

New records of leprarioid lichens in the Czech Republic

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A commented list of leprarioid lichens collected in the Czech Republic is given. 12 taxa are reported, of which 5 are new for the Czech Republic: *Botryolepraria lesdainii*, *Caloplaca chrysodeta*, *Lecanora leuckertiana*, *Lepraria crassissima* and *L. elobata*. In opinion of the authors *Lecanora leuckertiana* may be a heterogeneous species.

Key words: *Botryolepraria*, *Caloplaca*, *Lecanora*, *Lepraria*, leprarioid lichens, Czech Republic, Poland.

Introduction

Leprarioid lichens with leprose thallus, without cortex and inability to produce the ascocarps, especially *Lepraria* ACH. (including *Leproloma* NYL. ex CROMB., see KUKWA, 2002), had been neglected for a long time all over the Europe. However, the interest in them increased at the end of 20th century. It resulted in description of several new taxa and new combinations were proposed as well (BOTNEN & ØVSTEDAL, 1988; CANALS et al., 1997; CLAUZADE & ROUX, 1977; KUKWA, 2002; LAUNDON, 1989; LAUNDON, 1992; LEUCKERT & KÜMMERLING, 1991; LEUCKERT et al., 1995; LOHTANDER, 1994; LOHTANDER, 1995; ORANGE, 2001; TØNSBERG, 1992; TØNSBERG, 2002; ZEDDA, 2000). But the knowledge of detailed distribution and ecological requirements of all leprarioid taxa are still insufficient.

VĚZDA & LIŠKA (1999) included 15 taxa of *Lepraria* (including *Leproloma*) in their catalogue of lichens of the Czech Republic, encompassing however, some taxonomically unclear entities [e.g. *Lepraria farinosa* (HOFFM.) ACH.], type specimens of which should be studied to clarify their

taxonomic value. Many of the well defined and widely distributed species in Europe [e.g. *L. lobifigans* NYL. or *L. rigidula* (DE LESD.) TØNSBERG] have only few localities in the country, but it is highly probable, that they are common lichens in the Czech lichen flora. Records of some taxa, e.g. *L. incana* (L.) ACH., from earlier works cited by VĚZDA & LIŠKA (1999), are doubtful as the determinations have not been confirmed by thin layer chromatography (TLC). Therefore, the critical revision of the genus in the Czech Republic is necessary to expand the knowledge about the species distribution and ecology in this country.

In this paper we present new records of leprarioid lichens, mainly *Lepraria*, collected in the vicinity of Nové Město n. Metují (district Náchod, E Bohemia, Czech Republic) in April 2001. Five taxa have not been reported from the Czech Republic until recently: *Botryolepraria lesdainii* (HUE) CANALS, HERNÁNDEZ-MARINÉ, GÓMEZ-BOLEA & LLIMONA, *Caloplaca chrysodeta* (VAIN. ex RAS.) DOMBR., *Lecanora leuckertiana* ZEDDA, *Lepraria crassissima* (HUE) LETTAU and *L. elobata* TØNSBERG. Other species, except *Lepraria incana* (L.) ACH. and *Lepraria membranacea*

(DICKS.) VAIN. reported by HALDA (2001), the occurrence of which is confirmed here by TLC, are new for the studied area.

Material and methods

The material was collected in the vicinity of Nové Město n. Metují on 8 localities listed below. The collections are deposited in the private herbarium of Š. BAYEROVÁ (at present in the Institute of Botany, Academy of Sciences of the Czech Republic, Průhonice) and in the Lichen Herbarium of the University of Gdańsk (UGDA-L). The authors received some herbarium material on loan from the private herbarium of F. BERGER (Kopfing, Austria).

All specimens were observed with stereomicroscope at first. The following chemical analyses were carried out using TLC, as summarized by WHITE & JAMES (1985). The specimens were run on Merck silica gel 60 F₂₅₄ pre-coated glass TLC plates or on Sigma silica gel aluminium TLC plates in solvent systems A (TØNSBERG, 1992), B' (CULBERSON & JOHNSON, 1982) and C (CULBERSON, 1972). Confirmation of an identification of a substance was usually achieved by running the extracts adjacent to an extract containing known substances (cochromatography).

The abbreviation 'loc.' in the list of species stands for locality. Taxa new for the Czech Republic are marked with an asterisk (*). The nomenclature is mostly according to TØNSBERG (1992). As for the species not included there DIEDERICH & SÉRUSIAUX (2000) and ZEDDA (2000) is followed.

List of localities

(all in the district Náchod, hilly country Podorlická pahorkatina):

- 1 – in S part of the town Nové Město nad Metují, 400 m W of the castle-ruin Výrov, on the N-facing slope, alt. 300–360 m a.s.l., 20.04.2001, 50°20'26.60", 16°09'14.66" (WGS-84 is followed by all localities);
- 2 – the castle-ruin Výrov near the town Nové Město nad Metují, alt. 360 m a.s.l., 20.04.2001, 50°20'27.71", 16°09'26.89";
- 3 – on forest road 200 m SE of the castle-ruin Výrov near the town Nové Město n. Metují, alt. ca 330 m a.s.l., 20.04.2001, 50°20'26.60", 16°09'14.66";
- 4 – in the site called Horské Předměstí in the valley of the brook Bohdašínský potok near the town Nové Město nad Metují, alt. ca 360 m a.s.l., 20.04.2001, 50°20'21.27", 16°09'54.35";
- 5 – in the valley of the river Metuje, E of the town Nové Město nad Metují, alt. ca 320 m a.s.l., 21.04.2001, 50°22'15.46", 16°11'22.63";
- 6 – Nature Reserve Peklo in the valley of the river Metuje, NE of the town Nové Město nad Metují, S of the village Peklo, alt. 320–330 m a.s.l., 21.04.2001, 50°22'15.46", 16°11'22.63";
- 7 – Nature Reserve Peklo in the valley of the brook Olešenka, NE of the town Nové Město nad

- Metují, close to the village Peklo, alt. 350–400 m a.s.l., 22.04.2001, 50°22'45.58", 16°11'11.88";
- 8 – Nature Reserve Peklo, in the valley of the brook Olešenka, NE of the town Nové Město nad Metují, a scree 1 km NW of the hill Koží hřbet (alt. 564.2 m a.s.l.), alt. ca 400 m a.s.l., 22.04.2001, ca 50°22'31.46", 16°12'44.65".

List of species

**Botryolepraria lesdainii* (HUE) CANALS, HERNÁNDEZ-MARINÉ, GÓMEZ-BOLEA & LLIMONA

Lichenologist 29: 340 (1997).

B. lesdainii contains lesdainin as diagnostic substance (sometimes with traces of other terpenoids). Besides, verdigris colour of the thallus and the structure of the soredia, where algal cells are not completely enclosed by fungal hyphae, are the discriminating features (LAUNDON, 1992; CANALS et al., 1997).

Formerly *B. lesdainii* was placed in *Lepraria*, however basing on the above mentioned features it was segregated as a monotypic genus (CANALS et al., 1997). According to EKMAN & TØNSBERG (2002) it is not related to *Lepraria*. Their results support the view of CANALS et al. (1997).

Specimens examined: loc. 5, in shaded crevices of slate rock and on mosses, Š. BAYEROVÁ 2028; on rocks, M. KUKWA 657 (UGDA-L); loc. 6, on mossy dripping slate rock exposed to east, Š. BAYEROVÁ 2040; on calcareous slate stone, F. BERGER 15403; loc. 7, on shaded mossy slate rock exposed to north, Š. BAYEROVÁ 2047.

Additional specimens examined: S Moravia, Mikulovská vrchovina, S of Dolní Věstonice, Děvín Mt. – SE slopes, Nature Reserve 'Děvín', alt. ca 400 m a.s.l., on limestone in forest, 13.10.2001, M. KUKWA 1303 (UGDA-L).

**Caloplaca chrysodeta* (VAIN. ex RĀS.) DOMBR.

Konsp. Fl. Lish. Murm. Sev.-Vost. Finlyandii: 99 (1970).

Chemically the species is similar to *C. xantholyta* (NYL.) JATTA, known from the country, but *C. chrysodeta* has dull brownish yellow thallus without marginal lobes, whereas the thallus of the latter species is bright yellow and ± lobate (LAUNDON, 1974; PURVIS et al., 1992).

C. chrysodeta and *C. xantholyta* were placed in separate genus *Leproplaca* (NYL.) HARM. by some authors (LAUNDON, 1974; PURVIS et al., 1992), but at present they are considered to belong

to *Caloplaca* Th. Fr. (e.g. DIEDERICH & SÉRUSIAUX, 2000).

Specimens examined: loc. 6, on slate rock exposed to east, Š. BAYEROVÁ 2031; on calcareous slate overhang, F. BERGER 15416; M. KUKWA 659 (UGDA-L).

****Lecanora leuckertiana* ZEDDA**

Nova Hedwigia 71: 108–109 (2000).

The species has been recently described from Mediterranean area by ZEDDA (2000).

In our opinion, the species may be heterogeneous. The type specimen has lobate, stratified thallus and soredia forming a compact layer on the white medulla. Our collections have the same chemistry (usnic acid and zeorin), but different morphology: non-lobate thallus with soredia, which are well separable from each other and dispersed over the substrate surface. Also the medulla was not well defined. Such individuals need further studies if they represent an undescribed taxon or only the ecological morph of *L. leuckertiana*.

Specimens examined: loc. 5, on shaded slate rock, Š. BAYEROVÁ 2019; M. KUKWA 642 (UGDA-L).

***Lepraria caesiaalba* (DE LESD.)**

J. R. LAUNDON

Lichenologist 24: 324 (1992).

Both specimens represent chemotype I with fumarprotocetraric acid (LEUCKERT et al., 1995).

Specimens examined: loc. 8, on slate stone, Š. BAYEROVÁ 2055; on stone, M. KUKWA 680 (UGDA-L).

****Lepraria crassissima* (HUE) LETTAU**

Feddes Repert. Spec. Nov. Reg. Veget. 61: 125 (1958).

It is similar to *L. incana* in chemistry, but the latter has unstratified and non-lobate thallus. Moreover, *L. crassissima* produces large amounts of nordivarric acid, whereas *L. incana* in small to trace amounts or this substance is absent (BOOM et al., 1994). Also the concentration of zeorin is usually smaller, than in *L. incana* (KUKWA, unpubl.).

Specimens examined: loc. 6, on mosses and slate rock exposed to east, Š. BAYEROVÁ 2035 & 2036; on calcareous slate stone, F. BERGER 15408; loc. 7, on shaded mossy slate rock exposed to north, Š. BAYEROVÁ 2048.

***Lepraria eburnea* J. R. LAUNDON**

Lichenologist 24: 331 (1992).

The species has been reported from the Czech Republic only by LEUCKERT et al. (2002).

L. eburnea comprises three chemotypes, which do not show a clearly different geographical distribution (ORANGE, 1997). The specimens from the Czech Republic belong to the chemotype I. According to ORANGE (1997) and LEUCKERT et al. (2002) this one appears to be most widespread and abundant of the three chemotypes.

It is the only powdery species of genus *Lepraria* containing alectorialic acid in the thallus. Similar chemistry is known from *L. neglecta* (NYL.) ERICHSEN, but this taxon has granular, not powdery thallus. They differ also in their ecological requirements: *L. neglecta* grows in sunny habitats exposed to direct rain, whereas *L. eburnea* prefers places rather shaded and sheltered from the rainfalls.

Specimens examined: loc. 5, on bark at base of *Carpinus betulus*, Š. BAYEROVÁ 2024; on saxicolous mosses, M. KUKWA 636 (UGDA-L).

****Lepraria elobata* TØNSBERG**

Sommerfeltia 14: 197 (1992).

It has the same chemistry as *L. lobificans*, but there are significant differences in morphology. *L. elobata* has unstratified, non-lobate, usually grey thallus with soredia without projecting hyphae. *L. lobificans* has thick, usually lobate and greenish thallus with medulla. Soredia in this species are airy and have usually well developed long projecting hyphae (see also TØNSBERG, 1992).

Specimens examined: loc. 5, on bark at base of *Quercus robur*, Š. BAYEROVÁ 2022; on bark at base of *Picea abies*, Š. BAYEROVÁ 2025; on *Quercus* sp., M. KUKWA 648 (UGDA-L).

***Lepraria incana* (L.) ACH.**

Method. Lich. 4 (1803).

The species was reported several times from the Czech Republic (see VĚZDA & LIŠKA, 1999), but in most cases the identification was not corroborated by TLC. The records may belong to other morphologically similar taxa, e.g. *L. elobata* or *L. jackii*. For the discriminating features from *L. crassissima* see under this species.

Specimens examined: loc. 1, on bark at base of *Quercus petraea*, Š. BAYEROVÁ 2005; loc. 2, on soil and bark of *Ulmus glabra*, Š. BAYEROVÁ 2008; loc. 4, on bark of *Alnus glutinosa*, Š. BAYEROVÁ 2011 & 2012; loc. 5, on mosses and slate rock, Š. BAYEROVÁ 2015; on bark of *Alnus glutinosa*, Š. BAYEROVÁ 2016; on slate rock exposed to north, Š. BAYEROVÁ 2023; on rocks, M. KUKWA 637 (UGDA-L); loc. 6, on mosses and on slate rock exposed to east and to north-east, Š. BAYEROVÁ 2032 & 2033 & 2034 & 2037; on bark, F. BERGER

15407; loc. 7, on bark of *Fraxinus excelsior*, Š. BAYEROVÁ 2042 & 2043; on bark of *Tilia cordata*, M. KUKWA 673 (UGDA-L).

***Lepraria jackii* TØNSBERG**

Sommerfeltia 14: 200 (1992).

Up to now it has been reported from the Czech Republic only by KÜMMERLING et al. (1995b).

Specimens examined: loc. 4, on bark of *Alnus glutinosa*, Š. BAYEROVÁ 2011; loc. 5, on mosses and slate rock, Š. BAYEROVÁ 2015; on bark of *Alnus glutinosa*, M. KUKWA 649 (UGDA-L); on bark of *Picea abies*, M. KUKWA 647 (UGDA-L); on bark of *Quercus* sp., M. KUKWA 644 (UGDA-L); loc. 6, on bark of stump of unidentified tree, M. KUKWA 667 (UGDA-L); loc. 7, on bark of *Alnus glutinosa*, Š. BAYEROVÁ 2044; on bark of *Alnus glutinosa*, M. KUKWA 670 (UGDA-L).

***Lepraria lobificans* NYL.**

Flora 56: 196 (1873).

For differences from *L. elobata* see under this taxon. Up to now *L. lobificans* has been reported from the Czech Republic only by KÜMMERLING et al. (1993).

Specimens examined: loc. 1, on bark at base of *Quercus petraea*, Š. BAYEROVÁ 2005; loc. 2, on old wall of the castle-ruin, on marl, on mosses and bark, Š. BAYEROVÁ 2006 & 2007; on bark at base of *Ulmus glabra*, Š. BAYEROVÁ 2009; loc. 3, on bark at base of *Corylus avellana*, Š. BAYEROVÁ 2010; loc. 4, on slate rock, on mosses and bark, alt. ca 330 m a.s.l., Š. BAYEROVÁ 2013; loc. 5, on mosses and slate rock, Š. BAYEROVÁ 2017; on bark of *Alnus glutinosa*, Š. BAYEROVÁ 2020; on mosses and on bark at base of *Alnus glutinosa*, Š. BAYEROVÁ 2021; on mossy slate rock exposed to west, Š. BAYEROVÁ 2027; on bark of *Quercus* sp., M. KUKWA 651a & 652 (UGDA-L); on rocks, M. KUKWA 640 & 646 (UGDA-L); loc. 6, on slate rock exposed to east, Š. BAYEROVÁ 2031; on bark of *Tilia cf. cordata*, Š. BAYEROVÁ 2038; on calcareous slate stone, F. BERGER 15409; on bark of *Tilia* sp., M. KUKWA 666 (UGDA-L); loc. 7, on bark of *Fraxinus excelsior*, Š. BAYEROVÁ 2043; on bark at base of *Alnus glutinosa*, Š. BAYEROVÁ 2045 & 2046; on shaded mossy slate rock exposed to north, Š. BAYEROVÁ 2049; on mosses and on bark of *Acer pseudoplatanus*, Š. BAYEROVÁ 2050 & 2051.

***Lepraria membranacea* (DICKS.) VAIN.**

Acta Soc. Fauna Flora Fenn. 49, 2: 265 (1921).

The species has been reported many times from the Czech Republic (see VĚZDA & LIŠKA, 1999), but probably some records may belong to *Lep-*

raria lobificans or *L. vouauxii* (HUE) R. C. HARRIS, with which *L. membranacea* was confused in the past.

Specimens examined: loc. 5, on slate rock, Š. BAYEROVÁ 2018; on bark of *Quercus* sp., M. KUKWA 643 (UGDA-L); on rocks, M. KUKWA 641 (UGDA-L); loc. 8, on slate stone, Š. BAYEROVÁ 2054; on stone, M. KUKWA 681 (UGDA-L).

***Lepraria rigidula* (DE LESD.) TØNSBERG**

Sommerfeltia 14: 205 (1992).

Up to now it has been reported from the country only by KÜMMERLING et al. (1995a) and BAYEROVÁ & KARLÍK (2000).

Specimens examined: loc. 4, on mosses and bark of *Malus domestica*, Š. BAYEROVÁ 2014; loc. 5, on bark of *Populus cf. nigra*, Š. BAYEROVÁ 2029; on bark of *Populus nigra*, M. KUKWA 653 (UGDA-L); on bark *Quercus robur* M. KUKWA 651 (UGDA-L); on rocks, M. KUKWA 639 (UGDA-L); loc. 7, on bark of *Fraxinus excelsior*, Š. BAYEROVÁ 2043.

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