



<https://doi.org/10.15407/ukrbotj79.04.199>

RESEARCH ARTICLE

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

Kévin J.L. MAURIN<sup>1</sup> , Marleen BALING<sup>2</sup> , Peter J. de LANGE\*<sup>2</sup> 

<sup>1</sup>School of Science, The University of Waikato, Private Bag 3105, Hamilton 3240, Aotearoa / New Zealand

<sup>2</sup>School of Environmental & Animal Sciences, Unitec Institute of Technology, Private Bag 92025, Victoria Street West, Auckland 1142, Aotearoa / New Zealand

**Abstract.** *Pennantia* J.R.Forst. & G.Forst. section *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

**Article history.** Submitted 06 July 2022. Revised 25 August 2022. Published 31 August 2022

**Citation.** Maurin K.J.L., Baling M., de Lange P.J. 2022. Elevation of *Pennantia* J.R.Forst. & G.Forst. section *Dermatocarpus* Miers. (*Pennantiaceae* J.Agardh.) to subgenus rank. *Ukrainian Botanical Journal*, 79(4): 199–202. <https://doi.org/10.15407/ukrbotj79.04.199>

\*Corresponding author e-mail: [pdelange@unitec.ac.nz](mailto:pdelange@unitec.ac.nz)

### 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 and 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 et 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 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 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.

© 2022 K.J.L. Maurin, M. Baling, P.J. de Lange. Published by the M.G. Kholodny Institute of Botany, NAS of Ukraine. This is an open access article under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, distribution, and reproduction in any medium, provided the original work is properly cited



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)

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 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. 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).

## Acknowledgements

The authors wish to acknowledge during this time of extreme, unwarranted aggression to the people of Ukraine, the editorial staff of the *Ukrainian Botanical Journal*. In particular we single out Dr Vera Hayova and Professor Sergei Mosyakin, whose positivity during this difficult time, and dedication to their profession and science should serve as a model for other scientists on how to conduct oneself during a war. The authors acknowledge the comments from two anonymous referees.

## Ethics Declaration

The authors declare no conflict of interest.

## ORCID

K.J.L. Maurin: <https://orcid.org/0000-0003-2231-3668>

M. Baling: <http://orcid.org/0000-0003-0389-4807>

P.J. de Lange: <https://orcid.org/0000-0001-6699-7083>

## References

- Gardner R.O., de Lange P.J. 2002. Revision of *Pennantia* (*Icacinaeae*), a small isolated genus of Southern Hemisphere trees. *Journal of the Royal Society of New Zealand*, 32(4): 669–695. <https://doi.org/10.1080/03014223.2002.9517715>
- Kårehed J. 2001. Multiple origin of the tropical forest tree family *Icacinaeae*. *American Journal of Botany*, 88(12): 2259–2274. <https://doi.org/10.2307/3558388>
- Kårehed J. 2003. The family *Pennantiaceae* and its relationships to Apiales. *Botanical Journal of the Linnean Society*, 141(1): 1–24. <https://doi.org/10.1046/j.1095-8339.2003.00110.x>

Fig. 2. *Pennantia cunninghamii*. A: Adaxial leaf of *Pennantia cunninghamii* showing domatia (has raised lumps) in distal vein forks, New England National Park, Brinerville, New South Wales, Australia; B: Abaxial leaf 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

Keeling D., Gardner R., de Lange P. 2004. An inferred molecular phylogeny from nrDNA ITS sequences for *Pennantia* (*Pennantiaceae*). *New Zealand Botanical Society Newsletter*, 76: 24–27.

Maurin K.J.L. 2020. A dated phylogeny of the genus *Pennantia* (*Pennantiaceae*) based on whole chloroplast genome and nuclear ribosomal 18S–26S repeat region sequences.

*PhytoKeys*, 155(2): 15–32. <https://doi.org/10.3897/phytokeys.155.53460>

Miers J. 1852. On some genera of the *Icacinaeae*. *The Annals and magazine of Natural History, Zoology, Botany, and Geology*, 2(9): 481–492.

Recommended for publication by S.L. Mosyakin

Морін К.Дж.Л., Бейлінг М., де Ланге П.Дж. 2022. Підвищення статусу *Pennantia* J.R.Forst. & G.Forst. sect. *Dermatocarpus* Miers. (*Pennantiaceae* J.Agardh.) до рангу підроду. *Український ботанічний журнал*, 79(4): 199–202 [In English].

Університет Вайкато, Гамільтон 3240, Нова Зеландія: К.Дж.Л. Морін; Технічний університет УніТек, Окленд 1142, Нова Зеландія: М. Бейлінг, П.Дж. де Ланге.

**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 інших представників секції *Pennantia*.

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