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RESEARCH ARTICLE

Elevation of *Pennantia* J.R.Forst. & G.Forst. sect. *Dermatocarpus* Miers (*Pennantiaceae* J.Agardh.) to subgenus rank

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Abstract. *Pennantia* J.R.Forst. & G.Forst. sect. *Dermatocarpus* Miers is elevated to subgenus rank on the basis of morphological distinctions and phylogenetic position between the sole representative of this section, *Pennantia cunninghamii* Miers, and the other three members of section *Pennantia*.

Keywords: *Pennantiaceae*, *Pennantia* sect. *Pennantia*, *Pennantia* sect. *Dermatocarpus*, *Pennantia cunninghamii*, *Pennantia* subg. *Dermatocarpus*, new combination, taxonomy, Australasia

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Introduction

Pennantia J.R.Forst. & G.Forst. is an Australasian taxon of four species: the Norfolk Island endemic *Pennantia endlicheri* Reissek, Aotearoa / New Zealand endemic *P. corymbosa* J.R.Forst. & G.Forst. (the type of the genus, Fig. 1), eastern Australian endemic *P. cunninghamii* Miers, and Manawa Tawhi / Three Kings Islands endemic *P. baylisiana* (W.R.B.Oliv.) G.T.S.Baylis. It is the only genus in the *Pennantiaceae* J.Agardh. (Kårehed, 2001, 2003; Gardner, de Lange, 2002).

The position of the family with its sole genus, following its reinstatement by Kårehed (2001) is unequivocal (Maurin, 2020). All four species within the genus are well defined (Gardner & de Lange, 2002) and widely accepted (<https://powo.science.kew.org/results?q=Pennantia>). Within the genus, two sections are recognised, *Pennantia* J.R.Forst & G.Forst. sect. *Pennantia* with three species (*P. baylisiana*, *P. corymbosa*, and *P. endlicheri*) and sect. *Dermatocarpus*

Miers (Miers, 1852; Gardner & de Lange, 2002) for *P. cunninghamii*.

Miers (1852) established sect. *Dermatocarpus* when he described *Pennantia cunninghamii* (Fig. 2.), distinguishing the section on the basis of its ovate, leathery, endocarp, ‘putamen ovatum coriaceum’ (Miers, 1852, p. 491), contrasting this to the hard stone endocarp of sect. *Pennantia*. However, Gardner & de Lange (2002) noted further differences between the sections. In particular, the ovary of *P. cunninghamii* is ovoid rather than barrel-shaped, and deeply longitudinally ridged and furrowed, rather than more or less unfurrowed. The stigmatic area of *Pennantia cunninghamii* comprises three short apical style elongations, whereas that of sect. *Pennantia* has no style, rather a stigmatic surface composed of a ‘low-crested apical ring of 3 hippocrepiform or ±triangular segments’ (Gardner & de Lange, 2002). They also noted that *Pennantia cunninghamii* lacked uncinat hairs whereas these were sometimes present in sect. *Pennantia*. The leaf blades of



Fig. 1. *Pennantia corymbosa* the type of the genus *Pennantia*. Image shows a cultivated male plant, Tāmaki Makaurau / Auckland, Te Ika a Māui / North Island, Aotearoa / New Zealand (image: P.J. de Lange)

sect. *Pennantia* sometimes possess hair-fringed domatia at the base of the lateral veins, whereas *P. cunninghamii* leaves bear pit domatia mostly in the distal forks of the lateral veins.

Subsequent phylogenetic analyses consistently showed well-supported lineages, where *Pennantia cunninghamii* is sister to the three members of section *Pennantia* (Keeling et al., 2004; Maurin, 2020). Keeling et al., (2004) showed 15% sequence divergence between *Pennantia cunninghamii* and the other three members under nrDNA ITS gene, while Maurin (2020) estimated the sister split within the last 20 My (vs. estimation of 4.2 Mya diversification between New Zealand, Three Kings/ Manawatawhi and Norfolk Island species) using whole chloroplast genome and 18S–26S nuclear ribosomal repeat sequences.

In our view, the combination of morphological differences and the phylogenetic position warrant elevation of *Pennantia* sect. *Dermatocarpus*, to the rank of subgenus, and this action is taken here.

New Combination

Pennantia J.R.Forst. & G.Forst. subgenus *Dermatocarpus* (Miers) de Lange & K.J.L.Maurin comb. et stat. nov.

Basionym: *Pennantia* J.R.Forst. & G.Forst. sect. *Dermatocarpus* Miers, Ann. Mag. Nat. Hist. ser. 2, 9(54): 491 (1852).

Type: *Pennantia cunninghamii* Miers, Ann. Mag. Nat. Hist. ser. 2, 9(54): 491 (1852).

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Ethics Declaration

The authors declare no conflict of interest.

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Fig. 2. *Pennantia cunninghamii*. A: Adaxial leaf side of *Pennantia cunninghamii* showing domatia (as raised lumps) in distal vein forks, New England National Park, Brinerville, New South Wales, Australia; B: Abaxial leaf side of *Pennantia cunninghamii* showing pit domatia in distal vein forks, New England National Park, Brinerville, New South Wales, Australia; C: Male flowers of *Pennantia cunninghamii*, Scenic Rim, Queensland, Australia; D: Immature fruits of *Pennantia cunninghamii*, Laidley Creek falls Goomburra, Queensland, Australia (images: A–B, P. Pellier; C, N.J. Fisher; D, M. Bennett)



A



B



C



D

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Реферат. Статус назви *Pennantia* J.R.Forst. & G.Forst. sect. *Dermatocarpus* Miers підвищено до рангу підроду на основі положення у філогенетичній системі єдиного представника цієї секції, *Pennantia cunninghamii* Miers, та його морфологічних відмінностей від трьох представників секції *Pennantia*.

Ключові слова: *Pennantiaceae*, *Pennantia* sect. *Pennantia*, *Pennantia* sect. *Dermatocarpus*, *Pennantia cunninghamii*, *Pennantia* subg. *Dermatocarpus*, Австралазія, нова комбінація, таксономія