

# TELOPEA

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## A new species of *Radula* Sect. *Cavifolium* (Radulaceae: Hepaticae) from Queensland, Australia

E.A. Brown and T. Pócs

### Abstract

*Brown, E.A.*<sup>1</sup> & *Pócs, T.*<sup>2</sup> (<sup>1</sup>*Royal Botanic Gardens, Mrs Macquaries Road, Sydney, NSW 2000, Australia;* <sup>2</sup>*Research Group for Bryology of the Hungarian Academy of Sciences at the Botany Department of Eszterházy College, EGER, Pf.43, H-3301, Hungary*) 2001. A new species of *Radula* Sect. *Cavifolium* (Radulaceae: Hepaticae) from Queensland, Australia. *Telopea* 9(3): 435–438. ***Radula ornata*** is described from Mt. Bellenden Ker National Park, Queensland, Australia, at 1460 m altitude, where it is found on the bark of *Agathis atropurpurea* B. Hyland. The minuscule, pseudodichotomous plant is very distinct, having subsymmetrically bilobed leaves and a papillose dorsal lobe surface. It is the fourth representative of Section *Cavifolium* K. Yamada within the Subgenus *Radula* (Dumort.) Dumort. to be described.

### Introduction

In 1995 E.A. Brown, accompanied by B.M. Wiecek and K.L. Radford, collected a minuscule, creeping plant from the bark of a large (50 cm d.b.h.) specimen of the gymnosperm *Agathis atropurpurea* B. Hyland on Mt. Bellenden Ker at 1460 m altitude. At first sight the plant seemed to be a tiny *Microlejeunea* or even *Aphanolejeunea*, as it had no underleaves. Closer observation revealed that the rhizoid bundles originate on the lobule base convincing the authors that it belongs to the genus *Radula* Dumort. Features which make this taxon quite unusual for the genus are lobules which are almost equal in size to the lobe and conical papillae on the dorsal side of the lobe.

There are 32 *Radula* species known from Australia (Scott & Bradshaw 1985, Yamada 1982, 1984a, 1984b, 1987) but none of them possess the above characters. A similar leaf shape is known only in three species — *Radula cavifolia* Hampe, *R. helix* (Taylor) Gottsche, Lindenb. & Nees, and *R. aneurysmalis* (Taylor) Gottsche, Lindenb. & Nees, which have variously been assigned to Subgenus *Acroradula* Section *Saccatae* (Castle 1963) or to Subgenus *Radula* in their own section *Cavifolium* (Yamada 1979). *Radula cavifolia* is Southeast and East Asian, occurring from China through the Malay Peninsula to Borneo, the Philippines and Japan. *Radula helix* is temperate South American and distributed in southern Chile and Argentina, and *R. aneurysmalis* is known only from Tasmania (Castle 1963, Yamada 1979). The features shared by members of Section *Cavifolium* are small size (less than 800 µm wide), sparsely branched shoots, nearly orbicular leaves with an inflated lobule exceeding 65% of lobe length, strongly convex keel arching evenly into the lobe apices and the presence of dormant, spur-like, reduced stylar branches, although the latter character is not present in all members of the section (Yamada 1979, Schuster 1980).

## Taxonomy

### ***Radula ornata* E.A.Br. & Pócs, sp. nov.**

Planta minutissima pallide- vel brunneo-viridis, caulis ad 4 mm longus, diametro 50  $\mu\text{m}$ , 7 cellulis corticalibus et 3 medullaribus compositus, cum foliis distantis 250–300  $\mu\text{m}$  latus, sparse pseudodichotomico ramosus. Lobus apice truncato orbiculari-ovatus, cellulae lobi dorso papillis conoideis ornatae. Lobulus lobi subaequalis, ovatus, apice acuto, marginem ad longitudinem mediae cauli connato. Ceterae desunt.

Type: Australia, Queensland. Bellenden Ker National Park, ridge NNW of transmitter, Mt. Bellenden Ker, along the track to head of Mulgrave River, 17°15'45"S, 145°50'55"E, 1460 m alt., *E.A. Brown 95/243a*, *B.M. Wiecek & K.L. Radford*; 8 August 1995 (holo BRI; iso NSW, EGR).

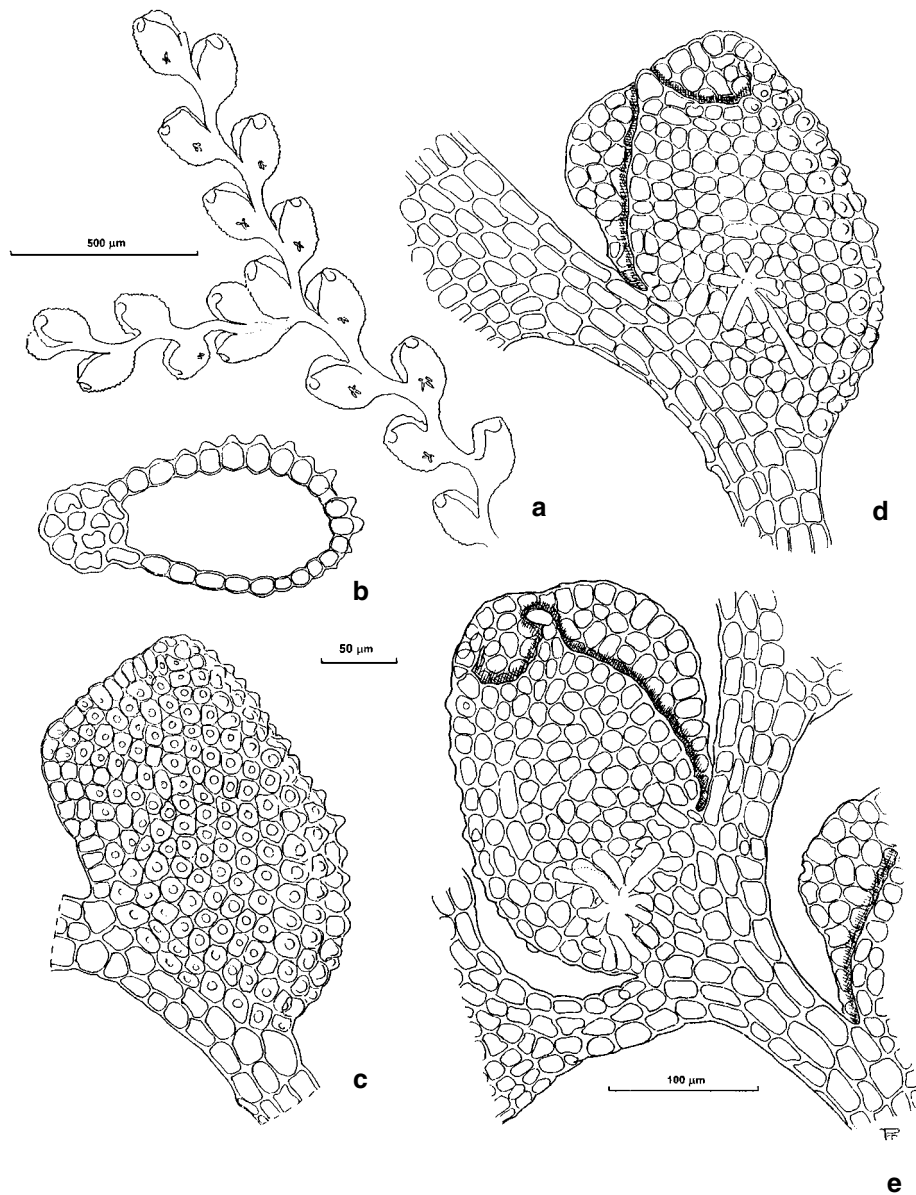
Minuscule, pale or brownish green plant creeping on bark (of *Agathis*). Leafy shoot up to 4 mm long, 250–300  $\mu\text{m}$  wide, with distant leaves almost parallel to the stem; with sparse terminal, pseudodichotomous, *Radula*-type branching (Fig. 1a, e), spur-like reduced stylar branches not observed. Stem diameter 50  $\mu\text{m}$ , composed of 7 rows of cortical and 3 rows of medullary cells. Leaf lobe orbicular ovate, c. 260–290  $\mu\text{m}$  long and 155–190  $\mu\text{m}$  wide; cells isodiametric, 12–15(–20)  $\mu\text{m}$  diam., dorsally with a conical papilla; marginal cells slightly narrower, usually without papillae; keel arched, papillose; apex truncate. Leaf lobule almost equal to lobe in size; cells isodiametric-rectangular, 12–18  $\mu\text{m}$ , or elongate, up to 25  $\mu\text{m}$  long, lacking papillae (except near the keel); apex acute, usually with a tooth 2 cells wide at the base and 1–3 cells high terminating with a larger hyaline cell. Rhizoid bundle often present, arising from the lower part of lobule. Lower half of adaxial (antical) lobe and lobule margin connate with the stem. Only sterile plants were observed, without gemmae. Oil-bodies 1 or 2 (rarely 3), large ovoid to ellipsoid, occluding most of cell lumen. (Fig. 1).

**Specimens examined:** Queensland: Bellenden Ker National Park, ridge NNW of transmitter, Mt. Bellenden Ker, along the track to head of Mulgrave River, 17°16'36"S, 145°51'06"E, 1400 m alt., *T. Pócs (01093/Q) & E.A. Brown*; 13 June 2001 (BRI, NSW, EGR).

**Distribution:** currently known only from the type location on Mt Bellenden Ker. Moderately common but very scattered in occurrence at collecting site, creeping on *Agathis atropurpurea* bark, in forest with *Agathis*, *Flindersia* and *Trochocarpa*.

**Notes:** members of the Section *Cavifolium* seem to form a small group of species occurring mostly in the Southern Hemisphere (and probably Gondwanic in origin). The new taxon fits reasonably well into the framework of this section, although it is much smaller than the above mentioned species (shoot width 250–300  $\mu\text{m}$  compared to 600–800  $\mu\text{m}$ ), has distant leaf arrangement, an often truncate lobe apex and dorsally papillose lobe cells (Fig. 1b–d). Reduced stylar branches were not observed in the material available for study but, as stated above, this character is not consistently present. Papillae on the leaves are exceedingly rare within the genus *Radula*, and have previously been reported only in *Radula ratkowskiana* K. Yamada (Subgenus *Radula*, Section *Radula*), which is not closely related to our species (Yamada 1984a). Based on the above characters the new species seems to be an isolated member of Section *Cavifolium*.

*Radula ornata* is morphologically closest to the southern temperate *R. helix*, having a similar lobe and lobule shape. The other members of this section, *R. aneurysmalis* and *R. cavifolia*, are sometimes considered synonymous (Castle 1963) but Yamada (1979) regards them as distinct taxa. The section requires further investigation to determine relationships.



**Fig. 1.** *Radula ornata* E.A.Br. & Pócs. **a**, habit, ventral view; **b**, transverse section of stem with lower part of leaf; **c**, leaf, dorsal view; **d**, leaf, ventral view; **e**, *Radula* type, terminal, pseudodichotomous branch. All drawn from type; c–e all drawn to same scale.

### Acknowledgments

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