

---

---

# RESEARCH NOTES

---

---

# НАУЧНЫЕ ЗАМЕТКИ

---

---

## FIRST RECORD OF *PARMELIA ASIATICA* (PARMELIACEAE, ASCOMYCOTA) IN EUROPE

Irina N. Urbanavichene<sup>1,\*</sup> , Gennadii P. Urbanavichus<sup>2</sup> 

<sup>1</sup>Komarov Botanical Institute of RAS, Russia

\*e-mail: [urbanavichene@gmail.com](mailto:urbanavichene@gmail.com)

<sup>2</sup>Ural Federal University, Russia

Received: 02.12.2023. Revised: 25.03.2024. Accepted: 10.04.2024.

The lichen *Parmelia asiatica* (Parmeliaceae), described in 2011 from China (Yunnan province), is reported for the first time in Europe, in European Russia. Since 2013, the species has been recorded in the Russian Far East and Baikal Siberia. The majority of the records are in Protected Areas located in regions with a humid climate, where the preferred habitats are mainly foothill/mountain, humid, mixed or dark coniferous old-growth forests. A critical analysis of the herbarium specimens from the Kerzhensky State Nature Reserve (Nizhny Novgorod Region, Russia) collected by the authors in 2020 allowed us to identify a specimen as *Parmelia asiatica*. Before this study, only six species of the genus *Parmelia* were known in European Russia. The present paper contains data on the new record of *P. asiatica*, its morphology, the species distribution range, and its ecology. The diversity of data collected in Russian state nature reserves (including the new record) proves the need and importance of studying the lichen flora of these territories, since they represent the best-preserved, rare and unique habitats. In particular, the Kerzhensky State Nature Reserve is believed to be located near the contact zone between European and Siberian vascular and lichen flora, which is also confirmed by the here reported record of *P. asiatica*.

**Key words:** European Russia, Kerzhensky State Nature Reserve, lichen, new locality, Nizhny Novgorod Region

The family Parmeliaceae comprises more than 2700 species, and the genus *Parmelia* Ach. contains 41 species (Lumbsch et al., 2011; Ossowska et al., 2023). Of these, 21 *Parmelia* species are registered in Russia, six of which are found in European Russia (Urbanavichus, 2010).

The corticolous macrolichen *Parmelia asiatica* A. Crespo & Divakar was described from China (Yunnan Province, Shi Bao Shan Park, 26.36666° N, 99.83333° E) (Lumbsch et al., 2011). To date, the species has been recorded from many localities in the Asian part of Russia (e.g. Lishtva et al., 2013; Zheludeva, 2015; Kuznetsova & Dudov, 2017; Kharpukhaeva & Lishtva, 2020; Chesnokov & Konoreva, 2021). The majority of the records are from mountainous old-growth forests and regions with a humid climate. The revision of specimens from the Kerzhensky State Nature Reserve revealed a sample as *P. asiatica*. As a result, we present a new record of this species from Europe, in European Russia. Ossowska (2023) has recently reported *P. asiatica* for the first time for North America. The species has been found in mountain forests of Canada (British Columbia) and the USA (Washington State and Alaska). Based on the foregoing, we assume that *P. asiatica* may be a more widespread species in the Northern Hemisphere in the specific forest habitats.

The considered herbarium specimens of *Parmelia asiatica* were collected in May 2020 in the Kerzhensky State Nature Reserve (Nizhny Novgorod Region, Russia). Morphological and anatomical characters were examined using standard microscopic techniques. Lichen substances were analysed by standard HPTLC methods (Arup et al., 1993). The specimen is deposited in the lichen herbarium of the Komarov Botanical Institute RAS (LE-L).

Examined specimen. Russia, Nizhny Novgorod Region, Bor district, Kerzhensky State Nature Reserve, quarter 207, 80 m a.s.l., the mouth of the River Pugai, broad-leaved forest, on the bark of *Quercus robur* L. (56.38807° N, 44.89383° E), 19.06.2020, I.N. Urbanavichene, G.P. Urbanavichus (LE-L22782). Secondary metabolites (HPTLC): atranorin, salazinic and consalazinic acids.

Morphologically (Fig. S1) and chemically, *Parmelia asiatica* is very close to *P. sulcata* Taylor. *Parmelia asiatica* differs from *P. sulcata* by the narrow sublinear lobes with sparse pseudocyphellae and spherical or hemispherical terminal soralia on the tips of the lobes (Fig. S2), and by a smaller thallus. *Parmelia sulcata* (Fig. S3) has a larger thallus with the upper surface often becoming cracked along prominent pseudocyphellae with

granular soredia arranged mainly in laminal, linear soralia (Kuznetsova & Dudov, 2017).

Distribution. Europe (present report), Asia (in Russia, it is Siberia (Irkutsk Region (Lishtva et al., 2013), Republic of Buryatia (Kharpukhayeva & Lishtva, 2020)), Russian Far East (Magadan Region (Zheludeva, 2015), Kamchatsky Krai (Lishtva et al., 2013), Amur Region (Kuznetsova & Dudov, 2017), Sakhalin Region, particularly Sakhalin Island (S.I. Chabanenko, LE-L17843), Iturup Island (Chesnokov & Konoreva, 2021)), China (Lumbsch et al., 2011)), North America (Canada, USA (Ossowska, 2023)) (Fig. S4).

Ecology. *Parmelia asiatica* grows on bark of trunks and branches of *Abies sachalinensis* (F. Schmidt) Mast., *Betula ermanii* Cham., *Chosenia arbutifolia* (Pall.) A.K. Skvortsov, *Larix gmelinii* (Rupr.) Rupr., *Picea ajanensis* Fisch. ex Carrière, *Pinus pumila* (Pall.) Regel, *Quercus robur*, *Rhododendron* sp. and *Sorbus commixta* Hedl.

According to Kadetov (2015) and confirmed by our data, the vascular and lichen flora of Kerzhensky State Nature Reserve is intermediate between the European and Siberian. This is confirmed by some other recent lichen findings, such as *Biatora albidula* Willey, *Caloplaca ahtii* Søchting, *Rinodina excrescens* Vain., *Schizoxylon albescens* Gilenstam, Döring & Wedin, *Usnocetraria oakesiana* (Tuck.) M.J. Lai & J.C. Wei, (Urbanavichene & Urbanavichus, 2021; Urbanavichus & Urbanavichene, 2022). These lichen species are very rare in European Russia and are much more common in mixed forests of south Siberia and Trans-Baikal Region (Urbanavichene & Urbanavichus, 1998; Makryi & Lishtva, 2005; Galanina et al., 2011; Palice et al., 2013; S.V. Chesnokov, LE-L16729; Kharpukhayeva, 2021). In addition, the floodplain forests along the banks of the River Kerzhenets and its tributaries were not affected by wildfire and serve as shelters for rare lichen species.

### Acknowledgements

The study of Irina N. Urbanavichene was supported by the institutional research project «Flora and systematics of algae, lichens, and bryophytes of Russia and phytogeographically important regions of the world» (№121021600184-6) of the Komarov Botanical Institute of RAS (Russia).

### Supporting Information

Additional data to the paper of Urbanavichene & Urbanavichus (2024) may be found in the [Supporting Information](#).

### References

- Arup U., Ekman S., Lindblom L., Mattsson J.E. 1993. High performance thin layer chromatography (HPTLC), an improved technique for screening lichen substances. *Lichenologist* 25(1): 61–71. DOI: 10.1006/lich.1993.1018
- Chesnokov S.V., Konoreva L.A. 2021. Addition to the lichen flora of Iturup Island (Sakhalin Region, Russian Far East). *Novosti Sistematiki Nizshikh Rastenii* 55(2): 379–392. DOI: 10.31111/nsnr/2021.55.2.379
- Galanina I.A., Yakovchenko L.S., Tsarenko N.A., Spribille T. 2011. Notes on *Rinodina excrescens* in the Russian Far East (Physciaceae, lichenized Ascomycota). *Herzogia* 24(1): 59–64. DOI: 10.13158/heia.24.1.2011.59
- Kadetov N.G. 2015. On the issue of the botanical and geographical position of the Nizhny Novgorod Trans-Volga region and the Kerzhensky State Nature Reserve. *Proceedings of the Kerzhensky State Nature Reserve* 7: 76–96. [In Russian]
- Kharpukhayeva T.M. 2021. Findings of new and rare lichen species of Eastern Siberia. *Turczaninowia* 24(3): 24–35. DOI: 10.14258/turczaninowia.24.3.2 [In Russian]
- Kharpukhayeva T.M., Lishtva A.V. 2020. Materials to the lichen flora of the Bauntovsky District, Republic of Buryatia. *Novosti Sistematiki Nizshikh Rastenii* 54(1): 149–164. DOI: 10.31111/nsnr/2020.54.1.149 [In Russian]
- Kuznetsova E.S., Dudov S.V. 2017. New records of lichens from the Zeysky Nature Reserve (Amur Region, Russia). *Folia Cryptogamica Estonica* 54: 51–58. DOI: 10.12697/fce.2017.54.09
- Lishtva A.V., Himelbrant D.E., Stepanchikova I.S. 2013. *Parmelia asiatica* (Parmeliaceae): the first record for the lichen flora of Russia. *Novosti Sistematiki Nizshikh Rastenii* 47: 225–229. DOI: 10.31111/nsnr/2013.47.225
- Lumbsch H.T., Ahti T., Altermann S., Amo De Paz G., Aptroot A., Arup U., Bárcenas Peña A., Bawingan P.A., Benatti M.N., Betancourt L., Björk C.R., Boonpragob K., Brand M., Bungartz F., Cáceres M.E.S., Candan M., Chaves J.L., Clerc P., Common R., Coppins B.J., Crespo A., Dal-Forno M., Divakar P.K., Duya M.V., Elix J.A., Elvebakk A., Fankhauser J.D., Farkas E., Itatí Ferraro L., Fischer E. et al. 2011. One hundred new species of lichenized fungi: a signature of undiscovered global diversity. *Phytotaxa* 18(1): 1–127. DOI: 10.11646/phytotaxa.18.1.1.
- Makryi T.V., Lishtva A.V. 2005. Lichens. In: *Biota of Vitimsky State Nature Reserve: Flora*. Novosibirsk: Geo. P. 115–175. [In Russian]
- Ossowska E.A. 2023. Notes on sorediate *Parmelia* species in North America with the first records of *P. asiatica* and *P. barrenoae*. *Phytotaxa* 619(2): 152–160. DOI: 10.11646/phytotaxa.619.2.3
- Ossowska E.A., Schiefelbein U., Szymczyk R., Kukwa M. 2023. Contribution to the knowledge of the distribution of *Parmelia* species (Parmeliaceae, Ascomycota) – New records confirmed by molecular data. *Acta Mycologica* 58: 175356. DOI: 10.5586/am/175356

- Palice Z., Printzen C., Spribille T., Svensson M., Tønsberg T., Urbanavichene I., Yakovchenko L.S., Ekman S. 2013. Taxonomy of the genus *Myrionora*, with a second species from South America. *Lichenologist* 45(2): 159–167. DOI: 10.1017/S0024282912000692
- Urbanavichene I.N., Urbanavichus G.P. 1998. *Lichens of the Baikal State Nature Reserve (annotated list of species)*. Moscow. 53 p. (Series «Flora and fauna of State Nature Reserves». Vol. 68.) [In Russian]
- Urbanavichene I.N., Urbanavichus G.P. 2021. Additions to the lichen flora of the Kerzhensky Nature Reserve and Nizhny Novgorod Region 55(1): 195–213. *Novosti Sistematiki Nizshikh Rastenii* 55(1): 195–213. DOI: 10.31111/nsnr/2021.55.1.195 [In Russian]
- Urbanavichus G.P. 2010. *A checklist of the lichen flora of Russia*. St. Petersburg: Nauka. 194 p.
- Urbanavichus G.P., Urbanavichene I.N. 2022. First records of lichenised and lichenicolous fungi for the lichen flora of Russia and Eastern Europe. *Nature Conservation Research* 7(2): 95–97. DOI: 10.24189/ncr.2022.024
- Zheludeva E.V. 2015. Lichen species from North-Eastern Priokhotye (Okhotsk Sea region) new for Magadan Region. *Turczaninowia* 18(4): 5–15. DOI: 10.14258/turczaninowia.18.4.1 [In Russian]

## ПЕРВАЯ НАХОДКА *PARMELIA ASIATICA* (PARMELIACEAE, ASCOMYCOTA) В ЕВРОПЕ

И. Н. Урбанавичене<sup>1,\*</sup> , Г. П. Урбанавичюс<sup>2</sup> 

<sup>1</sup>Ботанический институт имени В.Л. Комарова РАН, Россия

\*e-mail: [urbanavichene@gmail.com](mailto:urbanavichene@gmail.com)

<sup>2</sup>Уральский федеральный университет, Россия

Сообщается о первой находке *Parmelia asiatica* в Европе и Европейской России, лишайника, описанного в 2011 г. из провинции Юньнань (Китай). Начиная с 2013 г., *P. asiatica* был указан для азиатской части России из Байкальской Сибири и с Дальнего Востока, большей частью с заповедных территорий. В основном, это предгорные или горные, хвойно-широколиственные или темнохвойные старовозрастные леса в районах с гумидным климатом. В результате ревизии гербарных образцов лишайников, собранных в ходе исследований в Керженском государственном природном заповеднике (Нижегородская область, Россия), *P. asiatica* обнаружена нами в коллекциях 2020 г. В статье представлены сведения о встрече *P. asiatica* в Керженском заповеднике, ареале, экологии и морфологии вида. Полученные данные подчеркивают актуальность и необходимость изучения видового разнообразия лишайнофлор российских государственных природных заповедников, как наиболее хорошо сохранившихся территорий с редкими и уникальными биотопами. В частности, наша находка *P. asiatica* подтверждает, что территория Керженского государственного природного заповедника расположена вблизи зоны контакта европейской и сибирской флор лишайников и высших растений.

**Ключевые слова:** Европейская Россия, Керженский заповедник, лишайник, Нижегородская область, первая находка