

Didymodon baii (Pottiaceae), a new moss species from China

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Didymodon baii D.P. Zhao, J.N. Wang & X.D. Zhao (Pottiaceae) is described and illustrated as a new moss species from Inner Mongolia Autonomous Region of China. It differs from congeners by its oblong-lanceolate leaves gradually narrowed to the apex, with plane margins throughout, and costa long-excurrent as a flexuose subula, the transverse section of the costa having 4–5 guide cells in one layer and ventral stereids absent to weakly differentiated in one layer. Its relationships with some closely similar *Didymodon* species are discussed.

Didymodon is a taxonomically difficult moss genus in the family Pottiaceae (Zander 1993, Jiménez 2006). It comprises 122 species (Zander 1993) and is distributed nearly throughout the world. *Didymodon* is the most species-rich genus in this family in China, with the highest species diversity in the northwest and north China, especially in the north temperate mountainous areas.

During a recent botanical expedition to DaQing Mountain in Inner Mongolia Autonomous Region of China, we found a *Didymodon* specimen which could not be assigned to any known species. After consulting the relevant literature (e.g. Saito 1975, Magill 1981, Bai 1997, 2010, Li *et al.* 2001, Jiménez *et al.* 2005, Jiménez 2006, Zander 2007), we concluded that it was an undescribed species.

Didymodon baii D.P. Zhao, J.N. Wang & X.D. Zhao, *sp. nova* (Figs. 1 and 2)

Mountain National Nature Reserve, Hanghuawopu village, 41°3'51''N, 111°49'1''E, on soil of the floodway, mixed with *Bryoerythrophyllum gymnostomum* and *Didymodon ditrichoides*, 1860 m a.s.l., 25 Aug. 2013 D. P. Zhao 201308006 (holotype HIMC).

ETYMOLOGY: The species is named in honor of Prof. Xue-Liang Bai, a Chinese bryologist, and author of the *Bryophyte flora of Inner Mongolia*.

Plants 0.4–0.8 cm high, growing in loose turfs, dark-green. Stems erect, simple, central strand differentiated, without hyalodermis, sclerodermis scarcely differentiated or with outer cells smaller and thicker-walled. Rhizoidal tubers absent. Leaves monomorphic, twisted, appressed to incurved when dry, erect-patent to spreading when moist, oblong-lanceolate, gradually narrowed to apex, not keeled, 0.8–2.2 mm long; lamina unistratose, yellowish orange or yellow with KOH; apex acuminate, not deciduous; margins entire, plane, unistratose. Costa long-excurrent as a flexuose subula, not spurred; ventral cells of costa in upper middle of leaf rectangular to subquadrate, with 1 simple low papilla, without a band of

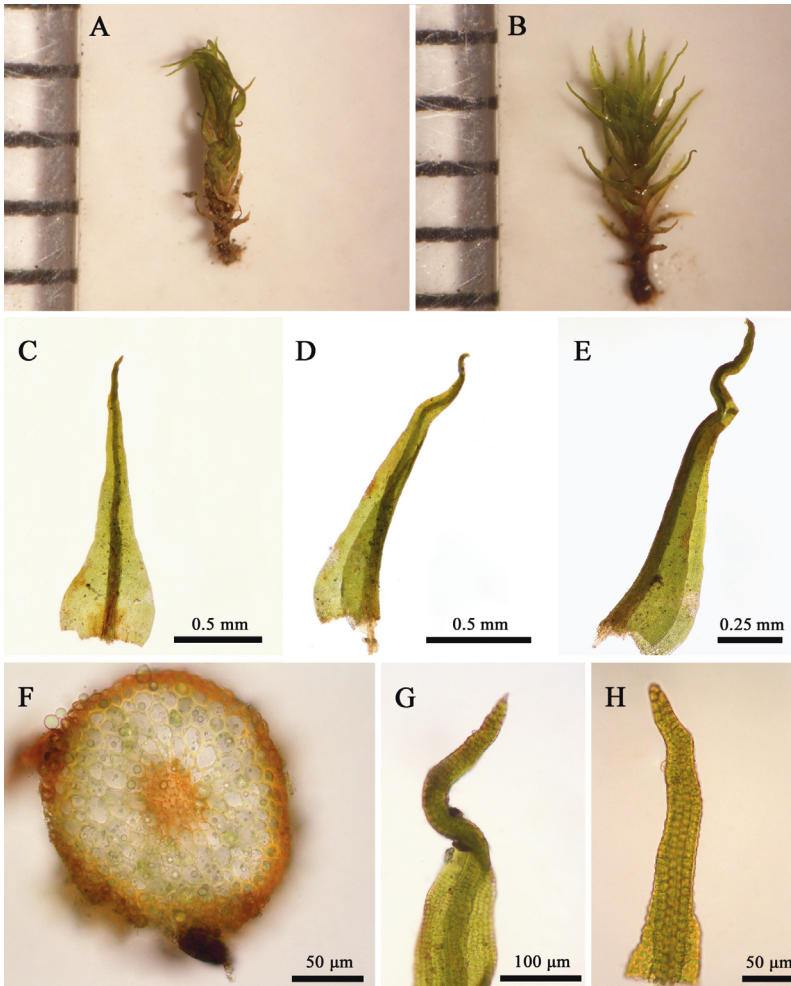


Fig. 1. *Didymodon baii* (from the holotype). — **A:** Plant when dry (ruler scale in mm). — **B:** Plant when moist (ruler scale in mm). — **C–E:** Leaves. — **F:** Transverse section of stem. — **G and H:** Leaf apex.

translucent cells below apex, dorsal cells of costa in upper middle of leaf rounded, subquadrate, smooth; in transverse section at midleaf, semi-circular; with 4–5 guide cells in 1 layer, ventral stereids absent to weakly differentiated in 1 layer, 2–3 layers of dorsal stereids, without hydroids, ventral epidermis differentiated, not bulging, smooth, dorsal epidermis differentiated, papillose. Upper and middle laminal cells rounded, quadrate, $5.2\text{--}15.6 \times 5.2\text{--}10.4 \mu\text{m}$, with 1 simple, low papilla per cell, lightly thick-walled; basal cells rectangular, quadrate at margins, $13.0\text{--}41.6 \times 5.2\text{--}10.4 \mu\text{m}$, weakly differentiated, not hyaline, smooth, thick-walled, not pitted. Gemmae absent. Dioicous. Sporophyte unknown.

Didymodon baii is characterized by oblong-lanceolate leaves that are gradually narrowed to

the apex; plane and entire leaf margins throughout; costa excurrent as a long and flexuose awn; and by a unistratose lamina, with one simple, low papilla per cell. In *Didymodon*, no other species has this combination of characters.

The leaf margins of *Didymodon* are generally recurved (Zander 1993). Only a few species, *D. australasiae*, *D. erosus*, *D. hegewaldiorum*, *D. lainzii*, *D. sinuosus* and *D. umbrosus*, resemble *D. baii* in having plane leaf margins (Jiménez et al. 2004, 2012, Jiménez 2006, Zander 2007, Jiménez & Cano 2008). However, *D. australasiae*, *D. lainzii* and *D. umbrosus* differ from *D. baii* in their bistratose to tetrastatose leaf margins and costa being percurrent or ending several cells below the leaf apex. *Didymodon hegewaldiorum* can be distinguished from *D. baii*

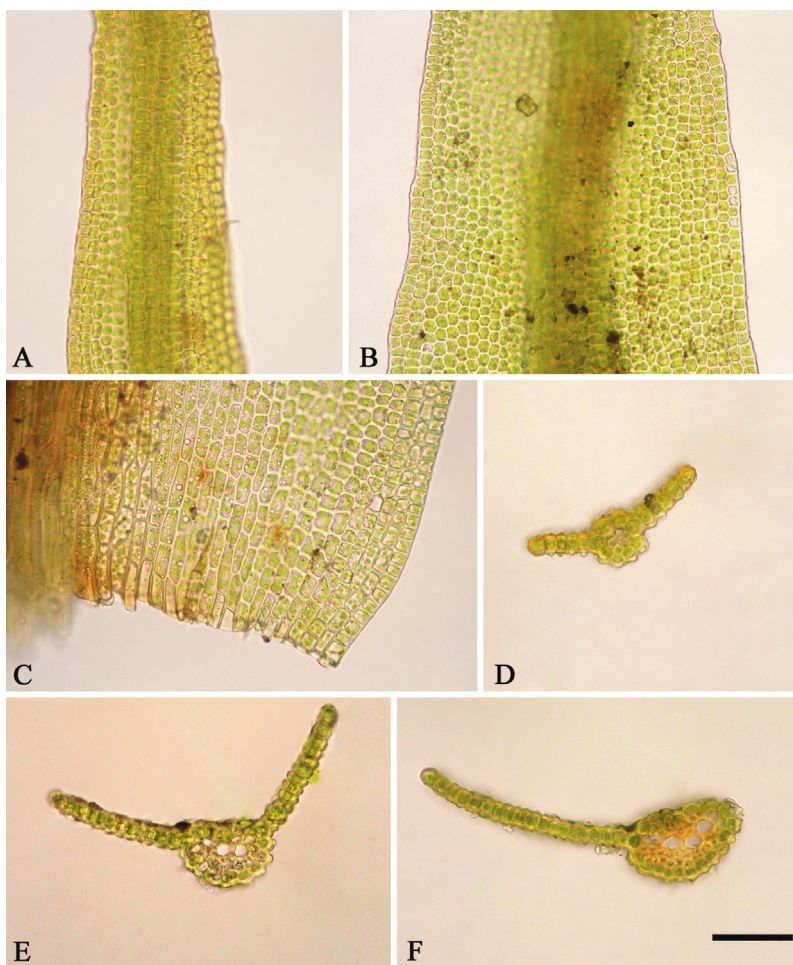


Fig. 2. *Didymodon baii* (from the holotype). — **A:** Upper laminal cells. — **B:** Middle laminal cells. — **C:** Basal cells. — **D:** Transverse section at upper leaf. — **E:** Transverse section at midleaf. — **F:** Transverse section near leaf base. Scale bar (in F): A–F = 50 μ m.

by its ovate leaf shape, cucullate leaf apex and bistratose leaf margins above midleaf. *Didymodon erosus* and *D. sinuosus* resemble *D. baii* in the unistratose leaf margins, however, they have sinuous or erose and papillose-crenulate leaf margins.

Didymodon icmadophila and *D. ditrichoides* might also be confused with *D. baii*. They share a similar leaf shape, usually a costa long-excurrent as a flexuose subula, and same habitat. However, *D. icmadophila* differs from *D. baii* by its long-excurrent costal subula which is often fragile, distal laminal cells usually being smooth and the leaf margins recurved below midleaf. *Didymodon ditrichoides* can be distinguished by its excurrent costa ending in a long, reddish-brown awn, and the leaf margins that are distinctly revolute throughout.

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