

Zealandia pustulata subsp. pustulata

COMMON NAME

hound's tongue, kōwaowao, pāraharaha

SYNONYMS

Phymatosorus pustulatus (G. Forst.) Large, Braggins et P.S. Green;
Phymatosorus diversifolius (Willd.) Pic. Serm.; Microsorium pustulatum (G. Forst.) Copel. subsp. pustulatum

FAMILY

Polypodiaceae

AUTHORITY

Zealandia pustulata (G.Forst.) Testo et A.R.Field subsp. pustulata

FLORA CATEGORY

Vascular – Native

ENDEMIC TAXON

No

ENDEMIC GENUS

No

ENDEMIC FAMILY

No

STRUCTURAL CLASS

Ferns

NVS CODE

PHYDIV

CHROMOSOME NUMBER

2n = 74

CURRENT CONSERVATION STATUS

2017 | Not Threatened

PREVIOUS CONSERVATION STATUSES

2012 | Not Threatened

2009 | Not Threatened

2004 | Not Threatened

DISTRIBUTION

Indigenous. New Zealand: Kermadec Islands (Raoul, Meyers only), Manawatāwhi / Three Kings Islands, North Island, South Island, Stewart Island/Rakiura, Chatham Islands, Antipodes Islands, Auckland Islands. Also Australia. Abundant throughout main islands of New Zealand except for Central Otago.

HABITAT

A common fern of coastal to montane area, growing either on the ground, over rocks or on tree trunks and branches. Although widespread and often found growing admixed with *Dendroconche scandens*, *Zealandia pustulata* is more drought tolerant and seems to prefer more open, drier habitats.



Stokes Valley. Dec 2004. Photographer: Jeremy R. Rolfe, Date taken: 25/12/2004, Licence: CC BY.



Remutaka Forest Park. Photographer: Jeremy R. Rolfe, Date taken: 22/11/2003, Licence: CC BY.

WETLAND PLANT INDICATOR STATUS RATING

UPL: Obligate Upland

Rarely is a hydrophyte, almost always in uplands (non-wetlands).

DETAILED DESCRIPTION

Epiphytic or rupestral scrambling or climbing fern. **Rhizomes** long-creeping, 4–10–(12) mm diameter, fleshy-succulent, yellow-green to golden brown, sometimes glaucous maturing greyish-brown to grey-black, growing tips densely invested in brown-black appressed ± ovate scales, these entire or minutely toothed near apex, scales shedding over time as rhizome matures leaving small scars. **Fronds** joined to rhizomes, very coriaceous; stipes 20–250–(340) mm long, pale brown to almost black, ± pliant when young becoming brittle with age; laminae adaxially glabrous (except for a few scales on midrib and costae), bright glossy green (yellow green in exposed sites), abaxially paler, in outline variable ranging from undivided (especially in young plants) narrowly elliptic, 70–250 × 10–30 mm to mostly pinnate, ovate, 60–450 × 40–300 mm; midrib and veins prominent, main lateral veins mostly prominent, usually with 2 or 3 series of major areoles between costa (midrib in simply fronds); hydathodes present on blind vein endings, visible mainly on upper surface; pinnae in 1–12 pairs, 30–170 × 5–40 mm, bluntly acute, margins smooth, weakly undulose to extremely so, bases adnate. **Sori** prominent, round (rarely elliptic), sunk into abaxial lamina causing a prominent bulge on the adaxial laminal surface, aligned in one row either side of costa, set back from pinna margins. **Spores** pale, bearing wart-like protuberances.

SIMILAR TAXA

Easily recognised by the stout, widely creeping, pruinose fleshy rhizomes bearing brown-black appressed scales (and which carry distinctive scars where the appressed brown-black scales have shed), and by the thick, leathery, bright glossy green fronds, broad pinnae with entire often wavy margins, distinctive conspicuously reticulate venation, and deeply impressed sori. The genus *Zealandia* differs from *Dendroconche* by the usually pruinose rhizomes and holoepiphytic rather than hemiepiphytic growth habit, absence of laterally inserted climbing roots and sori which are deeply impressed in the lamina (Testo et al. 2019).

PROPAGATION TECHNIQUE

Easily grown from rooted pieces of rhizome. Excellent in a hanging basket, large pot, or trained to grow over rocks, and logs. *Zealandia pustulata* can be easily established on the branches of suitable trees and can make a fine specimen for the average garden. Once established it rarely requires much attention and has the added bonus of being remarkable drought tolerant, disease and pest free.

TAXONOMIC NOTES

The treatment of Testo et al. (2019) in which the New Zealand ferns previously treated by New Zealand authors as *Microsorium* (see Brownsey & Smith-Dodsworth 2000) are segregated into two genera, *Dendroconche* and *Zealandia* is followed here.

ATTRIBUTION

Fact sheet prepared for NZPCN by P.J. de Lange (13 January 2012). Description adapted from Brownsey & Smith-Dodsworth (2000) and Bostock & Spokes (1998).

REFERENCES AND FURTHER READING

Bostock PD, Spokes TM. 1998. Polypodiaceae. *Flora of Australia* 48, *Ferns Gymnosperms and allied groups*: 468–495. ABRS/CSIRO Victoria, Australia.

Brownsey PJ, Smith-Dodsworth JC. 2000. *New Zealand Ferns and Allied Plants*. David Bateman, Auckland, NZ. 168 p.

Testo WL, Field AR, Sessa EB, Sundue M. 2019. Phylogenetic and morphological analyses support the resurrection of *Dendroconche* and the recognition of two new genera in Polypodiaceae Subfamily Microsoroideae. *Systematic Botany* 44(4): 1–16. <https://doi.org/10.1600/036364419X15650157948607>.

NZPCN FACT SHEET CITATION

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<https://www.nzpcn.org.nz/flora/species/zealandia-pustulata-subsp-pustulata/> (Date website was queried)

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/zealandia-pustulata-subsp-pustulata/>