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Going Underground: *Dactylanthus taylorii* in Auckland

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Dactylanthus (*Dactylanthus taylorii*) is New Zealand's only fully parasitic flowering plant. It grows underground attached to the roots of forest trees from which it obtains all its nutrients. It looks very different to most plants as it is just a warty tuber which does not need leaves to make food. It grows on a range of common shrubs and small trees either at the edge of or in regenerating forest e.g. lemonwood (*Pittosporum eugenioides*), kohuhu (*Pittosporum tenuifolium*), mamangi (*Coprosma arborea*), mahoe (*Melicactus ramiflorus*), lancewood (*Pseudopanax crassifolius*), and up to thirty other trees and shrubs. *Dactylanthus* can grow anywhere its host can i.e. from near sea level to over 1000m (Ecroyd 1996) and can be found on almost any topography including flat sites, gullies or ridges. *Dactylanthus* flowers are pollinated by the short tailed bat, but it is not dependant on bats, and today there are no longer many sites where these two species coexist.

Under Threat

Dactylanthus is threatened and without management would most probably decline to extinction. Possums, rats and pigs destroy the flowers and prevent seed production. Pigs can also kill plants by rooting out the whole tuber. Protecting *dactylanthus* involves intensive pest control or caging of plants to prevent browse. In the past people also directly threatened *dactylanthus* by digging up "woodroses" which were once a fashionable ornament. Woodroses are not the *dactylanthus*, or its flower, but the deformed tree root of the host which is dug up to reveal a scar where the parasite attaches itself to its host.

Dactylanthus in the Auckland Region

Dactylanthus has not been seen on the mainland of Auckland since the mid-1960s. The only specimen of *dactylanthus* collected in Auckland was by Katie Wood from Huia in 1953 (AK 30502). Ex-Auckland Regional Council (ARC) Senior ranger Bill Beveridge knew *dactylanthus* from Waitatarua in the Waitakere Ranges in the 1960s (pers comm.), and his sister reported it from Laingholm (Joan Glasse pers. comm. 2008). Lucy Moore records it was reported to her by Omaha locals as being found on Mt Tamahunga in the 1920s (Moore 1928). The earliest record for Auckland is from the forest near the source of the Hoteo River (Cheeseman 1914). There are anecdotal reports from Great Barrier Island recently given validity by a fossil pollen record (Yanbin Deng pers. comm. 2001). Little

Barrier Island is the only site in the Auckland region where *dactylanthus* is still currently known.

Dactylanthus on the Auckland Mainland

Dactylanthus is hard to find due to its underground habit. The best time to look for it is the two months during autumn when it is flowering and the inflorescences are visible above the soil surface. Could *dactylanthus* still be on the mainland in Auckland but its cryptic habit means it is not encountered? This is possible and indeed many aspects of its ecology make it well-suited to long term survival e.g. its lifespan is as long as its host tree, possibly over 100 years, and it also has long-lived seed. There are plenty of suitable habitats in the region. Encouragingly there have been several new populations found elsewhere in NZ over the past decade, e.g. in Puketū Forest in Northland, where *dactylanthus* hadn't been known before. For all these reasons it is likely that there could be some isolated, probably struggling in the presence of browsers, populations of this very secretive rare plant remaining in Auckland that remain to be discovered.

Chasing Old Records

The usual way to survey for most rare plants is to look in suitable habitat in places where that plant was known in the past. The assumption behind this is that all locations where a rare plant grows were recorded (either in the literature or by a specimen). If locations of some plants are kept secret to prevent collection (by people) this hampers the usual survey approach of identifying and chasing up old records. It was this fear of collectors removing *dactylanthus* for its woodrose that resulted in it going "underground" not only in its lifestyle but in the literature. I have been told that local botanists kept locations secret for this reason. Unfortunately now we need to find *dactylanthus* to protect it from more insidious threats, such as animal browse, and this secrecy impacts on our ability to protect it.

Some records, such as Katie Woods Huia record, appear to deliberately protect the location by noting an ambiguous and imprecise location such as "Huia Dam". Not only are there are two dams (although one was only under construction in Woods time) but the Huia valley is huge.

Collecting *dactylanthus* is nowhere near as common a pastime as in the past. Often ex-collectors take Department of Conservation rangers back to locations they dug *dactylanthus* up and now these

people are involved in its protection. The risk of destruction by collector's remains, however slight, and the precise location of any Auckland population located in the future will be kept secret to minimise this risk.

Why We Need to Know

Although at times surveying for *dactylanthus* does feel like looking for a needle in a haystack (and on a rainy day this is especially depressing) if we are not able to locate any remaining plants in the region and protect them from browse in the short-term any potentially remaining populations on the mainland of Auckland will disappear for good. People who knew *dactylanthus* in Auckland and hid the location believed

they were acting in the best interests of the plant (which they probably were at the time) but they have unwittingly jeopardised its survival.

The recovery plan (La Cock *et al.* 2005), and Recovery Plan review (Holzapfel 2005), recommend surveys in Auckland at Mt Hobson (Great Barrier Island), Warkworth and near the Huia Dam (Waitakere) as a national priority. In the past decade DoC and ARC have conducted six surveys at Great Barrier, and Waiatarua and Huia in the Waitakere Ranges and plan to keep looking. With any luck the next article in this journal will be proclaiming its re-discovery on the Auckland mainland!

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I'd like to thank Alan Esler for a discussion we had on Katie Wood. Alan was a friend of hers and discussing her approach to field work was useful to me in planning to follow up the Huia Dam location. I had secretly hoped Alan would tell me she never strayed far from the track. Alas this was not to be - Alan told me she was a very energetic person who would have left no area of Huia un-surveyed as she was allocated Huia as her "square" by Bot Soc in the preparation of the "Botany of Auckland" book! In any case this is very useful information to know.

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A gallery of secretive plants from the Far North

Maureen Young

Photographs by Kevin Matthews & Andrew Townsend

Casual travellers on a pilgrimage to Cape Reinga could be forgiven for being rather nonplussed about the state of the natural vegetation on the Aupouri Peninsula. That of the southern portion seems to have been taken over by aliens, and the northern tip appears to be covered only in dismal tea-tree scrub. This latter is relieved by swathes of the yellow/green tresses of the parasitic *Cassytha paniculata* and, in season, by the pink flowers of manuka (*Leptospermum scoparium*) and the soft yellow flowers of kumarahou (*Pomaderris kumeraho*). However, to the diligent botanist prepared to explore in out-of-the-way places, the Far North is a treasure trove with many secretive plants waiting to be found, several of them only growing in this northern district. These photographs show a few of them.

***Phylloglossum drummondii* Kunze** (Threatened/Nationally critical) (Fig. 1)

This tiny, winter-green plant is a member of the Lycopodiaceae. It grows on open, damp areas among low scrub, where there is a hard pan that restricts drainage. It used to be found as far south as the Waikato, and in Auckland was known from Waikumete Cemetery and also at Silverdale, but now is only found in Northland. It grows in colonies, often of

many plants, and the fertile spike matures in late August, early September.

***Anzybas rotundifolius* (Hook.f.) D.L.Jones & M.A.Clem.** (Naturally uncommon) (Fig. 2)

This helmet orchid has been found from Warkworth northwards, but recently discovered sites include Opuatia (Rangiriri), Great Barrier Island and Chatham Island. It grows in a variety of habitats, quite often in litter under kanuka scrub, but also in sphagnum wetlands, and on at least one dry kauri ridge. New sites are being regularly found in the Far North.

***Colensoa physaloides* (A.Cunn.) Hook.f.** (At risk/Relict) (Fig. 3)

This member of the Lobeliaceae was first included in *Lobelia* before being placed in its own genus, which commemorates William Colenso. It has also been placed in *Pratia*. The appearance of this softly herbaceous plant is unlike any other in the New Zealand flora. The specific name suggests that it looks similar to *Physalis* (Cape gooseberry), but it is equally likely to be mistaken for *Hydrangea*. When present, the long blue flowers and large brilliant purple/blue fruit ensure that there is no misidentification. It often grows on stream sides or on half-shaded slopes.