

PITTOSPORUM ON BANKS PENINSULA

Hugh Wilson

Hinewai Reserve, Akaroa

When Captain Cook's *Endeavour* sailed past Banks Peninsula in February 1770, botanists Joseph Banks and Daniel Solander were on board. They must have itched to go ashore. But although both Cook and Banks briefly described the vegetation they saw from the deck, no-one from the *Endeavour* landed. One of the ship's officers had (he thought) seen land off to the southeast, and Cook headed the *Endeavour* out to sea to check it out. It wasn't land. It was a big cumulus cloud. By the time the ship neared shore again, she was well south of the Peninsula.

Cook's second and third voyages to the South Pacific did not sail anywhere near Banks Peninsula. Another 70 years passed before European botanists made the first scientific collections of plant life from the region. This enviable task fell to the French. Two in particular – Etienne Raoul and Pierre de Belligny, who were based in Akaroa in the early 1840s – collected many specimens and sent them back to France.

When Raoul and Belligny were botanising in and around Akaroa, about 45% of Banks Peninsula's total vascular flora of some 570 species (we know this now in hindsight) were already scientifically named by botanists working in other parts of New Zealand, or, in a few cases, in other parts of the world. Raoul and Belligny had to determine which of the plants they were finding in this hitherto scientifically unexplored vegetation were species already named, and which were new.

Among the 26 Banks Peninsula species that Raoul named as new are some of our really common and now familiar plants, such as karamū (*Coprosma robusta*), narrow-leaved lacebark (*Hoheria angustifolia*) and matagouri (*Discaria toumatou*). He also named two of the Peninsula's outstanding endemic plants, the Peninsula sun hebe (*Veronica lavaudiana* = *Heliohebe lavaudiana*) and Akaroa daisy (*Celmisia mackaui*). Among the plants Raoul collected that were already named were others now familiar to us such as the native "jasmynes" (*Parsonsia capsularis* and *P. heterophylla*), broadleaf (*Griselinia littoralis*), akiraho (*Shawia paniculata* = *Olearia paniculata*), pigeonwood (*Hedycarya arborea*), and lemonwood (*Pittosporum eugenioides*) (Fig. 1, page 12).

In the case of lemonwood, Raoul published a new name in 1844 (*Pittosporum elegans*) without realizing that the species had already been validly named *P. eugenioides* by Allan Cunningham a few years earlier. A small-leaved shrub that Raoul collected near Akaroa he recognized as a relation of lemonwood, although a superficial glance would not have

suggested it. This one really was new to science. He named it *Pittosporum obcordatum*. The specific epithet refers to the leaves, some of which are heart-shaped. Nowadays the common names “heart-leaved kōhūhū” or “heart-leaved kohukohu” are often used.



Figure 1 *Pittosporum eugenioides* tarata or lemonwood. Scale bar = 1 cm. Original drawing by the author.

The genus *Pittosporum* had been published many years earlier, in 1788. Gaertner, a German botanist, formally erected the genus, which had been suggested, but not validly published, by Banks and Solander. Among the species published by Gaertner in the new genus was *Pittosporum tenuifolium* (kōhūhū), a small tree widespread through New Zealand (Fig. 2, Page 13), and also *P. umbellatum* (haekaro), another small tree occurring naturally in the east of the North Island from Gisborne northwards.

Like *Pittosporum eugenioides*, *P. tenuifolium* is common on Banks Peninsula, but Raoul appears not to have collected it. Warwick Harris (1999) suggested that Raoul might have focused his attention on finding and describing new plants, and would not have bothered with plants that were already named, common, and well-known. Harris was in particular discussing the lack of any Raoul collections of *Nothofagus* (beech). A comment by Captain Lavaud, Raoul’s naval commander, suggests that Raoul must have encountered beech “in the forests near Akaroa”. Lavaud lists kahikatea, mataī, rimu, tōtara, tawai and miro (Harris 1999). In using the

Māori word “tawai” it is highly unlikely that Lavaud was referring to anything other than beech (see Williams 1971).

The story of Raoul’s *Pittosporum obcordatum* is an intriguing one. For 170 years – from the early 1840s until now – nobody managed to rediscover this species on Banks Peninsula. Indeed it was not until early in the 20th Century that it was found again *anywhere!*



Figure 2 *Pittosporum tenuifolium* kōhūhū. Scale bar = 1 cm. Original drawing by the author.

The first rediscovery was made in the far north of the North Island, near Kaitaia. Later, populations were discovered in a few other places in the North Island. Botanists Bruce and Beverley Clarkson (Clarkson & Clarkson 1994) undertook focused searches for the elusive shrub throughout the North Island, with considerable success. Quite recently the species was found in the deep south of the South Island.

Sites were nearly always described as alluvial forest, often waterlogged in winter and drought-prone in summer. Botanists suggested that a major reason for the species’ rarity was that most of the suitable habitat had been cleared for conversion to agriculture. Some even doubted that it had actually ever been on Banks Peninsula, and suggested that Raoul may have collected it elsewhere. During his time based in Akaroa he had made three short trips to the Bay of Islands. An apparent record of *Angelica rosaefolia* (= *Scandia rosaefolia*) from Akaroa (see Laing 1919 and Martin 1963) is almost certainly based in error on a specimen collected from the far north.

When in recent years *Pittosporum obcordatum* was found in Southland and Otago, as far south as Manapouri, Raoul’s Banks Peninsula record seemed more believable again. I searched hard for it during my botanical survey of Banks Peninsula in the 1980s, but obviously not hard enough! Around 2000, Bruce Clarkson walked all the way down Hinewai’s Otanerito Valley with me, his *P. obcordatum*-honed eyes eagerly peeled. Bruce thought there was scarcely enough likely alluvial forest habitat for the species to be there.

Despite recent finds, “heart-leaved kōhūhū” is listed as “nationally vulnerable” in the Threatened Plants Register.

How Nature can surprise us! In February 2012 a keen-eyed, sharp-witted young botanist at last rediscovered *Pittosporum obcordatum* alive and well on Banks Peninsula (Fig. 3).



Figure 3 *Pittosporum obcordatum* heart-leaved kōhūhū.
Scale bar = 1 cm. Original drawing by the author.

Melissa Hutchison is a keen member of the Canterbury Botanical Society. She works as an ecologist with Wildlands Consultants. In February 2012 she was working on Christchurch City Council’s Ecological Survey, updating information on an area near Okains Bay that I had recommended for protection 20 years before (Wilson 1992). Melissa’s bright eyes lit upon a bizarrely-shaped shrub, one of thousands of odd-looking shrubs in the vicinity but one she felt warranted a closer look.

She identified it correctly but could hardly believe her eyes. She asked me for a second opinion. As I held her specimen in my cupped hands I also wondered if I was dreaming.

A week later, guided by Melissa, and with a cheerful “go for it” from the landowners, several of us visited the site and turned up a total of six bushes. In mid-April we revisited with Nicky Robb of Motukarara Nursery. Seed was collected from several bushes. We were surprised at the variation in capsule size, from about 3 mm across to about 7 mm. By the end of our search that day we had located 14 bushes, including the six found in February.

The site does not resemble the “alluvial forest” described in the literature. Instead, this is a gentle gully with dry hillsides slanting down towards the nearby sea. All the bushes discovered so far grow between about 40 and 80 m above sea level. The loessic soils can indeed become waterlogged in winter, despite the slope, and are certainly often droughty in summer. One bush was noted lying on its side (in good health though) where saturated loess had slumped in wetter conditions.

In the gully, regenerated native trees and shrubs form an open scrubby woodland over mostly exotic pasture grasses such as perennial ryegrass, sweet vernal, bromes, cocksfoot, Yorkshire fog, crested dogstail, danthonia, barley grass, vulpia and *Poa pratensis*. Upslope, the trees and shrubs thin out into open grassland. Downslope (seawards) they thicken into scrub and short forest. Common are lowland ribbonwood (*Plagianthus regius*, somewhat stunted), ngaio (*Myoporum laetum*), kōwhai (*Sophora microphylla*), mikimiki (*Coprosma virescens* and *C. crassifolia*), poataniwha (*Melicope simplex*), weeping māpou (*Myrsine divaricata*), and small-leaved tūrepo (*Streblus heterophyllus*). Fierce lancewood (*Pseudopanax ferox*) and two uncommon tree daisies are also growing in the vicinity. *Olearia fimbriata* is regarded as nationally vulnerable; it is rare and local on Banks Peninsula. *Olearia fragrantissima* is uncommon on Banks Peninsula, where it reaches its northern limit.

Why should *Pittosporum obcordatum* grow in such an apparently anomalous situation?

I have some sort of explanation. Compared to many parts of New Zealand, Banks Peninsula’s soils are relatively fertile. In less-fertile regions, several plant species that need nutrient-rich soils are restricted to alluvial flats where nutrients are naturally concentrated. On Banks Peninsula, however, hillsides are also fertile enough for these species. Thus kahikatea, lowland ribbonwood, narrow-leaved lacebark, *Coprosma wallii* – and *Pittosporum obcordatum* – can thrive on hillsides, even droughty ones, as well as on richer flats. These species *tolerate* water-logging, rather than *preferring* it. The nutrient status of the soil is the more important parameter.

What this hypothesis does *not* explain, however, is why then is *Pittosporum obcordatum* so rare? Melissa’s gully would appear to be repeated many times on the Peninsula. Fortunately Melissa herself now has resources and time to make a more detailed search in and around the original gully. But the species could well be lurking elsewhere, further afield. All of us need to keep our eyes and minds wide open!

The three species of *Pittosporum* known to be native on Banks Peninsula belong to an interesting genus. Some 150 trees and shrubs are currently placed in *Pittosporum*. Geographically they extend from the Canary Islands in the North Atlantic, southwards through Africa, eastern Asia and the Pacific to Australia and New Zealand. *Pittosporum* is the largest genus by

far in the family Pittosporaceae, which includes another six to eight smaller genera, all of them except *Hymenosporum* endemic to Australia (*Hymenosporum* extends to New Guinea).

Family relationships of Pittosporaceae appear to be with Apiaceae, Araliaceae, Griselinaceae and Pennantiaceae, along with three other small families with no New Zealand representatives.

Australia has the richest diversity of Pittosporaceae, and all the genera. Some of the species there are vines (*Billardiera*) and spiny shrubs (*Bursaria*). About 20 species of *Pittosporum* are native to Australia. New Caledonia has about 50, and Hawai'i 11. The Americas, both North and South, have no native Pittosporaceae at all, but an Australian (*Pittosporum undulatum*) is now an alien invasive weed in disturbed forests of Jamaica, Mexico, Hawai'i and elsewhere.

New Zealand has 21 species of *Pittosporum*, all endemic. Several are small-leaved, tangle-branched shrubs (e.g. *P. obcordatum*, *P. divaricatum*). Some start life as small-leaved shrubs, then grow into trees of more normal appearance (e.g. *P. patulum*, *P. turneri*). Others look "normal" from the start, such as lemonwood (*P. eugenioides*) and kōhūhū (*P. tenuifolium*).

Two other New Zealand species of *Pittosporum* are naturalised on Banks Peninsula, both native to the North Island. *P. crassifolium* (karo), although only sparsely naturalised on Banks Peninsula proper, is already worryingly invasive on Kaitorete. *Pittosporum ralphii* (soft karo) is fully naturalised on the Peninsula and increasing, although still local and uncommon.

Hymenosporum flavum (Australian frangipani), native to Australia and New Guinea, is grown in some Peninsula gardens but no wild plants have been detected so far.

Meanwhile, as I draft this article in August, Nicky Robb of Motukarara Nursery advises us that *Pittosporum obcordatum* seeds collected in mid-April have begun to germinate.

References

- Clarkson BD, Clarkson BR 1994. Ecology of an elusive endemic shrub, *Pittosporum obcordatum* Raoul. *New Zealand Journal of Botany* 32: 155–168.
- Gaertner J 1788-1791. *De fructibus et seminibus plantarum*. Stuttgart.
- Harris W 1999. *Nothofagus* collections associated with the French settlement of Akaroa. *Canterbury Botanical Society Journal* 33: 46–56.
- Laing RM 1919. The vegetation of Banks Peninsula, with a list of species (flowering plants and ferns). *Transactions of the New Zealand Institute* 51: 355–408.

- Martin W 1963. The indigenous flora of Banks Peninsula. Banks Lecture. Journal of the Royal New Zealand Institute of Horticulture 5: 48–59.
- Raoul EFL 1844. Choix de plantes de la Nouvelle Zélande. Annales des Sciences Naturelles 3(2): 113–123.
- Raoul EFL 1846. Choix de plantes de la Nouvelle Zélande. Paris, Fortin, Masson et Cie.
- Williams HW 1971. A dictionary of the Maori language. Seventh Edition. Wellington, Government Printer.
- Wilson HD 1992. Banks Ecological Region. Survey report for the New Zealand Protected Natural Areas Programme 21. Christchurch, Department of Conservation.

Postscript

The mid-October 2012 Botanical Society visit to the Banks Peninsula *Pittosporum obcordatum* site found the population in full flower. Further individuals were located, including some juveniles, which confirmed there is some recruitment of seedlings. The total known tally of *P. obcordatum* on Banks Peninsula currently stands at 23.

Meanwhile, at Motukarara Nursery, hundreds of *P. obcordatum* seedlings are crowding Nicky Robb's seed trays.

***OPHIOGLOSSUM CORIACEUM* (ADDER'S TONGUE) ON THE PORT HILLS, CHRISTCHURCH**

Rosemary Koller & Sally Tripp

Authors for correspondence: kollers@orcon.net.nz, sally.tripp@xtra.co.nz

Ophioglossum coriaceum is alive and well at the head of the Bowenvale Valley this spring (Fig. 1, page 18). There is a healthy strip, less than one metre long, of this unusual, primitive fern on the perimeter of a north-facing flat, rocky outcrop. The site is close to an area of rock that was blasted post-earthquake for safety reasons, so it is a relief to know that the Adder's tongue fern has survived in this location. The 2010 to 2012 earthquakes did significant damage on the Port Hills so we fear for the safety of some ferns on the rocky outcrops, especially those on Castle Rock.

In the past, Arnold Wall around 1918 (Wall 1918, 1953) and John Lovis and Hugh Wilson in the 1980s (Wilson 1992) recorded *Ophioglossum coriaceum* as being on the Port Hills, but we searched for over ten years and were