Cololejeunea hodgsoniae – an obligate muscicolous microepiphyll?

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Cololejeunea hodgsoniae is rather small, even for a liverwort. The shoots are approximately 250 μm wide and up to a millimetre or two long, at the most. Not many liverworts are this small. It is characterised by its acute leaf tips, papillae on the upper surfaces of the leaves, and lobules that are usually dimorphic, uncompressed 5-carinate perianths, and like all *Cololejeunea*, complete absence of under-leaves. This combination of characters means confusion with any other NZ species is near impossible.

Its size makes detection in the field somewhat problematic, so not surprisingly this species has rarely been collected specifically. More commonly it is encountered in the laboratory as an incidental amongst more obvious hepatics collected in the field. I have only observed it *in situ* once, growing fairly abundantly over *Radula marginata* on rocks in the stream between tracks 8 and 9, on the northern side of Little Barrier. In this case, I was searching for sporophytes on the *Radula,* so had my nose fairly close to the rock. Even this observation can be considered a little accidental.

During my habitual (everyone has their addictions) inspection of freshly collected and herbarium material of *Radula*, I have turned up *C. hodgsoniae* on a number of occasions. Interestingly it was also present in 50% of the specimens of *R. marginata* collected from Waipoua to South Westland loaned from Field, Herbarium.

As regards habitat, I have only ever observed this plant growing as an epiphyll on the leaves (rarely on the perianths) of *R. marginata,* and less commonly, on the leaves of *R. silvosa.* These two species often frequent hyper-humid streamside habitats, and it is here *C. hodgsoniae* grows. *Cololejeunea hodgsoniae* is almost without exception fertile. The fact that this species can complete its whole lifecycle upon a single leaf, or perianth of *Radula marginata*, is not surprising, perianths at least last little more than a year on most species before being overgrown by other shoots.

Try it for yourself - behold any sizeable patch of *R. marginata* growing on rocks in a streambed or on streamside banks, and those paler green specks will be *C. hodgsoniae*, promise.

Observations on karaka (*Corynocarpus laevigatus*) and its fruit

Graeme Platt

Terraced hill tops and promontories are to be regularly encountered at scattered locations around New Zealand, providing convincing evidence of historic, fortified military compounds and the country's totally dysfunctional early history. Today these defensive fortifications are referred to as "pa sites".

What is interesting about pa sites is the relict vegetation remaining in place around some of them. Two species stand out in particular – cabbage trees (*Cordyline australis*) and karaka (*Corynocarpus laevigatus*) – both known to be have been utilised by Maori as a source of food. Sadly, commencing in the first quarter of 1983 many of the cabbage trees have progressively died, all but eliminating them as a distinctive feature at many of these sites. On the other hand karaka trees remain evident at many pa sites, particularly those in and around Taranaki. There is very conclusive evidence that some of these trees were selected by Maori for their superior fruiting qualities.

When selecting superior lines of fruiting trees there is a combination of factors to be considered, such as disease resistance, size of fruit, volume of crop, fruit quality, flavour, and keeping qualities amongst others. Using only one of these factors - size of fruit - I have spent a considerable amount of time during my wanderings looking at karaka trees both at confirmed pa sites and those in natural stands, taking into account that it would be a very brave or foolish person to claim any particular grove of karaka trees was completely natural. Karaka is a species of climax broadleaved forest and its three most common companions are puriri (*Vitex lucens*), taraire (*Beilschmiedia tarairi*) and kohekohe *(Dysoxylum spectabile*). At locations where these four species coexist in mixed groves it is reasonable to assume the trees are natural.

It is evident that trees producing fruit of superior size were selected for planting around some pa sites. The size of fruit proved to be consistently larger on trees growing at pa sites then those located in natural forest. I never found a hint of any evidence suggesting karaka trees were ever clonally propagated. Superior trees were most probably transplanted as seedlings that had germinated naturally under large-fruited trees or were directly sown as large seeds themselves.

While it would be very easy to cook the books using my crude sampling methods, the fact remains that the largest karaka fruit I have ever seen was from a pa site, and consistently the smallest were from natural