

country, and in particular noted the length of time before flowering, and the length of time spent in a divaricating juvenile form, if at all.

In 1961, when Volume 1 of the New Zealand Flora was published (Allan 1961), three species and two varieties of *Sophora* were accepted (*S. prostrata*, *S. tetraptera*, and *S. microphylla* with var. *longicarinata* and var. *fulvida*), and with notes rejecting Cockayne's *S. chathamica*. In 2001 a revision of the taxonomy of *Sophora* in New Zealand was published by Heenan et al. (2001). They recognised seven species in the *S. microphylla* "complex": accepting *S. microphylla* and *S. longicarinata* (see Heenan 1998), reinstating *S. chathamica*, elevating *S. microphylla* var. *fulvida* to species rank as *S. fulvida*, and describing as new species *S. godleyi*, and *S. molloyi*. *Sophora godleyi* grows on calcareous mudstone and sandstone in eastern Taranaki, King Country, Whanganui, Rangitikei and Manawatu.

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Rewarewa and toru, our two native members of the Proteaceae

Mike Wilcox

The Proteaceae is a large, ancient southern Gondwanan family, best represented in Australia, South Africa and New Caledonia, but also occurring in Madagascar, South America, New Guinea, Indonesia, Sri Lanka, China, some Pacific islands, and in New Zealand. There are about 1700 species and 80 genera, the largest being *Grevillea* (362 spp.), *Hakea* (149 spp.), *Protea* (114 spp.), *Persoonia* (100 spp.), *Helicia* (100 spp.), *Dryandra* (93 spp.) and *Banksia* (76 spp.). The family features numerous species which are monotypic endemics, well-known examples being white waratah (*Agastachys odorata*) from Tasmania, northern silky oak (*Cardwellia sublimis*) from north Queensland, Atherton oak (*Athertonia diversifolia*) from north Queensland, notro (*Embothrium coccineum*) from Chile, and avellano (*Gevuina avellana*) from Chile.

To quote from this revision:

"**Etymology:** The specific epithet *godleyi* honours E.J. Godley, Director (1958-1980) of Botany Division, DSIR, who has undertaken studies of *Sophora* in New Zealand. It also acknowledges his important contribution to the present study through the extensive collection of *Sophora* he established at Lincoln, Canterbury, New Zealand, during the late 1950s and 1960s."

Heenan (2001) also provided a treatment of the Chilean pelú which Eric Godley had treated as *S. microphylla* (see Markham & Godley 1972), referring that species back again to *S. cassioides*. These revisions now mean that New Zealand has nine species of *Sophora*, all endemic. *S. cassioides* is being increasingly cultivated in New Zealand where it is often sold as *S. microphylla* and it is worrying to see that it is now beginning to naturalise (Heenan et al. 2004).

Both New Zealand members of the Proteaceae, *Toronia toru* and *Knightia excelsa*, are also monotypic endemics. There were several other genera of Proteaceae present in New Zealand 30-45 million years ago (including *Banksia*, *Hicksbeachia*, *Kermadecia*, *Macadamia*, and *Musgravea*), and up until the Pleistocene ice ages of the recent past, but these have all become extinct (Holden 1982; Dawson 1988; Pole 1998; Gibbs 2007; Carpenter et al. 2010). *Knightia* itself is ancient in New Zealand, with fossil pollen known from the Upper Cretaceous onwards, and also from Antarctica and Australia.

Toronia toru (A.Cunn.) L.A.S.Johnson & B.G.Briggs
According to Beever (1991) *Toronia toru* has three alternative Maori names: "toro" used in the north (which it would confusingly share with *Myrsine salicina*) – and used by Cockayne & Phillips Turner

(1967) and Sampson (1975), "mihimihi" in the Bay of Plenty, and "toru" used in the south – and used by Poole & Adams (1964), Salmon (1980), Webb, Johnson & Sykes (1990) and Eagle (2006). What Beever meant by toru (Sth.) in his dictionary is puzzling as the species neither occurs in the South Island nor southern North Island, its latitudinal range being 34° 28' to 38° 30' S. (North Cape to East Cape). Generally, it seems highly preferable to just use the one Maori name toru, to avoid confusion with the other toro, *Myrsine salicina*.

In their famous and comprehensive review of the Proteaceae, Johnson & Briggs (1975) removed what was previously *Persoonia toru* from the Australian genus *Persoonia*, and put it in its own genus, *Toronia*. The basis for this was that the New Zealand plant differed in various floral details, especially in having axillary inflorescences, and the chromosome number is $n=14$, whereas *Persoonia* has $n=7$. Following their Latin description, Johnson and Briggs stated that *Toronia* is derived from the epithet toru, and the ending -onia, to suggest the affinity with *Persoonia*. Taylor (2002), however, thought that *Toronia* was derived from either toro or toru.

Toronia occupies a position near the base of the Proteaceae phylogenetic tree, in the tribe Persoonieae of subfamily Persoonioideae, its closest relatives being *Garnieria spathulifolia* from New Caledonia, *Acidonia microcarpa* from Western Australia, and the "Rufiflora" group of *Persoonia*, namely *Persoonia inconspicua*, *Persoonia brevihachis* and *Persoonia rufiflora* from Western Australia (Weston 1995; Weston & Barker 2006).

Toru is a small bushy tree or shrub found in Northland, Auckland, Coromandel Peninsula, Great and Little Barrier Islands, Bay of Plenty, Rotorua, and sparsely in the western Waikato (e.g. Kawhia, Te Kauri) and it usually occurs on impoverished gumland soils, commonly co-occurring with kauri, as observed by Aspin (2008). During the Bot Soc trip to Pukekaroro in September 2010, toru was seen to be one of the commonest understorey trees in the kauri ricker forest. It is found in the Rotorua district, including thermal scrubland at Whakarewarewa (Ecroyd 1991) and on Rainbow Mountain. The biggest trees I have seen are at Awhitu, and on the Waiomu Track of the Coromandel Range (Wilcox 2008) where I measured a tree with a diameter at breast height of 43 cm and a height of 14 m.

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Rhys Gardner (2008a, b) has studied and reported on its flowers, discovering that the species has a strong tendency to be dioecious – in this regard a rare thing in the Proteaceae. As in the geebung and snottygobbles (*Persoonia*) of Australia, the flowers of *Toronia* are actinomorphic, scented, and insect-pollinated, and the fruit is a drupe. Proteid roots are absent. Toru is difficult to propagate as the seeds germinate poorly.

Knightia excelsa R.Br.

Rewarewa or honeysuckle is a well-known common tree in the North Island, and reaches to the Marlborough Sounds in the South Island. It is recognised by its deep-crowned, steeply-branched, columnar shape and gregarious habit as it protrudes as a tree coloniser on old burnt sites. It is best classified as a long-lived pioneer because it not only regenerates freely through fire-induced scrub to form a secondary forest of emergent trees or sometimes dense pole forests, but persists as scattered, large, old trees up to 35 m tall in mixed forests which include podocarps and other broadleaved trees. It generally favours drier, hilly country.

The seedlings are shade tolerant, with comparatively elongate, thin leaves, and are often seen in dense groups on the forest floor. The adult foliage is highly sclerophyllous, and fallen leaves build up on the ground before slowly decaying (Enright & Ogden 2006). Proteid roots are present (Webb et al. 1990). Seed germinates well and seedlings are easily raised in the nursery.

The flowers of rewarewa first appear as buds in late autumn and winter, and they open in late spring. They are pollinated by birds such as tui, or possibly by bats, as suggested by Gardner (1987). Honey bees work the flowers, too, and produce a delicious honey. The fruit matures and the seeds ripen and are shed by the following winter (Leathwick 1984). The seeds are winged and wind-dispersed. As is a feature of the family as a whole, the wood of rewarewa has very prominent multicelled rays, making it very attractive "in small doses" for inlay and cabinet work (Clifton 1990).

Two New Caledonian trees were originally placed in the genus *Knightia* (Virost 1968), but these have since been transferred to *Eucarpha* (Weston & Barker 2006) as *Eucarpha deplanchei* and *E. strobilina*.

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Pittosporum kirkii on Mt Tamahunga

Maureen Young

Pittosporum kirkii (Pittosporaceae) is a small tree with thick, leathery leaves that broaden towards a rounded tip, and with red petioles. The flowers are yellow, and the large capsule has two valves. The plant usually grows as an epiphyte, but occasionally it grows on the ground, mainly on rocky bluffs. It is found at higher altitudes, mostly higher than 250 m, and is nowhere common; indeed, it features in the threatened plant lists of both Northland and Auckland (Forester & Townsend 2004; Stanley et al. 2005). Although it can be seen on the higher reaches of both Little and Great Barrier Islands, there are no modern herbarium records from the area between Waipoua Forest and the Waitakere Range. The southern limit is just south of Tongariro National Park. The type locality is Great Barrier Island, which Thomas Kirk visited in December 1867. In his paper "On the botany of Great Barrier Island" Kirk (1868) noted it there as "*Pittosporum* n.s. [new species]?". By the time he published "On the botany and conchology of Great Omaha" (1872), J.D. Hooker had given the plant Kirk's name.

In September 1864 a group of Waikato Maori prisoners escaped from detention on Kawau Island and set up camp near the summit of Mt Tamahunga (439m), west of Leigh. How long they remained there I don't know, but it was long enough for the local settlers to become well used to their presence. The Meiklejohn family farmed at the base of

Tamahunga, (then known as Mt Hamilton), and on one occasion John Meiklejohn guided botanist Thomas



Fig. 1. Distribution map for *P. kirkii*, from records held in Auckland Museum Herbarium (AK), and from pers. obs. Open circles denote historic records, closed circles denote recent records. Drawn by the author.