

## Reinstatement of *Epacris Franklinii* Hook. f. (Epacridaceae)

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### Abstract

Reexamination has been made of the riverine species of *Epacris* Cav. in Tasmania, in order to clarify the identification of plants obtained from the Meander and Mersey Rivers. Some comments are made on the distribution and conservation status of the species. Evidence is presented supporting the reinstatement of *Epacris franklinii* Hook.f. as a species distinct from synonymy with *E. mucronulata* R.Br.

### Introduction

In his introductory comments on the genus *Epacris* Cav., Bentham (1868) remarks that “with all its variations in the foliage and shape of the corolla it (*Epacris*) is the most easily recognized (genus) in the Order (Epacridae)... The species, however, (of *Epacris*) are exceedingly difficult to circumscribe by any definite characters, the whole eighteen of the short-flowered ones seeming to pass into each other by small gradations”. Unfortunately the passage of time has done nothing to relieve this situation. To the contrary, the discovery of new short-flowered taxa has only added to the problem.

The history of *Epacris* in Tasmanian botany is a good reflection of the problem as the changing status of taxa in the treatments of successive botanists has shown. *Epacris*, a genus of ca. fifty species in eastern Australia, New Zealand and New Caledonia, is represented in Tasmania by some twenty eight taxa (Crowden and Menadue, 2000). Seven species were recognized by Robert Brown (1810) and fourteen, with two varieties, by J.D. Hooker (1860). Ten Tasmanian species are described in Bentham’s *Flora Australiensis* (1868), while five others, now or previously recognized as species, were considered by him as varieties, or were given synonymy with other species. Rodway’s *The Tasmanian Flora* (1903), considers eleven species with six earlier species considered as varieties (four) or as synonymous (two), while Curtis (1963) describes eighteen species, with no varieties and only one earlier species reduced to synonymy. The most recent treatment of the genus by Crowden and Menadue (2001) considers twenty two species and six unresolved taxa.

In the early literature of Tasmanian botany three riverine species of *Epacris* were described, *E. exserta* R.Br., occurring on the South Esk and Tamar River system of northern Tasmania, *E. franklinii* Hook.f. on the large streams flowing to the west coast and *E. mucronulata* R.Br. on the south flowing rivers emptying into Port Esperance. *Epacris franklinii* was later judged by Bentham (1968), to be identical with *E. mucronulata* on the basis of a comparison of some R. Brown specimens of *E. mucronulata*, with a specimen collected by R. C. Gunn from the Gordon R. Bentham’s description of *E. mucronulata* carries the footnote “Brown’s specimens are in young bud, Gunn’s are past flower, but both appear to belong to the same species”; thereafter all *E. franklinii* specimens have been referred to as *E. mucronulata* in Tasmanian literature.

In recent years, 1987 onwards, a number of *Epacris* collections have been made from the north flowing Meander and Mersey Rivers. There had been no collections prior to this time from either river system lodged in HO. The new collections, although apparently all of a single taxon, were lodged under a variety of names, *E. exserta*, *E. aff. exserta*, *E. aff. mucronulata* and *E. “Union Bridge”* (a Mersey R. site), with *E. exserta* becoming a favoured and commonly accepted reference. It became an important matter to determine the correct identity and affinities of these specimens when a proposal to build an

irrigation dam on the Meander R. was opposed, largely on the grounds that it would impact seriously on the habitat of the endangered species *E. exserta*.

### Discussion

Floral morphology provides a ready means of distinguishing between *E. exserta* and *E. mucronulata*. In *E. exserta* both the anthers and the stigma are fully exserted above the corolla tube (Fig. 1a). In *E. mucronulata* both anthers and stigma are enclosed (Fig. 1c). It was immediately obvious that none of the specimens from either the Meander or Mersey Rivers, was *E. exserta*, as the anthers and stigmas in all cases were fully enclosed. However, there was an evident affinity of these plants with *E. mucronulata*.

Examination of the HO *E. mucronulata* sheets and comparison with the Meander/Mersey collections indicated the presence of 2 taxa. Taxon 1 contains all the specimens from the Huon R. system, plus 2 sheets of Gordon R. plants. It matches the type of *E. mucronulata* R.Br. (BM). Taxon 2 contains plants from the King, Gordon, and Pieman River systems and all the plants from the Meander and Mersey Rivers.

The main differences between the two taxa are outlined here. Taxon 1:- young stems sparsely pilose, leaves often distinctly 3-nerved underneath, the apex drawn out to a point, the corolla tube exceeding the calyx, the style bulbous near the base, the stigma below the anthers. Taxon 2:- young stems glabrous or barely pilose, the leaves with only the midrib prominent underneath, the apex acute with a blunt, often upturned mucro, the corolla tube is about equal with the calyx, or slightly longer, the style tapering from the base or with a slight central swelling, the stigma near the top of the anthers.

The distinction in floral morphology, in particular style length, between the two taxa is illustrated in the flower section drawing shown on the cibachrome photo (K) of *E. franklinii* Hook. f. (Hook. f. nr. 1907, Fig. 2), (later redetermined by Bentham as *E. mucronulata* R.Br.). This drawing matches the flower of Taxon 2, but not that of Taxon 1.

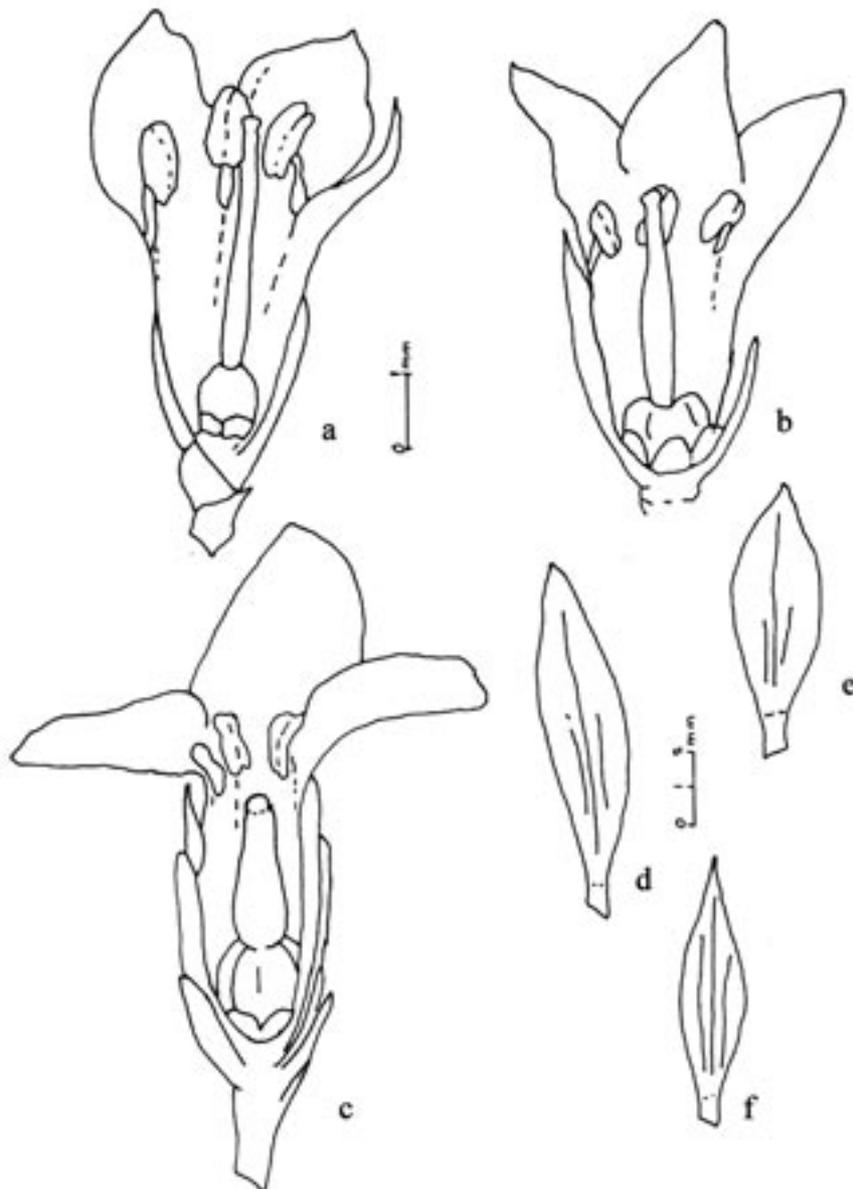
On this evidence it seemed appropriate to reinstate the earlier name *E. franklinii* Hook.f., for all the Taxon 2 specimens, including the Meander/ Mersey plants. *E. mucronulata* R.Br. would then apply only to the Taxon 1 specimens.

The disjunct distribution of *E. franklinii* may well be a consequence of the late quaternary glaciation history in the Central Highlands of Tasmania. It is possible that in a preglacial period of warmer, moister climate, the species was more widespread and at a higher altitude, where the major rivers which are the current habitat of these species all have their source. The onset of cooler and drier climate during the period(s) of glaciation would be expected to force the plants to lower altitudes down the separate river valleys.

Examination of herbarium records, together with field observations of the current distributions of these riverine species, showed *E. exserta*, to be restricted to the South Esk River in northern Tasmania, with its habitat much reduced by over 150 years of farm land development. Indeed some early collection sites are now entirely cleared of native vegetation. Its conservation status is given as endangered. *E. franklinii* and *E. mucronulata*, between them retain most of the distribution on the major river system of the west and south, previously allocated to *E. mucronulata*, and despite some hydroelectric developments and forestry activities, much of their riverine habitat remains intact. Prior to this investigation, the conservation status of *E. mucronulata* was given as vulnerable. This may require reassessment in the light of the significant narrowing of its distribution.

### Key to the species

1. Filaments longer than anthers: anthers and stigma exserted.....1. **E. exserta**
1. Filaments shorter than anthers: anthers and stigma enclosed. ....2
2. Leaves tri-nerved underneath, apex acute or acuminate: stigma below anthers. ....2. **E. mucronulata**
2. Leaves with only midrib apparent, apex acute with inturned mucro: stigma amongst anthers. ....3. **E. franklinii**



**Figure 1.** Half flowers of a. *E. exserta* R.Br., b. *E. franklinii* Hook. f. and c. *E. mucronulata* R.Br. Leaves of d. *E. exserta* R.Br., e. *E. franklinii* Hook.f. and f. *E. mucronulata* R. Br.



**Figure 2.** Cibachrome photograph from Kew of *E. franklinii* Hook. f., ex Herb. Hookerianum 1867. The notation states “very common shrub growing 6 feet high, overhanging the margin of the River Franklin near Macquarie Harbour. It would be under water much of the year, as the River is subject to heavy flooding and it was commonly so when I was there”.

### Taxonomy

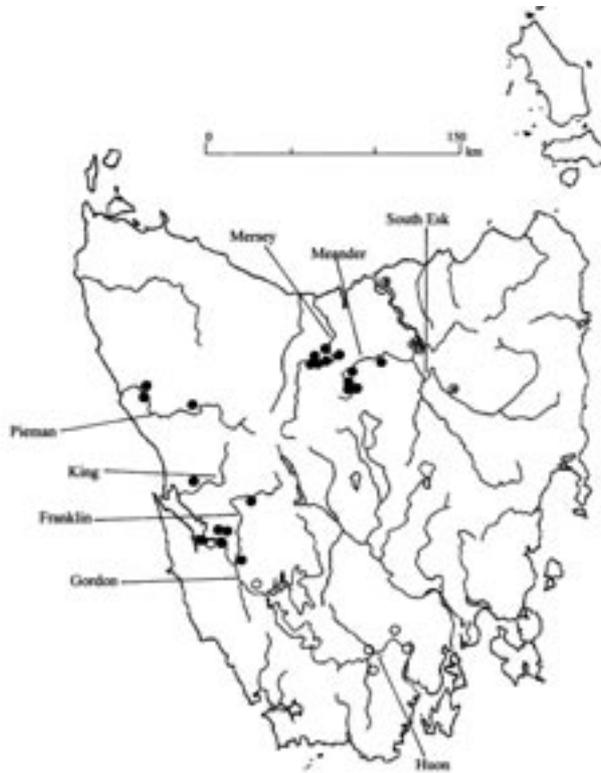
#### Description of the Species

1. *E. exserta* R.Br. Prod. 551, 1810; DC. Prod. vii. 763, 1839; Hook. f., Fl. Tasm. i, 260, 1831; Bentham, Fl. Australiensis, iv, 238, 1868; Rodway, Tas. Flora, 121, 1903; Curtis, Stud. Fl. Tas. Vol.2. 448, 1963. *Holotype*: Port Dalrymple, Jan. 1804, R. Brown 2485 (BM).

An erect multi-stemmed *shrub* up to 1.5m high. Young *stems* glabrous or nearly so. *Leaves* narrow-lanceolate to elliptical, 7 – 11mm long x 1.1 – 1.3mm wide, the apex acute, blunt, with a short mucro often slightly inturned. *Flowers* clustered in the axils of the top few leaves of new season's branchlets, are on long, bract-clothed pedicels, which bend and project the flowers out from the leaves. *Corolla* tube cylindrical, longer than the calyx and the lobes, the filaments longer than the anthers, projecting the (exserted) anthers clearly above the plane of the corolla lobes. *Style* cylindrical, the stigma at the top of the anthers and usually above them (Fig. 1 a, d).

*Distribution*: Very rare amongst riverbank boulders in the gorge of the South Esk River at Trevallyn (Launceston), and in riverine vegetation near the picnic grounds. Some early collections were made at Port Dalrymple (near Georgetown) and along the Nile River (Fig. 3.), these populations now appear to be extinct.

*Specimens examined*: South Esk R., Launceston, Sept. 23, 1842, R. C. Gunn, (HO 4248); Launceston, Aug. 21, 1931, A.M. Olsen (HO 4253); Cataract Gorge, Launceston, 1911, F.E. Burbury (HO 5285); Nile, Oct. 20, 1957, D.M. Paton, (HO 4257); Launceston, First Basin, Aug. 27, 1996, M. Iowski (HO 321505); below Trevallyn Dam, Oct. 16, 1987, R.K. Crowden (HO 111644).



**Figure 3.** Map showing collection sites in Tasmania of *Epacris exserta* R.Br. (<math>\langle</math>), *E. franklinii* R.Br. (#), and *E. mucronulata* Hook.f. (O).

**2. *E. mucronulata*** R. Br. Prod. 552, 1810; DC. Prod. vii. 764, 1839; Bentham, Fl. Australiensis, iv, 238, 1868; Rodway, Tas. Flora, 121, 1903; Curtis, Stud. Fl. Tas. Vol.2. 448, 1963. *Holotype*. Port de l'Esperence, banks of the larger river, June 1804, R. Brown 2486 (BM).

An erect *shrub* up to 2m high, many-branched and fastigiata. Young *stems* minutely to moderately pilose. *Leaves* lanceolate 8 – 12mm long, 1.5 – 2mm broad, on longish petioles 1 – 1.2mm, flat to slightly concave, margin slightly thickened and entire, midrib prominent below and usually 2 other veins, apex acute with a short mucro tapering to a blunt tip. *Flowers* relatively few and clustered in the upper axils, borne on long (2.0 – 2.3mm) bract-clothed pedicels. *Bracts* ovate and keeled in upper part, apex acute, the larger bracts becoming mucronate. *Sepals* lanceolate – narrowly ovate, ca. 4mm long x 1.2mm wide, the midrib indistinct except near the tip, apex acute and mucronate, the margin minutely ciliate in the upper part. *Corolla* tube cylindrical, longer than the sepals and the lobes, the anthers on short filaments and enclosed within the tube. *Style* with a basal swelling, short, the stigma below the base of the anthers (Fig. 1. c, f).

*Distribution*: Riverbank vegetation just above normal flow levels, but subject to inundation during floods. Huon and Picton Rivers, upstream from Huonville, and the Gordon River (Fig. 3).

*Specimens examined*: Tahune Bridge, Huon R., Sept. 21, 1979, S.J. Jarman (HO 31297); Huon R. at Judbury, Apr. 2. 1988, A. M. Buchanan (HO 109634); Huon R. 2km NW of Huonville, Jul. 14, 1991, P. Collier (HO 142403; Picton R at bridge, Oct. 30, 1982, A. Moscal (HO 66495); Huon R., Tahune Bridge, Sept. 2, 1983, R.K. Crowden (HO115366); Gordon R. near Sugarloaf, Nov. 11, 1846, J. Milligan (HO 5138); Gordon R., First Splits, Nov. 8, 1978, S.J. Jarman (HO 411340).

**3. *E. franklinii*** Hook.f. Fl.Tasm. i. 261. t. 79B, 1831. *Holotype*: Franklin R. Feb 7. 1845. Hook. f. nr. 1907, (Herb. Hookerianum 1867), cibachrome from K. *Isotype*: Franklin R. Feb. 7.1845. R. C. Gunn. HO 5944.

An erect spreading *shrub* up to 2m high. Young *stems* mostly glabrous or occasionally sparingly pubescent. *Leaves* lanceolate or elliptic 8 – 11mm long 1.3 – 1.4mm broad, on longish petioles 0.9 – 1.1mm, nearly flat or slightly concave near the petiole, margin minutely dentate, midrib only prominent below, apex acute, with a short usually inturred mucro. *Flowers* few, clustered at the branch tips, borne on long, curved, bract-clothed pedicels. *Bracts* ovate and keeled in upper part, apex narrowly ovate. *Sepals* ovate, ca. 4mm long x 1.5mm wide, apex broadly acute, the margin ciliolate. *Corolla* tube cylindrical, as long as or slightly longer than the sepals, but longer than the lobes, the anthers enclosed. *Style* tapering from the base, or with a slight central swelling, the stigma at the top of the anthers (Fig. 1. b, e).

*Distribution*: Riverbank vegetation along the Meander, Mersey, Pieman, Maxwell, Gordon, Franklin and King Rivers systems. The plants grow above the normal river flow levels, but are subject to inundation during floods (Fig. 3).

*Specimens examined*: Gordon R., Nov. 1896, L. Rodway (HO 5139); King R, Oct. 1903, L. Rodway HO 5137); King R. Nov. 24, 1998, A.M. Buchanan (HO 329373); Heemskirk Falls on Pieman R., May 27, 1985, M.J. Brown (HO 96681); Franklin R. at Irenabyss and downstream to Gordon, Mar. 10, 1980, A. Moscal (HO 34118); Pieman R. near Hades Ridge, Nov. 15, 1974, F. Allen (HO 106903); Jackeys Marsh, Meander R., Nov. 7, 1986, K. Williams (HO 509094); Mersey R. near Weegen, Oct. 1987, T. Aliano (HO 322792); Cheshunt Bridge, Meander, Nov. 11, 1997, T. Aliano (HO 323671); Mersey R. below Alum Cliffs, July 25, 1996, D. Keith (HO 320129); Egmont Bridge on Meander R. Jul.25, 1996, D. Keith (HO 321356); Long Ridge on Meander R., Jul. 23, 1996, D. Keith (HO 321353).

### **Acknowledgements**

Dr. Yvonne Menadue, for providing drawings of the species and staff of the Tasmanian Herbarium, for their willing help.

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