



Lepidozia bragginsiana, a new species from New Zealand (Marchantiopsida)

ENDYMION D. COOPER¹ & MATT A.M. RENNER²

¹Cell Biology and Molecular Genetics, 2107 Bioscience Research building, University of Maryland, College Park, MD 20742-4451, USA

²Royal Botanic Gardens & Domain Trust, Mrs Macquaries Road, Sydney, NSW 2000, Australia

(corresponding author: matt.renner@rbgsyd.nsw.gov.au)

Abstract

Molecular and morphological data support the recognition of a new *Lepidozia* species related to *L. pendulina* and also endemic to New Zealand, which we dedicate to Dr John Braggins. *Lepidozia bragginsiana* can be distinguished from closely related and other similar species by its bipinnate branching, the narrow underleaf lobes, typically uniseriate toward their tip on both primary and secondary shoots, the asymmetric underleaves on primary shoots that are usually narrower than the stem and also possess basal spines and spurs, the production of spurs and spines, or even accessory lobes, on the postical margin of primary and secondary shoot leaves; and by the relatively small leaf cells with evenly thickened walls. *Lepidozia bragginsiana* is an inhabitant of hyper-humid forest habitats where it occupies elevated microsites on the forest floor. A lectotype is proposed for *L. obtusiloba*.

Introduction

The Lepidoziaceae Limpricht in Cohn (1877: 310) is perhaps the most comprehensively treated family within Australasian liverworts, having been subject to intensive and ongoing study and revision (e.g. Schuster 1980, 2000; Schuster & Engel 1987, 1996; Engel & Glenny 2008, Engel & Merrill 2004, Engel & Schuster 2001, Cooper *et al.* 2011, 2012). One of the most species rich genera is *Lepidozia* (Dumortier 1831: 69) Dumortier (1835: 19) with around 80 species worldwide and 23 in New Zealand (Engel & Glenny 2008). Recent phylogenetic study of the family (Heslewood & Brown 2007, Cooper *et al.* 2011, 2012a, 2012b) is proving exceptionally useful for resolving a higher order classification that reflects phylogenetic relationships (Cooper 2013) and a major bibliographic initiative is building a comprehensive nomenclatural resource (von Konrat *et al.* 2010, Söderström *et al.* 2012, Cooper *et al.* 2013). The publication of the Liverwort Flora of New Zealand and associated treatments is stimulating interest in New Zealand liverworts by enabling and encouraging people to look at and understand their plants within a regional context, with the result that potentially new entities are sometimes discovered. To date species discovery within the Lepidoziaceae, as in most liverwort groups, has proceeded on the basis of morphological data alone (e.g. Schuster 1980, 2000; Schuster & Engel 1987, 1996; Renner *et al.* 2006; Meagher 2006, 2008, 2011), and molecular data have not yet been specifically applied to species discovery. However, standard practice for phylogeny reconstruction involves representative sampling of species across taxonomic groups ideally including multiple individuals from each species to ensure data quality. This approach led to the inclusion of several representatives of the New Zealand species *Lepidozia pendulina* (Hooker 1818: 60) Lindenb. in Gottsche *et al.* 1845: 208) in the phylogeny of Cooper *et al.* (2012a). One of these specimens was found to possess a unique combination of characters among New Zealand species (see *recognition* below), and sequence data did not support a close relationship between it and any other species (Fig. 1 and Cooper *et al.* 2012a). Further investigation of herbarium material and further survey work in the South Island confirmed the existence of two morphological groups within *Lepidozia pendulina*. We therefore describe the species as new to science and dedicate it to Dr John Braggins who was instrumental in its discovery. *Lepidozia bragginsiana* possesses a combination of characters somewhat intermediate between *L. pendulina* and *L. obtusiloba* Stephani (1909: 598). Comparison with *L. obtusiloba* prompts our lectotypification of this species. Throughout the manuscript herbarium acronyms follow Thiers (2014).

Lepidozia obtusiloba Steph., Sp. Hepat. 3: 604, 1909 (Stephani 1909).

Type:—Nova Zeland (ins. merid) Westland, top of Otira Gorge, amongst rocky boulders, 2350 ft, 11 Feb 1903, *T.W.N. Beckett 301*.
Lectotype (designated here): CHR585840! Isolectotypes: ex herb Levier 4607, G-000149! WELT-H003162!

Other type-series specimens:—Nova Zeland (ins. merid) Westland, top of Otira Gorge, among rocky boulders, 2350 ft, 11 Feb 1903, *T.W.N. Beckett s.n.*, ex herb Levier 4598. Paralectotype: G-000150! New Zealand, Otira Gorge, Westland, on bark of *Fuchsia* trees, 2700 ft, *T.W.N. Beckett 348*, det *L. obtusiloba* Steph. n.sp. 1904. Paralectotype: CHR585841!

Nomenclature:—The syntype series of *Lepidozia obtusiloba* comprises two gatherings by T.W. Naylor Beckett from the upper Otira Gorge, one *Beckett 301* from among rocky boulders, the other *Beckett 348* from the bark of a *Fuchsia* tree. Both gatherings have been split, and duplicates now reside in CHR, FH, G, BM, and WELT.

Recognition:—*Lepidozia obtusiloba* has leaf and underleaf margins crenulated due to bulging trigones between marginal cells, a region of enlarged cells at leaf base indistinct or absent, first two leaf lobes closely spaced, isodiametric terminal cells on underleaf lobes and leaf lobes, no accessory teeth on lobes or underleaves, and a more or less longitudinal-incubous leaf insertion line.

Remarks:—*L. obtusiloba* is apparently named for the obtuse underleaf lobe apices, which sometimes do appear obtuse. However, closer inspection reveals this is the result of each lobe's apex being adaxially reflexed, a feature particularly pronounced on underleaves from secondary shoots. This is a characteristic feature of the lectotype and other topotype material of *L. obtusiloba*.

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