

Thomas Cheeseman's botanical 'great day out' on Great Island

Thomas Cheeseman visited Great Island in the Three Kings group just before the introduction of goats in 1889. An enthusiastic botanist, and then curator of the Auckland Museum, he foresaw the potential of these islands, in their far northern location, as a biological 'treasure trove'.

Cheeseman describes the Government ship *Stella* steaming slowly alongside black, rugged, perpendicular cliffs, with surf dashing far up the rock and breaking with a deep hollow roar into huge caves. Unperturbed, he landed on a rough bouldery beach which was encumbered with masses of fallen rock.

His excitement can be imagined as he found one new species after another in the deep gullies of Great Island. There was a fern of the genus *Davallia* known, till then, only from Australia; also a new species of *Coprosma* much like *karamu* but with giant leaves and berries.

A highlight of Cheeseman's trip must have been what he described as the 'extraordinary and inexplicable' occurrence of a *Paratrophis* the form of which he recognised from Fiji, Tahiti and the Philippines: it is now described as a distinct New Zealand species of milkwood and named *Streblus smithii*. His naming of the new *Pittosporum fairchildi* was the botanist's tribute to Captain Fairchild, the ship's captain who had set him ashore that day.

In all, Cheeseman put together a list of 82 plants during a three-hour visit. Among them he encountered and recorded many of the 14 or so plants now recognised as peculiar to the Islands.

Sadly, by the time the goats were removed in 1946, many of the plants he recorded were no longer present, and others were restricted to the few places the goats could not reach.



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of shared ancestry, shifting in pockets of time and space over millions of years.

During the last global ice age, sea levels were 110 metres lower than today. While a land bridge then formed between the North and South islands, the Three Kings remained isolated in the far north of New Zealand. Though the seaweed flora resembles that of eastern Northland, the absence of a land bridge during the glaciation, and of prevailing New Zealand winds, had a huge influence on the flora and fauna of the islands. Today the Three Kings biota, and especially the marine flora, are a biogeographer's dream come true. With unusual combinations, surprising absences, and a fascinating array of species found nowhere else, this flora is a convincing legacy of past relationships and ever changing environmental influences.

A comparison of the Three Kings with another Northland group, the Poor Knights Islands, reveals quite different patterns of seaweed distribution and relationships. Though also without a land bridge during the last ice age, the Poor Knights are close to eastern Northland. There has been constant opportunity for species to be exchanged with the mainland via winds, currents and visits by land and seabirds, and there are no seaweeds peculiar to these islands at all.

Another comparison, is with the oceanic Kermadec Islands, some several hundred kilometres north of the Three Kings though still within New Zealand territory. As they are the tips of new volcanoes, the Kermadec Islands have a biota of very recent origin. Their flora and fauna have arrived by way of sea and wind, and the seaweeds show strong relationships to the tropical Pacific rather than to mainland New Zealand. As with the Poor Knights there are no endemic seaweeds present.

There are more unique algae at the Three Kings Islands than in any other single

Princes Islands, Three Kings group.

region of New Zealand's waters and yet, unlike the Kermadec and Poor Knights Islands, the Three Kings Islands do not have marine reserve status. Their particular mix of cold water and warm water, with Australian, northern New Zealand and endemic flora means that the Three Kings harbour a very special part of our natural world.

The special mix of cold and warm currents helps account for the presence of several species often also found in coastal waters about Wellington. Long thongs of the bull kelp, *Durvillaea*, encircle rocks of the island's exposed cliffs. The presence of such large quantities of *Durvillaea* at these warm northern islands is at first surprising, for it is typically a southern seaweed but its occurrence here corresponds with colder upwelling water around the group.

Yet other common New Zealand brown algae are absent from the Three Kings Absentees, such as Neptune's necklace *Hormosira banksii*, may have something to do with the limiting habitat — this is a rocky, 'high-energy' shore which restricts the range of marine communities — and there are no sheltered beaches or protected shorelines.

As well as the recently discovered *Landsburgia*, there are other unique brown algae on these islands. The endemic sargassum species, *Sargassum johnsonii*, forms dense forests extending from the upper subtidal zone to around 40 metres depth. Each individual sargassum may be over 2 metres in length and amongst these branches and leaf-like blades are many smaller algae — perched species growing as crusts, tufts and creepers. Just as all sorts of epiphytes (mosses, filmy ferns and climbers) grow on the forest trees, the sea forests have their layers of seaweeds of different sizes and forms. Divers who have looked closely at the Three Kings sargassum forests suspect there are actually two

At left: Great King Island.

