

NOTES OF *LOPHOZIA*. VII. ON THE DISTRIBUTION OF SOME SPECIES OF *LOPHOZIA* IN GEORGIA (CAUCASUS)

ЗАМЕТКИ ПО РОДУ *LOPHOZIA*. VII. О РАСПРОСТРАНЕНИИ НЕКОТОРЫХ ВИДОВ *LOPHOZIA* В ГРУЗИИ (КАВКАЗ)

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Abstract

Revision of the liverwort collection in Tbilisi Institute of Botany (TBI) has revealed four *Lophozia* taxa new for the liverwort flora of Georgia: *L. lantratoviae* Bakalin, *L. longidens* (Lindb.) Macoun, *L. perssonii* H. Buch et S.W. Arnell and *L. wenzelii* (Nees) Steph. var. *massularioides* Bakalin. A comment on these new findings is supplemented by the list of all *Lophozia* specimens in TBI.

Резюме

При ревизии коллекции печеночников, хранящейся в Тбилисском институте ботаники (ТБИ), обнаружено 4 новых для Грузии таксона *Lophozia*: *L. lantratoviae* Bakalin, *L. longidens* (Lindb.) Macoun, *L. perssonii* H. Buch et S.W. Arnell и *L. wenzelii* (Nees) Steph. var. *massularioides* Bakalin. Приводится описание этих новых находок и список всех видов *Lophozia* с территории Грузии, образцы которых хранятся в ТБИ.

KEYWORDS: *Lophozia*, liverworts, *Hepaticae*, Georgia, Caucasus.

The last checklist of Georgian bryophytes was published at 2004 (Chikovani & Svanidze, 2004). It includes data on distribution of 174 taxa of hepatics (3 hornworts and 171 liverworts) within administrative subunits and represents a shortened version of conspectus published 18 years before (Chikovani, 1986). Nomenclature usage in both papers is quite confusing. For *Lophozia*, Chikovani lists 6 species (if we omit species referred now to other genera): 1) *Lophozia alpestris* Schleich., which most likely means *L. sudetica*, since “*Lophozia alpestris*”, in its correct sense, is a member of *Leiocolea* and is cited in the paper under *Leiocolea collaris* (Nees) Schljakov., 2) *Lophozia ascendens* (Warnst.) R.M. Schust., 3) *L. excisa* (Dicks) Dumort., 4) *L. porphyroleuca* (Nees) Schiffn., which apparently means *L. guttulata* (Lindb. et Arnell) A. Evans, but not *L. silvicola* H. Buch (as it was shown by R.N. Schljakov (1981), *L. porphyroleuca* is synonymous with *L. ventricosa*, which Schljakov treated in the sense of *L. silvicola* H. Buch), 5) *L. ventricosa* (Dicks.) Dumort., 6) *L. wenzelii* (Nees.) Steph.

In the course of the recent achievements of molecular phylogenetics, the aforementioned more or less narrow generic concept of *Lophozia* became even narrower after segregating *Lophoziaopsis* Konstant. et Vilnet, with *L. excisa* (Dicks.) Konstant. et Vilnet (= *Lophozia excisa*) and *Pseudolophozia* Konstant. et Vilnet (with *P. sudeti-*

*ca* (Nees ex Hueb.) Konstant. et Vilnet (= *Lophozia sudetica*)) (Konstantinova & Vilnet, 2009). These “super-split” genera, however, are not distinct in morphology, so we retain *Lophozia* in the sense of Schljakov’s (1980) *Lophozia* or *Lophozia* subg. *Lophozia sensu* Schuster (1969). This morphologically natural group is characterized by a combination of features (present in the most phases of constituent taxa) such as presence of microcellous layer in the ventral portion of the stem, angular gemmae and bilobate leaves sheathing the stem in the base.

Revision of *Lophozia* specimens in TBI allowed the first author to reveal new species to Georgia, as well as to clarify distribution of some other taxa. All cited specimens examined are from TBI with some duplicates in VBGI.

1) *Lophozia lantratoviae* Bakalin

The species was described relatively recently (Bakalin, 2003), and its distribution is still imperfectly known. The original collection of the species is from southern part of the Republic of Yakutia (East Siberia), and first it was regarded (l.c.) as a probable East Siberian endemic taxon. Afterwards it was recorded from other regions of Siberia, as well as in the Russian Far East and in Russian part of the Caucasus (Konstantinova *et al.*, 2009). Recently it was also recorded for Seorak Mt. in northern

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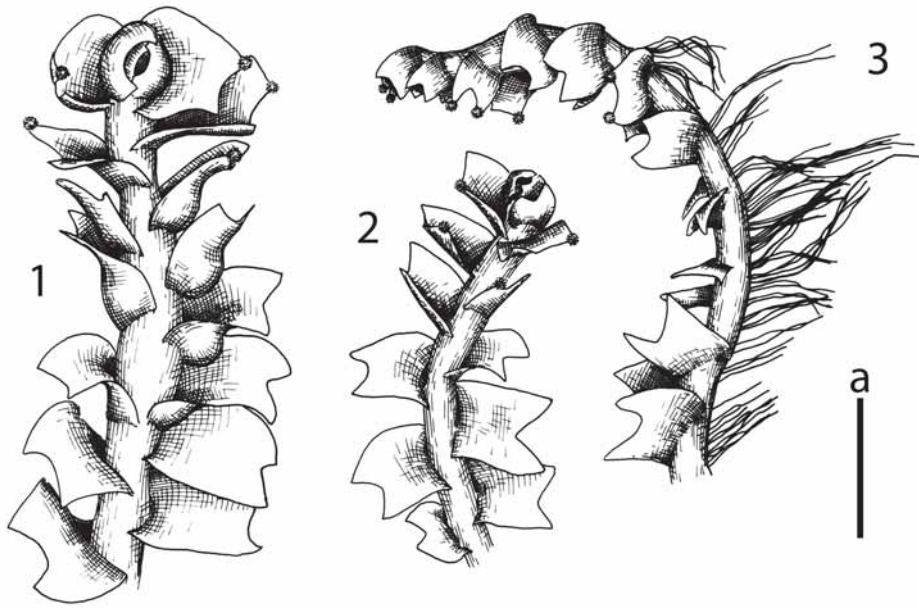


Fig. 1. *Lophozia lantratoviae* Bakalin. 1 – male branch, dorsal view; 2 – sterile branch, dorsal view; 3 – sterile branch, lateral view. Scale: a – 1 mm, for 1-3. All from N. Chikovani, leg. 14.VII.1976 (TBI).

part of South Korea (Choi *et al.*, 2012). Taking into account presently known distribution patterns of *L. lantratoviae*, its area may be regarded as Temperate – South Boreal Montane Asian. *L. lantratoviae* commonly occurs on stones along streams in spruce and fir forests in the middle mountain belt. Only one noticeable exception is in Kamchatka Peninsula, where the species grows in the mountain tundra belt on wet fine ground along temporary stream (Bakalin, 2009).

The diagnostic feature of the species is the combination of biconcentric oil-bodies and brown gemmae. A complex of differentiating features from morphologically related taxa, as well as illustrations were published by Bakalin (2003, 2005). Since the species was illustrated only for Yakutia specimens, we provide here figures based on material from Georgia (Fig. 1.).

*Specimens examined*: Georgia. Khevi, Kazbegi, Devdarak Canyon, 1900 m alt., cliffs. 14.VII.1976. N. Chikovani, two specimens from one locality (was identified as *L. wenzelii*).

#### 2) *Lophozia perssonii* H. Buch et S.W. Arnell

The species occurs sporadically across northern Eurasia, being noticeably rare in Northern America (Bakalin, 2011). Throughout its range, this species is restricted to limestone areas, but surprisingly it has never been recorded in the Caucasus. We found one specimen from Svaneti, the area rich in calcareous rocks. The species is characterized by a combination of brown to almost orange-red gemmae with long persistent one or two large oil-bodies and whitish plant color. Before the specimen was identified as “*L. alpestris*” from which it can be easily distinguished by aforementioned features. The differentiation of *L. perssonii* from other morphologically related taxa is discussed by Schljakov (1980) and Bakalin (2005). During the recent molecular works it was found that this taxon has molecularly nothing to do with other

*Lophozia* (Söderström *et al.*, 2010) and *L. perssonii* was segregated to the genus *Oleolophozia* L. Söderstr., De Roo & Hedd. Unfortunately, this point of view can hardly be supported by morphology; for this reason we are following Bakalin (2011) and retain the species within *Lophozia*.

*Specimen examined*: Georgia. Svaneti, Lendzheri Village area, limestone cliffs. 3.VII.1975 (no data on collector name)

#### 3) *Lophozia wenzelii* (Nees) Steph. var. *massularioides* Bakalin

This relatively recently described variety (Bakalin, 2005) with high probability belongs to the group of Caucasian neo-endemics. In the typical phase it is easily recognized by yellow color, large size, and chaotic distribution of fungal hyphae in the stem. In the course of more detailed studies, however, some transitional forms to var. *wenzelii* were found. Formerly, this species was recorded only in *Rhododendron caucasicum* communities. Our record attributes it to a different community formed by *Juniperus*, which may be similar in climatic under-canopy conditions. We found only one specimen in the herbarium TBI, but we are certain this species will be found in many other localities in the course of further studies of hepatics in Georgia.

*Specimen examined*: Georgia. Shivsheti Range, 2200 m alt., subalpine belt, on soil under juniper branches. 20.VIII.1971. N. Chikovani (was identified as *L. wenzelii* s.l.)

#### 4) *Lophozia longidens* (Lindb.) Macoun

This species with rather distinct appearance has never been recorded for Georgia. We were able to find it in a previously unpublished collection from Lagodekhi Strict Nature Reserve.

*Specimen examined*: Georgia. Kakheti, Lagodekhi Strict Nature Reserve, subalpine belt, decaying wood. 3.IX.1984. K. Tigishvili.

Rather numerous re-identifications indicate the need of total revision of *Lophozia* in Georgia. For example, *L. sudetica* (as "*L. alpestris*") in Georgia was treated as a common taxon, distributed in all Georgian administrative subunits (Chikovani & Svanidze, 2004), but we have found only three specimens in the TBI (all from Kakheti), while others were re-identified as *L. excisa* and *L. ventricosa*. A total revision of Georgian *Lophozia* herbarium collections may help to better understand the distribution patterns of *Lophozia* within the country. Thus, we provide the catalogue of the TBI specimens of *Lophozia* (with the exception of the above mentioned species), the names under which the specimens were kept before are in parentheses.

*Lophozia excisa* (Dicks.) Dumort. – Mtiuleti, Aragvi River Canyon, 2780 m alt., alpine meadow. 06.VIII.1971. K. Kimeridze ("*L. alpestris*").

*Lophozia guttulata* (Lindb. et Arnell) A. Evans – Trialeti, Bakuriani, 05.VII.1967. N. Chikovani (*L. porphyroleuca*); Sakachavo, 18.VI.1916. Ya. Lepchenko (*L. porphyroleuca*); Utseri 05.VII.1877 V. Brotherus (*L. porphyroleuca*); Adjara, iter Otingo 30.VIII.1910. G. Woronow (*L. ventricosa* s.l.).

*Lophozia sudetica* (Nees ex Hueb.) Grolle – Kakheti, Lagodekhi Strict Nature Reserve, 2100 m alt., NW-facing slope in *Carpinus* forest, on cliff. 29.VIII.1984. K. Tigishvili, two specimens from one locality (*Lophozia* sp., *Leiocolea badensis* (Gott.) Jørg.); 2150 m alt., NW-facing slope in *Carpinus* forest, on cliff. 28.VIII.1984. K. Tigishvili (*Lophozia* sp.).

*Lophozia ventricosa* (Dicks.) Dumort. var. *ventricosa* – Mtiuleti, Dusheti District, 1730 m alt., Logoksa Mt., alpine meadow, on soil. 05.VIII.1971. N. Chikovani ("*L. alpestris*"); Adjara, 1600 m alt., on soil. 17.VIII.1971. N. Chikovani (*L. porphyroleuca*), Shavsheti range, 2300 m alt. 20.VIII.1971 N. Chikovani (*L. ventricosa* s.l.); Aragvi River Basin, Mleti Village area, 2500 m alt., big boulders. 05.VIII.1971. G. Zamtaradze ("*L. alpestris*"), Kurkuta Mt., 2400 m alt., *Rhododendron* thickets. 19.VIII.1971. K. Kimeridze (*L. ventricosa* s.l.), 2400 m alt. 19.VIII.1971 Kimeridze (*L. ventricosa* s.l.); Meskheti, Alkhatsikhi District, Goderdzi Pass, on rotten wood. 15.VII.1968 I. Dylevskaya ("*L. incisa* (Schrad.) Dumort.").

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