

New and noteworthy lichen records from Central European Russia

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Abstract: MUCHNIK, E. & ŚLIWA, L. 2013. New and noteworthy lichen records from Central European Russia. – *Herzogia* 26: 117–121.

Lecania inundata, *Verrucaria myriocarpa* and *V. nigroumbrina* are reported for the first time for Russia from the Ryazan region (Central European Russia). A further eleven species are noteworthy records for the Lipetsk, Ryazan and Yaroslavl regions.

Zusammenfassung: MUCHNIK, E. & ŚLIWA, L. 2013. Neue und bemerkenswerte Funde von Flechten aus dem zentralen europäischen Russland. – *Herzogia* 26: 117–121.

Lecania inundata, *Verrucaria myriocarpa* und *V. nigroumbrina* werden erstmals für Russland aus der Region Riazan im zentralen europäischen Teil nachgewiesen. Elf bemerkenswerte Funde werden zusätzlich aus den Regionen von Lipetsk, Riazan und Jaroslawl gemeldet.

Key words: Biodiversity, lichenized fungi, Ascomycota, Ryazan region.

Introduction

Central European Russia, covering an area larger than 1,000,000 km², includes 28 constituent entities within the Federation (23 regions, 4 Republics and a city – Moscow). It is situated within several natural zones: taiga (mostly southern), coniferous-broadleaved, broadleaved forests, forest-steppe and steppe (including desertificated steppes). The lichen biota of this huge and diverse territory is still poorly understood. Lichenological explorations have been carried out over the period 2008–2011 by the first author on the territory of several regions in the Central European Russia (Lipetsk, Ryazan and Yaroslavl regions) that are especially poorly studied. Lichen specimens collected in 2003–2005 by researchers of the forest service “Galichya Gora” State Reserve in the Lipetsk region were also included in the study. The survey yielded a large and diverse collection of lichens with new country and noteworthy regional records that are presented here. As noteworthy, we regard species with less than five records in Central European Russia.

Materials and methods

Lichens were identified using routine microscopic and laboratory techniques. Characteristic lichen substances of selected specimens were analyzed by thin-layer chromatography (TLC) in solvent system A or/and C (methods followed ORANGE et al. 2001). Reference material was studied at the KRAM herbarium. Cited specimens are available at LE and/or RSU herbaria.

Results

Records new to Russia

Lecania inundata (Hepp ex Körb.) M. Mayrhofer

This usually calcicolous species with a world-wide distribution is characterized by having thick, uneven areoles with small nodules on the thallus surface (FLETCHER et al. 2009). It is probably common throughout the area, but overlooked.

Specimen examined: Ryazan region, Sasovsky district, near Temgenevo village, “Temgenevskiy limestone” Natural Monument, 54°24.045'N/41°54.611'E, alt. 110 m, steppe slope with limestone, on limestone, 2 June 2010, E. Muchnik (RSU).

Verrucaria myriocarpa Hepp ex Lönnr.

This is a saxicolous species occurring on sandstone and calcareous rocks. The species is well characterized by having an immersed or partially superficial thallus visible on the surface of rocks as darker spots and small perithecia that are not covered by the thallus. Perithecia form more or less prominent projections, but may also collapse leaving shallow pits in the rock. Ascospores are simple, colourless, oblong ellipsoid, 18–22 × 8–9 μm. Further details are provided by KRZEWICKA (2012).

The species was considered as a synonym of *V. murina* Leight. (KRZEWICKA 2012). However, various names have been applied for the taxon, which is currently regarded as *V. murina* auct. non Leight. in some regions of Europe (ORANGE et al. 2009). Since the taxonomic position of *V. murina* is not clear and the name is in need of typification, we decided to follow KRZEWICKA (2012) and to use the name *V. myriocarpa* for the species characterized by the above features.

Specimen examined: Ryazan region, Kasimovsky district, “Scherbatovskie limestone” Natural Monument, right bank of the river Oka near Scherbatovka village, 54°48.298'N/41°44.193'E, alt. 100 m, on limestone, 9 July 2009, E. Muchnik (LE), det. B. Krzewicka.

Verrucaria nigroumbrina Servit

This saxicolous species grows on calcareous substrata in open habitats. It is characterized by having an inconspicuous, brownish prothallus (or prothallus absent), a thin dirty yellowish to mid-brown thallus (black to unaided eye) without a black basal layer and with cracks around the perithecia. Ascospores are simple, colourless, oblong-ellipsoid 16–25 × 8–10 μm. For further details see KRZEWICKA (2012). This is a very poorly known species. In Central Europe (the Czech Republic and Poland) it was recognized as *V. nigroumbrina* (VĚZDA & LIŠKA 1999, FAŁTYNOWICZ 2003, KRZEWICKA 2012) and in Italy as *Lithoidea nigrescens* var. *umbrina* A. Massal. [the latter is a typonym of *V. nigroumbrina* Servit] (SERVIT 1950). In other parts of Europe and in North America the species has been known under its synonyms *V. nigrofusca* Servit and *V. fuscoatroides* Servit (BREUSS 2007). The species has been most recently reported for the first time also from Finland (PYKÄLÄ 2011).

Specimens examined: Ryazan region, Mikhaylovsky district, 0.5 km W from “Zavidovsky valley complex” Nature Monument, 54°14.361'N/38°47.054'E, steppe slope with limestone, on limestone, 26 May 2011, E. Muchnik (LE); Ryazan region, Mikhaylovsky district, near Zavidovka village, “Zavidovsky valley complex” Nature Monument, 54°14.934'N/38°47.928'E, steppe slope with limestone, on limestone, 26 May 2011, E. Muchnik (RSU), det. B. Krzewicka (both specimens).

Noteworthy regional records

Bactrospora dryina (Ach.) A. Massal.

In Russia, the species has been previously reported only from the Mari El Republic in Central European Russia (BOGDANOV & URBANAVICHUS 2008).

Specimen examined: Lipetsk region, Usmansky district, Usmansky pine forest, Voronezh State Reserve, 121 quarter, 51°59.383'N/39°34.905'E, alt. 155 m, mixed forest, on bark of dry *Populus tremula*, 23 June 2011, E. Muchnik (LE), det. L. Šliwa.

Caloplaca chrysoleta (Vain. ex Räsänen) Dombr.

The species has been previously reported for Central European Russia from Tver region (NOTOV et al. 2011) and Tatarstan Republic (EVSTIGNEEVA 2007).

Specimen examined: Lipetsk region, Krasninsky district, “Galichya Gora” State Reserve, plot “Pluschan” ravine “Taynik”, 52°50.024'N/38°59.383'E, alt. 150 m, on shaded limestone, 24 June 2004, Yu. Sushkova (LE), conf. G. Urbanavichus.

Caloplaca polycarpa (A.Massal.) Zahlbr.

The species was previously known in Russia only from the Dagestan Republic in Caucasus (URBANAVICHUS et al. 2011).

Specimen examined: Ryazan region, Sasovsky district, near Temgenevo village, “Temgenevskiy limestone” Natural Monument, 54°24.006'N/41°54.997'E, alt. 115 m, steppe slope on limestone, 2 June 2010, E. Muchnik (RSU), det. J. Vondrák.

Lecanora compallens Herk & Aptroot

The species has been most recently reported as new to Russia from the Leningrad region by STEPANCHIKOVA et al. (2011a, b).

Specimens examined: Yaroslavl region, Nekouzsky district, village Novinskoye, old country-estate of Sukhovo-Kobyliny, old park, on bark of *Tilia* sp., 57°53.301'N/37°48.284'E, 25 August 2008, E. Muchnik (LE); Ryazan region, Chuchkovsky district, village Rodniki, 54°16.667'N/41°14.2177'E, alt. 110 m, on bark of *Tilia* sp., 6 June 2009, M. Kazakova (RSU), det. A. Zduńczyk & M. Kukwa (TLC: usnic acid and atranorin in both specimens).

Lecanora persimilis (Th.Fr.) Arnold

This species has been previously reported only from Tula region in Central European Russia (GUDOVICHEVA 2006a).

Specimen examined: Ryazan region, Putyatinsky district, near Knyaginya village, 54°08.775'N/40°45.171'E, alt. 140 m, on wood of old country house, 30 May 2010, M. Muchnik (RSU), det. L. Śliwa.

Lecanora thysanophora R.C.Harris

The species has been reported in Central European Russia from the Northern part of Middle Russian Upland (GUDOVICHEVA 2006b), Voronezh region (MUCHNIK 2011) and Tver region (NOTOV et al. 2011). It was also recorded from the North Western part of European Russia in the Leningrad region by STEPANCHIKOVA et al. (2011a).

Specimens examined: Ryazan region, Shatsky district, The River Vysh Valley Reserve, Shatskoye forestry, Babakovskoye local forestry, 18 quarter, 53°55.319'N/42°08.495'E, alt. 130 m, old-growth oak forest, on bark of young *Acer* sp., 31 May 2010, E. Muchnik (RSU), det. L. Śliwa; Ryazan region, Shatsky district, Shatskoye forestry, Yambirskoye local forestry, 120 quarter, on bark of *Tilia* sp., 53°58.866'N/42°10.079'E, alt. 100 m, 1 June 2010, E. Muchnik (RSU), det. M. Kukwa (TLC: atranorin, usnic acid, zeorin, “thysanophora unknown”).

Lecidella flavosorediata (Vězda) Hertel & Leuckert

It has been previously reported from Russia in the Northern Urals and Caucasus (URBANAVICHUS & ANDREEV 2010), and in the Leningrad region (STEPANCHIKOVA et al. 2010).

Specimen examined: Ryazan region, Kasimovsky district, Belozyorskoye forestry, 41 quarter, 55°03.317'N/41°51.489'E, alt. 115 m, mixed forest, on bark of *Populus tremula*, 11 July 2009, E. Muchnik (LE).

Mycocomrothelia confusa D.Hawksw.

The species is known in Russia only from the Kaliningrad region (DOLNIK & PETRENKO 2003, URBANAVICHUS & ANDREEV 2010). It is a corticolous species, loosely associated with algae (facultatively lichenized with *Trentepohlia*). It may be confused with *M. micula* (Körb.) V.Wirth but the two taxa can be distinguished by the hymenial gel I-reaction: in *M. micula* the hymenial gel reacts I+ (blue) and in *M. confusa* it is I–.

Specimen examined: Ryazan region, Korablinsky district, 2 km E from Krasnaya Polyana village, Kipchakovskoye forestry, 44 quarter, 53°51.570'N/40°10.820'E, mixed forest, on bark of *Tilia* sp., 28 May 2011, E. Muchnik (LE).

Thelidium minutulum Körb.

The species has been previously reported from the Tver region in Central European Russia (NOTOV et al. 2011) and Tatarstan Republic (EVSTIGNEEVA 2007).

Specimen examined: Ryazan region, Rybnovsky district, near Zheleznitsy village, Khoryok grove, 54°35.560'N/38°50.095'E, oak forest, ravine with temporary stream and limestone, on limestone (periodically moistened), 26 May 2011, E. Muchnik (LE), conf. G. P. Urbanavichus.

Verrucaria praetermissa (Trevis.) Anzi

It has been previously reported for Russia from the Kaliningrad region (ANDREEV 2002) and the Karelia Republic (FADEEVA et al. 2007)

Specimen examined: Ryazan region, Rybnovskiy district, near Zheleznitsy village, Khoryok grove, 54°35.560'N/38°50.095'E, oak forest, ravine with temporary stream and limestone, on limestone (periodically moistened), 26 May 2011, E. Muchnik (LE, RSU), det. B. Krzewicka.

Verrucaria tectorum (A.Massal.) Körb.

This species has been recently recorded for the first time in Russia from the North Western part of European Russia in the Leningrad region by PŸKÄLÄ et al. (2012).

This saxicolous species occurs on bricks and calcareous rocks. It is characterized by having neighboring areoles of different thickness and a black basal layer; there may appear to be a second black layer within the thallus, due to new thalli overgrowing older ones. The perithecia are small, c. 0.2 mm diam. The involucrellum is well-developed, dark brown, reaching to the base of excipulum and often fusing with a black basal layer. The ascospores are simple, ellipsoid, 18–24 × 10–12 µm. For further details see CHRISTIANSEN & ROUX (1987) and KRZEWICKA (2012). *Verrucaria tectorum* is very similar to *V. nigrescens* but the latter species differs in having a thick black basal layer, often occupying half or two-thirds of the thallus thickness.

Specimen examined: Lipetsk region, Zadonsky district, near Lipovka village, 52°33.567'N/38°53.467'E, alt. 130 m, steppe slope with limestone, on limestone, 10 July 2005, L. N. Skolzneva (LE), det. B. Krzewicka.

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References

- ANDREEV, M. P. 2002. Addition to the lichen flora of the Kaliningrad region of Russia: saxicolous lichens. – *Novosti Sist. Nizsh. Rast.* **36**: 68–72 (in Russian).
- BOGDANOV, G. A. & URBANAVICHUS, G. P. 2008. Lichen species new and rare to Russia from the Republic of Marii El. – *Bot. Zhurn. (St. Petersburg)* **93**: 944–950 (in Russian).
- BREUSS, O. 2007. *Verrucaria*. – In: NASH III, T. H., GRIES, C. & BUNGARTZ, F. (eds), *Lichen Flora of the Greater Sonoran Desert Region*. Volume 3: 335–377. – Arizona, Tempe: Lichens Unlimited, Arizona State University.
- CHRISTIANSEN, M. S. & ROUX, C. 1987. Typification de *Verrucaria viridula* (Schrad.) Ach. – *Bull. Soc. Linn. Provence* **39**: 107–126.
- DOLNIK, C. & PETRENKO, D. E. 2003. Lichens of the southern Curonian Spit in the Baltic Sea. – *Bot. Zhurn. (St. Petersburg)* **88**: 41–59 (in Russian).
- EVSTIGNEEVA, A. S. 2007. Check-list of lichens of the Republic of Tatarstan. – *Novosti Sist. Nizsh. Rast.* **41**: 196–229 (in Russian).
- FADEEVA, M. A., GOLUBKOVA, N. S., VITIKAINEN, O. & AHTI, T. 2007. Conspectus of lichens and lichenicolous fungi of the Republic of Karelia. – Petrozavodsk: KNTs RAN (in Russian).
- FALTYNOWICZ, W. 2003. The lichens, lichenicolous and allied fungi of Poland. An annotated checklist. – Kraków: W. Szafer Institute of Botany, Polish Academy of Sciences.
- FLETCHER, A., JAMES, P. W. & PURVIS, O. W. 2009. *Lecania* A.Massal. (1853). – In: SMITH, C. W., APTROOT, A., COPPINS, B. J., FLETCHER, A., GILBERT, O. L., JAMES, P. W. & WOLSELEY, P. A. (eds). *The lichens of Great Britain and Ireland*. Pp. 454–463. – London: British Lichen Society.
- GUDOVICHEVA, A. V. 2006a. Lichen species new to Mid-Russian Uplands. – *Bot. Zhurn. (St. Petersburg)* **91**: 1110–1114 (in Russian).

- GUDOVICHEVA, A. V. 2006b. Lichens of the North of the Middle Russian Upland requiring for protection. – In: ANDREEV, M. P., HIMELBRANT, D. E., GOLUBKOVA, N. S., TITOV, A. N. & URBANAVICHUS, G. P. (eds). Lichen flora of Russia: State and perspective of exploration. – Proceedings of the international conference dedicated to the 120th anniversary of V. P. Savich. Saint-Petersburg, October 24–27, 2006. Pp. 86–90 (in Russian).
- KRZEWICKA, B. 2012. A revision of *Verrucaria* s.l. (Verrucariaceae) in Poland. – Polish Bot. Stud. **27**: 3–142.
- MUCHNIK, E. E. 2011. New and rare lichen species in lichen flora of Voronezh region and Central Chernozemiye (Central Russia) revealed in reserved territories. – Novosti Sist. Nizsh. Rast. **45**: 199–203 (in Russian).
- NOTOV, A. A., HIMELBRANT, D. E. & URBANAVICHUS, G. P. 2011. The list of lichens and allied fungi of Tver Region. – Tver: Tver State University (in Russian).
- ORANGE, A., HAWKSWORTH, D. L., MCCARTHY, P. M. & FLETCHER, A. 2009. *Verrucaria* Schrad. (1794). – In: SMITH, C. W., APTROOT, A., COPPINS, B. J., FLETCHER, A., GILBERT, O. L., JAMES, P. W. & WOLSELEY, P. A. (eds). The lichens of Great Britain and Ireland. Pp. 931–957. – London: British Lichen Society.
- ORANGE, A., JAMES, P. W. & WHITE, F. J. 2001. Microchemical methods for the identification of lichens. – London: British Lichen Society.
- PYKÄLÄ, J. 2011. Additions to the lichen flora of Finland. VI. – Graphis Scripta **23**: 47–55.
- PYKÄLÄ, J., STEPANCHIKOVA, I. S., HIMELBRANT, D. E., KUZNETSOVA, E. S. & ALEXEEVA, N. M. 2012. The lichen genera *Thelidium* and *Verrucaria* in the Leningrad Region (Russia). – Folia Cryptog. Estonica **49**: 45–57.
- SERVÍT, M. 1950. Novae species Italicae lichenum pyrenocarporum. – Ann. Mus. Civico Storia Nat. Genova **64**: 48–55.
- STEPANCHIKOVA, I. S., KUKWA, M., KUZNETSOVA, E. S., MOTIEJŪNAITĖ, J. & HIMELBRANT, D. E. 2010. New records of lichens and allied fungi from the Leningrad Region, Russia. – Folia Cryptog. Estonica **47**: 77–84.
- STEPANCHIKOVA, I. S., HIMELBRANT, D. E., KUKWA, M. & KUZNETSOVA, E. S. 2011a. New records of lichens and allied fungi from the Leningrad Region, Russia. II. – Folia Cryptog. Estonica **48**: 85–94.
- STEPANCHIKOVA, I. S., SCHIEFELBEIN, U., ALEXEEVA, N. M., AHTI, T., KUKWA, M., HIMELBRANT, D. E. & PYKÄLÄ, J. 2011b. Additions to the lichen biota of Berezovye Islands, Leningrad Region, Russia. – Folia Cryptog. Estonica **48**: 95–106.
- URBANAVICHUS, G. P. & ANDREEV M. P. 2010. A checklist of the lichen flora of Russia. – St. Petersburg: Nauka (in Russian).
- URBANAVICHUS, G. P., GABIBOVA, A. & ISMAILOV, A. 2011. New records of lichens and lichenicolous fungi for Russia and Caucasus from Daghestan. – Turk. J. Bot. **35**: 291–297.
- VEZDA, A. & LIŠKA, J. 1999. A Catalogue of Lichens of the Czech Republic. – Průhonice: Institute of Botany, Academy of Sciences of the Czech Republic.

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