

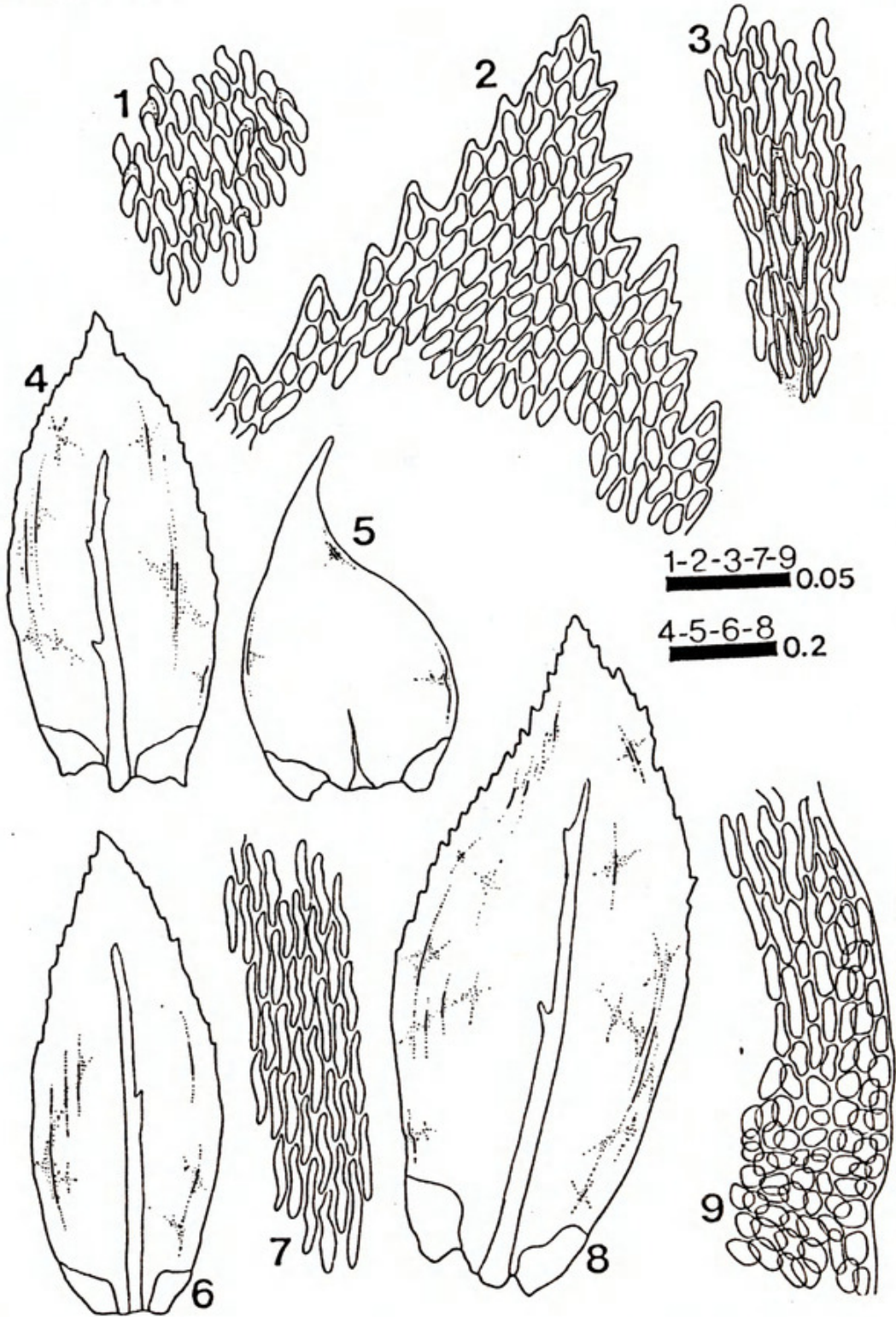
**Notes on *Isothecium myosuroides* and *I. obtusatum*
(Musci: Brachytheciaceae) in western North America**

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Isothecium myosuroides Brid. is a widespread species of the north temperate zone. It is found on all northern continents, most commonly in coastal areas and it is absent from interior areas with strongly continental climates. It is widespread throughout Europe where it occurs from Iceland east to the Murmansk area of Russia, south to the Mediterranean region, and west to the Baltic States, Carpathian Mountains, and the Caucasus. In Africa it is known from Macaronesia and Algeria. In Asia, it has been reported from eastern China and Taiwan, and specimens from Japan named as *Isothecium subdiversiforme* Broth. seem identical to *I. myosuroides*. In eastern North America *I. myosuroides* is uncommon and has a discontinuous distribution, occurring in coastal regions from Newfoundland south (Prince Edward Island, Macoun *Canadian Musci* 351, MO) to Maine, in the mountains of New Hampshire and along the North Carolina--Tennessee border, and on the north shore of Lake Superior in Ontario. In western North America, the species is widespread and common along the coast from the Aleutian Islands south to Guadalupe Island, Baja California, inland to southwestern Alberta (*Schofield* 44348, MO), Montana, and the Sierra Nevada of California. The western North American plant has usually been treated as a distinct species, *I. stoloniferum* Brid., but this species cannot be maintained, since many forms from this region are identical to European and eastern North American forms of *I. myosuroides* (Allen 1983).

Although *I. myosuroides* is a stenotypic species in eastern North America, it is strikingly polymorphic throughout the western North American part of its range. It has a very broad ecological amplitude in this area, growing on rock, the trunks or branches of trees, or decaying wood, in habitats varying from extremely humid to rather dry. The plants typically have creeping stems that give rise to erect, stipitate plants, but there is much variation in gross morphology, especially in growth form. There are three major expressions in western North America: the rather julaceous *myurellum* morphotype, the robust *cardotii* morphotype, and the stoloniferous *spiculiferum* (or *stoloniferum*) morphotype. The remarkable high level of

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Figures 1--9 *Isothecium obtusatum* Kindb. 1. Upper dorsal leaf cells. 2. Leaf apex. 3. Upper leaf cells and costa at tip showing projecting spines. 4, 6, 8. Branch leaves. 5. Stipe leaf. 7. Basal leaf cells. 9. Alar region of leaf. All scales in mm. All figures from *Whittemore 3328* (MO).

variability exhibited by this species in western North America suggests that the taxonomy of the species is still not fully resolved and a thorough examination of the variation exhibited by *Isothecium myosuroides* in western North American is needed.

A fourth western North American morphotype in the *I. myosuroides* complex, which includes the type of *I. obtusatum* Kindb., was noted by Crum (1987). Despite the overall variability of the complex, this morphotype is recognizable by a combination of several character-states that are rare or absent in *I. myosuroides* proper. In many ways, it is more distinctive than any of the recognized phases that are commonly recognized in the literature. We are not willing to make formal taxonomic changes without a complete study of the complex as a whole, but we would like to draw the attention of future workers on the complex to the characters of this morphotype.

Isothecium myosuroides Brid. morphotype *obtusatum*

Isothecium obtusatum Kindb., Rev. Bryol. 22: 83. 1895. Protologue:
Canada. On rocks. Amer. Canada, Vancouver island (1893):
Macoun; *Roell* (1888).

Plants with creeping primary stems and ascending, pinnately branched aerial stems. Primary stems and stipe-like bases of aerial stems with leaves small, distant, strongly spreading to squarrose, acuminate. Aerial stems and branches often compressed, leaves large, imbricate, narrowly elliptical to lance-ovate or lanceolate, apex broadly acute to slenderly acuminate; upper leaf cells short (ca 3:1), often with distal ends of some cells projecting adaxially as large spines, sometimes these projecting cells overlap the adjacent cell so the papillae form scattered bistratose spots one cell across; margins strongly singly or doubly serrate, teeth mostly 2 or 3 celled; costa single, strong, ca 2/3 of leaf length, sometimes tapered distally, often spurred along its length, ending in one or more large adaxial spines; alar region small, sharply set off from leaf cells. Leaves of the aerial stems 1.2-2.0 mm long; branch leaves are 0.6-1.2 mm long. Sporophyte the same as in *I. myosuroides*

On exposed, damp rock or dry boulders and fallen logs in British Columbia (*Macoun* 126, CANM) and California (Marin Co., *Schofield* 16860, Contra Costa Co., *Flowers* 4134; San Mateo Co., *Whittemore* 3328, all MO).

The *obtusatum* morphotype differs from *I. myosuroides* in a number of characters. Most expressions of *I. myosuroides* are larger than the *obtusatum* morphotype; the stem leaves in *I. myosuroides* reach 3.65 mm long, and the branch leaves reach 3.0 mm long (Allen 1983). In *I. myosuroides* the stem leaves are very variable with some specimens having stem leaves similar to those of the morphotype, but in others they are scarcely differentiated and spread at a moderate angle; the shoots in *I. myosuroides* are less often compressed, the leaf cells are longer, the leaf margins usually have single celled teeth, and the costa always tapers distally, is never laterally spurred, and usually lacks apical spines. The *obtusatum* morphotype also bears a close resemblance to *Isothecium howei* Kindb. in aspect, plant size, costal form, marginal leaf serration, and leaf cell size and papillosity. *Isothecium howei* is presently in the synonymy of *I. cristatum* (Hampe) Robins., but should be evaluated in conjunction with any study on the *obtusatum* morphotype.

Literature Cited

- Allen, B. H. 1983. *Isothecium myosuroides* Brid. and *I. stoloniferum* Brid.: A quantitative study. *Bryologist* 86: 358--364.
- Crum, H. 1987. *Bestia*, *Tripterocladium*, and *Isothecium*: an explication of relationships. *Bryologist* 90: 40--42.

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