

DIDYMODON GLAUCUS RYAN (POTTIACEAE, MUSCI) –
THE FIRST RECORD FROM SIBERIA

DIDYMODON GLAUCUS RYAN (POTTIACEAE, MUSCI) –
ПЕРВАЯ НАХОДКА В СИБИРИ

ELENA A. IGNATOVA¹ & MICHAEL S. IGNATOV²

ЕЛЕНА А. ИГНАТОВА¹, МИХАИЛ С. ИГНАТОВ²

Abstract

Didymodon glaucus Ryan, a rare species with the mainly European distribution, is found in Irkutsk Province of Siberia. Previously it was known in Asia east of Turkey by a single record from the Russian Far East. The description and illustrations of Siberian specimen of *D. glaucus* is given. A comparison of *D. glaucus* with similar species is provided.

Резюме

Didymodon glaucus Ryan, редкий преимущественно европейский вид, найден в Сибири, в Иркутской области. Ранее он был известен из Азии (восточнее Турции) по единственному указанию с российского Дальнего Востока. Приводятся описание и иллюстрации сибирского образца. Дано сравнение *D. glaucus* с близкими видами.

Didymodon glaucus Ryan is known as a rare species with the main distributional range in Europe. It was described in 1901 from Norway and currently recorded also from Austria, Czechia, Germany, Great Britain, Greece, Hungary, Italy, Luxemburg, Romania, Slovakia, Sweden, Switzerland, Turkey (Kučera, 2000; Smith, 2004). However, European authors (e.g. Kučera, l.c., Nyholm, 1989) neglected the record of the species from Russian Far East (Lazarenko, 1940, as *Barbula glauca* (Ryan) Möll.). Two nearby localities in Maikhe (Artyom) River basin (Primorsky Territory, Shkotovo District) were cited.

In 2005 *Didymodon glaucus* was collected in Slyudyanka Creek near the southern coast of Baikal Lake. This record confirms highly disjunct distribution of the species in Eurasia.

The following description is based on specimen from Siberia [some literature data are given in brackets].

Didymodon glaucus Ryan Fig. 1

Barbula glauca (Ryan) Möll. – *Barbula rigidula* (Hedw.) Milde var. *glauca* (Ryan) Amann – *Didymodon rigidulus* Hedw. var. *glaucus* (Ryan) Wijk & Margad.

Plants small, in loose tufts or growing as a group of individual plants, bluish-green. Stem 1-2 [-10] mm, without hyalodermis, with central strand. Leaves curled and twisted when dry, spreading to recurved or s-shaped when moist, linear-lanceolate, 2.0-3.0 x 0.3-0.4 mm, with narrow (2-3 cells wide) 2-3-layered apical part 0.1-0.3 mm long; costa strong, 50-60 µm at base, slightly narrowed at distal part, ending below apex (at base of narrow apical part of leaf), guide cells in two layers in transverse section, dorsal stereid band present, ventral stereid band not developed, dorsal epidermal cells not differentiated (surface cells of costa elongate and smooth on abaxial side), ventral epidermal cells 3-5, large

¹ – Biological Faculty, Moscow State University, Moscow 119991 Russia – Россия 119991 Москва, Московский государственный университет, Биологический факультет, каф. геоботаники.

² – Main Botanical Garden of Russian Academy of Sciences, Botanicheskaya, 4, Moscow 127276 Russia – Россия 27276 Москва, Ботаническая, 4, Главный ботанический сад РАН

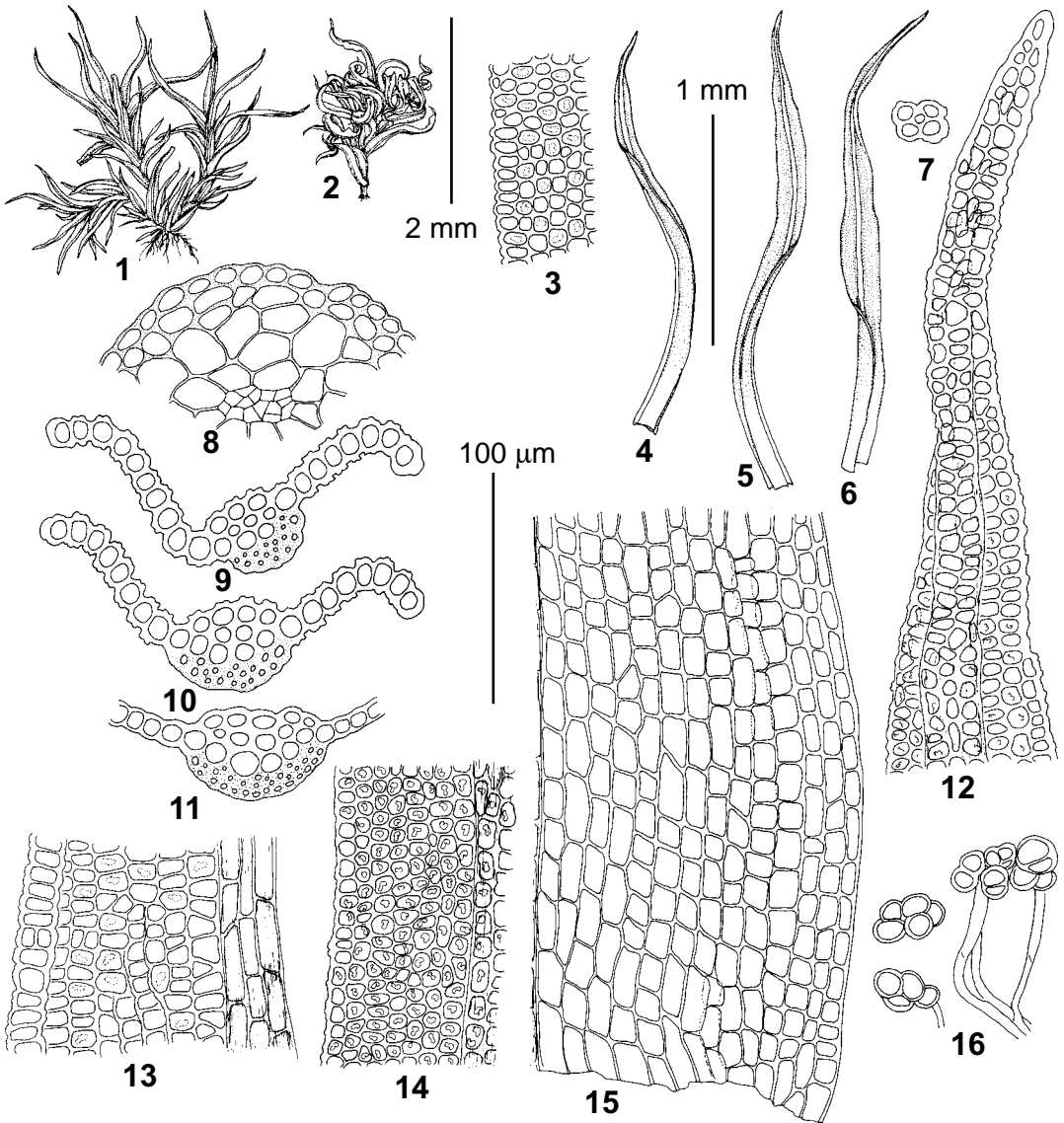


Fig. 1. *Didymodon glaucus* Ryan (from Irkutsk Province, 8.VI.2005, Ignatov & Kazanovsky s.n.): 1 – habit, wet; 2 – habit, dry; 3 – upper laminal cells; 4–6 – stem leaves; 7 – transverse section of leaf apical part; 8 – stem transverse section; 9–11 – leaf transverse sections; 12 – cells of leaf apex; 13 – median laminal cells and abaxial side of costa; 14 – median laminal cells and adaxial side of costa; 15 – basal laminal cells; 16 – gemmae. Scale bars: 2 mm for 1, 2; 1 mm for 4–6; 100 µm – for 3, 7–16.

and papillose (surface cells of costa quadrate except basal ca. 1/5); margins slightly and narrowly recurved at middle part on various length, plane distally, slightly uneven and sometimes crenulate due to slightly bulging cells; lamina unistratose except uppermost apex; upper and median laminal cells rounded-quadrate or transversely rounded-rectangular, thin-walled, 5–8 x 6–10 µm, slightly bulging, covered with low branched pa-

pillae, usually one per cell, obscure in front view; cells of uppermost acumen similar in shape and size on both sides to upper laminal cells, papillose, with conic and smooth terminal cell; basal laminal cells rectangular, with very thin walls, 14–30 x 7–12 µm. Sporophytes unknown for this species. Vegetative reproduction by multicellular round gemmae 25–30 µm in diameter born on modified rhizoids in leaf axils.

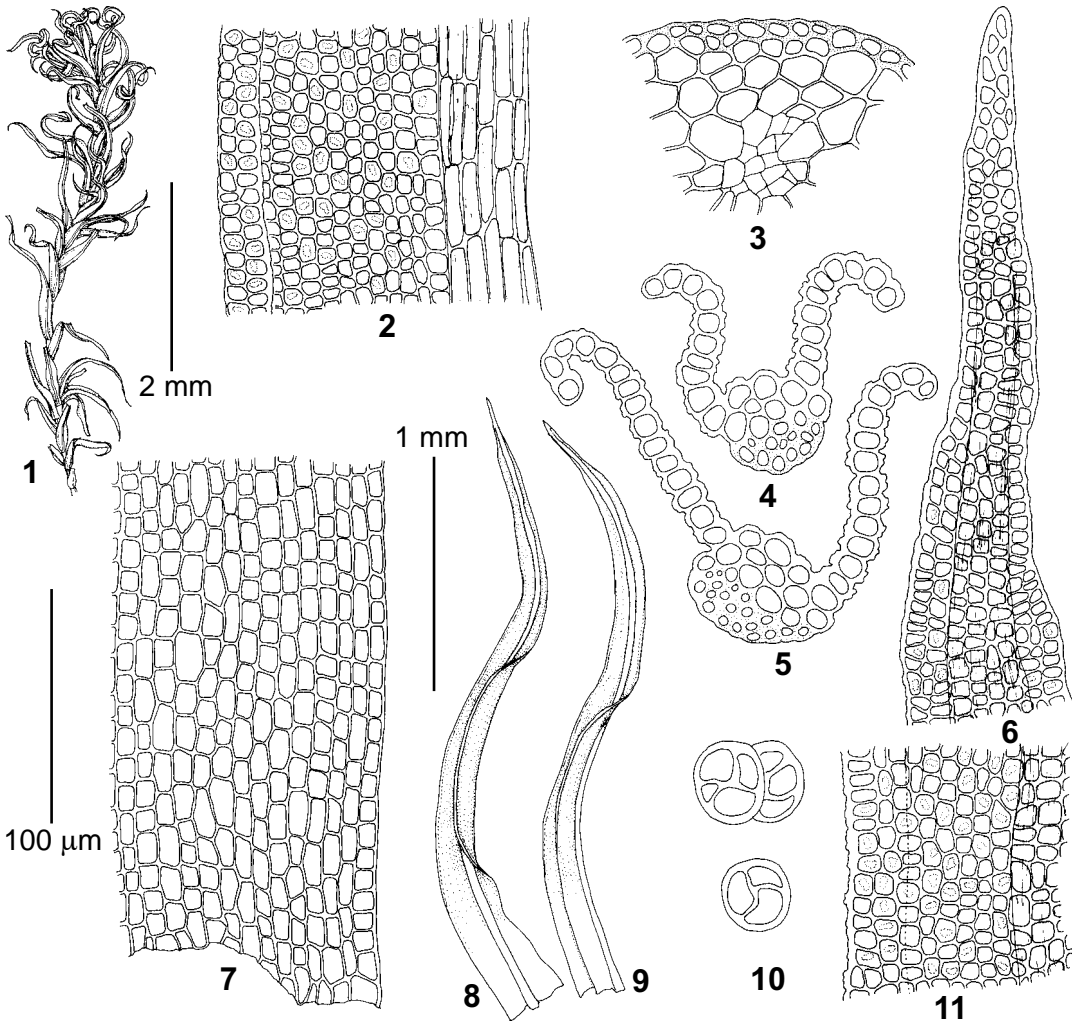


Fig. 2. *Didymodon glaucus* Ryan (from Czechia, Mähren, 31.III.1907, *Podpera* s.n.): 1 – habit, dry; 2 – upper laminal cells and abaxial side of costa; 3 – stem transverse section; 4-5 – leaf transverse sections; 6 – cells of leaf apex; 7 – basal laminal cells; 8-9 – stem leaves; 10 – gemmae; 11 – median laminal cells and adaxial side of costa. Scale bars: 2 mm for 1; 1 mm for 8-9; 100 µm – for 2-7, 10-11.

SPECIMEN EXAMINED: Siberia, Irkutsk Province, Slyudyanka Distr., Slyudyanka Creek 7 km upstream from its mouth (at Baikal Lake), 51°37.5'N, 103°39'E, 650 m alt. 8.VI.2005 *Ignatov & Kazanovsky #05-4001* (MHA).

The species was collected in rather small amount on fine soil in niche under overhanging cliff. The area is characterized by complex geology, including calcareous rocks (marble), rocks rich in heavy metals, mica, etc.

Siberian plants fit well the descriptions of *D. glaucus* from Europe (Kučera, 2000; Nyholm, 1989; Smith, 2004) and are similar to European

specimens (e. g. Czechia, Mahren, 31.III.1907, *Podpera* s.n. (MO), Fig. 2), differing only in slightly smaller size of plants and leaves. Nyholm (1989) describes costa of the species as ending just below leaf apex, and Kučera (2000) calls it as excurrent to 10% of leaf length. Actually, it is difficult to say if costa fills the uppermost part of leaf or not. Most abaxial surface of costa has cells smooth, elongate, and shiny, while in the apical part they turn to subquadrate, papillose and dull; however, in transverse section through leaf apex (Fig. 1: 7) cells are uniform, with one cell with narrow lumen in a center.

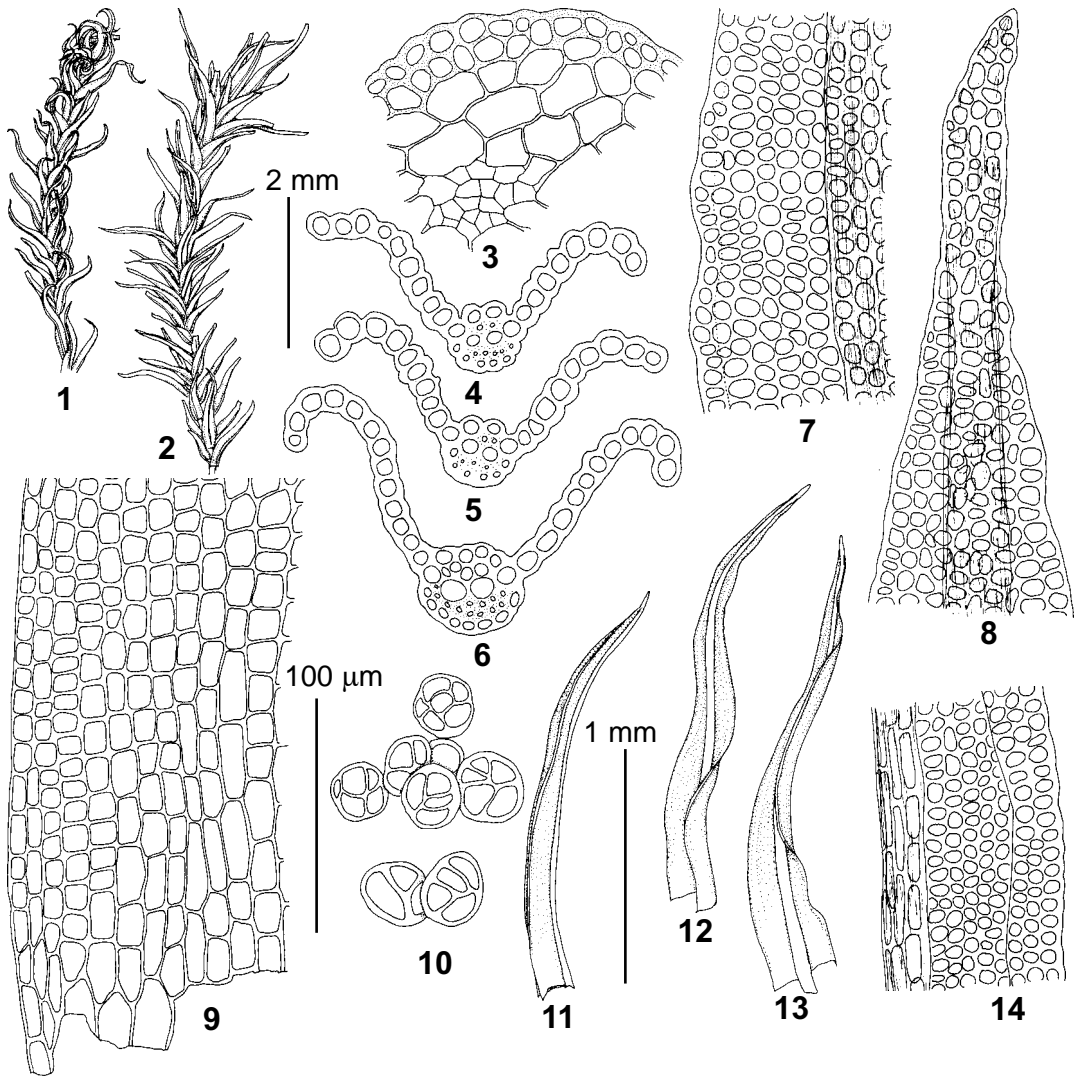


Fig. 3. *Didymodon japonicus* (Broth.) K. Saito (from the isotype of *Molendoo glauca* Broth., Japan, Uematsu #779 (MO)): 1 – habit, dry; 2 – habit, wet; 3 – stem transverse section; 4-6 – leaf transverse sections; 7 – upper laminal cells and adaxial side of costa; 8 – cells of leaf apex; 9 – basal laminal cells; 10 – gemmae; 11-13 – stem leaves; 14 – median laminal cells and abaxial side of costa. Scale bars: 2 mm for 1-2; 1 mm for 11-13; 100 μ m – for 3-10, 14.

The habitat of Siberian population is very similar to that in Europe (cf. Kučera, 2000).

The species was unknown for us and it was not identified immediately; we used also Moss Flora of China (Li Xing-jiang et al., 2001) and found one more possible name for our plant – *Didymodon pallido-basis* (Dix.) X.-J. Li & Iwats. According to the description, this species has also narrowly ovate-lanceolate to linear-lanceolate leaves with recurved margins, crisped-flexuose

when dry, costa stout, percurrent to shortly excurrent, with smooth and elongate abaxial surface cells, upper and median cells isodiametric, 6-10 μ m, papillose, and basal laminal cells rectangular, smooth and hyaline. We studied isotype of *D. pallido-basis* from TSN; though it is very similar in habit to *D. glaucus*, some characters clearly differentiate these two species: 1) surface cells on adaxial side of costa are elongate and smooth in *D. pallido-basis* vs. subquadrate and papillose in

D. glaucus; 2) costa is usually excurrent in short apiculus vs. ending below apex, apical part of leaf narrow, 2(-3)-layered, consisting of subquadrate papillose cells; 3) basal laminal cells elongate-rectangular, 14-50 x 6-12 μm vs. short-rectangular, 14-20(-30) x 7-12 μm ; 4) gemmae are unknown in *D. pallido-basis* vs. they are usually present in *D. glaucus*. Leaves of *D. pallido-basis* are gradually narrowing from ovate base to apex, while they have parallel margins in considerable part of leaf in *D. glaucus*, and leaf margins are more strongly recurved in *D. pallido-basis*. Upper and median cells of *D. pallido-basis* are described and illustrated as multipapillose, but our study of leaf cross-section from the isotype specimen revealed that papillae are very similar to those of *D. glaucus*, low and branched, they are hardly seen in front view. *Didymodon pallido-basis* is currently known from type locality in China, Liaoning only (Li Xing-jiang et al., l.c.).

One more Asian species, *D. japonicus* (Broth.) K.Saito, is similar to *D. glaucus* in many characters (Fig. 3). The former species was described from Ja-

pan and it is known from several localities in central and eastern China (Li Xing-jiang & al., 2001). It shares with *D. glaucus* linear-lanceolate leaf shape, slightly recurved leaf margins, costa with elongate abaxial and subquadrate adaxial surface cells, ending below apex, similar structure of leaf apex (narrow, 2-layered, formed by subquadrate cells), thin-walled and hyaline, short-rectangular basal cells and usually present multicellular rounded gemmae on rhizoids in leaf axils. However, *D. japonicus* differs from *D. glaucus* in upper and median cells with more strongly thickened walls and absence of papillae, though rare occurrence of single low papillae is mentioned by Li Xing-jiang et al. (2001). The limited number of studied specimens does not allow however to understand the variation of *D. japonicus* and make any conclusion about presumable identity of these species.

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