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ON THE IDENTITY OF PHYSCOMITRIUM MARTIANOVII (FUNARIACEAE, BRYOPHYTA)

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ЧТО ТАКОЕ PHYSCOMITRIUM MARTIANOVII (FUNARIACEAE, BRYOPHYTA)?

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Abstract

The study of type collections of *Physcomitrium martianovii* Broth. ex Abramov reveals that it is a synonym of *Entosthodon hungaricus* (Boros) Loeske. However, the type of *Physcomitrium martianovii* var. *majus* is *Physcomitrium pyriforme* (Hedw.) Brid. A description and illustrations of the type material are provided.

Резюме

Изучение типового материала показало, что *Physcomitrium martianovii* Broth. ex Abramov является синонимом *Entosthodon hungaricus* (Boros) Loeske. При этом, однако, *Physcomitrium martianovii* var. *majus* Broth. ex Abramov относится к *Physcomitrium pyriforme* (Hedw.) Brid. Приводятся иллюстрации и описание типового материала.

In the second volume of "Novosti Sistematiki Nizhshikh Rastenij" (Novitates Systematicae plantarum non vascularum), which was labelled as '1965', there was published a paper of V. F. Brotherus (b. 1849 – d. 1929) with the description of several new taxa, including *Physcomitrium martianovii* and *P. martianovii* var. *majus* (Brotherus, 1965). Descriptions of these taxa were taken from a manuscript, fragmentarily preserved in the Komarov Botanical Institute after the Second World War. Most probably this was a manuscript addressed to Fedtshenko, who had begun to publish his multivolumed Flora of Asiatic Russia (in Russian), and for whom Brotherus was invited to work on the mosses. The first and second parts of the 'Mosses' in the Flora of Asiatic Russia appeared in 1914 and 1918, and the third part was published after Brotherus death, in 1931 (Brotherus, 1914, 1918, 1931). These three parts covered the families Andreaeales to Encalyptaceae, thus appearing immediately prior to the Funariaceae according to the "Brotherus system" (Brotherus, 1924). The authority of both *Physcomitrium martianovii* and its var. *majus* was attributed to Brotherus (Crosby & al., 1992; database of Missouri Botanical Garden: http://www.mobot.org/Pick/Search/most.html), although the actual decision to validly publish these taxa (as said in the original paper) was done by the Cryptogamic Department of the Komarov Botanical Institute. That department was headed at that time by V. P. Savicz, who studied algae and lichens, whereas the Laboratory of Bryology and Lichenology in that department was headed by I. I. Abramov, who also edited the bryological part of "Novosti Sistematiki Nizhshikh Rastenij". The description of Brotherus' long-posthumous new taxa also included illustrations, prepared by the technician of the Cryptogam department A. P. Sharikova, presumably under the supervision of I. I. Abramov. Thus the correct author citation, according to Article 46 of the International Botanical Code (Greuter, 2000), should be *P. martianovii* Broth. ex Abramov, and the same for var. *majus*.

Our study of the holotypes of two these taxa in Brotherus' Herbarium in Helsinki University, reveals

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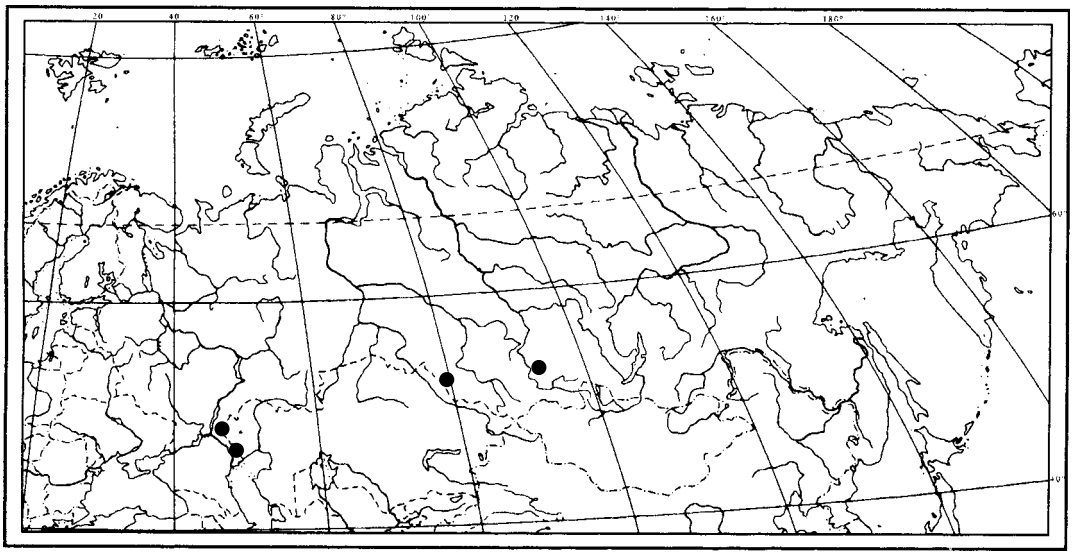


Fig. 1. Distribution of *Entosthodon hungaricus* (Boros) Loeske in Russia.

that the holotype of *P. martianovii* has elongate and thick-walled exothecial cells, characteristic for the genus *Entosthodon* (Fig. 2F). At the same time, *P. martianovii* var. *majus* has exothecial cells quite normal for the genus *Physcomitrium*: short rectangular, with moderately incrassate cell walls.

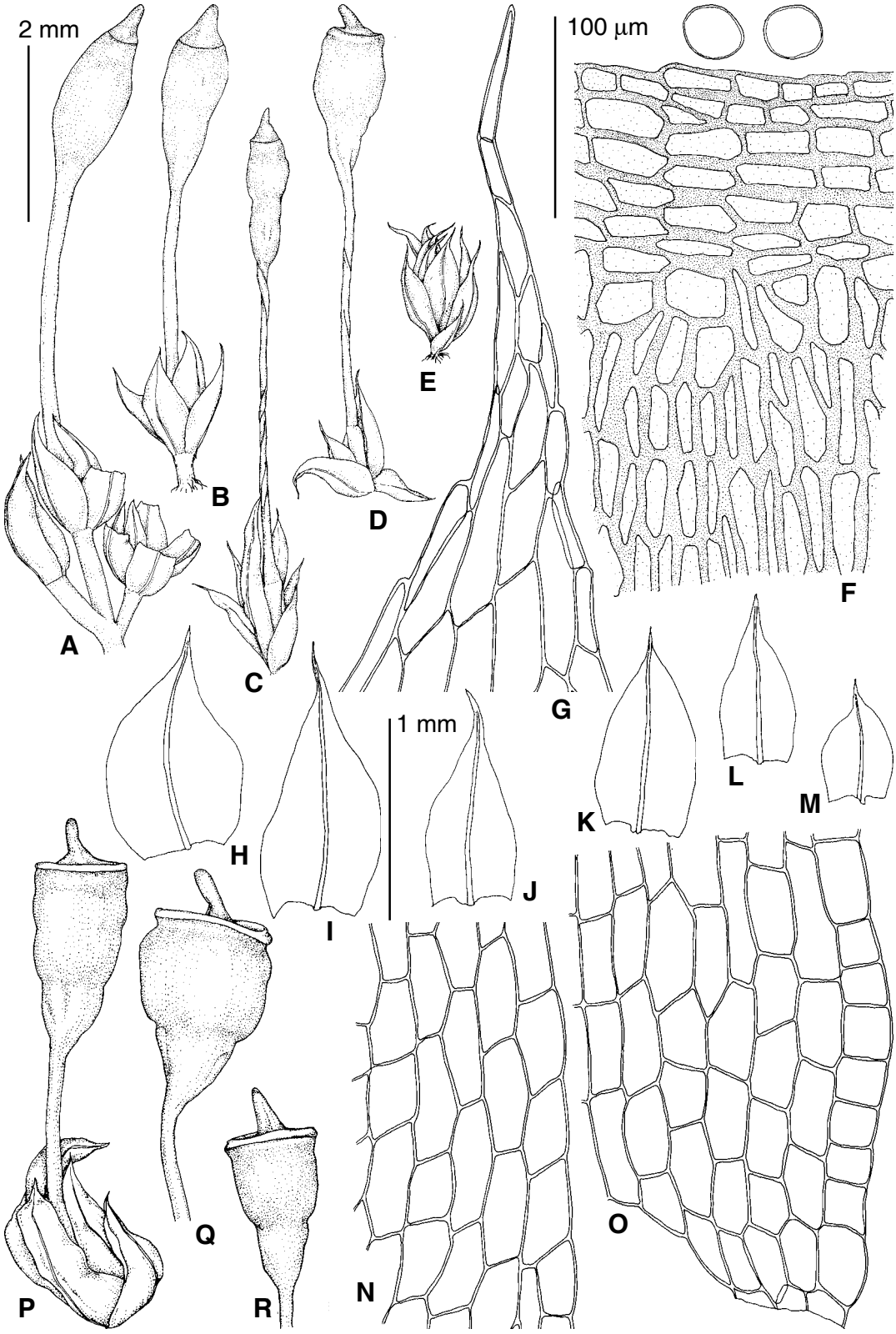
Plants of the holotype of *P. martianovii* are rather small for *Physcomitrium pyriforme* (with which it was compared in the original description), but are of a size normal for most *Entosthodon* species. Other diagnostic characters of *P. martianovii* (entire or subentire leaves and spores 25-28 μm in diameter) are also all in agreement with *E. hungaricus*. The latter species is distributed mainly in southern Europe, but recently it was found as new for Asia in the lowland steppes of Altaisky Territory (Pisarenko & al., 2001). The type locality of *P. martianovii* is the second known locality of this species in Asia and the easternmost one (Fig. 1).

Entosthodon hungaricus (Boros) Loeske, Repert. Spec. Nov. Regni Veg. Sonderbeih. 3(2): 115. 1929. – *Funaria hungarica* Boros, Magyar Bot. Lapok 23 73. 1924.

Physcomitrium martianovii Broth. ex Abramov, Novosti Sistematiki Nizshikh Rastenii '1965': 273. f. 1. 1965, syn. nov. Holotype: "Sibiria, Minusinsk, 20.VIII.1887, leg. *Martianoff s.n.*, (H-BR 3160007!).

Plants in loose tufts or growing as separate individuals, pale to yellowish- or grayish-green. Stems short, 1-1.5 mm, simple, erect. Lower leaves smaller, 1-1.5 mm long, ovate-lanceolate. Upper leaves few, erect when wet, slightly curved when dry, 3-3.5 mm long, ovate to obovate, shortly acute, and with narrow attenuate apiculus, slightly narrowed toward base, not decurrent, concave; margin plane, unbordered, in upper part slightly crenulate by upper cell angles; costa stout, ending below apex; laminal cells smooth, thin-walled, with few chloroplasts, in mid-leaf rectangular to short-rectangular, 40-65(-80)×20-30 μm, at margins shorter, almost quadrate, below apex rhomboidal, towards base longer, in leaf base corners enlarged, 40-60×25-40 μm, forming small group. Autoicous. Seta stout, ca. 4 mm long, slightly twisted when dry. Lid small, almost plane, with short beak. Capsule brown, 1.5-2 mm long; erect, symmetric, oblong-clavate; neck narrow, slightly shorter than urn. Exothecium cells with very thick (12-14 μm) cell walls, almost equal in width to lumen, below mouth transverse-rectangular in 3-5 rows, further below irregularly rounded and then elongate rectangular. Peristome

Fig. 2. A-O: *Entosthodon hungaricus* (Boros) Loeske (from the holotype of *Physcomitrium martianovii* Broth. ex Abramov, H) and P-R: *Physcomitrium pyriforme* (Hedw.) Brid. (from the holotype of *Physcomitrium martianovii* var. *majus* Broth. ex Abramov, H): A-E, P – habit; F – exothecial cells and spores; G – upper laminal cells; H-M – leaves; N – mid-leaf cells; O – basal leaf cells; Q-R – capsules. Scale bars: 2 mm for A-E, P-R, 1 mm for H-M; 100 μm for F-G; N-O.


2 mm
100 μm
1 mm
A
B
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lacking. Spores brownish, papillose, 25-30 µm. Calyptra large, in lower part swollen and lobed.

Entosthodon hungaricus was long considered endemic to southern Europe, but recently it was also found in North Africa, Morocco (Cano & al., 1999), and in Central Asia, Altai (Pisarenko & al., 2001). It is quite likely (cf. Fig. 1) that this species occurs in Kazakhstan and southern regions of West Siberia, an area poorely explored for bryophytes. Until now, however, *E. hungaricus* has not been found in Middle Asian collections (Abramov & al., 1989). In European Russia this species was found so far only in the dry desert area to the east of the Volga River (Ignatov & Ignatova, 2003; Suragina & al., 2002). Pisarenko & al. (2001) provided an overview of the distribution and ecology of *E. hungaricus*, one of few mosses that can tolerate high concentrations of NaCl in the soil.

Physcomitrium pyriforme (Hedw.) Hampe, Linnaea 11:80. 1837. – *Gymnostomum pyriforme* Hedw., Sp. Musc. Frond. 38. 1801.

Physcomitrium martianovii var. *majus* Broth. ex Abramov, Novosti Sistematiki Nizsikh Rastenii '1965': 274. 1965, syn. nov. Holotype: "Transbaikalia, distr. Verchneudinsk, ad Yamarovka, 23.VII.1911, P. Mikhno (H-BR 3160006!). – *P. martianovii* fo. *majus* (Broth.) Smirnova, Novosti Sistematiki Nizsikh Rastenii 6: 256. 1969 '1970'.

Most plants of the holotype are quite typical *P. pyriforme*: mature capsules have their characterisic shape (Fig. 2Q), and the exothecium is formed by shortly rectangular cells, i.e., typical for the genus *Physcomitrium*. Immature capsules are narrower (Fig.2P,R), somewhat resembling *Entosthodon*, but their exothecium is identical with that in typical '*pyriforme*' capsules.

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