wilcox and Nick Singers.

The report by Phillips Turner (1909) on the botany of the Higher Waimarino District more or less includes most of the places we visited, and is still a very useful reference on the plants of this area. Pokaka (Fig. 3) was one of the bases for his exploration of the Waimarino bush and for collecting plant specimens, and he is honoured with two endemic central North Island plants, *Alseuosmia turneri* and *Pittosporum turneri*.

Fig. 1: Taylor Memorial Lodge, Pokaka, 30 March 2017. All photos by Mike Wilcox unless stated otherwise.

Pokaka (altitude 820 m) is located 12 km south of National Park Village and 18 km north of Ohakune in Ruapehu District, Horizons (Manawatu-Whanganui) Region, the central North Island of New Zealand, right beside the main trunk railway line. There used