

Identification of some native members of Epacridaceae by their leaves

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Introduction

Anyone devoted to Poole & Adams (1964) knows that determining sterile specimens of the various kinds of mingimingi (*Cyathodes* spp., etc) is quite straightforward. Here I go over this ground, adding two species they did not illustrate, *Cyathodes parviflora* and *C. robusta*. The nomenclature of Allan (1961) is used – some names have changed since then (into *Acrothamnus*, *Leptecophylla*, *Styphelia*, *Leucopogon*, *Androstoma*), and might do so again.

The species

A leaf of each of 16 NZ epacrids is illustrated in Fig. 1, the view being of the lower (abaxial) surface, which as usual has the greater taxonomic content. Aside from leaf colour, I have not been able to distinguish the recently described *Leucopogon xerampelinus*, a North Cape serpentine endemic, from *C. parviflora* of Chatham Islands, Lord Howe Island and Australia, so it has been omitted. Similarly with *Leucopogon nanum*, closely related to *C. fraseri*. All the observations here are of dried material. The surface of the blade between the veins is called the intervenium; it often differs from the venation in colour and prominence. A warning: the epacrids typically have their vegetative and floral buds enclosed in scales, which can differ substantially from the normal leaves in shape and ornamentation.

Some of the most distinctive leaf features are:

Archeria racemosa Blades elliptic, margins flat to slightly recurved, acuminate narrowed to an obtuse apex, venation below conspicuously raised and more or less branched and reticulate.

Archeria traversii Blades lanceolate, margins strongly recurved and minutely ciliate, venation below sometimes raised and more or less reticulate (midrib in dried material often strongly prominent and detaching internally from rest of blade – air-gap shown dark in Fig.1G).

Cyathodes colensoi Margins flat and strongly ciliate distally, intervenium below whitened by wax deposited in minutely reticulate fashion.

Cyathodes empetrifolia Petiole at right angles to blade so that these stand out stiffly from shoot; blade linear, a single lateral vein running very close to each margin, the intervenium below pale with minute interwoven hairs projecting out flat over the channel between midrib and lateral vein.

Cyathodes fasciculata Blades of adult plant oblanceolate, margins flat and minutely serrate distally, bluntly apiculate, lateral veins conspicuous above, being pale and slightly sunken, and usually somewhat raised and more or less branched and reticulate below.

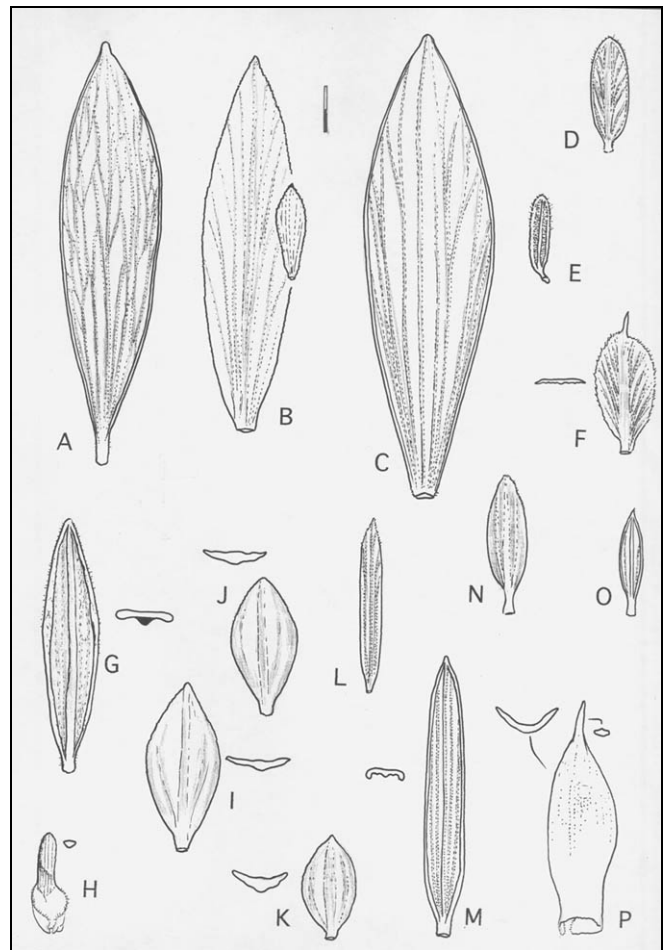


Figure 1: Leaves (abaxial surface) of some NZ Epacridaceae. Scale bar represents 2 mm, except for A and B (the juvenile, larger leaf), for which it represents 5 mm.

- A. *Archeria racemosa* Opotiki, AK 50316
- B. *Cyathodes fasciculata* juvenile (larger leaf) Topuni AK 35449, adult Opepe 91281
- C. *Cyathodes parviflorus* Chatham I., AK 235254
- D. *Cyathodes colensoi* Ruapehu, AK 117878
- E. *Cyathodes empetrifolia* Waikaremoana, AK 58254
- F. *Cyathodes fraseri* Three Kings, AK 183118
- G. *Archeria traversii* Haast, AK 129437
- H. *Dracophyllum muscoides* Hector Ra., AK 236800
- I. *Epacris pauciflora* var. *pauciflora* Moanatuatua, AK 117469
- J. *Epacris pauciflora* var. *sinclairii* Gt Barrier I., AK 287517
- K. *Epacris alpina* Mt Tauhara, AK 91963
- L. *Cyathodes juniperina* Opepe, AK 91280
- M. *Cyathodes robusta* Chatham I., AK 235223
- N. *Pentachondra pumila* Ruapehu, AK 117881
- O. *Cyathodes pumila* Dunedin, AK 105533
- P. *Sprengelia incarnata* Tasmania, AK 281656.

Cyathodes fraseri Margins broadly hyaline, flat, stoutly ciliate, apex a pungent apicule, veins strongly raised below.

Cyathodes juniperina Blade linear, minutely serrate distally, apex a pungent apicule, veins not evident above, intervenium below whitened by wax deposited in minutely reticulate fashion.

Cyathodes parviflora Margins usually recurved only in proximal half of blade, entire, apex with a very short rounded mucro, lower surface with prominent branched and reticulate venation.

Cyathodes pumila Margins flat, entire, apex shortly apiculate, lower surface between midrib and margins entirely covered with a thick (usually non-reticulate) deposit of white wax.

Cyathodes robusta Blade lanceolate, margins strongly recurved, apex with short rounded mucro, intervenium below usually whitened with wax deposited in minutely reticulate fashion.

Dracophyllum muscoides Blade about as long as the sheathing petiole, linear, obscurely serrate distally.

Epacris alpina and *E. pauciflora* (both vars) Blade ovate, margins minutely serrate distally, veins not at all prominent below, intervenium pale but not wax-covered.

Pentachondra pumila Petiole relatively long (c. 1/3 length of blade); blade lanceolate, margins minutely serrate, apex subobtuse, the veins relatively obvious below (as compared to those of *Epacris pauciflora*) being narrower and paler than the intervenium, but not raised.

Sprengelia incarnata Leaf recurved so that upper half (blade) is at right angles to the stem-enclosed lower half (sheathing base/petiole), apicule long and subpungent, lower surface of blade with conspicuous pale dots (stomata) and obscure veins.

References

Allan, H. H. 1961: Flora of New Zealand. Vol. 1. Government Printer, Wellington.

Poole, A. L. & Adams, N. M. A. 1964. Trees and Shrubs of New Zealand. Government Printer, Wellington.

The lignotuber of tutu (*Coriaria arborea*)

Alan Esler & Wilson Esler

Early farmers on the Auckland isthmus had it fairly easy with no forest to clear or logs to drag out of swamps. Bracken fern prevailed in the early 1940s. This could be burnt off and land cultivated for the first grain crops. But the farmers complained about having to dig out the roots of tupaki that we know as tutu. To throw some light on the subject we began to take an interest in the underground parts of tutu, not in the fernland because there is none locally. The quest began in Taranaki where the Mangorei Stream swept away most of the soil from beneath the plants on its margins. The first feature to notice was the size of these "roots" — great woody masses like overgrown distorted beetroots more than half a metre across. They were fairly regular in outline sitting slightly askew and held by a few very stout roots.

Seedlings growing on mossy rocks at a higher level told some more of the story. They had globular tubers with many shoots, some forming top growth, others latent or aborted. The specimen illustrated in *Wild plants in Auckland* on p188 had a tuber the size of a walnut and 37 shoots of various kinds.

The tutu we examined at Te Kaha in the Bay of Plenty was playing a supreme pioneering role stabilising steep roadside batters composed of shattered, moving greywacke fragments. The hard substrate prevented downward growth which was then directed across the slope as a stout arm sprouting new growth along the way. In the deep detritus on the lower side of the road

the plants took on the proportions on the lower half of a person's body.

Around Auckland tutu is a pioneer on the eroding sandstone slopes along the coast. The substrate is very unstable and many plants slide or roll as chunks of rock become dislodged. In the new position the uppermost part of the tuber resprouts even if it has been inverted. Further distortion occurs when parts of the tuber distant from the new shoots die off.

Woody plants that grew along streams are often well represented on coastal driftwood. These tell a story about what goes on underground without having to do any spade work. Tutu is less often seen than expected. The wood is fairly soft and also subject to decay in parts long before it becomes driftwood.

Enough information was gained from this range of examples to allow speculation on the form the tubers may have taken when growing with bracken on level permeable soil. They were likely to have been fairly regular in profile, inverted conical, possibly more than half a metre wide, and with a few stout roots arising high on the body of the tuber. Quite large bushes could develop on these wide persistent crowns after each destructive fire.

Such a life form is anomalous in the New Zealand flora. In Australia plants of this nature had a regenerative advantage in fire ravaged vegetation and evolved in that direction. Do other species of *Coriaria*