The genus *Lepraria* (Stereocaulaceae, lichenized Ascomycota) in Belarus

**Andrei Tsurykau**¹², **Vladimir Golubkov**³ & **Pavel Bely**⁴

¹Department of Biology, F. Skorina Gomel State University, Sovetskaja st. 104, 246019 Gomel, Belarus. E-mail: tsurykau@gmail.com

²Department of Ecology, Botany and Nature Protection, Institute of Natural Sciences, Samara National Research University, Moskovskoye shosse 34, 443086 Samara, Russia

³Department of Biology and Ecology, Ya. Kupala Grodno State University, Dovatora st. 3/1, 230015 Grodno, Belarus. E-mail: vgolubkov@tut.by

⁴Laboratory of Ecological Physiology of Plants, Central Botanical Garden of the National Academy of Sciences of the Republic of Belarus, Surganova 2B, 220012 Minsk, Belarus. E-mail: pavel.bely@tut.by

**Abstract:** Based on an examination of 360 herbarium specimens of the genus *Lepraria*, this study deals with their morphology, secondary chemistry, habitat requirements and distribution in Belarus. Nine taxa have been accepted, of which *L. ecorticata*, *L. finkii* and *L. rigidula* are new to the country. *L. incana* appears to be the commonest species in the country (48% of the studied specimens).

**Keywords:** Stereocaulaceae, secondary metabolites, chemotaxonomy, lichen distribution, lichen ecology

**INTRODUCTION**

The circumscription of lichen-forming fungi has traditionally been based on their morphological, chemical and ecological features, but many species reproduce through the dispersal of lichenized diaspores and never form fruiting bodies. Historically, asexually reproducing crustose taxa were treated together as *Lichenes imperfecti* (Reichenbach, 1841; Poelt, 1958; Tehler, 1996) although they do not represent a monophyletic group (e.g. Lendemer, 2013). Recent advances in molecular biology and chemistry of secondary lichen metabolites has helped systematists to classify members of this group (e.g. Leuckert et al., 1995; Ekman & Tønsberg, 2002; Nelsen et al., 2008; Hodkinson & Lendemer, 2013; Lendemer & Hodkinson, 2013), but many aspects of their biology and taxonomy remain poorly understood and critically understudied.

According to Lendemer (2013) *Lepraria* Ach. is “the most unusual member” of the sterile lichen crusts. This genus is comprised of c. 60 species with a leprose thallus almost entirely composed of soredia (Saag et al., 2009). These taxa are diverse both chemically and morphologically. Although the genus has been comprehensively revised during recent decades in some countries (Laundon, 1992; Tønsberg, 1992; Lohtander, 1994; Kukwa, 2006b; Baruffo et al., 2006; Lendemer, 2013), there are many countries where our knowledge of *Lepraria* is still incomplete.

In Belarus, information on lichens goes back to the end of the 18th century, when Gilibert (1781) reported 42 species including *Lichen incanus*. Since then, leprose lichen species have been much neglected, there being only a few records of *Lepraria incana* s.l. (Ges’, 1960; Golubkov & Shukanov, 1983; Golubkov, 1988; 2011), and the genus itself was often missing in lichenological summaries (fide Gorbach, 1973). Only a few reliable records of Belarusian *Lepraria*, confirmed by thin-layer chromatography, have been recorded in the literature (Czyżewska, 2005; Golubkov & Kukwa, 2006; Tsurykau et al. 2014). As a result, only six taxa have been recorded from the country, namely *L. eburnea* J.R. Laundon, *L. elobata* Tønsberg, *L. incana* (L.) Ach. s.str., *L. jackii* Tønsberg, *L. neglecta* (Nyl.) Erichsen and *L. vouauxii* (Hue) R.C. Harris. The aim of this study is to extend our knowledge of the range of taxa within the genus *Lepraria*, together with information on their morphology, chemistry, ecology and distribution in Belarus.
MATERIAL AND METHODS

This study is based on material in GSU, GRSU, MSK, MSKH and MSKU herbaria (Thiers, [continuously updated]), which include collections made by the authors. Lichen morphology was studied under a stereomicroscope, Nikon SMZ-745, and secondary lichen compounds were studied with TLC using aluminum plates Macherey-Nagel Alugram Sil G UV254 in solvent system C according to the methods of Orange et al. (2001). In all, 360 specimens have been studied, most of which were collected by the authors; when more than one species was present in a packet, each taxon was counted as a separate specimen. Due to insufficient or indecipherable data on the labels, we were unable to interpret the ecology of eight specimens. Morphological descriptions and chemical data given are based exclusively on Belarusian material.

RESULTS

Nine taxa have been found in the material examined, of which three species, Lepraria eburnea (J.R. Laundon) Kukwa, L. finkii (B. de Lesd.) R.C. Harris and L. rigidula (B. de Lesd.) Tønsberg, are new to Belarus. Five taxa, L. eburnea, L. eorticata, L. neglecta, L. rigidula and L. vouauxii, are known only from a very few locations and may be endangered in Belarus. L. incana appears to be the most widely distributed and commonest species in the country.

THE SPECIES

Lepraria eburnea J.R. Laundon

Morphology: Thallus leprose, thick, finkii-type, whitish to greenish-white, old sample with pink tint (caused by the presence of alectorialic acid), thallus margin diffuse to delimited, medulla white, soredia with short projecting hyphae. Three specimens perfectly matched descriptions of the species (see Kukwa, 2006a and literature cited therein), while the fourth sample had a very thick thallus with a well-developed medulla which was preliminarily assigned to L. eorticata.

Chemistry: Alectorialic and protocetraric acids.

Ecology: According to Kukwa (2006b), L. eburnea inhabits a wide range of basic to moderately acidic substrata; in Belarus the species was found on soil (1 specimen) and Alnus glutinosa (1). Golubkov & Kukwa (2006) reported Quercus robur as a substrate for the third known specimen.

Distribution: In Belarus it is a rare species (Fig 1A), most probably under-collected, being previously known from one locality in Belovezhskaja Puscha National Park (Golubkov & Kukwa, 2006); two new discoveries are given below. L. eburnea has been reported from Europe, Asia, North America (including Greenland) and Australia (Güvenç and Oztürk, 1999; Saag et al., 2009; Lendemer, 2013; McCarthy, 2015).

Notes: The species is well characterized by the projecting hyphae on its soredia and the presence of alectorialic acid. Specimens of L. eburnea are often morphologically similar to L. finkii, but differ chemically. The species has similar chemistry to L. neglecta, but the latter differs by its granular and coarse thallus; it also grows in places exposed to sun and rain (Tønsberg, 1992; Golubkov & Kukwa, 2006).

Lepraria eorticata (J.R. Laundon) Kukwa

Morphology: Thallus leprose, irregular, powdery, thick, whitish-green or bluish-green with yellowish tint, thallus margin diffuse, medulla absent, soredia separated from each other, with no projecting hyphae. Three specimens perfectly matched descriptions of the species (see Kukwa, 2006a and literature cited therein), while the fourth sample had a very thick thallus with a well-developed medulla which was preliminarily assigned to L. eorticata.

Chemistry: Usnic acid and zeorin.

Ecology: According to Kukwa (2006a) and Flakus & Kukwa (2007), L. eorticata usually grows on stones, very rarely on tree bark; in Belarus it inhabits the bark of Populus tremula (2 specimens), Tilia cordata (1) and Fraxinus excelsior (1).

Distribution: New to Belarus, where it is known from four localities, mainly in the southern part of the country (Fig. 1B). World distribution data on L. eorticata are scarce; it has rarely been reported from Europe, Asia and South America (Kukwa, 2006a; Flakus & Kukwa, 2007). The species has been tentatively excluded from North American lichen check-list (Lendemer & Hodkinson, 2013).

Specimens examined: Brest region, Kamenets district, Belovezhskaja Puscha National Park, Korolevomostovskoe forest, 52°36'N, 23°46'E, 159 m, on Alnus glutinosa, 12.07.1981, leg. V. Golubkov (MSK); Grodno region, Grodno district, the city of Grodno, Rumlevo wooded park, 53°39'N, 23°51'E, 161 m, slope of a ravine, on soil, 23.08.2008, leg. V. Golubkov (GRSU). Number of specimens examined: 2.
Notes: Phylogenetic affinities of the crustose leprose taxa which produce usnic acid has been frequently questioned (e.g. Laundon, 1992; Sipman, 2003; Nelsen et al., 2008; Lendemer & Hodkinson, 2013; Bungartz et al., 2013). Recent molecular phylogenetic studies (Nelsen et al., 2008; Lendemer & Hodkinson, 2013) were the basis for transferring several taxa from Lepraria to other genera, and only three such species currently remain within Lepraria, namely L. ecorticata, L. leuckertiana (Zedda) L. Saag and L. straminea Vain. Lendemer & Hodkinson (2013) assumed that L. ecorticata was taxonomically heterogeneous, and unites biogeographically discordant elements with an aggregate thallus containing usnic acid and zeorin. However, we tentatively apply the name “Lepraria ecorticata” to Belarusian material until further European populations have been studied.

The species has a similar chemistry to L. leuckertiana and L. straminea, but the former differs by its wooly, thick and stratified thallus, while the latter has a granular, L. neglecta-like thallus and grows in Antarctica (Øvstedal & Lewis Smith, 2001; Kukwa, 2006a; Saag et al., 2009). In Belarus, L. ecorticata may be mistaken for Lecanora compallens Herk & Aptroot and L. expallens Ach., but these species have a prothal- lus and delimited soralia at least in the young parts of the thalli (Kukwa, 2006a).

**Specimens examined:** Brest region, Pružany district, Belovežskaja Pusča National Park, Khvoinik forest, 4 km NE of Khvoinik village, 52°43′N, 23°59′E, 170 m, ash forest, on Fraxinus excelsior, 27.07.1983, leg. V. Golubkov (GRSU); Gomel region, Dobrush district, Dobrush forest, 4 km N of Uborok village, 52°29′N, 31°30′E, 137 m, spruce forest, on Populus tremula, 26.07.2010, leg. P. Bely (MSKH-2867); Zhitkovichi district, Pererovo forest, 52°02′N, 27°58′E, 134 m, aspen forest, on Populus tremula, 18.05.1973, leg. O. Shakhrai (GSU); Grodno region, Grodno district, the city of Grodno, Stanislavovo Park, 53°41′N, 23°50′E, 131 m, on F. excelsior, 15.04.2004, leg. A. Khantanovich (GRSU). Number of specimens examined: 4.

**Lepraria elobata** Tønsberg

Morphology: Thallus leprose, irregular, powdery, thin, whitish to bluish-grey, thallus margin diffuse, medulla absent, soredia separated from each other, without projecting hyphae.

Chemistry: Atranorin, constictic acid, cryptostictic acid, stictic acid, zeorin.

Ecology: In Belarus, L. elobata was found almost exclusively in coniferous woodlands (98.4% of the studied material) of varying humidity, from wet boggy areas to dry pine stands, growing on Pinus sylvestris (32 specimens), Picea abies (21), Betula pendula (4), Quercus robur (4) and lignum (2).

Distribution: Lepraria elobata is widely distributed in Belarus (Fig. 1C). The species has a boreal distribution, being known from Europe, North America (including Greenland) and in Asia from the Russian Far East (Saag et al., 2009; Urbananichus, 2010; Lendemer, 2013). Two Asian specimens from Buryatia (Russia), published as L. elobata by Kharpukhaeva & Khanin (2012), should be considered with caution as the specimens were claimed to contain atranorin and lepraric acid, and atranorin, connorstictic acid and consoporphyrilic acid, respectively.

Notes: In Belarus, only L. finkii has a similar chemistry to L. elobata, but the former differs by its woolly, thick thallus with long projecting hyphae.
Selected specimens examined: Brest region, Stolin district, 5 km NW of Stolin town, 51˚56’N, 26˚49’E, 139 m, spruce forest, on Quercus robur, 06.08.2010, leg. P. Bely, (MSKH-3002); Gomel region, Gomel district, Dolgoleskoje forest, 0.5 km NE of Dolgolesie village, 52˚16’N, 30˚44’E, 134 m, pine forest, on Pinus sylvestris, 07.08.2013, leg. A. Tsurykau (GSU-1848); Grodno region, Lida district, 2 km S of Tarnovo village, 53˚46’N, 25˚08’E, 142 m, pine forest, on Pinus sylvestris, 25.01.2007, leg. N. Mętjas (GRSU); Minsk region, Stolbtsy district, 2.5 km NE of Kletische village, 53˚50’N, 26˚19’E, 141 m, spruce forest, on Pinus sylvestris, 08.09.2010, leg. P. Bely (MSKH-3242); Mogilev region, Bobruisk district, 1 km NW of Sychkovo village, 53˚13’N, 29˚07’E, 162 m, spruce forest, on Picea abies, 21.11.2010, leg. P. Bely (MSKH-5702); Vitebsk region, Lepel district, 1.5 km NE of Lepel town, 54˚53’N, 28˚44’E, 144 m, spruce forest, on Picea abies, 14.07.2010, leg. P. Bely (MSKH-5695).

Number of specimens examined: 65.

Lepraria finkii (B. de Lesd.) R.C. Harris

Morphology: Thallus leprose, woolly, soft, thick, light-green to greyish, sometimes becoming partly detached from the substratum, thallus margin diffuse to delimited, sometimes with sublobes, medulla well developed, white, soredia often grouped in consoredia, loosely packed, with usually long projecting hyphae.

Chemistry: Atranorin, constrictic acid, cryptostictic acid, stictic acid, zeorin.

Ecology: In Belarus the species prefers wet spruce forests (21 specimens), but some specimens were found in broadleaved forests or in open situations. Lepraria finkii inhabits a wide range of substrata, namely bark (23 specimens), soil (4), wood (3) and concrete (1); corticolous samples were collected from Picea abies (10), Alnus glutinosa (4), Betula pendula (2), Quercus robur (2), Acer platanoides (2), Pinus sylvestris (2) and Sorbus aucuparia (1). It would appear that L. finkii is the most indifferent species within the genus in Belarus in terms of substrate selectivity, as noted by Kukwa & Flakus (2009) (sub. L. lobificans) and Lendemer (2013).

Distribution: Lepraria finkii (sub. L. lobificans) is a widespread cosmopolitan lichen, reported from all continents, except Antarctica (Sipman, 2004; Saag et al., 2009; Kukwa & Flakus, 2009; McCarthy, 2015) new to Belarus, being common in the country (Fig. 1D).

Notes: This taxon was previously known as L. lobificans auct. (Laundon, 1992) until Lendemer (2010; 2013) resolved its status and adopted the name L. finkii.

The species is highly characteristic due to its chemistry (atranorin, zeorin, and stictic acid complex) and morphology (cottony thallus having long projecting hyphae).

Selected specimens examined: Brest region, Baranovichy district, 1 km N of Baranovichy town, 53˚10’N, 26˚00’E, 186 m, spruce forest, on concrete, 27.08.2009, leg. P. Bely (MSKH-928); Gomel region, Staro-Djatlovichskoje forest, 1.5 km NE of Chkalovo village, 52˚17’N, 30˚51’E, 119 m, pine forest, on Pinus sylvestris, 31.07.2013, leg. A. Tsurykau (GSU-1734); Grodno region, Volkovysk district, close to Savichy village, 53˚09’N, 24˚37’E, 218 m, on soil, 24.05.2006, leg. V. Golubkov (GRSU); Minsk region, Stolbtsy district, 1 km NE of Kroman’ lake, 53˚43’N, 26˚19’E, 153 m, spruce forest, on lignum, 12.09.2010 leg. P. Bely (MSKH-3555); Mogilev region, Bobruisk district, 1 km NW of Sychkovo village, 53˚13’N, 29˚07’E, 162 m, spruce forest, on Picea abies, 21.11.2010, leg. P. Bely (MSKH-5262); Vitebsk region, Lepel district, Domzheritsy forest, close to Domzheritsy village, 54˚45’N, 28˚19’E, 167 m, spruce forest, on Alnus incana, 19.04.2010, leg. P. Bely (MSKH-3894).

Number of specimens examined: 35.

Lepraria incana (L) Ach.

Morphology: Thallus leprose, powdery, greyish-green, blue-green or greyish-blue, margin diffuse, medulla rarely present, thin, soredia diffuse.

Chemistry: Divaricatic acid and zeorin, sometimes accompanied by atranorin.

Ecology: The species is mostly found in conifer forests (96% of the studied material) of varying illumination and humidity. The frequency on different substrata is as follows: Picea abies (88 specimens), Pinus sylvestris (58), Quercus spp. (12), wood (3), Populus tremula (3), Alnus glutinosa (2), Abies alba (1), Acer platanoides (1), Betula pendula (1), Pyrus communis (1) and Tilia cordata (1). The species inhabits mostly acidic substrata, as noted for Latvia by Mežaka et al. (2012).

Distribution: This is the most widely distributed and commonest species within the genus in Belarus, with scattered localities in the northern and eastern parts of the country (Fig. 1E). According to Saag et al. (2009), L. incana is a cosmopolitan lichen, being reported from all continents, except Arctic and Antarctic regions. However, as discussed by Lendemer (2011), this species is absent in North America as sequences derived from its populations of L. incana have revealed two semi-cryptic species, namely L.
Notes: The species of *Lepraria* producing di- 
varicatic acid has been recently overviewed by 
Lenderem (2011), revealing that *L. incana* can 
be heterogeneous (see above).

**Selected specimens examined:** Brest region, 
Pruzhany district, Belovezhskaja Puscha National Park, 
Nikorskoje forest, 5 km SE of Babinet village, 52°37′N, 
24°03′E, 172 m, oak forest, on *Abies alba*, 29.07.1983, 
leg. V. Golubkov (MSK); Gomel region, Buda-Koshelevo 
district, Chebotovichi forest, 0.5 km SW of Klenovitsa 
village, 52°36′N, 30°19′E, 139 m, pine forest, on *Pinus 
sylvestris*, 13.07.2013, leg. A. Tsureyku (GSU-1608); 
Grodno region, Grodno district, the city of Grodno, 
bank of the Gorodnichanka river, 53°40′N, 23°49′E, 
127 m, on *Acer platanoides*, 23.03.2004, leg. A. 
Khartonovich (GRSU); Minsk region, Stolbtsy district, 
2.5 km NE of Kletische village, 53°50′N, 29°30′E, 147 
m, spruce forest, on *Picea abies*, 08.09.2010, leg. P. 
Bely (MSKH-3255); Mogilev region, Bobruisk district, 
1 km NW of Sychkovo village, 53°13′N, 29°07′E, 163 
m, spruce forest, on lignum, 21.11.2010 leg. P. Bely 
(MSKH-2626); Vitebsk region, Lepel district, 0.5 km 
NE of Domzheritsy village, 54°45′N, 28°19′E, 190 m, 
spruce forest, on *Picea abies*, 08.10.2009, leg. P. Bely 
(MSKH-1940).

Number of specimens examined: 172.

**Lepraria jackii** Tønsberg var. **Jackii**

Morphology: Thallus leprose, powdery, whitish-
green to greenish, subthalline hyphae white, 
soredia diffuse, fine, with or without short pro-
jecting hyphae.

Chemistry: atranorin, jackinic and angardianic/
roccellic acids.

Ecology: In Belarus, *L. jackii* grows only in for-
est conditions, almost exclusively in coniferous 
woodlands (67 specimens). It prefers acidic 
substrata, mostly bark of *Pinus sylvestris* (36), 
*Picea abies* (27) and *Quercus robur* (2), but also 
occurs on lignum (3). A similar ecology was also 
reported for Poland by Kukwa (2006b).

Distribution: The species was previously in-
cluded in “The red list of lichens of Pripyatsky National Park” (Golubkov 2011). The current 
study reveals that *L. jackii* is widely distributed 
in Belarus, but occurs in scattered localities in 
the eastern and northern parts of the country 
(Fig. 2A). The species is common in Scots pine 
forests of varying age, humidity and light condi-
tions, except for very young pine stands. *L. jackii* 
has been reported from Europe, Asia, North 
America and Australia, and mostly confined to 
the boreal zone (Saag et al., 2009; Lenderem, 
2013; McCarthy, 2015).

Notes: Until 2002, only three species of *Lepr-
aria* containing fatty acids and atranorin were 
known to occur in Europe: *L. borealis* Loht. & 
Tønsberg, *L. jackii* and *L. rigidula* (B. de Leds.) 
Tønsberg (Tønsberg, 1992; Lohtander, 1994). 
Since then, much attention has been paid to 
the taxonomy and chemistry of this group, and 
six species have been newly described, namely 
*L. bergenensis* Tønsberg, *L. celata* Slavíková, 
*L. granulata* Slav.-Bay., *L. humida* Slavíková & 
Orange, *L. sylvicola* Orange and *L. toensbergiana* 
Bayerová & Kukwa (Tønsberg, 2002; Bayerová et 
al., 2005; Slavíková-Bayerová & Orange, 2006; 
Slavíková-Bayerová & Fehrer, 2007). However, 
the systematic position of the latter taxon has 
been briefly discussed (Bayerová & Haas, 2005; 
Baruffo et al., 2006; Fehrer et al., 2008; Tretiach 
et al., 2009; Saag et al., 2009), and a new com-
bination *L. jackii* var. *toensbergiana* (Bayerová 
& Kukwa) Kukwa has been proposed (Śliwa & 
Kukwa, 2012).

Of the species mentioned above, *L. borealis* 
(granular thallus with delimited thallus and 
raised lobes), *L. bergenensis* and *L. humida* (an-
thaquinones in subthalline hyphae), and *L. 
celata* (confined to mountainous regions) also 
produce jackinic/rangiformic or angardianic/
roccellic acids accompanied by atranorin, but 
grow mostly on siliceous rocks and soil. *L. granu-
lata* (granulata unknown 1 & 2), *L. jackii* var. 
toensbergiana (toensbergianic acid), *L. rigidula* 
(nephosteranic acid) and *L. sylvicola* (roccellic 
and toensbergianic acids) are chemically distinct 
by producing other fatty acids (see literature 
cited here).

The identification of fatty acids in our *L. 
jackii* samples needs further verification using 
additional solvent systems, e.g. B’ and G (Orange 
et al., 2001); however, TLC in solvent C was 
repeated at least twice for each specimen and 
the results were similar and uniform (Bayerová et 
al., 2005) for 68 samples; one sample was 
preliminarily identified as *L. cf toensbergiana* 
and its specific affiliation was verified by Martin 
Kukwa.

**Selected specimens examined:** Brest region, 
Baranovichi district, 1 km N of Baranovichi town,
Lepraria neglecta (Nyl.) Erichsen

The single specimen of _L. neglecta_ housed in MSK was previously studied by Golubkov & Kukwa (2006); for details see the latter paper. Distributional data are provided in Fig. 2B.

Lepraria rigidula (B. de Lesd.) Tønsberg

Morphology: Thallus leprose, cottony to powdery, whitish or light green, margin diffuse, medulla sometimes present, white, projecting hyphae long. A difference in morphology is often caused by a variety of habitat conditions (Kukwa, 2006b). In Belarus, the terricolous sample is characterized by its rather whitish thallus with well-developed medulla, while the corticolous thallus is thinner and has a greenish colour resembling _L. jackii_.

Chemistry: Atranorin and nephrosteranic acid.

Ecology: _L. rigidula_ was found growing on soil (1 specimen) and _Pinus sylvestris_ (1) in open habitat and middle-aged pine forest, respectively. In Poland it usually grows on nutrient-rich tree bark in open localities, being rare within forests (Kukwa, 2006b).

Distribution: New to Belarus, being known only from two localities in the Gomel region in the south-eastern part of the country (Fig. 2C). _L. rigidula_ has been reported from Europe, Asia, North and South America, northern Africa and the Antarctic region (Øvstedal & Lewis Smith, 2001; Flakus & Kukwa, 2007; Saag et al., 2009; Lendemer, 2013).

Notes: Species producing fatty acids and atranorin are compared under _L. jackii_.

Specimens examined: Gomel region, Buda-Koshelevo district, Chebotovichi forest, 0.5 km SW of Klenovitsa village, 52°36′N, 30°19′E, 131 m, pine forest, on _Pinus sylvestris_, 13.07.2013, leg. A. Tsurykau (GSU); Rechitsa district, close to Unoritsa village, 52°27′N, 30°19′E, 120 m, bank of the Dnieper river, on soil, 10.08.2008, leg. A. Tsurykau (GSU).

Number of specimens examined: 2.

**Lepraria vouauxii** (Hue) R.C. Harris

Morphology: Thallus leprose, cottony, soft, thick, grey to green, with distinct yellowish tint, thallus margin diffuse, medulla white, soredia loosely packed, with short projecting hyphae.

Chemistry: Pannaric acid 6-methylester.

Ecology: _L. vouauxii_ is a ubiquitous lichen, occurring in natural habitats and in urban areas. The species was found on trees with medium acidic to basic and nutrient-rich bark, namely _Acer platanoides_, _Alnus glutinosa_, _Fraxinus excelsior_, _Malus sylvestris_ and _Quercus robur_.

Distribution: In Belarus the species is rare, but probably under-collected, being known only from six localities in the southern part of the country (Fig. 2D). _L. vouauxii_ is a cosmopolitan lichen commonly reported from all continents including the Antarctic region (Øvstedal & Lewis Smith, 2001; Flakus & Kukwa, 2007; Saag et al., 2009; Lendemer, 2013; McCarthy, 2015).
Notes: In Belarus *L. vouauxii* is most similar to *L. finkii*, but the latter differs by its chemistry, having long projective hyphae, and lacking the yellowish tint. This is the only *Lepraria* species with pannaric acid 6-methylester known to occur in Belarus.

**Selected specimens examined:** Brest region, Pružany district, Belovezhskaya Pushcha National Park, Pererovo forestry, 2 km E of Pererovo village, 52°38’N, 23°55’E, 162 m, black alder forest, on *Fraxinus excelsior*, 22.06.1983, leg. V. Golubkov (MSK); Gomel region, Zhitkovichi district, Pripyatsky national park, Ozerany forest, 51°59’N, 27°51’E, 127 m, birch forest, on *Acer platanoides*, 16.06.1971, leg. O. Shakhrai, (GSU-2139); Grodno region, Grodno district, the city of Grodno, Gilibert central park, 53°41’N, 23°50’E, 122 m, on *Fraxinus excelsior*, 09.11.2004, leg. A. Tsurykau (GSU-1877).

Number of specimens examined: 11.

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