CALOPLACA AUREA (TELOSCHISTACEAE), A LICHEN SPECIES NEW TO BULGARIA

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During a study on the occurrence of *Caloplaca aurea* (Schaer.) A. Zahlbr. in Poland I discovered a herbarium specimen of that species collected by Janusz Nowak in Bulgaria in 1962. It appears that the locality has never been published, and that it is the first record of *C. aurea* for the Bulgarian lichen flora.

Caloplaca aurea is a member of the lobate species of the genus *Caloplaca* included in sect. *Gasparrinia*. *Caloplaca aurea* is characterized by a small, irregular, yellowish golden, more or less white-pruinose thallus. It forms marginal lobes crenated on the edges and laterally touching each other. The central part of the thallus is wavy to slightly bullate. Apothecia numerous, rounded, sitting on the surface of the thallus, mainly in its central part, 0.4–1.0 mm diam., often gathered into groups. Apothecial disc dark orange to reddish. Thalline margin persistent, first rather thick, later becoming thinner, then often uncovering the upper part of the margin proper, which is the same color as the apothecial disc. Hypothecium yellowish and hymenium colorless, about 80 μm high. Epihymenium granular, brownish golden. Ascospores mainly fusiform, often constricted in the middle part with distinctly prolonged ends, 15.0–20.8 × 5.0–6.3 μm; 8 in each ascus; polarilocular, with poorly developed septum or more rarely distinctly one-septate with very thin, entire septum *ca* 1μm wide.

Caloplaca aurea is most closely related to *C. paulii* Poelt which differs by its distinctly bullate thallus with very short, reduced lobes at the edges (Poelt 1965). The surface of the thallus of *C. paulii* is almost shiny, not pruinose, dark orange. In addition it is a saxicolous taxon growing directly on calcareous rocks. It is rarer than *C. aurea*, known from a few high mountain localities in Austria (Hafellner & Türk 2001), Spain (Llimona & Hladun 2001), Sweden (Santesson 1993), Afghanistan (Poelt 1965) and Greenland (Hansen *et al.* 1987). *Caloplaca aurea* shows some morphological similarity to representatives of the genus *Fulgensia* A. Massal. & De Not. (Poelt 1965; Westberg & Kärnefelt 1998; Gaya *et al.* 2003). The species of *Fulgensia*, however, produce non-polarilocular, non- or one-septate ascospores, and the ontogeny of the septum is completely different than in *Caloplaca*. This constitutes a significant taxonomic feature (Poelt 1965; Nimis *et al.* 1994; Westberg & Kärnefelt 1998).

Caloplaca aurea is a widespread, high-mountain, calcareous species occurring in highland areas mainly of Central and Southern Europe. This taxon is known from subalpine and alpine belts of high mountain ranges. It was reported from Poland

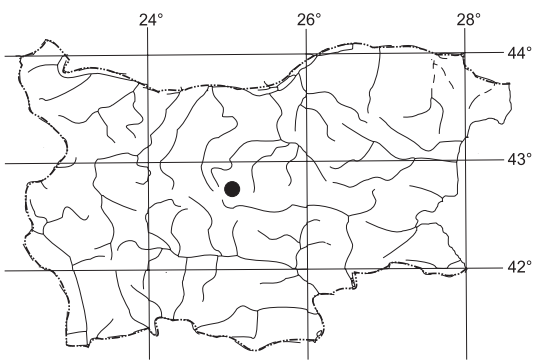

Fig. 1. Locality of *Caloplaca aurea* (Schaer.) A. Zahlbr. in Bulgaria.

(Bielczyk 2003), Slovakia (Pišút *et al.* 1996), Ukraine (Kondratyuk *et al.* 1998), Germany (Wirth 2004)), Austria (Hafellner & Türk 2001), Romania (Moruzi *et al.* 1967), former Yugoslavia (Kušan 1953), Italy (Nimis 1993), Spain (Llimona & Hladun 2001) and Morocco (Egea 1996).

Caloplaca aurea prefers dry and exposed sites, growing on limestone debris, soil and mosses in fissures of calcareous rocks and more rarely directly on the surface of calcareous rocks. In Bulgaria the species occupies its typical habitat, growing on humus in fissures of calcareous rocks in mountains at alt. 1800 m.

SPECIMEN EXAMINED. BULGARIA. STARA PLANINA MTS: Koloferska Planina range, above Raj mountain shelter, over humus in fissures of calcareous rocks, alt. 1800 m, 7 Aug. 1962, *leg. J. Nowak* (KRAM-L 9714).

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A NEW LOCALITY OF *OROBANCHE BARTLINGII* (OROBANCHACEAE) IN POLAND

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Orobanche bartlingii Griseb. was found for the first time to Poland in Ojców National Park in 1992 (Szeląg 2001a). In June 1995 the author found a new locality of this species in the central part of the Wyżyna Krakowsko-Częstochowska upland in the vicinity of Rzędkowice, between the Turnia Lechwora and Turnia Kursantów peaks (Fig. 1). *Orobanche bartlingii* grew in patches of the forest edge association *Peucedanetum cervariae* Kaiser 1926 [= *Geranio-Peucedanetum cervariae* (Kuhn 1937) Th. Müller 1962], in a flat, open and sunny place. The population of this species consisted of dozens of blooming specimens, all parasitizing on *Libanotis pyrenaica* (L.) Bourg. It was visited and examined again in June 1996, when a new locality of *O. bartlingii* was found, several hundred meters to the east, near Okiennik rock. This species occurred there in similar habitat, but in the shadow of a huge *Fagus sylvatica* L. tree. It is very probable that *O. bartlingii* is more frequent in this vicinity, considering that the phytocoenoses of forest edge communities with its host plant *Libanotis pyrenaica* are very common. Where the terrain does not stop the succession of vegetation, these communities would be replaced by thermophilous shrubs in the future. Locally, however, *O. bartlingii* does not seem to be directly threatened, and single specimens were observed in phytocoenoses of grasslands on steep slopes, where succession of vegetation is stopped or very slowed.

Orobanche bartlingii was reported from Austria (Adler *et al*. 1994; Melzer & Barta 1995), Italy (Prosser 1999), the Caucasus, Western and Eastern Siberia, Central Asia (Maevskij 1964; Novopokrovskij & Tzvelev 1958; Tzvelev 1981), NW Russia (Tzvelev 2000), Ukraine (Prokudin 1987), the Czech Republic (Dostál 1989; Zázvorka 2000), Slovakia (Zázvorka 1997), Estonia (Hiiemäe & Roosmaa 2001; Kukk 1999), France (Royer *et al*. 1992), Germany (Rothmaler *et al*. 2002; Uhlich *et al*. 1995), Hungary (Soó 1968), Poland (Szeląg 2001a, b), Romania (Buia 1960), and Switzerland (Binz & Heitz 1990). According to Welk (2002), *Orobanche bartlingii* is a Pontian-South-Siberian species.

Concerning altitudinal distribution, *O. bartlingii* is a lowland-upland (up to submontane) species, occurring generally between 0 and 1000 m a.s.l. (Uhlich *et al*. 1995).

Host fidelity is another interesting problem connected with *O. bartlingii* (see Szeląg 2001a). In the European part of the distribution area of

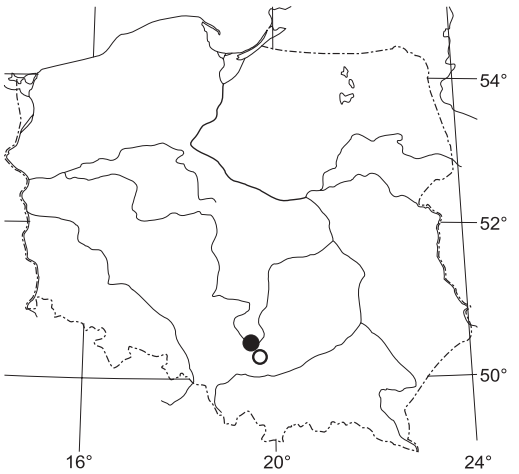

Fig. 1. Distribution of *Orobanche bartlingii* Griseb. in Poland. ○ – known locality, ● – new localities.

O. bartlingii it was observed growing very frequently on *Libanotis pyrenaica*. That species was reported as the only host plant from Austria (Melzer & Barta 1995), the Czech Republic (Dostál 1989; Zázvorka 2000), France (Olivier *et al*. 1995), Germany (Fundmeldungen 1998; Pusch & Barthel 1992; Rothmaler *et al*. 2002), Italy (Prosser 1999) and Poland (Szeląg 2001a, b). In Slovakia, *O. bartlingii* parasitizes either *Libanotis pyrenaica* or *Peucedanum cervaria* (Zázvorka 1997).

Information about the phytocoenotic amplitude of *O. bartlingii* is insufficient. According to Rothmaler *et al*. (2002) it is connected with thermophilous forest edge communities from the alliance *Geranion sanguinei*. In a European monograph of the *Orobanche*, Uhlich *et al*. (1995) regard this species as characteristic of the association *Peucedanetum cervariae* belonging to the alliance *Geranion sanguinei*. In Poland, Szeląg (2001a) observed *Orobanche bartlingii* in patches of xerothermic grassland from the alliance *Festucetalia valesiacae*.

Orobanche bartlingii is generally considered to be threatened with extinction. It figures in the national 'red lists' of Austria (Niklfeld *et al*. 1986), the Czech Republic (Holub *et al*. 1979), Estonia (Lilleleht 1998), France (Olivier *et al*. 1995), Germany (Korneck *et al*. 1996), Poland (Szeląg 2001b), Slovakia (Maglocký & Feráková 1993) and Switzerland (Moser *et al*. 2002). Accordingly, Schnitter and Günther (1999) designated this species as very threatened in the whole of Europe. Welk (2002) gave a similar diagnosis, and also emphasized negative dynamic tendencies of *O. bartlingii* on this continent.

Specimens examined. POLAND. Wyżyna Krakowsko-Częstochowska upland: Rzędkowice, open and sunny phytocoenoses of *Peucedanetum cervariae*, between Turnia Lechwora and Turnia Kursantów peaks (50°34′N, 19°30′E), 18 July 1995, *leg. W. Rakowski*; phytocoenoses of *Peucedanetum cervariae* shaded by *Fagus sylvatica*, near Okiennik rock (50°34′N, 19°30′E), 18 July 1995, *leg. W. Rakowski*.

Herbarium specimens have been deposited in the Herbarium of the Department of Plant Ecology and Environmental Protection of Adam Mickiewicz University in Poznań (POZM).

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LICHENES SELECTI EXSICCATI – A NEW EXSICCATA DISTRIBUTED BY THE W. SZAFER INSTITUTE OF BOTANY, POLISH ACADEMY OF SCIENCES, KRAKÓW

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Herbarium collections are a desirable and recognized way of documenting botanical research. They are important source of information on the diversity, variability and distribution of organisms.

The first complete Polish lichen exsiccata was *Lichenotheca Polonica*, published by Feliks Krawiec (1930). From 1952 this series was continued by Zygmunt Tobolewski (1952). *Lichenes Poloniae Meridionalis Exiccati* by Janusz Nowak (1971, 1975, 1995) is the second continuing lichen exsiccate in Poland and the first lichen exsiccata published by the W. Szafer Institute of Botany, Polish Academy of Sciences in Kraków. Up to the present, ten fascicles (250 numbers in all) of *Lichenes Poloniae Meridionalis Exiccati* have been published. They cover lichens occurring in Poland, mainly in the Polish Carpathians and the Wyżyna Krakowsko-Wieluńska upland. So far over 1100 numbers of Polish lichen exsiccata have been published, covering over 400 species (see Fałtynowicz 1997).

A new series of lichen exsiccata, *Lichenes Selecti Exsiccati*, distributed by the W. Szafer Institute of Botany, is being prepared. This series covers specimens from various part of the world. *Lichenes Selecti Exsiccati* will contain common and interesting lichens characteristic of the examined territory. The first part comprises lichens of northern Finland.

Lichenes Selecti Exsiccati is issued at irregular intervals in fascicles of 25 each, with 30 duplicate sets, but some specimens are available in up to 40 duplicates. Ten sets are distributed by the W. Szafer Institute of Botany, Polish Academy of Sciences, to the following recipients: ASU, B, BM, GZU, KRAM, LE, MIN, PR, UPS and W. Sets or specimens are available on an exchange basis. Curators of herbaria interested in receiving the series should contact Urszula Bielczyk, Curator of KRAM-L (W. Szafer Institute of Botany, Polish Academy of Sciences, Lubicz 46, PL-31–512 Kraków, Poland; e-mail: bielczyk@ib-pan.krakow.pl). Contributions to this series are welcome.

The following list of specimens makes up Fascicle 1 (No. 1–25) of *Lichenes Selecti Exsiccati – Lichens of Finnish Lapland*:

Arctoparmelia centrifuga (L.) Hale: FINLAND. Kittilä Lapland: 6 km N of Kolari by road to Muonio (route E-08). In forest on shady, noncalcareous rocks, alt. 148 m, 67°23′N, 23°48′E, 26 Aug. 2003, *leg. B. Krzewicka 2535*.

Baeomyces placophyllus Ach.: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, on grounds of Finnish Meteorological Institute. In forest on path in moist place, alt. 184 m, 67°22′N, 26°37′E, 20 Aug. 2003, *leg. B. Krzewicka 2514*.

Baeomyces rufus (Huds.) Rebent.: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, on grounds of Finnish Meteorological Institute. In forest on path in dry place, alt. 184 m, 67°22′N, 26°37′E, 20 Aug. 2003, *leg. B. Krzewicka 2513.*

Cetraria ericetorum Opiz: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, on grounds of Finnish Meteorological Institute. In forest on path in dry and sunny place, alt. 184 m, 67°22′N, 26°37′E, 21 Aug. 2003, *leg. B. Krzewicka 2530*.

Cetraria islandica (L.) Ach.: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, on grounds

of Finnish Meteorological Institute. In forest on path in dry and sunny place, alt. 184 m, 67°22′N, 26°37′E, 21 Aug. 2003, *leg. B. Krzewicka 2528.*

Cladonia arbuscula (Wallr.) Flot. subsp. ***mitis*** (Sandst.) Ruoss: FINLAND. Inari Lapland: Kevo, 16 km S of Utsjoki, in experimental area of Kevo Research Station – "Tree-line gardens." On soil in sunny and dry place, alt. 84 m, 69°46′N, 27°01′E, 19 Aug. 2003, *leg. B. Krzewicka 2479.*

Cladonia botrytes (K. G. Hagen) Willd.: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, on grounds of Finnish Meteorological Institute. In forest on wood in dry and sunny place, alt. 184 m, 67°22′N, 26°37′E, 21 Aug. 2003, *leg. B. Krzewicka 2529.*

Cladonia coccifera (L.) Willd.: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, on grounds of Finnish Meteorological Institute. On soil in exposed, dry and sunny place, alt. 184 m, 67°22′N, 26°37′E, 21 Aug. 2003, *leg. B. Krzewicka 2531.* TLC usnic acid and zeorin (by Piotr Osyczka).

Cladonia cornuta (L.) Hoffm.: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, by road to Orakylä. On soil in exposed, dry and sunny place, alt. 184 m, 67°22′N, 26°37′E, 21 Aug. 2003, *leg. B. Krzewicka 2527.*

Cladonia stellaris (Opiz) Pouzar & Vězda: FINLAND. Inari Lapland: Kevo, 16 km S of Utsjoki, in experimental area of Kevo Research Station – "Tree-line gardens." On soil in sunny and dry place, alt. 84 m, 69°46′N, 27°01′E, 19 Aug. 2003, *leg. B. Krzewicka 2478.*

Cladonia uncialis (L.) Weber *ex* F. H. Wigg. subsp. ***uncialis***: FINLAND. Inari Lapland: Kevo, 16 km S of Utsjoki, in experimental area of Kevo Research Station – "Tree-line gardens." On soil in sunny and dry place, alt. 84 m, 69°46′N, 27°01′E, 19 Aug. 2003, *leg. B. Krzewicka 2481.*

Dibaeis baeomyces (L. fil.) Rambold & Hertel: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, on grounds of Finnish Meteorological Institute. In forest on path in dry and sunny place, alt. 184 m, 67°22′N, 26°37′E, 20 Aug. 2003, *leg. B. Krzewicka 2515.*

Flavocetraria nivalis (L.) Kärnefelt & Thell: FINLAND. Inari Lapland: Kevo, 16 km S of Utsjoki, in experimental area of Kevo Research Station – "Tree-line gardens." On soil in sunny and dry place, alt. 84 m, 69°46′N, 27°01′E, 19 Aug. 2003, *leg. B. Krzewicka 2480.*

Icmadophila ericetorum (L.) Zahlbr.: FINLAND. Inari Lapland: Kevo, 16 km S of Utsjoki, on slope of hill above Kevo Research Station. On soil, on path in forest, alt. 90 m, 69°45′N, 27°01′E, 19 Aug. 2003, *leg. B. Krzewicka 2483.*

Melanelia olivacea (L.) Essl.: FINLAND. Kittilä Lapland: 6 km N of Kolari, by road to Muonio (route E-08). In forest on bark of *Betula pubescens* subsp. *czerepanovii*, alt. 148 m, 67°23′N, 23°48′E, 27 Aug. 2003, *leg. B. Krzewicka 2557.*

Nephroma arcticum (L.) Torss.: FINLAND. Inari Lapland: Kevo, 16 km S of Utsjoki, on slope of the hill above Kevo Research Station. In forest on soil among mosses, alt. 90 m, 69°45′N, 27°01′E, 19 Aug. 2003, *leg. B. Krzewicka 2482.*

Ochrolechia frigida (Sw.) Lynge: FINLAND. Inari Lapland: Kevo, 16 km S of Utsjoki, on hill above Kevo Research Station. On detritus in exposed, sunny and dry place, alt. 100 m, 69°45′N, 27°01′E, 19 Aug. 2003. *leg. B. Krzewicka 2485.*

Peltigera aphthosa (L.) Willd.: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, on grounds of Finnish Meteorological Institute. In forest on soil among mosses, alt. 184 m, 67°22′N, 26°37′E, 20 Aug. 2003, *leg. B. Krzewicka 2512.*

Peltigera malacea (Ach.) Funck: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, on grounds of Finnish Meteorological Institute. In forest among mosses in moist place, alt. 184 m, 67°22′N, 26°37′E, 21 Aug. 2003, *leg. B. Krzewicka 2526.*

Pertusaria dactylina (Ach.) Nyl.: FINLAND. Kittilä Lapland: 6 km N of Kolari, by road to Muonio (route E-08). In forest among mosses at base of noncalcareous block of rock, alt. 148 m, 67°23′N, 23°48′E, 27 Aug. 2003, *leg. B. Krzewicka 2558.*

Solorina crocea (L.) Ach.: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, on grounds of Finnish Meteorological Institute. In forest by path on soil in exposed place, alt. 184 m, 67°22′N, 26°37′E, 20 Aug. 2003, *leg. B. Krzewicka 2516.*

Sphaerophorus fragilis (L.) Pers.: FINLAND. Inari Lapland: Kevo, 16 km S of Utsjoki, on hill above Kevo Research Station. On noncalcareous rocks among mosses in exposed, sunny and moist place, alt. 100 m, 69°45′N, 27°01′E, 19 Aug. 2003, *leg. B. Krzewicka 2486.*

Stereocaulon condensatum Hoffm.: FINLAND. Sompio Lapland: Tähtelä, 8 km S of Sodankylä, on

grounds of Finnish Meteorological Institute. In forest on path, alt. 184 m, 67°22′N, 26°37′E, 20 Aug. 2003, *leg. B. Krzewicka 2517.*

Umbilicaria hyperborea (Ach.) Hoffm. var. ***hyperborea***: FINLAND. Kittilä Lapland: 6 km N of Kolari, by road to Muonio (route E-08). On sunny, noncalcareous rocks, alt. 148 m, 67°23′N, 23°48′E, 26 Aug. 2003, *leg. B. Krzewicka 2533.*

Vulpicida pinastri (Scop.) J.-E. Mattsson & M. J. Lai: FINLAND. Kittilä Lapland: 6 km N of Kolari, by road to Muonio (route E-08). In forest on noncalcareous rocks in exposed areas, alt. 148 m, 67°23′N, 23°48′E, 26 Aug. 2003, *leg. B. Krzewicka 2534.*

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