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NEW DATA ON DISTRIBUTION AND TAXONOMY OF SOME SPECIES IN LOPHOZIACEAE (HEPATICAE)

НОВЫЕ СВЕДЕНИЯ О РАСПРОСТРАНЕНИИ И ТАКСОНОМИИ НЕКОТОРЫХ ВИДОВ СЕМЕЙСТВА LOPHOZIACEAE (HEPATICAE)

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Abstract

Lophozia ventricosa var. *longiflora* (Nees) Macoun is recorded for South Shetland Islands; this is the second report of the taxon for the Southern Hemisphere. *Isopaches bicrenatus* (Hoffm.) H.Buch is reported for the first time from Central America, in Dominican Republic. A new combination *Isopaches pumicicola* (Berggr.) Bakalin *comb. nov*. is proposed. *Tritomaria mexicana* Bakalin sp. nov. is described as new to science. The diagnostic characters of the new species include 2-lobed leaves with equal to slightly subequal lobes and 1-celled angular gemmae, the combination unknown in any other member of the genus.

Резюме

Lophozia ventricosa var. *longiflora* (Nees) Macoun приводится для Южных Шетландских островов, эта вторая находка вида в Южном полушарии. *Isopaches bicrenatus* (Hoffm.) H. Buch впервые приводится для Центральной Америки (Доминиканская Республика). Предложена новая комбинация *Isopaches pumicicola* (Berggr.) Bakalin comb. nov. *Tritomaria mexicana* Bakalin sp. nov. описана как новый для науки вид. Таксономически важными характеристиками нового вида являются двулопастные листья с симметричными до слегка несимметричных лопастями и 1-клеточные выводковые почки. Такое сочетание не известно у других представителей рода.

In the course of preparation of the treatment of *Lophozia* and allied genera for the Flora of North America I have also studied collection of Lophoziaceae from some other areas. Interesting findings and one new species are discussed in the present paper.

1. ***Lophozia ventricosa*** var. ***longiflora*** (Nees) Macoun

I have reported (Bakalin, 2005) that *Lophozia ventricosa* sometimes occurs in the Subantarctic Region. A new locality of this species from South Shetland Islands is an addition to the previously known place of *L. ventricosa* var. *longiflora* (Nees) Macoun in South Georgia. This collection has been previously issued in 'Bryophyta Antarctica Exsiccatae', N. 124 as *Lophozia excisa* (Dicks.) Dumort. Plants in the specimen bear obviously whitish to greenish gemmae, and are in other features indistinguishable from the typical *Lophozia ventricosa* var. *longiflora*.

Specimen examined: Antarctic South Shetland Islands. King Georg Island: Maxwell Bay, Ardley Island near Fildes Peninsula. 62°13'S – 58°56'W, 15 m alt. In turfs of *Polytrichum strictum* on the surface of deep peat bank on gently sloping ground. Coll. R Ochyra 2.III.1980 (F-1061992).

Bednarek-Ochyra et al. (2000) recorded *L.* cf. *groenlandica* (Nees) Macoun for Antarctic. They indicate for the latter lax, polymorphous and sometimes trilobed leaves with deep sinus, to 1/2 of leaf length. These characters indicate that this tax-

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on is rather *L. ventricosa* var. *ventricosa,* not *L. groenlandica*. Distinction between these two polymorphous taxa is discussed by Bakalin (2005).

2. ***Isopaches bicrenatus*** (Schmid. ex Hoffm.) H. Buch

There are four species of *Isopaches* worldwide. One of them: ***Isopaches pumicicola*** (Berggr.) Bakalin comb. nov. (Basionym: *Lophozia pumicicola* Berggr. 1898. New Zealand Hepaticae, 21) is distributed in New Zealand, the other three are confined mainly to the Northern Hemisphere, although *Isopaches decolorans* penetrates deeply into the Paleotropics (Gradstein & Vana, 1987), reaching equatorial Africa and *I. bicrenatus* has disjunctive localities in New Zealand and Brazil (Engel & Glenny, 2008; Gradstein & Pinheiro da Costa, 2003).

The specimen of the latter species was revealed also in Central America: Dominican Republic. Provincia La Vega: vicinity of pyramids, 13.8 km S of Valle Nuevo, 44 km S of Constanza. ca. 18°N 70°W, 2250 m .s.l. Humid steep ravine and adjacent fields. Coll. W.R. Buck 30 April 1982, field number 8070 (NY-00670928).

Plants in the sample bear perianths, antheridia and gemmae. The inflorescence is mostly paroicous, but also heteroicous, with some antheridial innovations. The latter condition is unusual in this species, and was described by Schuster (1995) based on North American material. The perianth mouth is crenulate (not spinose-ciliate as in *I. bicraenatus*), and both female and male bracts have entire margins. Plants bear copious rusty-red gemmae and have a strong cedar oil fragrance; these are quite characteristic of this species. The purplish color of shoots is, however, unusual for this species.

3. A new species of ***Tritomaria*** from southern Mexico.

The genus *Tritomaria* s. str. includes six species distributed mainly in cold regions of the Northern Hemisphere, although two species, *T. exsectiformis* and *T. exsecta* reach the zone of broad-leaved deciduous forest to the south. One species, *T. camerunensis* S.W. Arnell, was described from Cameroon Mountains in equatorial Africa and is known only from that area. In the course of my recent studies of *Lophozia* genus at the Missouri Botanical Garden, I found a new species of *Tritomaria* from the southern part of Mexico.

Tritomaria mexicana Bakalin sp. nov.

Plantae dioicae, ascendentes, vivide virides vel brunneolae vel flavo-virescentes. Caules in sectione transversali strato microcelluloso usque ad 1/4 portionem altitudinis caulis. Folia subtransverse inserta, lobis aequalibus vel subaequalibus, cuticula distincte striolato-verrucosa, parietibus tenuibus, trigonis concavis. Gemmae rubrae, rubiginosae vel purpureo-nigricantes, unicellulares, in angulis valde protrudentes. Perianthium ad orem abrupte contractum, ca. (1.7–) 2.0–22.5 x 0.6–0.7 mm, ore ciliato, ciliis per longitudinem 4(–5) cellularum longis, plerumque unistratosum.

Holotypus: Mexico. Michoacan: San Juan Nuevo, Patzingo (19°28'N, 102°11'W), 2400 m alt. On tree base in rather open montane Pine-Oak forest. leg. M. Burghardt 06 Oct. 2004 № 4512. (MO-5366378, isotypus in VLA).

Plants 5–10(–13) x 1.6–2.0 mm, ascending, bright green to brownish or yellowish green. Stems to 135–150 μm in height and ca. 170–190 μm in width, sparsely branching, transverse section with microcellous layer up to 1/4 of stem height, cell walls thickened along margin, ventral surface red-brown; rhizoids common, originating from dorsal side of stem at right angles, ca. 3 mm length. Leaves subtransversely inserted, spreading to erect-spreading, somewhat sulcate, distant, with apices deflected from the apex, oval to ovate, 0.6–0.8 x 0.53–0.65 mm, lobes equal to subequal, divided by a U-shaped sinus descending to 1/4–1/3 of leaf length, lobes with acute to obtuse apices, top of stem bearing clusters of gemmae; cells of midleaf nearly subquadrate to rectangular, (12–)14–22(–25) x (12–)14–22(–25) μm, in leaf base to 25–30 μm in length; cuticle distinctly striolate verrucose, walls thin, trigones concave; oil-bodies spherical to shortly ellipsoidal, 3–3.5 x 3.5–6 μm, faintly papillose, 4–8 per cell; underleaves absent. Specialized asexual reproduction by gemmae at apex of shoots, red, rusty-red to blackish purple, commonly pentagonal to polygonal in shape, 18–23 x 20–26 μm, 1-celled, with strongly protruding angles. Sexual condition dioicous. Androecia unknown. Gynoecia terminal, commonly with one or two ventral innovations, female bracts in 1 pair, obovate, entire, ca. 1.11–1.15 x 0.8–1.0 mm, divided to 1/4 of their length into 2 acute lobes with entire margins by a gibbous sinus,

Table 1. A comparison of *Tritomaria mexicana* with related species (* – based on Arnell, 1958).

Feature	*T. mexicana*	*T. exsectiformis*	*T. camerunensis**
Width of shoots, mm	1.6–2.0	1.6–2.0	ca. 0.8–1.2
Width of stem, μm	170–190	240–275	180–240
Size of leaves, mm	0.6–0.8 x 0.53–0.65	0.8–0.9 x 0.75–0.9	ca. 0.6 x 0.5
Number of lobes	2	(2–)3	2–3
Lobes	equal to subequal	unequally 3-lobed or more rarely strongly asymmetrically 2-lobed	unequal to strongly unequal
Shape of sinus	U-shaped	angular to U-shaped	gibbous
Midleaf cell length, μm	(12–)14–22(–25)	20–36(–40)	ca. 30
Midleaf cell width, μm	(12–)14–20(–25)	17–22	ca. 20
Midleaf cell walls	thin	thin	thick
Trigones	small, concave	bulging	distinct, convex
Oil-bodies n per cells	4–8 per cell	(6–9–)12–15 per cell	no data
Oil-bodies shape	spherical to shortly ellipsoidal, faintly papillose	spherical to ovoid faintly papillose	no data no data
Oil-bodies size, μm	3–3.5 x 3.5–6	3.0–4.5 x 4.0-5.5	no data
Gemmae	1-celled, angular	2-celled, angular	1-celled rounded to 2-celled angular
Gemmae, size, μm	18–23 x 20–26	13–20 x 16–26	14 x 14 -22
Bracts	divided into 2 acute subequal lobes with entire margin by gibbous sinus	divided into (2–)2–5 strongly unequal lobes with entire margin and angular to U-shaped sinus	no data
Perianth exertion	exerted to 5/6 of its length,	exerted to 3/4 of its length,	no data
Perianth shape	abruptly constricted to mouth	contracted to mouth	
Perianth size	(1.7–)2.0–2.5 x 0.6–0.7 mm	ca. 2.0 x 1.0 mm	

not connate, bracteole absent. Perianth exerted to 5/6 of its length, cylindrical-subclavate, tightened to mouth, ca. (1.7–)2.0–2.5 x 0.6–0.7 mm, mouth ciliate with cilia to 4(–5) cells long, generally 1-stratose. Sporophyte unknown.

The species is most closely related to *T. camerunensis* and *T. exsectiformis*. The distinctions between three taxa given in Table 1.

The diagnostic characters of the new species include 2-lobed leaves with equal to slightly subequal lobes, and 1-celled angular gemmae, a combination not known in other members of the genus. Arnell (1958) indicates for *T. camerunensis* 1–2-celled gemmae, but described 1-celled ones only as oval. I presume these 1-celled gemmae in *T. camerunensis* may be only immature, become angular and 2-celled at maturity. The same phenomenon occurs frequently in other *Lophozia* species.

Currently the species is known only from the type and data on its ecology are incomplete.

The specimen was identified previously as *Lophozia* cf. *longidens* by J. Vana. Actually confusion of the species with *Lophozia* is hardly possible, due to presence of certain unique features inherent *Tritomaria*: strongly and thoroughly papillose leaf cuticle, abruptly contracted perianth mouth, and the absence of bracteole.

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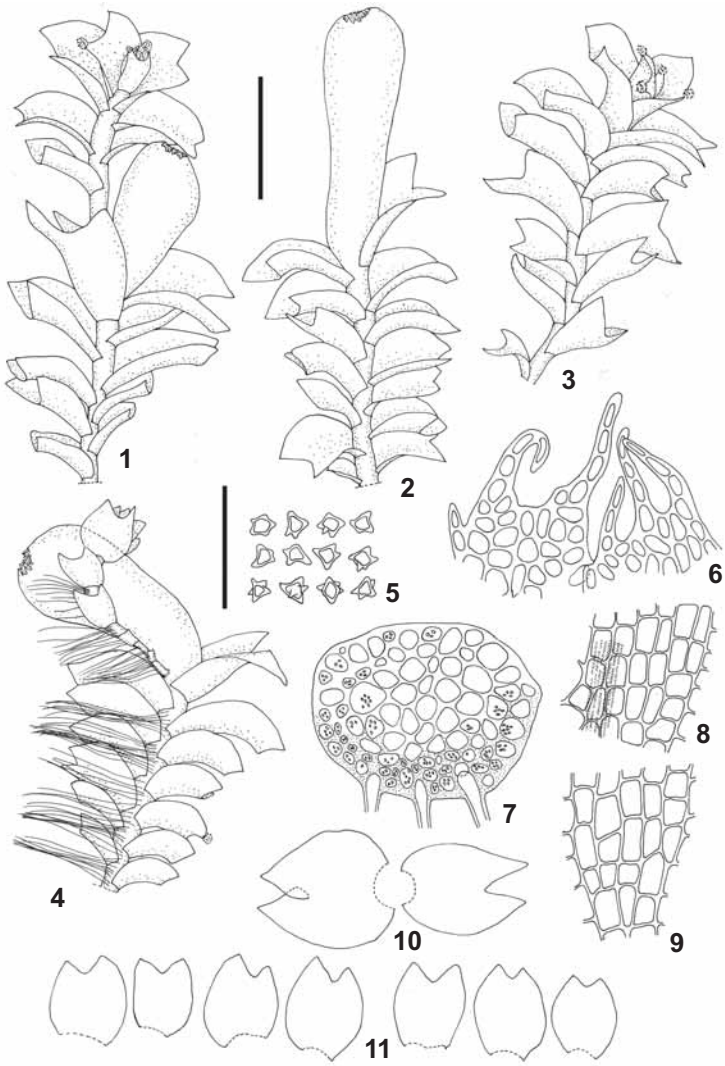

Fig. 1. *Tritomaria mexicana* Bakalin: 1, 2 – perianthous plants, dorsal view; 3 – gemmiparous plant, dorsal view; 4 – perianthous plant, ventral view; 5 – gemmae; 6 – perianth mouth; 7– stem cross section; 8 – cells in the midleaf (papillae are shown on the part); 9 – cells in the leaf base; 10 – female bracts; 11 – leaves. Scales: a - 1 mm for 1-4, 10, 11; b - 100 mm for 5-9. All from holotype (MO).

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