

A new species of wirerush from the wetlands in northern New Zealand

July 9 2012

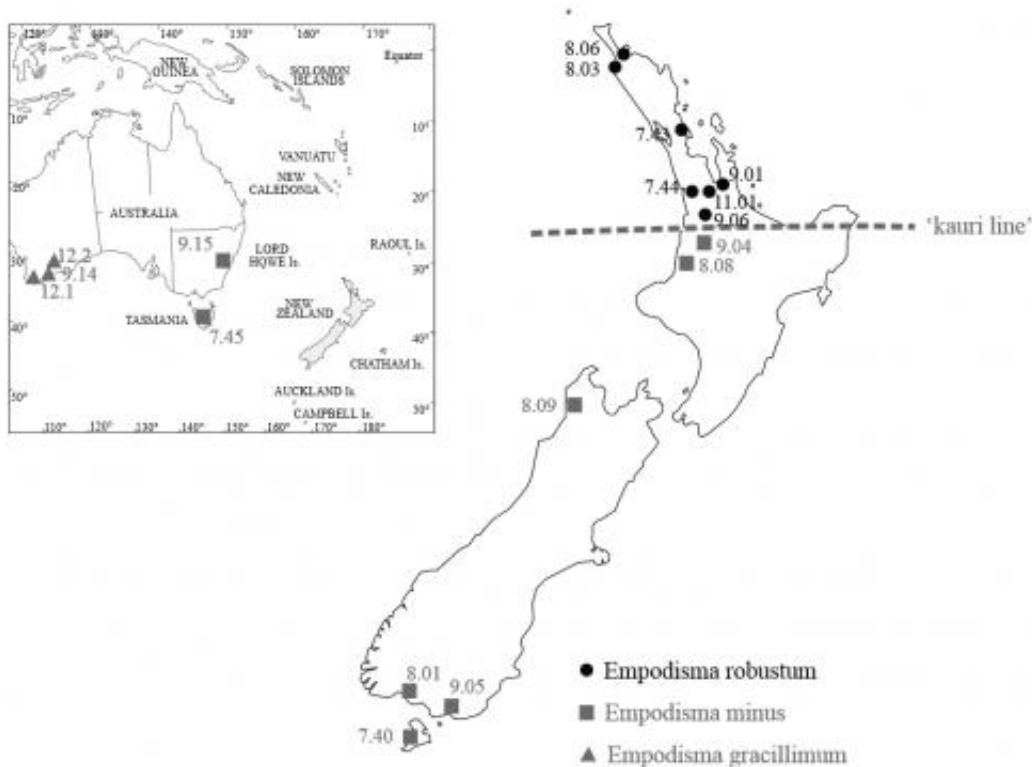


This shows Beverly Clarkson assessing the ecological condition of an *Empodisma robustum* wetland. Credit: Steve Wagstaff and Beverly Clarkson

The northern part of the North Island of New Zealand is marked at approximately 38° S latitude by a distinct ecological boundary known as the "kauri line". This region forms the southern distributional limit of many plants and is the warmest part of New Zealand. A number of endemic plants are found there. Ecologists have recently discovered a new species of wirerush from peatlands north of the "kauri line".

Wetlands serve vital ecological functions by providing wildlife habitat, carbon storage, nutrient regulation and water balance. New Zealand has a number of wetland types. The peat-forming wetlands are dominated by a plant commonly known as wirerush (*Empodisma*, Restionaceae). The name *Empodisma* is derived from a Greek word meaning "to hinder".

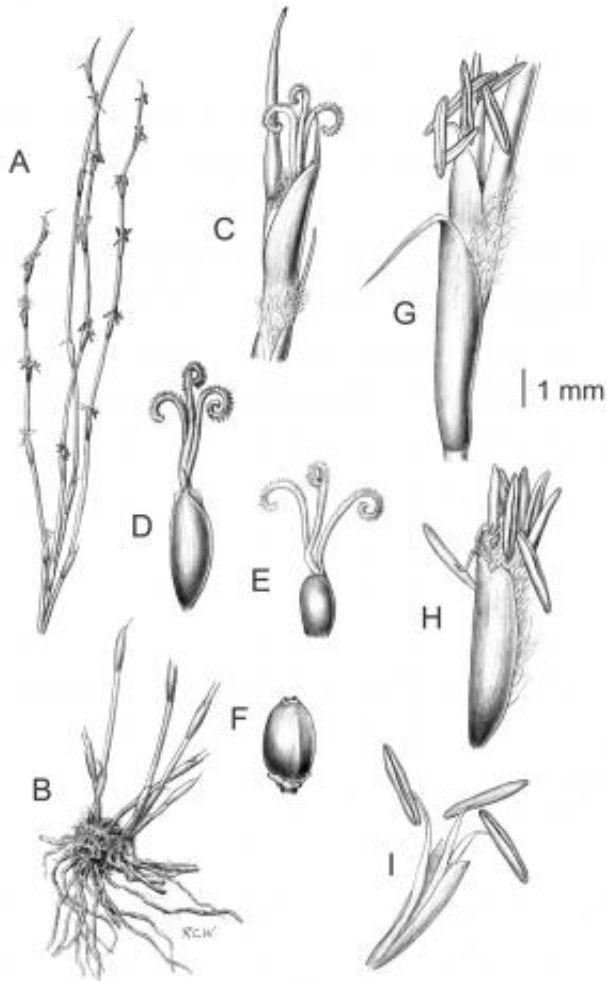
Both the common and the Greek name describe its dense scrambling growth form. *Empodisma* is in the southern hemisphere family Restionaceae.



This is a map showing the generalized distribution of *Empodisma* in Australia and New Zealand and the collection localities of the DNA samples included in our study. The approximate position of the kauri line in New Zealand is shown with a dashed line. Credit: Steve Wagstaff and Beverly Clarkson

The horizontal root systems of wirerush branch profusely forming finely divided rootlets with long-lived root hairs. In wirerush bogs, the underlying peat is formed largely from the remains of the root systems, stems bases and trapped plant litter. The peat mass absorbs water like a sponge. In peat bogs, incoming rainfall and atmospheric particles are the

only source of nutrients. These are removed from the flow of water in the porous upper layers of peat. This may be an adaptive feature in nutrient-poor environments such as peat bogs.



Morphological characteristics of *Empodisma robustum*. A) Vegetative shoot with attached leaves and flowers (actual size) B) Rhizomes with emerging vegetative shoots (2.5× actual size) C) Vegetative shoot with attached pistillate flower D) Pistillate flower with attached bracts E) Gynoecium F) Mature nut G) Vegetative shoot with attached staminate spikelet H) Staminate flower with attached bracts I) Staminate flower. Scale bar = 1 mm. Credit: Steve Wagstaff and Beverly Clarkson

Steve Wagstaff and Beverly Clarkson recognize three [species](#) of wirerush including the newly described species *Empodisma robustum*. *Empodisma robustum* is only found in peatlands in northern New Zealand, whereas *E. minus* is found in central and southern [New Zealand](#) and eastern Australia, and *E. gracillimum* is restricted to western Australia. Their study provides an account of the origin, diversification and ecology of the genus with descriptive keys and illustrations.

More information: Wagstaff SJ, Clarkson BR (2012) Systematics and ecology of the Australasian genus *Empodisma* (Restionaceae) and description of a new species from peatlands in northern New Zealand. *PhytoKeys* 13: 39-79. [doi: 10.3897/phytokeys.13.3259](https://doi.org/10.3897/phytokeys.13.3259)

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