

Checking the details of some of these records (what a great online resource!) indicated that naturalisation in Queensland is recent (see Table 1).

Barleria repens Nees (1847) is a perennial herb, slightly woody when old, with creeping, climbing stems; native to tropical east Africa along the coast from Zanzibar to South Africa; there are c.300 species in the genus, native to the tropics and subtropics largely in Africa and Asia, and most species are frost-sensitive (Cullen et al. 2000). There

is a wonderful coloured illustration of it in Curtis's Botanical Magazine (Hooker 1887) (Fig. 2). Although some species of the genus are present in New Zealand I found no evidence that *Barleria repens* is cultivated here. It's possibly too tropical to ever be a troublesome weed in New Zealand.

Acknowledgement

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References

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Rangitoto Wilding Pines Update

Steve Benham

Reading past accounts of Rangitoto written by eminent botanists of their time, such as Dr. L.H. Millener who spent more than 30 years studying and enthusing his students about the botany of this unique island, there appears to have been an on-going history of grave concerns regarding threats from introduced fauna and flora to the island.

The all too well known risk of fire to the island's unique ecosystems is as valid today as it was then in 1956 when Laurie Millener on behalf of the Auckland Botanical Society (ABS) wrote to the Minister of Lands, E.B. Corbett, stating that introduced animals, plants and acts of vandalism all contributed to the potential demise of Rangitoto's plant life (Anon., 1957; Godley & Thomson, 2000; Godley, 2009).

Fifty-seven years later we are now celebrating the monumental achievement of finally declaring both Rangitoto and the contiguous island of Motutapu mammalian pest-free. Together they amount to 3,883 ha of mammalian pest-free land within easy reach of New Zealand's largest metropolis.

Rangitoto eradications have a long history going back to the 1880s beginning with goats, then possums and rock wallabies in the 1990s and finally in July 2009 with feral cats, hedgehogs, mice, rabbits, rats and stoats. Being vigilant with intensive surveillance and monitoring from now until eternity will hopefully help to maintain the mammalian pest-free status of these islands, allowing for further natural new arrivals, and native animals and plants

functioning without introduced mammalian browsing and predation.

Since the pest-free declaration, saddlebacks and whiteheads have been released successfully on Rangitoto, and little brown kiwi, takahe, saddleback and whiteheads on Motutapu. Natural arrivals now resident on Motutapu include bellbird and kakariki. Pateke, commonly known as brown teal, have occasionally been recorded on Motutapu. There are plans to translocate pateke to Motutapu once wetland restoration is more advanced.

Reptiles on Rangitoto are represented by the native copper skink (*Cyclodina aenea*) and Suter's skink (*Oligosoma striatum*), the latter now occurring in larger numbers since the mammalian pest eradication. The introduced rainbow skink (*Lampropholis delicata*) is abundant. On Motutapu, Moko skink (*Oligosoma moco*), copper skink (*Cyclodina aenea*), Suter's skink (*Oligosoma striatum*) and the common gecko (*Hoplodactylus maculatus*) all occur in larger numbers than the introduced rainbow skink.

Among the introduced plants, Laurie Millener recognised pines as a 'real danger'. In 1948-49 he galvanised members of the ABS and an engineer from the Devonport Borough Council into action and between them they destroyed over 1000 trees, ranging from seedlings to mature trees up to 1 m in diameter and >16 m in height. Millener reported that thousands of pines still remained to be controlled.

Dr Eric Godley, a Devonport resident in the early 1900s who had a very close botanical affinity with Rangitoto agreed to prepare a report on the number of pines on the island in 1948 (Godley and Thomson, 2000; Godley, 2009). Together with a few Society members he managed to plot the locations of wilding pines. This report was sent to the Rangitoto Domain Board. Further trips in 1953 and 1954 were organised to record and cull these coniferous thugs.

Both radiata pine (*Pinus radiata*) and maritime pine (*P. pinaster*) occur on the island and probably arrived as early as 1900 (Wilcox, 2007). Despite these early efforts of wilding pine control, mostly radiata continued to dominate the skyline of Rangitoto until intensive control was instigated in the 1980s when the Department of Conservation (DoC) took over administration in 1987.

Since 2005 regular aerial surveillance for pines has been part of the annual weed management plan. Helicopters, with global positioning satellite (GPS) and digital photography technology to grid-search, locate and photograph individual and clusters of wilding pines, are an integral part of our weed eradication programme (Fig.1). The other part of the annual operation which is the most challenging is the actual culling operation which involves sending in trained contract staff armed with GPS technology and chainsaws. Ideally, in best practices it is obviously advantageous to cull the pines before coning but on Rangitoto conditions are so harsh that even 1 m high trees can produce cones. Infestations of pines often appear in clusters and in areas where historically large trees were recorded.

Being of recent volcanic origin, the rough, clinkery lava and the predominantly slab flow lava in the South eastern sector of Rangitoto (Wilcox, 2007) must rank it as one of the most hazardous terrains in the Auckland region for our weed contractors.

For the past 7 years as DoC's Biodiversity Ranger – Flora, with part of my portfolio being responsibility for managing weed issues, I have overseen the removal of 2,196 wilding pines from Rangitoto. With the habitual budget restraints and other urgent

Rangitoto weed control to be undertaken, notably evergreen buckthorn (*Rhamnus alaternus*), only the southern sector south of the Summit Road has had pine surveillance and control during this period.

For 2014 the NE sector is scheduled for wilding pine surveillance using the latest and more efficient technology. Un-manned Aerial Vehicles (UAVs), commonly known as Drones, will be trialled for recording individual and clusters of pines.

Perhaps sometime in the future, weed control technology will be available to remotely and safely control specific weed species such as wilding pines growing in amongst and through Rangitoto's native forest canopy.

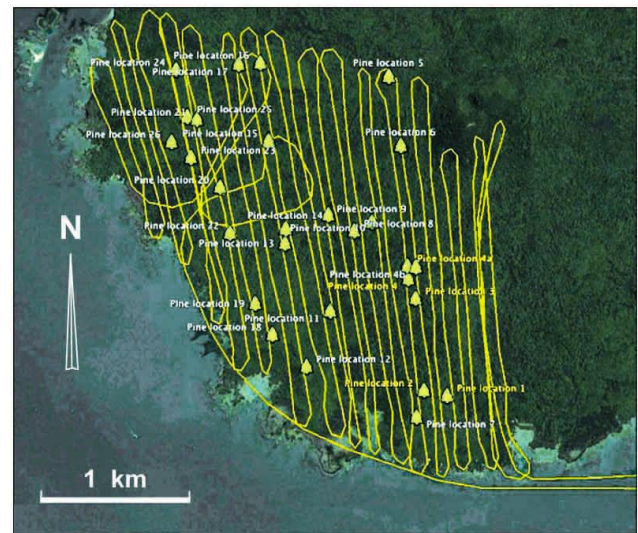


Fig. 1. Rangitoto: SW sector showing grid-lines from aerial wilding pine survey, March 2013.

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