Leptospermum scoparium A garden escape well established in Abbey Wood on Tresco (Scilly); seedlings reported from Penzance (W. Cornwall).

Muehlenbeckia complexa, or wireplant. Long-naturalised on rocky slopes, in quarries and along hedgebanks in Scilly and the Channel Is.

The book contains no key or descriptions. Instead, each taxon is accompanied by a list of references and illustrations, and an indication of the number of localities it has been recorded from in the last sixty years. Many of the New Zealand and other alien plants are quite local in Britain, and the information in this book might give some practical help to homesick OEers. But it would be a guilty pleasure to seek out *Crassula helmsii*, which is called here, rather unfairly, New Zealand pygmyweed (it is native to Australia as well). It has the longest entry in the book, and is an awful reminder that plant introduction is not an exact science: "Introduced on oxygenating plants, or accidentally with ornamental aquatic plants, now well-established and abundant in ponds, reservoirs and canals in widely scattered localities throughout the British Isles; increasing rapidly, already a threat to native vegetation in some areas."

Kemp Rd Bush, Awhitu Peninsula

Chris Green and Marjorie Cutting

Introduction

We were asked to survey the native vegetation on the property of Mr Andrew Hastings. Mr Hastings' property is part of a larger forest area, known as the Kemp Rd Bush, which is a Site of Special Wildlife Interest [1]. Kemp Rd Bush is about 170 hectares in size and is one of the larger native forest remnants left on the Awhitu Peninsula, located immediately south-east of Awhitu Central. It lies on the southern side of Awhitu Central Road which runs along the crest of a prominent east-west aligned ridge. This area includes one of the highest points (165 m asl) on the Peninsula. From this ridge the bush drops steeply to the south, into a valley which forms the top of a moderate sized catchment of the Kauritutahi Creek. Kauritutahi Creek flows into the Manukau Harbour just north of Awhitu Regional Park.

Kemp Rd Bush is an area of strongly regenerating forest with pockets of mature forest remnants (grid reference Q12 525 547). The forest block was observed from a number of vantage points and four excursions into the bush were made on 29 July 1994.

Vegetation of the Awhitu Ecological District

Cameron (1994) described the general geology of this district as well as the level of vegetation clearance and the general nature of the vegetation and fauna. It is our intention in this discussion to merely focus on the past vegetation history, and describe the current patterns of the indigenous vegetation surrounding and within Kemp Rd Bush.

Vegetation History of the Awhitu Peninsula

Recent research studying pollen and fossil leaves indicates that over 380,000 years ago the Awhitu Peninsula was covered with a mature warm temperate lowland forest. Major taxa recorded from pollen and fossil remains indicate that *Metrosideros*, kauri, *Libocedrus*, *Ascarina lucida*, taraire, tawa, totara and titoki (amongst others) were present (Newman & Lusk, 1990).

More recent history indicates that a large kauri forest was present in the northern part of the peninsula until it was milled in 1835 and the timber towed to Onehunga (Muir, 1957). Historical commentary testifies that kauri gum was dug around Awhitu and the northern part of the peninsula. It is reasonable therefore to speculate that Kemp Rd Bush could contain remnants of that older kauri

1. Sites of Special Wildife Interest are areas identified by the Department of Conservation for their wildlife habitat values.

forest. Other vegetation on the peninsula included a strip of puriri forest which probably ran down to Maioro and Pukekohe and was sheltered by the long bare iron sand coast (Muir, 1957). Flax milling as an industry also thrived on the peninsula (Muir, 1957). Today the peninsula's native vegetation consists of remnants of forest and scrub, left on the steep faces and gullies mostly along the central stem of the peninsula. More substantial tracts of forest are found around the Kemp Rd area and further to the north (Clunie, 1994).

The Auckland Botanical Society have made two excursions into this area firstly in 1965 to Awhitu Central and in 1970 to Hamiltons Bush (Cookson,1965 & Young, 1970).

Vegetation Description

Today Kemp Road Bush is primarily composed of regenerating forest in various stages of modification. Several different forest types are present including excellent stands of regenerating kauri forest on several ridges and gentle hill slopes, remnant broadleaf forest in the valleys, and areas of regenerating manuka or kanuka forest at various stages (c. 10 years or 30-50 years old). There are also freshwater wetland associations in the creek bed. A number of remnant stands of mature forest are present throughout the area. Unfortunately the top of the valley is now very modifed with extensive areas of woolly nightshade, gorse and pampas.

Kauri Forest
A reasonably large north facing slope is composed of strongly regenerating kauri ricker stands probably somewhere between 60 - 100 years of age. The canopy of this forest is dominated by mid size kauri rickers and with rimu, kanuka and tanekaha also obvious in the canopy.

Remnant Forest
Much of the remnant broadleaf forest is mostly on south facing slopes and in small gullies. The mature remnant forest areas have tall taraire trees with scattered Hall's totara of substantial proportions. Included in these remnant forest areas, mostly on the spurs and mid slopes in the southern part of the forest, are areas of older kauri presumably left from previous milling operations. These trees are also of sizeable girth. The older kauri area is characterised by a diverse and intact understorey. The forest around the stream margins and valley also have a diverse canopy mixture with kahikatea, pukatea, putaputaweta in the mid tier. Kiekie while present is not common. Across the forest block as a whole, pohutukawa is occasional in the canopy. This scattering of mature pohutukawa is a pattern distinctive in other forest areas along the Awhitu Peninsula.

We spent some time wandering in the stream valleys, exploring the swampy margins of the Kauritatutahi Creek and tributaries as well as the forest vegetation in this area. The forest canopies were varied but tended to include kahikatea, puriri, manuka, tanekaha, rimu, taraire, kauri, maire tawake, tawa, putaputaweta and mamaku. The understorey was predominantly composed of lancewood, tanekaha, miro, totara, mamangi, ponga, nikau and in places wheki along the stream. On the ground a number of species were observed including miro seedlings, totara, rimu, nikau, mingimingi, kahikatea, karaka, and putaputaweta. The understorey of this area shows signs of previous grazing and trampling by stock, but probably not in the last few years. Unfortunately around the stream we found a large area of mistflower.

Kanuka and Manuka Regeneration
Present in the area are various stages of both manuka and kanuka regeneration. One area of regenerating manuka in particular on the Kemp Rd side of the block appeared to be the result of a fire. Kanuka regeneration at the top of the hill above Kemp Road has locally abundant patches of toru emergent with many lancewood, akepiro, and *Astelia* on the ground. The canopy height of this shrubland area is about 4 metres and is notable for the kauri regeneration on the ground.

On the eastern side of the forest block, manuka and kanuka dominate where an area has more recently been cut over for firewood. Present in the canopy also are toro and lancewood. The mid tiers contain tanekaha, and rewarewa (which is also emergent in the canopy). The ground has a number of species including *Gahnia* spp., *Lepidosperma laterale*, manuka, totara seedlings,

tanekaha, rewarewa, mapou, lancewood, mairehau, *Rubus*, bracken in places, *Dianella*, *Olearia furfuracea* and mingimingi. Totara seedlings and mairehau were very noticeable.

Fauna Values

This forest block was surveyed by the Fauna Survey Unit of the Wildlife Service in 1982 and registered as a Site of Special Wildlife Interest (SSWI) with a ranking of moderate. During this visit a range of forest and bush margin birds were recorded. Native species included New Zealand pigeon, tui, kingfisher, fantail, grey warbler, silvereye, welcome swallow and harrier. Introduced species included chaffinch, yellowhammer, goldfinch, greenfinch, blackbird, eastern rosella, Californian quail and magpie. The broadleaf-podocarp forest areas would be particularly valuable food sources for New Zealand pigeon during the fruiting season and good numbers were recorded during our site visit. The area is large enough to sustain a good population of pigeon, depending on the number of predators in the area. Mr Hastings reported that some 1080 poisoning for possum had occurred on the property within the last two years.

Generally the forest offers an excellent variety of vegetation types and species associations as wildlife habitat. It would be one of the best, if not the best, remaining area of podocarp-broadleaf-kauri forest on the Awhitu Peninsula with very good regeneration. The range of plant species in the young mixed forest areas would be attractive to a range of bird species at various times of the year during both flowering and fruiting periods. In contrast, the wetland area in the creek bed appeared largely unsuitable as habitat for secretive swamp birds as the raupo and other plants were too sparse to offer good cover. Mr Hastings informed us that there were larger areas of raupo further down the valley.

Discussion

As very little is published on the flora and vegetation on the Awhitu Peninsula, we thought a comparison with Tatangarau, the forest block about 1.5 km to the north of here (see Cameron, 1994), would be of interest. The Kemp Rd forest does feature a number of species which were absent in the Tatangarau area. These species include taraire, tawa, puriri, karaka as well as kohekohe. We also found toru but not tawheowheo. Unlike Tatangarau this block also supports a larger array of native gymnosperms including Hall's totara which was found by Nigel Clunie some months earlier (Clunie, 1994). Of interest also in this block of forest was the presence and abundance of mairehau (the scent of which one of the authors has a particular preference for which is of assistance in observing this species!). We were also lucky to be in the appropriate season to find *Acianthus sinclairii* in flower and *Schizaea bifida* with sporangia, discovering these when searching for a way out of the manuka scrub within which we were temporarily lost. We also observed numerous basket fungi along the slope rising from Kemp Road itself.

Acknowledgment

Thanks to Mr Hastings for the invitation to survey his property.

References

Cameron, E. K. 1994: Tatangarau, Awhitu - vegetation and flora. *Auckland Botanical Society Journal 49(2):* 60-66

Clunie, N. M. U. 1994: Auckand Regional Council Possum Vulnerability Survey, Manukau and Awhitu Ecological Districts Final Report. Unpublished report held by ARC.

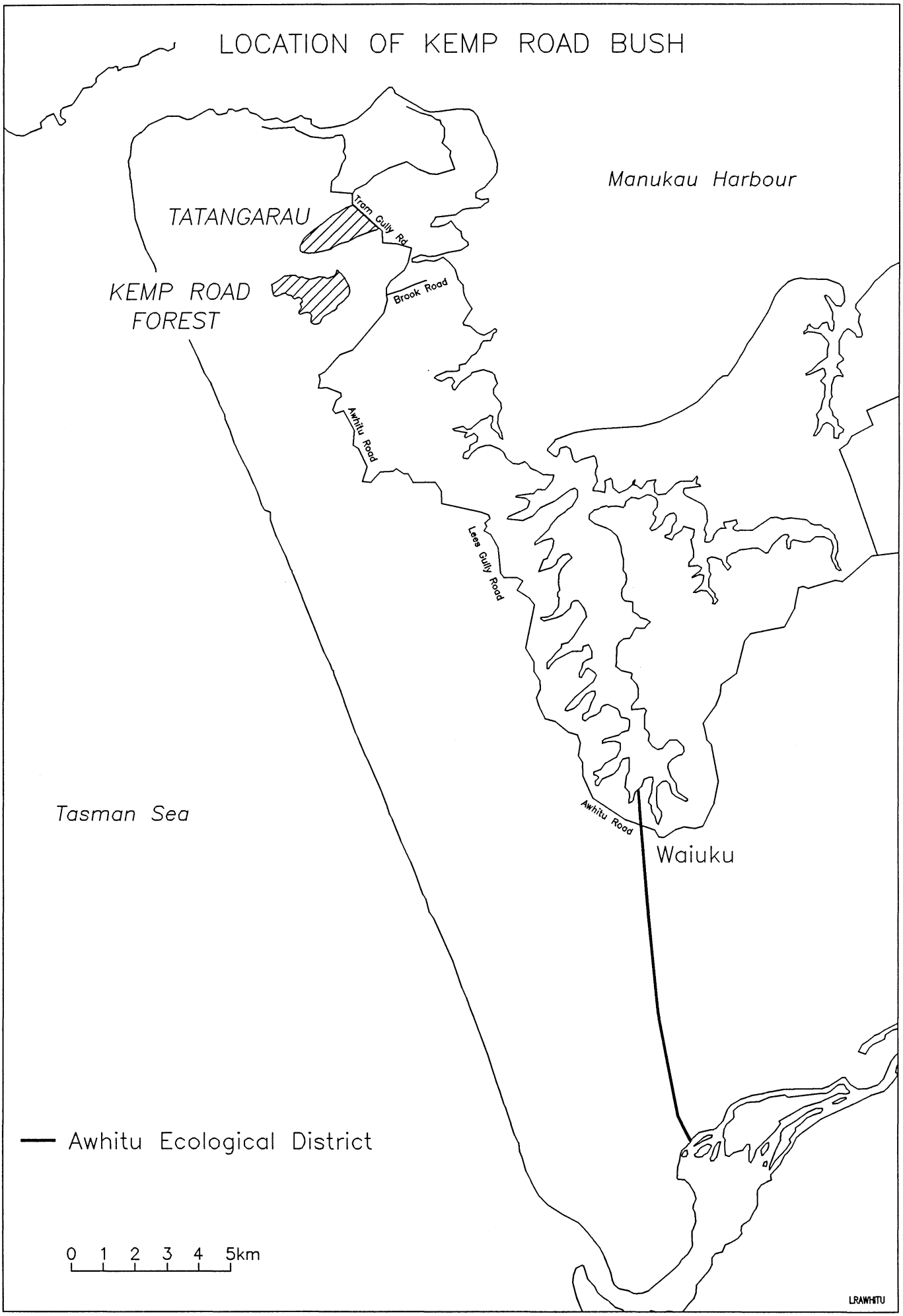
Cookson, H. 1965: Awhitu Central - 18 September 1965. *Auckland Botanical Society News Sheet.*

Muir, Brian. 1957. Waiuku and District. 121 pp.

Newman, Rewi and Chris Lusk. 1990: Comparsion of Plant Micro and Macro fossils, Kariotahi, Awhitu Peninsula. *Tane, Vol. 32*:171-178.

Young, M. H. 1970: Hamiltons Bush, Awhitu Central - 18 July. *Auckland Botanical Society News Sheet.*

FIGURE 1



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Auckland Regional Council
14th September 1995

Appendix: Vascular flora of Kemp Rd Bush, Awhitu Ecological District

Ferns and fern allies (17)

Adiantum cunninghamii	common maidenhair	1, 3, 5	o
Asplenium oblongifolium	huhuru	1, 5	o
B. filiforme	kiwakiwa	1, 3, 5	o
B. fraseri		2	r
Blechnum sp. (kiokio)	kiokio	2, 4, 5	o
Cyathea dealbata	ponga	1, 3, 5	c
C. medullaris	mamaku	3, 5	c
Dicksonia squarrosa	wheki	3, 4, 5	o
Lastreopsis glabella		1	o
Lycopodium volubile		1	l
Lygodium articulatum	mangemange	1, 3, 5	o
Phymatosorus pustulatus	hound's tongue	3	c
P. scandens	moki	5	c
Pneumatopteris pennigera	pakau	3	l
Pteridium esculentum	bracken	2	r
Pyrrosia eleagnifolia	leather-leaf fern	3	l
Schizaea bifida		2	r

Gymnosperms (7)

Agathis australis	kauri	1, 3, 5	a
Dacrycarpus dacrydiodies	kahikatea	1, 3, 5	o
Dacrydium cupressinum	rimu	1, 3, 5	c
Phyllocladus trichomanoides	tanekaha	1, 2, 3, 5	c
Podocarpus hallii	Hall's totara	NC	o
Podocarpus totara	totara	1, 2, 3, 5	c
Prumnopitys ferruginea	miro	1, 2, 3, 5	c

Dicotyledons (45)

**Ageratina riparia*	mistflower	3	lc
Alectryon excelsus	titoki	5	r
Alseuosmia macrophylla	toropapa	1, 5	c
Beilschmiedia tarairi	taraire	1, 3, 5	lc
B. tawa	tawa	1, 3, 5	lc
Brachyglottis repanda	rangiora	1	r
B. kirki	Kirk's daisy	2	r
Carpodetus serratus	putaputaweta	3, 4, 5	lc
Coprosma arborea	mamangi	3	lc
C. areolata		5	o
C. robusta	karamu	1, 5	o
C. spathulata		1	o
Corynocarpus laevigatus	karaka	1, 3, 5	c
Cyathodes juniperina	prickly mingimingi	1, 3, 5	a
Dysoxylum spectabile	kohekohe	5	lc
Geniostoma rupestre	hangehange	1, 2, 3, 5	lc
Freycinetia banksii	kiekie	5	r
Haloragis erecta	shrubby haloragis	4	r
Hedycarya arborea	pigeonwood	1, 5	r
Knightia excelsa	rewarewa	1, 2, 5	c
Kunzea ericoides	kanuka	2, 3, 4, 5	a
Laurelia novae-zealandiae	pukatea	1, 5	o
Leptospermum scoparium	manuka	2	a
Leucopogon fasciculatus	mingimingi	1, 2, 5	c

Macropiper excelsum	kawakawa	3, 5	o
Melicytus ramiflorus	mahoe	5	r
Metrosideros excelsa	pohutukawa	1, 5	o
Myrsine australis	mapou	1, 2, 3, 5	c
Nestegis lanceolata	white maire	1	lc
Olearia furfuracea	akepiro	1, 2, 5	c
O. rani	heketara	5	r
Parsonia sp.	NZ jasmine	5	o
Phebalium nudum	mairehau	1, 2	lc
Pomaderris phylicifolia var. *ericifolia*	tauhinu	5	r
Psuedopanax crassifolius	horoeka	1, 2, 3, 5	c
P. arboreus	fivefinger	5	c
Ripogonum scandens	supplejack	3, 5	l
**Rorippa nasturtium-aquaticum*	watercress	4	l
Rubus cissoidies	bush lawyer	1, 2	c
**Rubus fruticosus* agg.	blackberry	4	r
**Solanum mauritianum*	woolly nightshade	top corner	a
Syzygium maire	maire tawake	3, 4	la
Toronia toru	toru	1, 2, 5	la
Vitex lucens	puriri	3, 5	c
**Ulex europeaus*	gorse	roadsides, top corner	la

Monocotyledons (19)

Acianthus sinclairii		2	r (AK 214602)
Astelia solandri		3, 5	c
A. trinerva		1, 5	lc
Collospermum hastatum		5	l
Cordyline australis	cabbage tree	1, 4	l
C. banksii		1, 5	o
**Cortaderia jubata*	purple pampas grass	top	a
Dianella nigra		1, 2, 5	o
Gahnia sp.		2, 5	c
Isachne globosa	swamp millet	4	l
Lepidosperma laterale		2	l
Oplismenus imbecillis		5	l
Phormium tenax	flax	roadside	l
Pterostylis trullifolia		1, 2	r (AK 214601)
Rhopalostylis sapida	nikau	1, 3, 4, 5	c
Schoenoplectus validus		4	l
Schoenus tendo		4	l
Typha orientalis	raupo	4	lc
Uncinia sp.	hook sedge	5	c

Legend

* adventive
1 = Kemp Rd side
2 = from Awhitu Central Rd side - track - younger regeneration
3 = stream remnant
4 = swamp around main stream
5 = Lee covenant coming back down to 1

a = abundant
c = common
o = occasional
l = local
r = rare
NC = recorded by Nigel Clunie