

An orphan Trans-Tasman moss without a family

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Finnish bryologist and school teacher Viktor Ferdinand Brotherus (1849–1929) described a new species of moss in 1900(3) from a specimen collected at Knocklofty—a hill on the outskirts of West Hobart—sent to him by Tasmanian bryologist William Weymouth (1841–1928). He placed the new species in the genus *Anomodon* Hook. and Taylor(3) which was then in the family Thuidiaceae Schimp; based on superficial similarity with other species in the genus(10). The Thuidiaceae is well represented in Tasmania but *Anomodon* is chiefly northern hemisphere(10,8) though the global distribution of *Anomodon* was no doubt poorly understood at the turn of the 20th century.

Some taxa lack descriptions of their spore-producing generation in treatments because no material is found at the time of circumscription, as was the case for the new moss species. The species has since been collected from various parts of Tasmania, Victoria, Western Australia and less frequently in South Australia and New Zealand(10,1) however sporophytes were still not revealed(10). Mosses are divided into two groups based on the placement of their sporophytes; acrocarpous and pleurocarpous. The former has female gamete producing organs—and therefore sporophytes—born at the tips of shoots. In pleurocarps the same organs and sporophytes are born on lateral branches. Brotherus was an advocate of classifying mosses this way(7) and as such accepted the Tasmanian specimen as a pleurocarp in the exclusively pleurocarpous Thuidiaceae, even so without confirmation of sporophyte characters. The specimen was described and named *Anomodon tasmanicus* Broth.(3)

Anomodon was revised by Iñigo Granzow-de la Cerda in 1989 during which time he discovered that a syntype of the Weymouth collection of *Anomodon tasmanicus* contained a terminal perichaetial bud which confirmed the species as acrocarpous(6). While this added significantly to solving the taxonomic placement of matching specimens, it required that the taxon had to be assigned to a new family.

English bryologist Hugh Dixon (1861–1944) and New Zealander bryologist George Sainsbury (1880–1957) described a new species *Triquetrella curvifolia* Dixon ex Sainsb. in 1933(4) from a specimen collected in 1930 by colleague and liverwort expert Amy Hodgson (1888–1983), while she was visiting a grassy hillside in Hastings, New Zealand. This new species was described only by gametophyte material (the description notes *fructus ignotus*). Dixon and Sainsbury described the species as "*a very distinctive species in the leaves finely cuspidate, with a smooth hyaline tip, much less strongly papillose than in most species, and especially in the leaves closely twisted round the stem when dry, often forming an indistinct spiral. The stems are slender, elongate, flexuose, more or less prostrate, so that the triquetrous arrangement is not so marked as is usually the case when moist*". Its vegetative characters are also compared with the more common and widespread species *Triquetrella papillata* (Hook.f. & Wilson) Broth.

Between the botanical brains of Hodgson, Dixon and Sainsbury, they found and gave an apparently new and distinctive species a brief but accurate description. The name survived at least 36 years until the bryological community including Sainsbury agreed that *Anomodon tasmanicus* and *Triquetrella curvifolia* were the same taxon(6). Granzow determined that the species best fitted the genus *Triquetrella* due to leaf morphology and in applying Brotherus' priority of publication revised the taxon to *Triquetrella tasmanica* (Broth.) Granzow-de la Cerda. English-born New South Welsh bryologist William Watts (1856–1920) lodged what was apparently the same taxon as Brotherus' *Anomodon tasmanicus* under the name *Triquetrella albicuspes* Broth., sp. nov.(11) Philip Sollman(9) resolves *T. albicuspes* as having no status on account that it did not meet publication requirements. *Triquetrella albicuspes* is mentioned amongst a description of the bryoflora in an area of New South Wales(11) and likely used pre-emptively for a taxon which Brotherus subsequently chose not to publish. It should scarcely need saying that *T. albicuspes* is *nomen nudum* but more importantly that the Watts specimens were identical to and should have been applied to *Anomodon tasmanicus* or *Triquetrella tasmanica*. Sollman(9) regards the species to be better left in Thuidiaceae due to the presence of stoloniform branches (and implies other characters); though he does not comment on the record of apically-borne archegonia in type material. Independently Spence(10) cites unpublished molecular data which supports better placement of the material in Racopilaceae (pleurocarpous).

The genus of Brotherus' *Anomodon tasmanicus* is unresolved. *Anomodon* is now regarded best placed in its own pleurocarpous family Anomodontaceae(5,2) previously a subfamily of Thuidiaceae. The Australian Moss Census (AusMoss 2019) lists *Triquetrella tasmanica* (Broth.) Granzow-de la Cerda as the currently accepted name for this taxon. The evidence for its current accepted name rests on Granzow's interpretation of apical perichaetial buds. Further molecular analysis is required to better identify its lineage within the bryoflora.

During our botany workshop to Licola in 2017, we recorded *Triquetrella tasmanica* on an open, grassy dry slope adjacent to McMillans Walking Track. This represents the southeastern-most databased record in Victoria (the next northwest near Jamieson). On close inspection, this taxon has similarities with other species in the abovementioned genera, with general form and branching like many Thuidiaceae and somewhat complanate, ranked leaves with horizontal shoots attached to soil by rhizoids, not unlike *Racopilum cuspidigerum* (Schwägr.) Ångstr. The habitat comprised clay-loam soil amongst grass tussocks in a dry eucalypt forest with the dominant species (canopy) *Eucalyptus angophoroides* R.T. Baker, *Eucalyptus macrorhyncha* F.Muell ex Benth., (shrub layer) *Cassinia longifolia* R.Br., *Bursaria spinosa* Cav., (ground layer) *Cymbonotus preissianus* Steetz, *Dichondra repens* J.R. Forst. and G.Forst., *Hydrocotyle laxiflora* DC., *Plantago debilis* R.Br., *Tetratheca*

