

LEPIDOZIA SUBTRANSVERSA STEPH., A NEW SPECIES
FOR THE RUSSIAN LIVERWORT FLORA

LEPIDOZIA SUBTRANSVERSA STEPH. – НОВЫЙ ВИД
ДЛЯ ФЛОРЫ ПЕЧЕНОЧНИКОВ РОССИИ

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Abstract

Lepidozia subtransversa Steph. is recorded for the first time for Russia from the southern spools of Sikhote-Alin Range (Primorsky Territory, Russian Far East). The species differs from the second known from Russia species of *Lepidozia* (*L. reptans* (L.) Dumort.) in more common lateral flagelliform branches and wider (up to 15 cells wide) lobes of main stem leaves. The morphological description, differentiation from *Lepidozia reptans* and illustrations are given.

Резюме

Lepidozia subtransversa Steph. приводится впервые для России из южных отрогов Сихотэ-Алиня в Приморском крае (российский Дальний Восток). Это второй вид рода *Lepidozia* известный в России. В сравнении *L. reptans* (L.) Dumort. он характеризуется более частым присутствием флагеллевидных латеральных побегов и более широкими лопастями стеблевых листьев (до 15 клеток шириной). Предполагается, что этот восточноазиатский вид редок в юго-восточной России и вряд ли будет найден во многих других пунктах. Приводятся морфологическое описание, отличия от *Lepidozia reptans* и оригинальные иллюстрации.

KEYWORDS: Hepaticae, *Lepidozia*, phytogeography, Russian Far East, Temperate East Asia.

In the course of study of liverworts in the Primorsky Territory of the Russian Far East the first author collected a peculiar *Lepidozia*, which was identified as *Lepidozia subtransversa* Steph. Common in Holarctic *Lepidozia reptans* (L.) Dumort. was hitherto the only species of this genus known in Russia (Konstantinova *et al.*, 2009).

The Lepidoziaceae is one of the largest liverwort families in the world. It includes ca. 440 species united into 29 genera and 7 subfamilies (Frey & Stech, 2009). The family is particularly taxonomically diverse in Temperate Antipodes, also Neotropics and, to a lesser degree, in Paleotropics. At present ca. 60 species of *Lepidozia* are known (Frey & Stech, 2009).

The Lepidoziaceae in the Russian Far East was firstly reviewed by Zerov (1966) who reported one species of *Lepidozia* – *L. reptans* – for Primorsky Territory, Sakhalin and Kuril Islands. Later this species was recorded from Chukotka, Kamchatka, Magadan Province, Khabarovsk Territory and Amurskaya Province, becoming noticeably more frequent southward (Bakalin, 2010). The distribution of *L. reptans* occurs mainly in Boreal and Temperate regions throughout Holarctic, although sometimes it penetrates southward to subalpine forests

of Kinabalu Mt. in Borneo (Mizutani, 1974) or subtropical evergreen forests in Luzon (Mizutani, 1976). The lepidozias diversity in areas neighboring to the Russian Far East is somewhat richer. Western North American hepatic flora counts 3 species of the genus (Hong, 1988), 6 species are reported from Japan (Yamada & Iwatsuki, 2006), 4 from Korean Peninsula (Park & Choi, 2007), and 9 from China (Piippo, 1990).

Lepidozia subtransversa was described from Japan (“Hayachine, Nikko”) by F. Stephani (1897) as the species similar to *L. filamentosa* (Lehm. & Lindenb.) Gottsche, Lindenb. & Nees, with the note that the latter differs from the former in much deeply incised lobes (l.c., 95: “le dernier [*L. filamentosa*] differe par des feuilles beaucoup plus profondement laciniees”). The species is restricted to temperate regions of East Asia, including Korean Peninsula, Japan and China (Yamada & Iwatsuki, 2006; Park & Choi, 2007; Piippo, 1990). Therefore the record in Russian Far East was highly expected.

Lepidozia subtransversa was discussed in detail in the revision of Japanese Lepidoziaceae (Hattori & Mizutani, 1958). Authors synonymized *L. subtransversa*

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Table 1. A comparison of *Lepidozia subtransversa* and *L. reptans*

Characters	<i>L. subtransversa</i>	<i>L. reptans</i>
Diameters of stem, mm	0.50-0.65	0.20-0.35
Leaf position on main stem	contiguous	imbricate
Leaf lobe width at base	7-15 cells	4-8 cells
Lateral flagelliform branches	common	rather common
Cuticle	smooth	smooth
Distribution	Temperate East Asia	nearly all Holarctic
Sexual condition	dioicous	autoicous

with the western North American *L. filamentosa*, a species known in Alaska, British Columbia, Washington (Hong, 1988). According to their observations, the Alaskan material is “identical with Japanese *L. subtransversa*” (Hattori & Mizutani, 1958: 82). Later, after study of large collections from British Columbia, Hattori (1966) found that *L. subtransversa* is different from *L. filamentosa* and treated the former as subspecies of the latter. He notes main differences between these taxa as the following (Hattori, 1966: 269): “(1) plants are more robust in *L. subtransversa* than in *L. filamentosa*; (2) pinnae longer (1-2 cm long) in *L. subtransversa*, whereas in *L. filamentosa* short, slender, and loose; (3) leaves on pinnae usually denser and larger in *L. subtransversa* than in *L. filamentosa*”. Afterwards *L. subtransversa* was regarded as a separate species (Yamada & Iwatsuki, 2006; Mizutani & Chang, 1986, *etc.*).

Below we provide the description of *Lepidozia subtransversa* based on the material from the Primorsky Territory.

Lepidozia subtransversa Steph., Bull. Herb. Boiss. 5: 95. 1897.

Lepidozia obtusistipula Steph., Bull. Herb. Boiss. 5: 95. 1897.

Lepidozia crassicaulis Steph., Sp. Hep. 3: 632. 1909.

Lepidozia coreana Steph., Sp. Hep. 6: 332. 1922

Lepidozia filamentosa (Lehm. & Lindenb.) Gott. subsp. *subtransversa* (Steph.) S. Hatt., J. Hattori Bot. Lab. 29: 269. 1966.

Plants 20-40×0.8-1.4 mm, prostrate to ascending, yellowish green to whitish green. **Stems** usually 1-2-pinnate to rarely 3-pinnate, lateral flagelliform branches elongate, common; cross section ca. 0.50-0.65×0.40-0.45 mm, cortex cells slightly thick-walled in 1-2 layers, pale green, 25-32.5×20-25 µm, inner cells, 25-32.5×20-25 µm, slightly thick-walled, trigones concave to rarely triangular, colorless. **Rhizoids** scarce, developed near underleaf bases of flagelliform branches. **Leaves** contiguous, subtransversely inserted, obliquely quadrate, convex, asymmetrical (dorsal lobe bigger), main stem leaves 0.7-0.9×0.7-0.9 mm, branch stem leaves 0.7-0.9×0.6-0.75 mm, 3-4 lobed for 0.3-0.5 of the leaf length, lobes triangular, acute to acuminate, 7-15 cells wide at base, antical lobe usually larger, sinus acute to subacute. **Cells** subquadrate, slightly thick-walled, trigones concave, in the

midleaf 25.0-37.5×17.5-25.0 µm, near the apex 20-25×20-25 µm, at the base 20-50×20-30 µm; cuticle smooth. **Oil bodies** 7-15 per cells, elliptical to fusiform and ovate, 4-5×2.5-3.0 µm, smooth, homogeneous. **Underleaves** transversely inserted, subquadrate, concave, on main stem 0.65-0.75×0.35-0.45 mm, on branches 0.40-0.55×0.35-0.45 mm, 4-lobed for 0.3-0.4 of the underleaf length, lobe ligulate to lanceolate, 6-8 cells wide at base. **Sexual condition** undeterminable in Russian plants, reported as dioicous (Iwatsuki, 2001).

Specimen examined: RUSSIA, Primorsky Territory, Shkotovsky District, southern spurs of Falaza (Litovka) Mt., Smol'ny Klyuch Stream Valley (43°06'48"N, 132°45'39"E), 399 m alt., 09 July 2011, S.S. Choi #R5059 (JNU, duplicate in VBGI).

According to Hattori & Mizutani (1958) and Mizutani & Chang (1986), *L. subtransversa* is mostly restricted to subalpine coniferous forests, although sometimes the species occurs in “alpine” *Pinus pumila* (Pall.) Regel associations (Hattori & Mizutani, 1958), where it grows on rocks covered by humus, decaying wood and forest floor, and in the latter habitat it is one of the most common hepatics in the northern Japan. In Russia the species was collected in *Picea-Abies* mossy forest, over wet rocks covered with sandy soil on slope to stream, where it forms rather pure mats.

Being seen once in the field, the species can be easily assumed as different from *Lepidozia reptans* due to its wider leaf lobes and very common presence of lateral flagelliform branches. The main differentiating characteristics of both species are given in Table 1.

Since *L. subtransversa* is common in boreal forest of northern Japan, we presumed its wide occurrence in similar environments in Primorsky Territory. However we failed to find more specimens neither by an undertaken revision of all available collections of *L. reptans* from the South of the Russian Far East, nor by intensive search in the stream valleys near to the locality where the only Russian specimen was collected.

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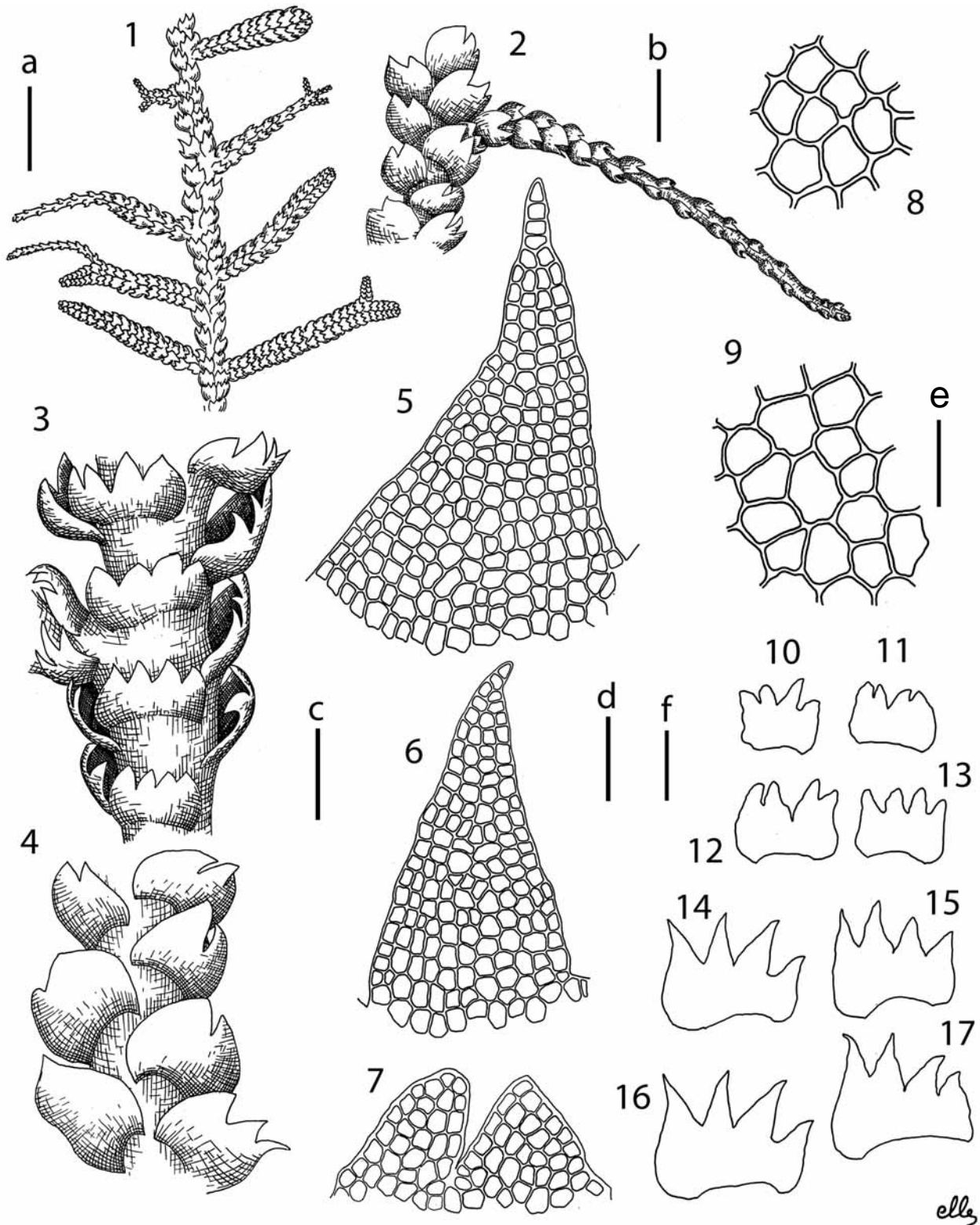


Fig. 1. *Lepidozia subtransversa* Steph. (from: Russia, Primorsky Territory, Falaza Mt., S.S. Choi #R5059, JNU, VBGI). 1 – habit, dorsal view; 2 – part of shoot with attenuate branch, dorsal view; 3 – part of shoot, ventral view; 4 – part of shoot, dorsal view; 5 – dorsal lobe of the leaf; 6 – middle lobe of the leaf; 7 – lobes of underleaf; 8 – midlobe cells; 9 – midleaf cells; 10-13 – underleaves; 14-17 – leaves. Scales: a – 2 mm, for 1; b – 1 mm, for 2; c – 500 μ m, for 3, 4; d – 100 μ m, for 5-7; e – 50 μ m, for 8, 9; f – 500 μ m, for 10-17.

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