Bot Soc trips to The Noises (Hauraki Gulf) and an updated species list

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The Auckland Botanical Society (AK Bot Soc) has had two day trips to The Noises Islands in recent years: 20 March 1993 and 21 March 1998. For both trips we hired the *Reo Moana* and left from Panmure Wharf. The trip taking nearly 2 hrs each way allowed only limited time for botanising. Both trips were well attended: 47 adults and 8 children (1993), and 52 adults and 7 children (1998). The 1993 trip spent 2.5 hrs on Motuhoropapa and 1.5 hrs on Otata; in 1998 we spent 3.5 hrs only on Otata. Jessica Beever (1993) published an article on the mosses of The Noises, based on the 1993 Bot Soc visit and existing herbarium specimens in AK and WELT. AK Bot Soc also visited Otata on 3 March 1951 with the W.E.A. (Workers Education Association) Natural History Club in a launch "loaded to capacity" (Hannken & Moynihan 1951). I wonder what the attraction of The Noises in March is for AK Bot Soc?

The rocky island group was named by an early French explorer who called them *Les Noisettes* - "The hazelnuts" which has been corrupted to "The Noises" (Cranwell 1981: 69). The Noises are composed of Waipapa Group argillites and greywackes (unfossiliferous) of possible Jurassic age (Mayer 1968). There are four main islands in the group: Otata (15.0 ha), Motuhoropapa (also known as Motuhurakia) (8.1 ha), David Rocks (0.3 ha) and Ruapuke or Maria (1.1 ha) (island areas after Taylor 1989) and there are also five associated islets. They lie in the inner Hauraki Gulf; Otata is 2.4 km north-east of Rakino Island (see Fig. 1). The islands of the group have a rocky, indented coastline and the larger islands are clothed in regenerating forest. Motuhoropapa reaches 50 m asl and Otata 61 m. There are no permanent streams on the islands but the south-facing valley behind the bach was quite moist during our visits and there is a well (produces 40 gals/day) some 100 m up the valley from the bach (probably dug last century). Water can also be dug for at Sandy Bay on the northern Otata coast.

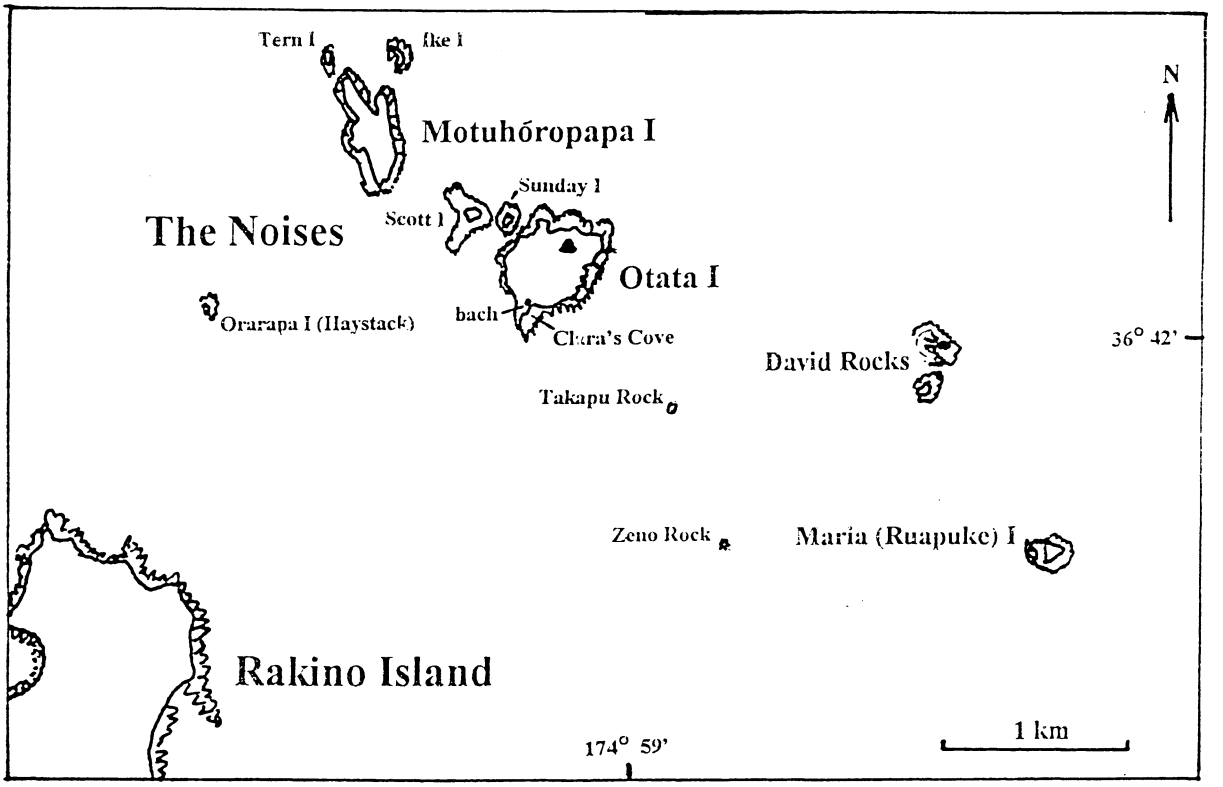

Fig. 1. Place names and location of Motuhoropapa and Otata Islands, part of The Noises Islands, Hauraki Gulf.

The whole group is privately owned. Captain McKenzie owned The Noises in the 1920's. They were

purchased by Captain Frederic Stanley Wainhouse in c.1932 who remarried in 1940, Margaret Neureuter. After Wainhouse died on the island in 1957, the ownership was then briefly held by his wife, who passed the islands on in the same year to Brian P. Neureuter, her nephew. Brian has recently passed the ownership to Rod Neureuter, his son. Captain McKenzie built the bach in the south-east corner of Otata Island in 1930, to which he made an addition in 1952. During the war, from about 1942, the Wainhouses starting spending quite a lot of time at Otata - about two months before Christmas, then another two months after Christmas. The Marine Department had to take them there as there were mine fields laid around the islands at that time. After the war they used to spend about nine months a year there until Captain Wainhouse died. The bach is still used today for summer holidays by the owners. The only other building on the group is a hut on Motu-horopapa, built by The Wildlife Service in 1977 or 78 to provide a base to study the Norway rats (I. McFadden pers. comm.). There are no landing structures on any of the islands.

Fauna

Three lizards have been recorded for Otata: copper skink (*Cyclodina aenea*), shore skink (*Oligosoma smithi*) and common gecko (*Hoplodactylus maculatus*) (Moors 1985a). When AK Bot Soc was on Motuhoropapa in 1993 we saw two fresh empty shells of the large land snail, *Placostylus hongi*, released on the island (referred to as Motuhurakia) in 1934 (Powell 1938) by Powell from Archway Island of the Poor Knights Islands (F.J. Brook pers. comm.). Live *P. hongi* were seen on the island as recently as 1997 by Fred Brook, Ian McFadden and Richard Parrish (I. McFadden pers. comm.). Jim Goulstone (1996) described a tiny new land snail, *Climocella haurakiensis*, from Motuhoropapa and Otata (type locality), as well as from some other Gulf islands and two mainland localities. Cunningham and Moors (1985) published a full account of the birds for The Noises group, totalling 52 species of which 8 of the 20 species of seabird and 13 of the 32 species of land bird breed on the islands. They do not include the observation of Gillham (1965: 250) who records seeing on Motuhoropapa (Motuhurakia) "a few tiny storm petrel burrows". I.A.E. Atkinson (pers. comm.) suggests that Gillham may have in fact seen Norway rat burrows, not petrel burrows. This would have been in 1957, before Norway rats were recorded for the island. The land birds we saw during our two trips were fantail, greywarbler, silvereye, blackbird and tui. Seabirds we saw were pied shags roosting in pohutukawa (*Metrosideros excelsa*), by the Otata bach at Clara's Cove (named after a visitor to the island in Wainhouse's time); and several large unoccupied petrel burrows were see on both islands, probably belonging to grey-faced petrels. Cunningham and Moors (op. cit.) recorded scattered, small nesting colonies of grey-faced petrels on both islands; pied shags nesting above Clara's Cove, and spotted shags sporadically nesting on the northern cliffs of Otata, with numbers varying from 0 to 100.

Otata used to be inhabited by rabbits and stoats (Moors 1985a); the rabbits died out c.1944-45, some three years before the first stoats were encountered. There were no rabbits on the island when Brian Neureuter first went there in 1946 but they had been a problem in the Wainhouses garden during the war years. No stoats have been seen since the mid 1950's. The first Norway rats found on the group were thought to have arrived 1956-57 on Otata, and on Motuhoropapa in 1962 (Moors 1985a). In 1976 the island group was selected by the Wildlife Service to provide information on the ecology of Norway rats on small islands and to test eradication methods. By the mid 1980's they were considered to be rat free (Moors 1985b). Ian McFadden informed me that rodent sign was found again in February 1991 on Otata, followed by Norway rats trapped on Motuhoropapa, and in the same year both islands and adjoining islets were baited by Department of Conservation staff. The eradication was successful on the two main islands but two of the smaller islets required subsequent baiting and by 1994 the group was once again considered clear of rats. Again in 1996 rat sign was found on Motuhoropapa and these rats were probably effectively poisoned by 1997 (I. McFadden pers. comm.). No recent rodent sign has been seen on Otata (P. Neureuter pers. comm., 1998).

Vegetation

Mason and Trevarthen (1950) record that most of Otata was burnt in c.1931, but most other accounts record the burning as in the late 1920's (e.g. Moors 1985a). The account by G.T.S. Baylis, based on the Otata June 1934 Auckland University Field Club trip, quoted in Mason and Trevarthen (op. cit.), records: "The southern half of the island, for the most part forming an open valley sloping south-west, is apparently in more or less primitive condition. It is covered with scrub 5-15 ft in height or even taller, dominated by mahoe, with the big-leaved kawakawa a little less plentiful. In this respect it resembles strikingly an association on one of the Poor Knights Islands (Tawhiti Rahi), where the association is more scrubby, kawakawa is largely replaced by hangehange (leaves large and always fleshy) and manuka, but in some places there is almost pure mahoe. On the steep slopes to the sea on the eastern side of the island, pohutukawa is plentiful and karo may attain

considerable size. Much of the northern slope of the island has been burnt, and rabbits, whose burrows are plentiful, no doubt assist to keep it open. Tutu and flax are dotted over it on the grassy slopes." Notes from the 1935 Field Club excursion mention that the northern slopes of Otata are colonised by almost pure danthonia (*Rytidosperma* spp.) - flax (*Phormium tenax*) - tutu (*Coriaria arborea*) association, growing vigorously after fire (Mason & Trevarthan 1950).

Today the dominant canopy of Otata is pohutukawa and karo (*Pittosporum crassifolium*), over 15 m tall in the more sheltered places, with a dense-to-open understorey dominated by karo, coastal karamu (*Coprosma macrocarpa*), kawakawa (*Macropiper excelsum*), houpara (*Pseudopanax lessonii*)(especially near the coast), mahoe (*Melicytus ramiflorus*), mapou (*Myrsine australis*)(locally dominant), hangehange (*Geniostoma rupestre*) and bamboo sedge (*Gahnia lacera*). Shrubby windswept vegetation clothes the steep northern coastal slopes where manuka (*Leptospermum scoparium*), karo, mapou, houpara, bamboo sedge and bracken (*Pteridium esculentum*) form the main cover. Flax, N.Z. broom (*Carmichaelia australis*), koromiko (*Hebe stricta*), tutu and *Astelia banksii* are less frequent. Pohutukawa line the cliff-tops.

The vegetation of Motuhoropapa is more advanced than that of Otata. Atkinson (1960) suggested that part of the vegetation is recovering from "disturbance within the last fifty years" and the presence of large diameter pohutukawa "suggests that remnants of the original plant cover may be present." The canopy and understorey is similar composition to that of Otata except that it is locally taller and that there is more diversity amongst the woody vegetation. For example, woody species that are more frequent on Motuhoropapa include: akeake(*Dodonaea viscosa*), akepiro (*Olearia furfuracea*), kohekohe (*Dysoxylum spectabile*), ngaio (*Myoporum laetum*), poroporo (*Solanum aviculare*), rangiora (*Brachyglottis repanda*), tawapou (*Pouteria costata*), and wharangi (*Melicope ternata*). Conversely the woody species that are more common on Otata, compared with Motuhoropapa, generally grow in more open situations, e.g. manuka, mapou, tauhinu (*Ozothamnus leptophylla*), tutu and whau (*Entelea arborescens*).

Vascular flora of Motuhoropapa and Otata Islands

Mason and Trevarthen (1950) were the first to publish something on the flora of The Noises, recording 81 species for Otata (they also included previous Auckland University Field Club trip records from 1933, 1934, 1935, and 1948 trips). Hannken and Moynihan (1951), expanded by Hannken and Trevarthen (1952), followed with supplementary lists for the same island (partly based on the 1951 AK Bot Soc trip) adding 24 species to the initial list. Based on a brief trip to Motuhoropapa in June 1954 Atkinson (1960) documented the vegetation of the island and Mason et al. (1960) published a vascular plant list for the same island totalling 88 species. Atkinson (1984, updated 1985) documented the vascular flora seen by him between 1978 and 1985 for all The Noises Islands: totalling 142 species for Otata, 129 species for Motuhoropapa, with 97 species shared between the two islands. This present account adds historical (pre-1978) and post 1985 records to Atkinson's list. The pre-1978 records add 18 new species to the list, and 8 species previously recorded for only one of the two islands are now recorded for both islands. The AK Bot Soc visits add 5 (3 native + 2 adventive) new species for Motuhoropapa, and 18 (8 + 10) for Otata, which include 17 (9 + 8) new records for both the islands. Two AK Bot Soc records for Otata (*Coprosma robusta, Pteris macilenta*) were unrecorded by Atkinson (1985) but were recorded in earlier accounts. The only other post Atkinson (1985) additions are three species (*Bromus valdivianus, Cakile edentula, Carex pumila*) collected in 1995 by P.J. de Lange and D.B. Rogan on Otata, *Senecio scaberulus* and a hybrid *Senecio* from Motuhoropapa collected by P.J. de Lange in 1994 and 1995 respectively, two species (*Bromus arenarius, Taraxacum officinale*) seen by P.J. de Lange in 1994-5 on Otata, and gorse (*Ulex europaeus*) seen by B.P. Neureuter. Planted species that could impact on the island's vegetation are listed for the first time. This updated flora lists 189 wild species for Otata, 158 for Motuhoropapa, and 230 for both islands (see Table 1).

Table 1. Vascular flora totals of Otata and Motuhoropapa Islands, and their combined flora (excluding cultivated specimens).

	Otata	Motuhoropapa	Totals
Native ferns	24	19	28
Native dicots	68	68	88
Native monocots	27	24	32
Adventive dicots	52	32	59
Adventive monocots	18	15	23
TOTALS	**189**	**158**	**230**
% native	63	70	64

The following vascular plant list is based on all previous accounts (see above) with synonymy as appears probable, 108 Motuhoropapa and Otata herbarium specimens in AK, plus 2 vouchers from Otata in AKU, and one from Otata in MPN. Generally only the earliest collection is cited. Collections were made by T.C. Chambers (27 March 1949, AKU), T.F. Cheeseman (April 1880, April & November 1883), L.M. Cranwell (December 1932), M.E. Kulka (July 1954, AKU), N. Mackie (May 1933), B.E.G. Molesworth (May 1938, MPN), L.B. Moore (March 1934), J. Trevarthen (April 1950), D.L. Knowlton (July 1954), I.A.E. Atkinson (1980), R.E. Beever (March 1993), E.K. Cameron (March 1993 & 1998), B.S. Parris (March 1993), I. McFadden (February 1994), P.J. de Lange (February 1994 &1995), and D.B. Rogan (February 1995).

Wild plants

Key (mainly follows Atkinson's (1984) ratings; pre-1978 records (which are actually pre-1955) are treated as historical and an abbreviated reference is given to their source)

* = adventive plant (the date is given for the first known record for each species on Motuhoropapa or Otata)
** = new record from AK Bot Soc 1993 or 1998 visits
a = abundant; plants of general occurrence in suitable habitats
la = locally abundant; plants seen in five or more places; very numerous locally
m = many; plants seen in five or more places but confined to less than half the island's area
\+ = present; plants seen in fewer than five places on the island although more than five individuals may be present
l = local; confined to one or two sites
s = scarce (< 5 individuals seen)
(3) = bracketed figures beside abundance ratings indicate the number of individuals seen
(+) = bracketed abundance ratings indicate that the plants seen have been removed
AK = voucher specimen in Auckland Museum herbarium
AKU = voucher specimen in Auckland University herbarium
MPN = voucher specimen in Massey University herbarium

Sources for historical records:

H&T = Hannken & Trevarthen (1952), seen on Otata in 1951, not recorded since
IA = Atkinson (1960), seen on Motuhoropapa in 1954, not recorded since
M,K,A = Mason et al. (1960), seen on Motuhoropapa in 1954, not recorded since
M&T = Mason & Trevarthen (1950), seen on Otata in 1933-50, not recorded since
LMC = collected by LM Cranwell on Motuhoropapa in 1932, not recorded since
TFC = collected by TF Cheeseman on Otata in 1883, not recorded since

Ferns and fern allies (28 +0) (= native + adventive totals)

	Common name	Otata	Motuhoropapa
Adiantum aethiopicum	true maidenhair		+
A. cunninghamii	common maidenhair	a	m
A. hispidulum	rosy maidenhair	la	
Anarthropteris lanceolata	lance fern		M&T
Asplenium bulbiferum	hen & chickens fern, AK 213546	l**	
A. haurakiense	AK 135812-13	m	a
A. oblongifolium	shining spleenwort, AK 106932-33	a	a
A. polyodon	sickle spleenwort, AK 213547	l**	
Blechnum novae-zelandiae	kiokio		+
Cheilanthes distans	woolly cloak fern	H&T	
C. sieberi	rock fern	la	+
Cyathea dealbata	ponga	+(3)	
C. medullaris	mamaku	+(9)	
Dicksonia squarrosa	wheki	s(2)**	
Doodia media subsp. *australis*	rasp fern	a	+
Lastreopsis velutina	velvet fern		+
Lycopodium varium	iwituna	H&M	+
Pellaea rotundifolia	tarawera	+	+(2)
Phymatosorus pustulatus	hound's tongue, AK 115659	m	m
Pneumatopteris pennigera	gully fern	s(1)**	
Polystichum richardii	common shield fern	+	+
Psilotum nudum	psilotum, AK 58394, AKU 103	l	M,K,A
Pteridium esculentum	bracken, AK 115556	a	la
Pteris comans	coastal brake, AK 209950	s**	m
P. macilenta	sweet fern, AK 209949	l	
P. tremula	shaking brake	m	m
Pyrrosia eleagnifolia	leather-leaf fern	+	+
Tmesipteris elongata	tmesipteris, AK 209951	l**	+
		24	19

Dicotyledons (88 + 58)

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Acaena novae-zelandiae	bidibid	M&T	
*Ageratina adenophora** (1984)	Mexican devil	+	
Anagallis arvensis var. *arvensis** (1954 or 1984)	scarlet pimpernel	m	m
Anagallis arvensis var. *coerulea** (1954 or 1984)	blue pimpernel	m	m
Apium prostratum var. *prostratum*	sea celery, AK 104973	m	m
*Araujia sericifera** (1993)	moth plant, AK 213553-54	I**	
*Atriplex prostrata** (1984)	orache	+(1)	+
*Bidens pilosa** (1984)	beggars' ticks	+	
Brachyglottis repanda	rangiora	+(1)	m
*Cakile edentula** (1995)	sea rocket, AK 222897	s	
Calystegia soldanella	shore bindweed	m	+
Cardamine debilis agg.		I**	
Carmichaelia australis	N.Z. broom, AK 103119	m	m
*Centaurium erythraea** (1984)	centaury	+	+
*Cerastium glomeratum** (1984)	annual mouse-ear chickweed	m	la
*Cirsium vulgare** (1951)	Scotch thistle	m	m
Clematis paniculata	clematis	m	m
*Conyza albida** (1951)	broad-leaved fleabane	m	m
Coprosma grandifolia	kanono	M&T	IA, M,K,A
C. lucida	shiny karamu		+(1)
C. macrocarpa	coastal karamu	a	a
C. macrocarpa x *C. robusta*	hybrid	+	+
C. repens	taupata	m	m
C. rhamnoides		H&T	M,K,A
C. robusta	karamu	s	
Coriaria arborea	tutu	m	
Corynocarpus laevigatus	karaka		+(1)
Cotula australis	soldier's button		+
C. coronopifolia	bachelor's button, AK 209957		s**
*Crassula decumbens** (1984)	Cape crassula		+
C. sieberiana		M&T	m
*Crepis capillaris** (1951)	hawksbeard	m	+
Cyathodes juniperina	prickly mingimingi	+(1)	
Dichondra repens agg.	dichondra	m-la	a
Disphyma australe	NZ ice plant	a	a
Dodonaea viscosa	akeake		m
Drosera auriculata	spoon-leaved sundew	+	
Dysoxylum spectabile	kohekohe	+	a
Einadia triandra	AK 3926	+	+
Entelea arborescens	whau, AK 5192	m	
Epilobium nummulariifolium	creeping willow herb, MPN 1558	M&T	
E. rotundifolium	willow herb, AK 213551	I**	
*Euphorbia peplus** (1954)	milkweed	+**	m
*Fumaria muralis** (1984)	scrambling fumitory	+	
Galium propinquum		+	
Geniostoma rupestre var. *ligustrifolium*	hangehange, AK 106037	m	m
*Geranium molle** (1984)	dove's foot	m	
G. retrorsum	turnip-rooted geranium		+
G. solanderi "large petals"	turnip-rooted geranium	+	
Gnaphalium audax	creeping cudweed, AK 213545	+	
*G. coarctatum** (1984)	purple cudweed		+
*G. simplicicaule** (1998)	AK 235118	s**	
G. sphaericum	Japanese cudweed	m	m
*Gomphocarpus fruticosus** (1984)	swan plant, AK 213541	I	
Haloragis erecta subsp. *erecta*	shrubby haloragis	m	m
Hebe ?macrocarpa x *H. stricta*	koromiko hybrid, AK 209954		s**
H. stricta var. *stricta*	koromiko, AK 213542	m	m
*Helminthotheca echioides** (1951)	oxtongue	m	m
Hydrocotyle novae-zeelandiae		M&T	
*Hypochoeris glabra** (1951)	smooth catsear	H&T	
*Hypochoeris radicata** (1951)	catsear	m	la
Lagenifera pumila	AK 209959		I**
*Leontodon taraxacoides** (1984)	hawkbit	+	+
Leptospermum scoparium	manuka	m	IA
Leucopogon fasciculatus	mingimingi	m	m
Lilaeopsis novae-zelandiae		M&T	
*Linum bienne** (1984)	Australian flax	+	
L. monogynum	rauhuia, AK 100887	+	m

Lobelia anceps	shore lobelia	+	m
*Lotus suaveolens** (1984)	hairy birdsfoot trefoil	+	
*Lycopersicum esculentum** (1993)	tomato	I**	
Macropiper excelsum subsp. *excelsum*	kawakawa, AK 134264-72	m	m
*Malva sylvestris** (1984)	large-flowered mallow	+	
*Medicago nigra** (1984)	bur medick	+	
*Melilotus indicus** (1984)	King Island melilot	+	+
Melicope ternata	wharangi, AK 104484-5	+(6)	a
Melicytus novae-zelandiae	coastal mahoe, AK 209955	m	m
M. ramiflorus	mahoe, AK 100262	a	a
Mentha x *piperita* var. *citrata** (1984)	mint, AK 213540	I	
Metrosideros excelsa	pohutukawa	a	a
*Modiola caroliniana** (1984)	creeping mallow	+	
Muehlenbeckia australis	pohuehue	+	IA
M. complexa	small-leaved pohuehue	a	m
Myoporum laetum	ngaio	+(6)	m
Myrsine australis	mapou, AK 105680	a	m
*Nicotiana tabacum** (1998)	tobacco, AK 235122	s**	
*Olea europaea** (1980)	olive, AK 215882		(+)
Olearia furfuracea	akepiro	+(c.40)	m
*Orobanche minor** (1951)	broomrape	m	a
Oxalis exilis	creeping oxalis	+	m
O. rubens			M,K,A
Ozothamnus leptophylla	tauhinu, AKU 5076	m	+(1)
*Parentucellia viscosa** (1984)	tarweed		+
Parsonsia heterophylla	parsonsia	I	a
Pelargonium inodorum	kopata		+
Peperomia urvilleana		+	m
*Physalis peruviana** (1984)	cape gooseberry	+	m
*Phytolacca octandra** (1984)	inkweed	+	+
Pimelea cf. *urvilleana*	coastal pimelea, AK 101719	+	+
Pittosporum crassifolium	karo	a	a
P. crassifolium x *P. umbellatum*			+(1)
*Plantago lanceolata** (1984)	narrow-leaved plantain	+	m
*Polycarpon tetraphyllum** (1984)	allseed	m	m
Pomaderris phylicifolia var. *ericifolia*	tauhinu	m	
Pouteria costata	tawapou		m
*Prunus persica** (1993)	peach	s(1)**	
Pseudognaphalium luteoalbum agg.	Jersey cudweed	+	m
Pseudopanax arboreus	fivefinger	m	m
P. crassifolius	horoeka, lancewood	M&T	
P. crassifolius x *P. lessonii*	hybrid	m	+(2)
P. lessonii	houpara	a	a
*Ranunculus parviflorus** (1984)	small-flowered buttercup	+	
*Rhamnus alaternus** (1984)	rhamnus, AK 209953		+(>10)
*Rumex conglomeratus** (1993)	clustered dock	I**	
*R. crispus** (1984)	curled dock	+	
*Sagina apetala** or *S. procumbens** ? (1984)	annual pearlwort		+
Sarcocornia quinqueflora	glasswort	a	a
Schefflera digitata	pate		M,K,A
Scleranthus biflorus		+	
*Senecio bipinnatisectus** (1984)	Australian fireweed		m
*S. cruentus** (1984)	cineraria	+	
S. glomeratus	fireweed		+
S. glomeratus x *S. hispidulus*	AK 228092		I
S. hispidulus	fireweed, AK 228090	a	a
S. lautus var. *lautus*	shore groundsel	m	a
S. scaberulus	fireweed, AK 224328		s
*S. skirrhodon** (1984)	gravel groundsel	+	+
*S. vulgaris** (1984)	groundsel		+
Sicyos australis	mawhai, AK 9196-7	TFC	
*Silene gallica** (1984)	catchfly	+	Ia
Solanum americanum	small-flowered nightshade	Ia	m
S. aviculare f. *aviculare*	poroporo		m
*S. nigrum** (1954)	black nightshade, AK 209948	+	M,K,A
*Sonchus oleraceus** (1954)	sow thistle	m	m
Sophora microphylla	kowhai		+(1)
Spergularia media	sea spurrey	+	Ia
Stellaria parviflora	NZ chickweed		+
*Taraxacum officinale** (1994)	dandelion	I	

Tetragonia trigyna	climbing NZ spinach, AK 3994	m	m
*Tolpis barbata** (1984)	tolpis	+	
*Trifolium dubium** (1932)	suckling clover, AK 76042	a	m
*T. repens** (1984)	white clover	a	
*Tropaeolum majus** (1984)	garden nasturtium	l	
*Ulex europaeus** (c. 1983)	gorse	l	
*Vicia tetrasperma** (1984)	four-seeded vetch	m	
Veronica plebeia (1948)		M & T	
Wahlenbergia vernicosa	New Zealand harebell	m	m
		120	100
Monocotyledons (32 + 23)			
Acianthus sinclairii			la
*Anthoxanthum odoratum** (1984)	sweet vernal	la	+
Arthropodium cirratum	rengarenga	+	m
Astelia banksii	astelia, AK 3181	m	a
*Avena barbata** (1951)	wild oat	la	m
*Bothriochloa macra** (1984)	red-leg grass	+	
*Briza minor** (1984)	shivery grass		m
*Bromus arenarius** (1994)	spring brome		+
*Bromus diandrus**	ripgut brome	la	la
*B. lithobius** (1993)	Chilean brome, AK 213544	l**	
*B. valdivianus** (1995)	AK 222910	l	
*B. willdenowii** (1984)	prairie grass	m	
Carex breviculmis	grassland sedge	m	
C. flagellifera	Glen Murray tussock, AK 213539	+	la
C. inversa	creeping lawn sedge	+	
C. pumila	sand sedge, AK 222145	l	
C. spinirostris		+	
C. testacea		la	
*Chlorophytum comosum** (1993)	spider plant, AK 213552	l**	
Collospermum hastatum	kahakaha		s(3)**
Cordyline australis	cabbage tree	+(2)	m
*Cortaderia selloana** (1985)	pampas grass		+
C. splendens	toetoe, AK 201018	+	m
Cyperus ustulatus	giant umbrella sedge	+	
*Dactylis glomerata** (1954)	coxsfoot	l**	M,K,A
Dianella nigra	blueberry	+	m
Dichelachne crinita	long-hair plume grass	m	m
*Digitaria sanguinalis** (1951)	summer grass, AK 209958	H & T	l**
Elymus multiflorus	blue wheat grass, AK 110601-3		LMC
Gahnia lacera	bamboo sedge	a	+
*Holcus lanatus** (1954)	Yorkshire fog		M,K,A
*Iris foetidissima** (1984)	stinking iris, AK 213550	la	
Isolepis nodosa	knobby sedge	la	la
Juncus gregiflorus or *J. usitatatus* ?			M,K,A
Lachnagrostis billardierei	sand wind grass, AK 110207-08	m	m
*Lolium perenne** (1984)	perennial ryegrass	+	+
Microtis unifolia	onion orchid, AK 3446	TFC	M,K,A
Morelotia affinis		+	
Oplismenus imbecillis	panic grass, AK 109927	c	m
*Parapholis incurva** (1932)	sickle grass, AK 99363		+
*Paspalum dilatatum** (1951)	paspalum, AK 213543	+	
*Phoenix canariensis** (1984)	Canary Island palm, AK 213548	lc	
Phormium tenax	New Zealand flax, AK 108869	a	m
Poa anceps subsp. *anceps*	AK 110451	m	m
*P. annua** (1984)	annual poa	+	+
Pterostylis alobula	greenhood	M&T	la
P. banksii	greenhood		+
Rhopalostylis sapida	nikau	+(1)	+(2)
*Rytidosperma racemosum** (1984)	danthonia	m	+**
R. unarede	danthonia	a	+
*Sporobolus africanus** (1950)	ratstail	a	la
Stipa stipoides	needle tussock	+	
Thelymitra longifolia	sun orchid	+	m
Uncinia uncinata	hook grass	m	+
*Vulpia bromoides** (1984)	vulpia hair grass	m	la
		45	39

Most of the exotics were planted by the Wainhouses (1940-57), this includes a variety of spring bulbs (including daffodils, jonquils, freesias) and a *Hibiscus*. They are all still present but they are not listed below. The native plantings were purchased from Oratia Native Plant Nursery.

* = exotic species (dates are given for the first known planting)

Alectryon excelsus (c.1984)	titoki	x1 (c.4 m tall)
Agathis australis (1983-85)	kauri	x3
*Alocasia brisbanensis** (pre 1940's)	elephant ear	m
*Cannabis sativa** (1993)	hemp	s(2) on Motuhoropapa
*Chlorophytum comosum** (1993)	spider plant	l
Cordyline australis (c.1994)	cabbage tree	x3
Corynocarpus laevigatus (c.1950)	karaka	x1
*Ficus carica** (c.1940)	fig	s
*Gomphocarpus fruticosus** (pre 1984)	swan plant	l
*Helianthus tuberosus** (1950)	Jerusalem artichoke, AK 213549	l
*Hydrangea macrophylla** (c.1950)	hydrangea	l (alive 1993, dead 1998)
*Iris foetidissima** (pre 1940's)	stinking iris	many
Knightia excelsus (1997)	rewarewa	x1
Mentha x *piperita** (pre 1984)	mint	l
Musa cultivar* (1930's, died out)	banana	+ (Cranwell 1981: 70)
*Nicotiana tabacum** (c.1945)	tobacco	l
*Passiflora edulis** (1997-98)	passionfruit	x1 (c.40 cm tall)
Pericallis x *hybrida** (c.1958)	cineraria	l
*Phoenix canariensis** (1940's)	Canary Island palm	c.9 (cut down)
Pouteria costata (c.1984)	tawapou	x1 (c.4 m)
Prumnopitys ferruginea (c.1984)	miro	x1
*Prunus persica** (early 1950's)	peach	x1
Rhopalostylis sapida (1984)	nikau	x1 (2 m tall, trunkless)
Sophora microphylla (1993-95)	kowhai	m (<1.5m tall)
*Tropaeolum majus** (pre 1984)	garden nasturtium	+
Vitex lucens (c.1984 & 1997)	puriri	x2
*Vitis vinifera** (c.1950)	grape	s

Dubious and excluded records, and less obvious synonymy

Adiantum diaphrum (as *A. affine*) M&T, M,K,A - but M&T didn't record *A. cunninghamii*, and M,K,A didn't record *A. hispidulum.*

Avena fatua H&T, Atkinson (1984) - most likely to be *A. barbata* because H&T and Atkinson (op. cit.) only recorded the single *Avena* species from The Noises group and *A. barbata* is the common wild *Avena* species in the Gulf. Also in April 1994 on Maria Island P.J. de Lange and I saw only *A. barbata.*

Bidens frondosa Atkinson (1984) - mistake for *B. pilosa*?

Bromus tectorum Atkinson (1984) - most likely one of the *Bromus* sp. recorded in the main list above.

Clematis hexasepala M,K,A - taxon uncertain, recorded with *C. paniculata* (as *C. indivisa*).

Euphorbia glauca IA - recorded in error for *E. peplus* (I.A.E. Atkinson pers. comm., 1998).

Lotus angustissimus Atkinson (1984) - most likely *L. suaveolens* because Atkinson only recorded the single *Lotus* species from The Noises group and *L. suaveolens* is the abundant wild *Lotus* species in the Gulf. Also in April 1994 on Maria Island P.J. de Lange and I only saw *L. suaveolens.*

Phormium cookianum (as *P. colensoi*) M&T - it is an addition from the 1948 Field Club trip - mistake for *P. tenax*?

Pittosporum umbellatum IA, M,K,A - unusual record for this far west in the Gulf; later Atkinson (1984) only records *P. crassifolium* x *P. umbellatum* (a hybrid I have never seen) and not *P. umbellatum.*

Pterostylis graminea & *P. puberula?* (as *P. nana*) M,K,A - unlikely species to be found on small islands, and *P. alobula* & *P. banksii* were not recorded by M,K,A.

Pterostylis trullifolia M&T - more likely to be *P. alobula,* the commonest *Pterostylis* species on the Gulf islands.

Rytidosperma pilosum (as *Danthonia pilosa*) H&T - possibly one of the more recently recorded *Rytidosperma* species because *R. pilosum* appears to be unrecorded from the inner Hauraki Gulf and H&T only recorded this single *Danthonia* species.

Rytidosperma sp. (as *Danthonia semiannularis*) M&T, M,K,A - because of taxonomic changes it is now unclear which *Rytidosperma* species this refers to.

Taraxacum officinale Atkinson (1984) - more likely *Leontodon taraxacoides* which is common on the Hauraki Gulf islands and was unrecorded by Atkinson. Also, dandelion (*T. officinale*) is uncommon in "natural" areas on the Gulf islands and as the name suggests the two species are rather similar in appearance. Neither species were seen by AK Bot Soc, but dandelion was seen by P.J. de Lange by the Otata bach (a typical modified habitat for it).

Notes on specific native species

Many native species characteristic of the more outer islands of the Hauraki Gulf are present on The Noises (I consider The Noises on the outer edge of the inner Gulf Islands). These species are usually absent from the inner Gulf islands. For example: ferns such as *Asplenium haurakiense, Lastreopsis velutina* and *Pteris comans*; dicots - coastal mahoe (*Melicytus novae-zelandiae*) (also present on Motuihe - P.J. de Lange pers. comm.), *Linum monogynum*, *Scleranthus biflorus*, tawapou (although it is frequent on Motutapu); and a monocot - *Elymus multiflorus.*

- Karo (*Pittosporum crassifolium*) - as noted by H&M (1951) on Otata karo reaches "extreme size," some at

least 30 cm (12") in diameter, and have very large fruit. One of the first things we noticed after the Otata landing was the large (unfortunately not measured) yellow fruit of the shoreline karo, reminiscence of *Pittosporum fairchildii* of the Three Kings Islands. This is not unique in the Hauraki Gulf as I have measured yellow fruit on Goat Island karo (by Leigh) up to 3 cm diameter (AK 228952). The largest-trunked karo we saw was behind the Otata bach measuring 40.0 cm diameter. These very large trees must be close to their ultimate size. On Motuhoropapa Atkinson (1960) referred to karo reaching a height of 9.1 m (30 ft).

- Kawakawa (*Macropiper excelsum* subsp. *excelsum*) - Baylis (in M&T 1950) referred to the big-leaved kawakawa on Otata. Gardner (1997) in his revision of *Macropiper* recognised a new subspecies (subsp. *peltatum*) on the outer islands (such as Three Kings, Poor Knights, Mokohinaus, Hen). For islands south of the Hen and Chickens Islands, such as The Noises, Gardner (op. cit.) recognised the kawakawa as intermediate between the outer island large glossy-leaved form (subsp. *peltatum*) and the smaller-duller mainland form (subsp. *excelsum*).
- Kohekohe (*Dysoxylum spectable*) - has never been planted on the island (B. Neureuter pers. comm.). Atkinson (1984) recorded it as abundant on Motuhoropapa and as a single tree on Otata. During the 1998 AK Bot Soc trip we saw a 4.5 m tall tree by the northern part of the ring track, a 4 m one behind the bach, and several seedlings. Because kohekohe is now considered dioecious (Braggins & Large 1996), at least two flowering plants would have been required before seed set occurred on the island. Presumably NZ pigeon(s) occasionally visit the group and disperse large seeds such as kohekohe. With at least one fruiting tree present on the island, kohekohe should now rapidly increase on Otata because it is one of the main canopy species on most Hauraki Gulf islands.
- Mawhai (*Sicyos australis*) - is a nationally threatened species ranked as "Local" by Cameron et al. (1995). T.F. Cheeseman collected mawhai on Otata (he spelt Otatau) in November 1883 and it now appears to be extinct in the inner Hauraki Gulf. Cameron (1992) discusses the retreat of mawhai from the southern part of its range and from inshore islands. Its decline maybe related to its susceptibility to Cucumber Mosaic Virus (A.D. Thomson pers. comm.). Therefore the cultivation of cucurbit species near mawhai may have caused its decline.
- Nikau (*Rhopalostylis sapida*) - there are two known plants on Otata - one planted near the bach (2 m, trunkless) and a natural one further to the north (B. Neureuter pers. comm.). Also there are two wild plants on Motuhoropapa (Atkinson 1984).
- *Senecio scaberulus* - listed nationally as "Vulnerable" by Cameron et al. (1995). There is a single 1994 collection from Motuhoropapa (*de Lange*, AK 224328) and Atkinson (1984) recorded it as present on Scott Islet (between Motuhoropapa and Otata). Earlier records of this taxon may refer to *S. hispidulus*.
- Tawapou (*Pouteria costata*) - it is common on Motuhoropapa and there is a single planted specimen (c.4 m tall) on Otata. When seedlings appear on Otata their origin will be difficult to determine.

Weeds

Of the 82 naturalised plant species recorded on Motuhoropapa and Otata Islands there are only 8 species which I currently consider are a serious threat to the long term ecology of the islands. Every effort should be made to eradicate these environmental weeds before they become more widespread in the group. The other 74 naturalised species are all herbaceous (except the single wild peach record) and do not form dense patches which would inhibit native regeneration. The eight weeds are:

- Canary Island palm (*Phoenix canariensis*) - some nine palms were on the shell tombolo by the Otata bach. They were planted c.1940's and were cut down c.1981-82 because they were naturalising. Today seedlings are still frequent up to c.100 m from the bach, but none have leaves longer than 80 cm. The seed, with a fleshy covering, is probably dispersed by blackbirds (B.P. Neureuter pers. comm.) and NZ pigeons (when/if present)? Cunningham and Moors (1985) did not report NZ pigeons from The Noises, nor have the Neureuters seen pigeons on Otata, but as the vegetation continues to mature it should become more attractive for pigeons to visit .
- Gorse (*Ulex europaeus*) – only known as a single large plant on the north side of Otata (c. 1983) which seeded well (B.P. Neureuter pers. comm.). It was removed by the Neureuters, and seedlings were pulled out for many years. It is now thought to be eradicated. Although gorse would be shaded out on most sites by dense regeneration, it was good to eradicate it because it would have become a permanent feature of the open coastal cliffs.
- Mexican devil (*Ageratina adenophora*) - is only known from Otata Island. It is likely to become more common and spread to the other larger islands of the group. It has windblown seed.
- Moth plant (*Araujia sericifera*) - first found by AK Bot Soc in 1993 near the bach on Otata and was uprooted. Some six more vines were seen behind the bach during the 1998 trip (non fertile); these were

also uprooted. This species has the potential to spread quickly over Otata and to reach the other islands of the group. It has windblown seed.

- Olive (*Olea europaea*) - Atkinson (1984) records it as present and uprooted for Motuhoropapa. It is unknown elsewhere in the group but does occur on the adjacent Rakino Island (pers. ob.). Presumably the seed with a fleshy covering is spread by frugivorous birds of a reasonable size.
- Pampas grass (*Cortaderia selloana*) - discovered on Motuhoropapa in 1985 by Atkinson (1985), and a single plant was also found by him a little earlier, on Maria Island. Pampas has the ability to spread and establish quickly in open areas, including coastal cliffs. It has windblown seed.
- Rhamnus (*Rhamnus alaternus*) - Atkinson (1984) records many plants of rhamnus on Motuhoropapa which were removed. AK Bot Soc saw at least ten plants on the same island in 1993 which were uprooted (the smaller ones), or ring-barked (the larger ones - but they probably resprouted from the base). A single plant was also uprooted on Orarapa Island in 1994 (*de Lange,* AK 224299). See Cameron (1994) and Fromont (1997) for the distribution of rhamnus in the Hauraki Gulf. Fromont (op. cit.) found that on the inner Hauraki Gulf islands the seeds, contained in a small fleshy fruit, are distributed by frugivorous birds: blackbirds, thrushes, starlings, silvereyes and mynas. All these birds are known to occur on Motuhoropapa and Otata (Cunningham & Moors 1985).
- Stinking iris (*Iris foetidissima*) - a garden escape from localised plantings on Otata. It was locally present when Brian Neureuter (pers. comm.) first visited this island in 1946. It is now widespread on the island, especially by the forested ring track. Presumably the seeds with a fleshy orange-red covering are spread by frugivorous birds. If not eradicated this species has the ability to form a dense, shade-tolerant ground cover.

There are other environmental weeds known to occur on The Noises, but are currently unrecorded for Motuhoropapa or Otata:

- Boxthorn (*Lycium ferocissimum*) - is known on five of the other seven islands in the group (Atkinson 1984). It has fleshy fruit, seeds bird dispersed.
- Brush wattle (*Paraserianthes lophantha*) - also recorded by Atkinson (op. cit.) on five of the other seven islands. Some brush wattle seeds float and may be dispersed by petrels or shearwaters picking up and swallowing floating seed, later excreting it on land (see Tennyson 1995: 23).
- Everlasting pea (*Lathyrus latifolius*) - only known from Maria (Atkinson 1984). Dispersal unknown? Seeds float in seawater?
- Mile-a-minute (*Dipogon lignosus*) - only known on Maria where it is abundant (Atkinson 1984). Dispersal unknown? Seeds do not float in seawater (pers. ob.).
- Woolly nightshade (*Solanum mauritianum*) - Only known from one plant on Maria, which was removed (Atkinson 1984). It has fleshy fruit, seeds bird dispersed.

Threats to the biota

- Weeds - these arrive from two sources: island hopping (assisted by wind, birds, sea) or garden plantings around the Otata bach. Also the illegal planting of hemp (*Cannabis sativa*) is a threat because of the introduction of unsterilised soil which may contain weed seeds (see de Lange et al. 1995). At least eight established naturalised species require immediate control or monitoring (see above), there are at least another five serious weed species on the other Noises Islands and an unknown number on adjacent Rakino Island that also require control/eradication.
- Native plantings - these are listed above (see under "Plantings in the vicinity of the Otata bach"), and have been restricted to the valley by the Otata bach. Wright and Cameron (1990) point out the negative effects of planting inappropriate native species on offshore islands. Many native species differ from area to area (e.g. see kawakawa above under "Notes on specific native species") and if plants are brought in from outside, this local distinctiveness could be changed or lost. Natural regeneration on the two main Noises is thriving and at an advanced stage. There is no need to "assist" it. The scientific value of the vegetation will be compromised by these native introductions. If planting is thought to be required then transplanting existing wild seedlings on The Noises would be more natural. A record of any introductions would be useful.
- Exotic animals - Norway rats and stoats are the only known mammals presumed to have island hopped to reach The Noises. Currently the group is considered free of exotic mammals (I. McFadden pers. comm.) but new introductions, or re-invasions, via the Rakino-Motutapu-Rangitoto "chain" are a constant threat.

Discussion

The regeneration of Motuhoropapa and part of Otata is now over 100 years old and the most extensive shrubby vegetation remains on the drought-prone northern cliffs of Otata which were burnt in the late 1920's. Excluding Rangitoto Island which is a unique case, The Noises contain the best indigenous cover of all the inner Gulf islands. With their total indigenous cover, special flora and fauna values, low weed problems and lack of exotic mammals, The Noises have outstanding conservation values. Their private ownership has limited the amount of human modification. The present owners are very supportive of conservation and have allowed rat eradication projects to take place. However, to maintain this high status frequent monitoring for new pest arrivals should be carried out, some established weeds require eradicating as soon as possible and the planting of unprovenanced natives should cease. The Noises have the potential to be one of the best sources for future regeneration projects occurring in the inner Gulf. The long term protection of the group would greatly benefit from pest management on the adjacent island, Rakino. Keeping The Noises rat free has to date been carried out by a few dedicated individuals and there is no process in place to keep these important islands rat free. There is a challenge here for public agencies to set in place a process to protect one of the gems of the Hauraki Gulf from new pests (plants & animals) establishing on The Noises.

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