

dispersal kernels using a simulation model, Pegman et al. (2016) demonstrated that the spatial arrangement of the above two canopy tree species plays an important role in dispersal processes. Tree aggregation was correlated with a lower mean seed dispersal distance, as shown in Figure 2, although it was accompanied by occasional long-distance dispersal events. Conversely, tree dispersion was correlated with an increase in mean dispersal distance, potentially increasing the probability of seeds finding suitable habitats for germination and growth.

The good news is that *H. novaeseelandiae* has been doing an excellent job in dispersing seeds from other large-fruited canopy trees too. For example, Pegman (in prep.) has shown that seeds of *Corynocarpus laevigatus* and *Beilschmiedia tarairi* (two other large-fruited indigenous tree species) were found under canopies of *V. lucens* and *P. ferruginea* in the Waitakere and Hunua Ranges, where almost no *C. laevigatus* and *B. tarairi* trees were observed.

## References

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## ***Corybas rotundifolius* (Hook.f.) Rchb.f. in Woodcocks Kawaka Reserve, near Warkworth**

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During the time that I have been aware of the tiny helmet orchid, *Corybas rotundifolius* (Fig. 1), it has been known by three different names. When *Flora of New Zealand Volume II* was published (Moore & Edgar 1970) this orchid was confused with an Australian species, *C. unguiculatus*, and Lucy Moore, author of the orchid chapter in that publication, used that name. Later, when the *Corybas* genus was split up by two Australian botanists (Jones et al. 2002), the name *Anzybas rotundifolius* was used.<sup>1</sup> Much to the frustration of us ordinary mortals it has been changed yet again, and has now settled for the time being, as *Corybas rotundifolius*. In Moore and Edgar (1970: p.116) the distribution was given as:- "Known only from a few localities, all north of lat. 38°; near Kaitaia; north of Whangarei; Glen Eden slopes of Waitakere Range; Tauhei near Morrinsville; Moanatuatua near Cambridge .... rare and easily overlooked".

In 1981, David Given, then New Zealand's leading authority on rare and endangered native plant

species, published *Rare and Endangered Plants of New Zealand* (Given 1981), and compiled, together with Gordon Williams, the *Red Data Book on Threatened Species in New Zealand* (Williams & Given 1981). These two volumes brought to the attention of the botanical world the presence of many species that were poorly known, and with many more informed searchers out in the field a truer picture was gained of the numbers of these various plant species. *Corybas rotundifolius* was one of those species.

Although rather spasmodic in occurrence, *C. rotundifolius* is no longer considered to be a threatened plant, being found from Spirits Bay to Warkworth, with one outlier at Opuatia, near Rangiriri, and also on the Chatham Islands and Great Barrier Island. It is usually found in regenerating forest or gumland scrub amongst dense litter. A single ovate leaf up to 2.5 cm long, occasionally notched on each side, subtends a solitary maroon and white flower that stands directly over the leaf. It does not have the long, filiform lateral sepals and petals that are seen in many of the other *Corybas* species and give them the common name of "spider orchids".

And so the scene is set for the exciting discovery, in 1985, of *C. rotundifolius* in Woodcocks Kawaka

<sup>1</sup> **Footnote from Editors** : Confusingly, in Flora Vol II the name *N. rotundifolia* is mentioned only in notes appended to the entry for *Corybas oblongus* (Moore & Edgar 1970, p.117), but Jones et al. (2002) clarified matters: *Anzybas rotundifolius* was based on the basionym *Nematoceros rotundifolia* J.D.Hook. in Hooker's *Flora Novae-zelandiae* 1: 251 (1853).

Reserve, c. 6 km from Warkworth. I was a new chum to all things botanical and my partner, Frank Hudson, was a “tree man” who ignored anything that wasn’t taller than himself. Both Lucy Moore and I had not long before returned to our childhood hometown of Warkworth, and Frank and I would sometimes take her out on short botanical rambles.

On this June day we were poking around in an area of regenerating gymnosperms in this delightful reserve, when I spotted a small flowering *Corybas* orchid with no “whiskers”. Frank and I had visited Great Barrier earlier in the year, and we had become familiar with *C. cheesemanii* (then known as *C. aconitiflorus*) which was also whiskerless, so I knew it was not that. I had spent time poring over Bruce Irwin’s exquisite little line drawings of the *Corybas* species in *Flora Vol. II* and knew that there were only two without long lateral sepals and petals, the second being what was then considered to be the rare and endangered *C. unguiculatus* (a third such species, *C. carsei*, had been included in the concept of *C. unguiculatus* used in *Flora II*). I called out in excitement that I had found *C. unguiculatus*, and Lucy hurried over to confirm it. In my diary I noted that she was overjoyed and amazed. Frank arrived a minute later to tell us that he had found it elsewhere.

Searching confirmed that there were a good number of plants, though it was a little early for many to be flowering. According to my diary, as we drove home Lucy was in a ferment the whole way – who could she write to besides Bruce Irwin? No, maybe she would ring him up! (being familiar with the famous thriftiness of the Moore family, this was a turn up).

Over the intervening 33 years I have periodically paid a mid-winter visit to Woodcocks Reserve to check on our precious orchid and lately I had been rather sad that it seemed to be decreasing in numbers and perhaps heading for extinction there. However, this year Jack Warden and I visited at the end of July and found that it was in very good heart, with several large patches of healthy plants (Fig. 2), some leaves measuring 25 x 30 mm. Perhaps the wet conditions, so dismal for us humans, have suited a tiny winter orchid.

In my northern explorations, mostly in the company of my friend Anne Fraser, I have come across *C. rotundifolius* at 10 other locations, the most northerly being near the road to Spirits Bay on the wondrously named Sod Wall Track.



**Fig. 1.** *Corybas rotundifolius*, Woodcocks Kawaka Reserve. Photo: J Warden, July 2018.



**Fig. 2.** The habitat of *C. rotundifolius*, Woodcocks Kawaka Reserve. Photo: J Warden, July 2018.

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