Bot Soc trip to the Moturekareka group, Hauraki Gulf

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At 8.15 am on 13 March 1999, 42 Auckland Bot Socers (33 adults, 8 children and a baby) departed from Sandspit on the *Kawau Kat* for the Moturekareka group of islands (see Fig. 1). It was the type of morning I had hoped for, clear sky and no wind. Penguins stood out on the calm sea and several rafts of fluttering shearwaters were surface feeding off Mullet Point. After eight trips ferrying people we were all ashore on the north side of Motutara by 9.30 am. It was our dinghy and two took it fishing while the rest botanised. To utilise the low tide at 10.30 am we headed first for Kohatutara, the rocky stacks to the south.

Three connected islands make up the group: Moturekareka is the largest (19 ha) and is joined to Motutara (4.5 ha) at all except high tide and Kohatutara (1.1 ha) is joined only around low tide (Fig. 1). All three are Crown owned and managed by the Department of Conservation (DoC) . The two larger islands are covered with regenerating native scrub/forest and tall emergent pine trees (*Pinus radiata*). The rocky islets (Kohatutara) support scattered patches of low windswept vegetation. The only introduced mammals are mice. See Tennyson et al. (1997) for an account of the flora, fauna and history of the Moturekareka group.

Kohatutara

Low shrubs of taupata (*Coprosma repens*) were common on the rocky isles of Kohatutara, contrasting their scarcity on most of Auckland's mainland coast. But South African shrub bone-seed (*Chrysanthemoides monolifera)* was depressingly common on most coastal slopes of the whole group. The herbaceous species were particularly lush, no doubt the result of their frequent lashings of bird fertiliser. In the right season this is a good island for nesting sea birds (gulls and terns), but we only saw old nests of red billed gulls (a couple with a cold egg still present), a welcome swallow nest in a small recess in the rock with one cold egg, and watched as a blue penguin attempted to come ashore. The brownish, red alga *Apophlaea sinclairii* was common on the inter-tidal rocks as flattened sheets (tar-like) tightly attached to the rocks with small erect, knobby branches.

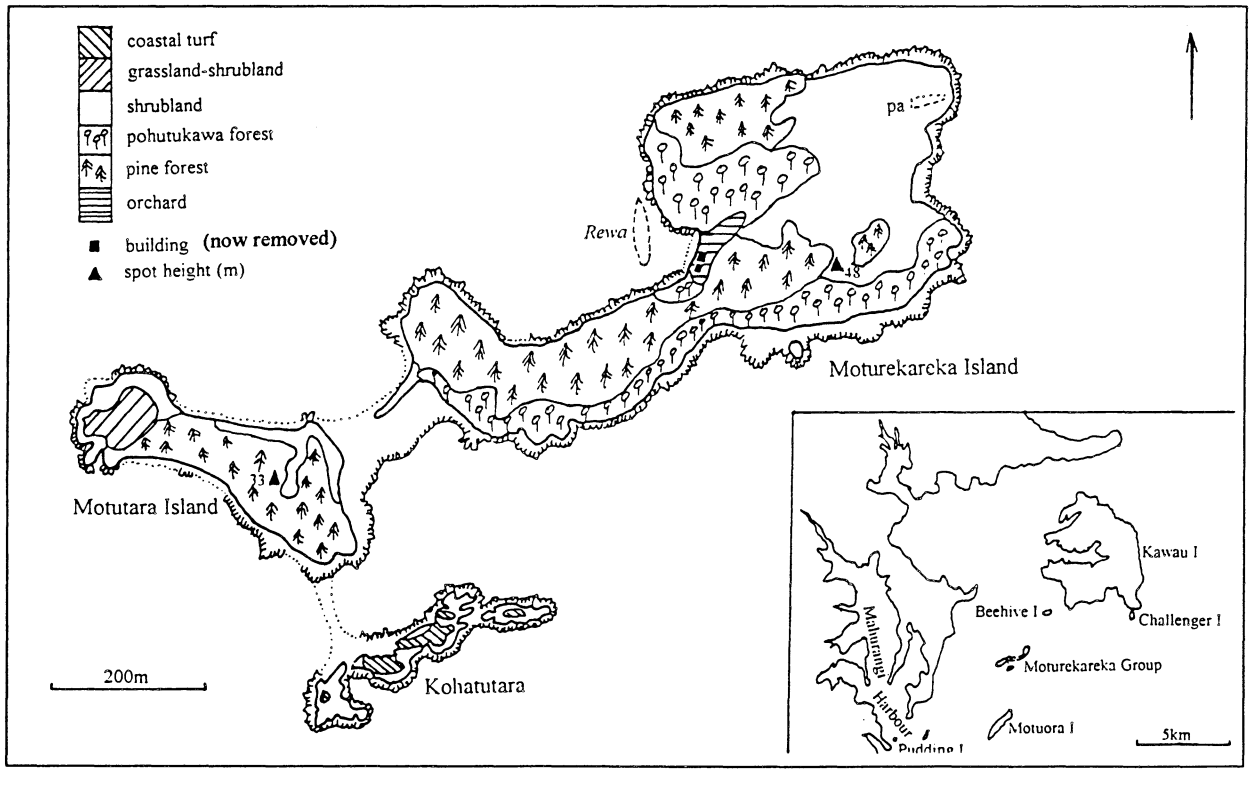

Fig.1. Place names and location of Moturekareka, Motutara and Kohatutara Islands in the Hauraki Gulf, and vegetation zones of the three islands (fig. 1 of Tennyson et al. 1997).

Motutara

With the tide on the turn we headed back to complete our circumnavigation of Motutara. Small bright green "balloons" up to 30 mm tall of an alga were admired on Motutara's southern inter-tidal rocks. A specimen (AK 237479) was sent to Wendy Nelson who identified it as a blue-green alga (*Rivularia* or *Nostoc*) which fills up with gas during the day. Along the drift line there was much discussion about the identity of the large numbers of faded-brown tube (hollow) sections (100-150 mm long x 12-13 mm diameter) washed up with which no one was familiar. I escaped too many questions by saying that they must be animal. Later back at the Museum Wilma Blom identified them as pieces of the "home" of a large marine worm (*Chaetopteris*) which lives immediately sub-tidally (see Fig. 2). In New Zealand they appear to live attached to rubble and not buried in soft sediment (W. Blom pers. comm.).

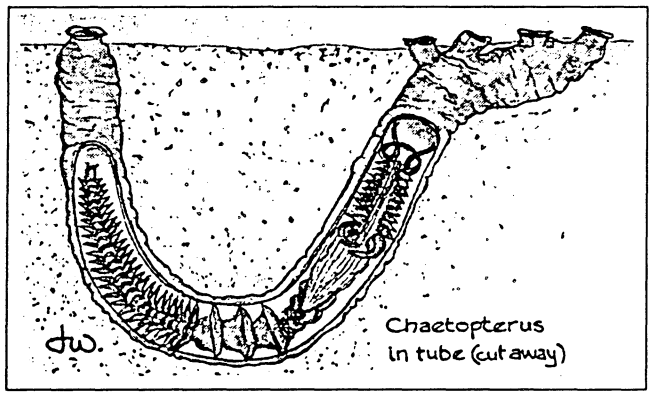

Fig.2. Marine worm (*Chaetopterus*) by John Walsby (reproduced with permission).

Karo (*Pittosporum crassifolium*) fringed the beach / forest margin of Motutara. Many of these small trees had ripe yellow fruit up to 30 mm long x 32 mm diameter (AK 237220). We saw similar-sized yellow fruit during the Bot Soc trip to The Noises in March 1998 (Cameron 1998: 33) and I have also collected similar fruit up to 30 mm diameter on Goat Island near Leigh (AK 228952). As noted by Cameron (1998) these large yellow fruit are reminiscent of the fruit of the Three Kings karo (*Pittosporum fairchildii*). Coastal mahoe (*Melicytus novae-zelandiae*) dripping in green fruit and wharangi (*Melicope ternata*) with hanging black seeds were also admired. The old quarry site at the west end of the island was closely investigated which resulted in both species of *Cheilanthes* being found growing together in two places. Much of the bone-seed recorded here and elsewhere by Tennyson et al. (1997) had recently died (wonderful to see!). Either the result of salt damage from the high number of easterly storms this summer or the result of such a hot dry January (or the combination of both events)? Lunch was enjoyed in the sun on the north side of Motutara where most took the opportunity for a swim in the warm clear water.

Moturekareka

After lunch we headed for Moturekareka, unfortunately the weather rapidly changed to overcast with light warm rain which continued until we assembled to leave the island at 3 pm. We went up the ridge track on Moturekareka amongst the regenerating bush and mature pine trees. We proceeded on to the bach sites by the wreck of the *Rewa.* (This steel four-masted barque was purposely run ashore in the bay as a breakwater in July 1930.) The best bach was removed to Motutapu in June 1997 (now the DoC Field Centre Administration Office), the other building was gifted to Camp Bentzon (a school camp) and moved to North Cove on Kawau Island in August 1997 where it is now a store room. The small generator shed built by DoC in about 1995 was dismantled at the same time and later disposed of. A search around this area added several new weeds and cultivated species to the plant list. Most of us then proceeded behind this area to the eastern end of the island. After a scramble down a coastal slope to the storm platform we managed to return to the bach site (anti-clockwise direction) with dry feet. We regrouped on the north-west point of Moturekareka and were soon all aboard a different *Kawau Kat* heading for Kawau Island and then back to the Sandspit. There were more rafts of fluttering shearwaters as we neared the channel leading up to the Sandspit.

Flora

Seventeen species were added to the recorded flora for the group, mainly from Moturekareka (see Table 1 below), five species were added to individual island totals (Moturekaeka & Motutara), and 12 species are further commented on.

Table 1. Updated vascular flora totals of Moturekareka (MR), Motutara (MT), Kohatutara (K) Islands and their combined flora (2 native hybrids and the freak mahoe are excluded)*

Plant group	MR	MT	K	Totals
Native ferns	21	11	1	23
Native dicots	46	31	13	50
Native monocots	25	19	5	29
Adventive conifers	1	2	-	2
Adventive and planted dicots	51	38	6	67
Adventive and planted monocots	26	18	5	33
TOTALS (previous totals)	**170** (154)	**119** (114)	**30** (30)	**204** (187)
% native	54	52	63	50

*Note - 13 planted (P) species which lack any sign of naturalising are included above (8 dicots, 5 monocots).

Key Abundance ratings:
a = abundant
c = common
o = occasional
l = local
s = scarce (< 5 plants seen)

Other abbreviations used:
AK = voucher number, Auckland Museum herbarium
P = planted (all by bach site on Moturekareka)
* = exotic species

New records for the group

Ferns
Cheilanthes sieberi l Motutara (quarry site) (AK 237552)
Dicksonia squarrosa x1 Moturekareka (c. 2 m tall, bach site)

Dicots
*Cakile edendula** x1 Motutara (back of shingle beach, north side)
Coprosma repens x ? *C. macrocarpa* x1 Motutara (low plant, back of shingle beach, south side. Similar to *C. repens* but leaves more dull) (AK 237218)
Dichondra aff. *repens* o Kohatutara (in spray zone, leaves shiny; replaces *D. repens* s.str. record for this island) (AK 237556)
Einadia triandra o Moturekareka (northern side, eastern end; splash zone, fleshy red fruit present)
Gonocarpus incanus x1 Moturekareka (light bush, north of bach site near top of plateau)
*Helminthotheca echioides** l Moturekareka (bach site)
Melicytus ? *ramiflorus* freak x1 Moturekareka (c. 1.5 m tall in light bush, north of bach site near top of plateau, all leaves quite narrow: 93 x 18 mm blade only) (AK 237553)
*Modiola caroliniana** l Moturekareka (bach site area)
Nestegis lanceolata x1 Moturekareka (c. 0.4 m tall in light bush, north of bach site near top of plateau)
*Plantago major** l Moturekareka (bach site area) (AK 237550)
*Polygonum arenastrum** l Moturekareka (bach site area)
*Rosmarinus officinalis** P Moturekareka (x1, bach site)
*Vinis vinifera** l Moturekareka (large spreading vine behind bach site, originally planted)

Monocots
*Cyperus eragrotis** l Moturekareka (bach site area) (AK 237221)
Hemerocallis ? *fulva** P Moturekareka (x1 clump, sterile, bach site)
Kniphofia ? *uvaria** P Moturekareka (x1 clump, sterile, bach site)
Paspalum ? *distichum** l Motutara (single sterile patch, south side island, back of gravel beach, seepage area?)
*P. vaginatum** l Moturekareka (rocky cliff north side, splash zone)

Mosses (not previously recorded; very much under recorded here)
*Fissidens taxifolius** l Moturekareka (behind bach site on old concrete generator base) (AK 237057)
Ptychomnion aciculare o Motutara (regenerating forest)
Thuidium furfurosum lc Motutara (regenerating forest)

Lichens and marine algae (were recorded separately by Doug Rogan (see Rogan 1999))

New records for individual islands in the group

Ferns

Polystichum richardii s Motutara (south side by coast)

Dicots

Oxalis rubens l Moturekareka (coastal slope, north side)

Solanum americanum s Moturekareka (regenerating bush)

Monocots

*Poa annua** s Moturekareka

Rytidosperma ? *unarede* o Motutara (quarry site)

Changes in abundance or confirming previous doubtful records

Ferns

Asplenium flaccidum x1 Moturekareka (confirmed) (x1 plant, on log in light bush, north of bach site near top of plateau)

Cheilanthes distans l Motutara growing with *C. sieberi* (quarry site) (AK 237552)

Dicots

*Citrus paradisi** not seen by bach site (removed/died?)

Entelea arborescens l Moturekareka (several, north bush margin by bach site)

*Ficus carica** not seen by bach site (removed/died?)

*Orobanche minor** lc Motutara (quarry site)

*Osteospermum fruiticosum** not seen by bach site removed/died?)

*Prunus persica** not seen by bach site (removed/died?)

*Rumex crispus** o Moturekareka, l Motutara (quarry site)

*Tropaeolum majus** not seen by bach site (removed/died?)

Monocots

*Agapanthus praecox** P Moturekareka (confirmed) (bach site, patch c. 4 x 2 m)

*Trachycarpus fortunei** P Moturekareka (bach site; x2 c. 4 m tall, x1 c. 1.5 m tall)

Fauna - additional notes

Invertebrates

Centipede (*Cormocephalus rubriceps*) - 200 mm long specimen, Moturekaeka in June 1997 (D. Holland pers. comm., 1997).

Lizards

Two skinks basking on Motutara quarry site, not identified: ?copper skinks.

Birds

Grey-faced petrel - 2 dead, drift line: x1 Motutara, x1 Kohatutara. Few burrows seen on Moturekareka, not occupied yet.

Blue penguin - 4 dead, drift line: x1 each Moturekaeka & Motutara, x2 Kohatutara. Many live birds swimming just offshore.

Pied shags - several flying and sitting around the coast of the whole group.

Variable Oystercatcher - on the tombolo connecting Moturekareka and Motutara there was a group of 4 (1 was a juvenile).

Black-backed gull - occasional adults and fewer juveniles around coast of whole group.

Red-billed gull - similar to black-backed gull but fewer birds.

Morepork - Moturekareka, forest near bach site, x2 seen, same bird?

Welcome swallow - abandoned nest Kohatutara, otherwise occasional around the coast of the whole group.

Grey warbler - x1 Kohatutara; common Moturekareka & Motutara.

Fantail - occasional Moturekareka & Motutara.

Tui - heard Moturekareka.

Mammals

It is assumed mice are still present, but not seen.

Discussion

Environmental weeds and ornamental plantings

The points about weed management raised by Tennyson et al. (1997) are unfortunately all still relevant because little weed management has been carried out on this group over the last two years. D. Holland (pers. comm.) informed me that he ring-barked one of the planted loquats (*Eriobotrya japonica*) (by bach site) and uprooted lots of loquats and brush wattle (*Paraserianthes lophantha*) seedlings in June 1997. Bot Socers did the same in March 1999. With a better look around the bach site (and both baches now removed) more garden

a number of lichen species (e.g. *Collema* sp. and *Leptogium azureum*) not previously seen elsewhere.

Algae – Motutara (MT), Moturekareka (MR) & Kohatutara (K)

Apophlaea sinclairii	MR, MT, K	*Corallina officinalis*	MR, MT, K
Bachelotia antillarum	MR, MT, K	*Cystophora torulosa*	MR, MT, K
Bryopsis plumosa	MR, MT, K	*Enteromorpha intestinalis*	MR, MT, K
Carpophyllum flexuosum	MR, MT, K	*Hormosira banksii*	MR, MT, K
Carpophyllum maschalocarpum	MR, MT, K	*Notheia anomala* (on *Hormosira banksii*)	MR, MT, K
Carpophyllum plumosum	MR, MT, K	*Rivularia* sp.	MT, AK 237479
Codium fragile	MT	*Sargassum sinclairii*	MR, MT, K
Colpomenia sinuosa	MR, MT, K	*Xiphohpora chondrophylla*	MR, MT, K

Lichens

Brigantiaea chrysosticta	MT	*Placopsis* sp.	MT, K
Caloplaca sp.	MT	*Pseudocyphellaria* cf. *ardesiaca*	MT, AK 237060
Chrysothrix candelaris	MR, MT	*Pseudocyphellaria aurata*	MT, AK 237065
Cladia aggregata	MR, MT	*Ramalina australiensis*	MT
Cladonia sp.	MR, MT	*Ramalina celastri* s.str.	MR, MT, K
Collema sp.	MR	*Rhizocarpon grande*	MT, K
Dirinaria applanata	MT, K	*Rimelea cetrata*	MR, MT, K
Graphis sp.	MR, MT	*Rimelea reticulata*	MR, MT, K
Heterodermia speciosa	MT, K	*Stereocaulon corticulatum*	MT, AK 237062
Lecanora sp.	MT	*Stereocaulon ramulosum*	MT, K
Lepraria incana	MR, AK 237058	*Trapelia coarctata*	MT, K, AK 237064
Leptogium azureum	MR	*Trentepohlia**	MR
Megalospora campylospora	MT	*Usnea* – 3 spp.	MR, MT
Parmotrema cristiferum	MR, MT, K	*Xanthoparmelia australasica*	MT, AK 237063
Pertusaria psorodes	MR, MT	*Xanthoria ligulata*	MR, MT, K
Phyllopsora sp.	MR	Indet. crust (Acarosproaceae)	MR, AK 237059

* actually a free-living alga.

Acknowledgement
I would like to thank Wendy Nelson for very promptly identifying the "emerald balls".

References
Cameron, E.K. 1999: Bot Soc trip to the Moturekareka group, Hauraki Gulf. *Auckland Botanical Society Journal* 54(1): 8-12
Tennyson, A.J.D., Cameron, E.K. & Taylor, G.A. 1997: Fauna, flora and history of Moturekareka, Motutara and Kohatutara Islands, Hauraki Gulf. *Tane 36:* 27-56.

Kikuyu grass – a further note

An addition to Alan Esler's useful paper in the *Auckland Botanical Society 53(2):* 62-64 (1999)

Colin Little

Kikuyu grass is astonishingly aggressive, a characteristic which was almost alarmingly evident in the days not long after its introduction. An example, in the early 1950s, was an old wooden telegraph pole in the Auckland Domain which was hollowed by rot. Kikuyu grass had grown up inside it right to the top of the pole where it proliferated in a spectacular green bunch.

About the same time, near Whangarei and elsewhere, the grass had conspicuously grown in waves over road-side fences. There was no herbicide that could control it. The standard grass herbicides, dalapon and TCA were relatively ineffective. Sodium chlorate gave only a temporary burn.

However if there were fairly severe ground frosts the above-ground parts of kikuyu were killed. Pastures in the north could often be seen in winter to have brown patches indicating where kikuyu had been. Winter vulnerability reduced the grass's popularity with farmers. This indicates that when a warmer climate develops the range of kikuyu can be expected to spread farther south than at present, making it an even more serious weed. One that if left unchecked can overwhelm crops, even orchard trees.