NEW RECORD OF *STEREOCAULON EVOLUTUM* (LICHENES) IN POLAND

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Stereocaulon Hoffm. is known as a taxonomically difficult genus. The absence of stable morphological characters (Lamb 1977, 1978) and the insufficiency of chemical variability to distinguish chemotypes creates many taxonomical problems. Probably this is the main reason that *Stereocaulon* has drawn little attention from investigators.

During revision of herbarium materials of *Stereocaulon* from Poland, *Stereocaulon evolutum* Graewe *ex* Th. Fr. was found. It is the second record of this species in Poland. The new locality is situated in the Wyżyna Polanowska upland (Fig. 1). Chemical compounds were detected by TLC running in A and C solvents (White & James 1985; Orange *et al*. 2001). This paper presents a description of *S. evolutum*, with a discussion of affinities and data on distribution, ecology and chemistry.

Stereocaulon evolutum Graewe *ex* Th. Fr.

Stereocaulon spissum Nyl. *ex* Hue var. *laxum* Frey

DESCRIPTION OF POLISH SPECIMENS. Primary thallus disappearing. Pseudopodetia 1–3 cm tall, grey, arched or prostrate at the apices. Pseudopodetia form compact cushions to 6 cm diameter, are irregularly branched from the base, dorsoventral and decumbent. Pseudopodetia have a thin grey tomentum on the underside of tips. Phyllocladia at first granular, later flattened, deeply divided into cylindrical extensions, often overlapping and concealing pseudopodetia, the lower surface glabrous. Cephalodia indistinct, containing *Stigonema*. Fruitbodies not present in Polish specimens. According to Lamb (1977, 1978) and Purvis *et al*. (1995), *S. evolutum* forms terminal apothecia, 1 cm diameter, flat at the beginning, older convex. Hymenium 55–65 μm high, in the upper part dark brown, 6–8 ascospores in one ascus. *Stereocaulon evolutum* is morphologically similar to *S. saxatile* H. Magn. (Table 1).

CHEMISTRY. Thallus Pd ± yellow. According to Ramaut (1962), *S. evolutum* contains atranorin, lobaric acid and norstictic acid. In the Polish material, atranorin, lobaric acid and a trace of stictic acid were detected.

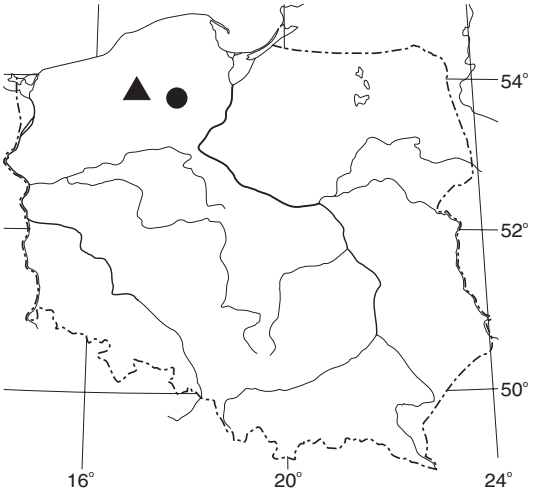

Fig. 1. Distribution of *Stereocaulon evolutum* Graewe *ex* Th. Fr. in Poland. ▲ – new locality in Wyżyna Polanowska upland, ● – known locality in Bory Tucholskie forest.

Table 1. Comparison of characters in *Stereocaulon evolutum* Graewe *ex* Th. Fr. and *S. saxatile* H. Magn. (according to Nowak & Tobolewski 1975; Purvis *et al*. 1995).

Character	*Stereocaulon evolutum*	*Stereocaulon saxatile*
Thallus	Primary thallus disappearing. Pseudopodetia 1–3 cm tall, arched or prostrate, dorsoventral, irregularly branched from the base. Forming compact cushions to 5–6 cm dia. Grey tomentum present only on the apices of pseudopodium or absent.	Primary thallus disappearing. Pseudopodetia 1–2 cm tall, stout, prostrate, dorsoventral, richly branched from upper part. Forming dense tufts to 7 cm dia. Grey tomentum toward apices, always present.
Phyllocladia	Grey, flattened, divided, often overlapping, surrounding pseudopodetia.	Dark grey, granular or flattened, squamulose, almost completely covering pseudopodetia
Cephalodia	Indistinct, containing *Stigonema*	Rare, inconspicuous, containing *Stigonema*
Apothecia	Rare, terminal	Rare, teminal
Chemistry	Pd ± yellow, atranorin, lobaric acid and norstictic acid	Pd ± yellow, atranorin, lobaric acid and norstictic acid
Ecology	Saxicolous, sometimes growing among mosses	Saxicolous, often on gravelly soil

ECOLOGY. *Stereocaulon evolutum* is a saxicolous lichen and occurs on erratic exposed boulders, especially on granite rocks. Sometimes it grows among mosses (Motyka 1964; Nowak & Tobolewski 1975; Purvis *et al*. 1995).

DISTRIBUTION IN POLAND. The species was reported for the first time from Poland by Kiszka and Lipnicki (1994). It was noted in the Kręgi Kamienne Reserve (Bory Tucholskie forest). It still grows there, confirmed by Opanowicz and Fałtynowicz in May 2002. A second locality was found in the Wyżyna Polanowska upland in 1978 (part of the Pojezierze Zachodniopomorskie lakeland). The locality does not exist any longer; the boulders have been overgrown by vascular plants.

GENERAL DISTRIBUTION. *Stereocaulon evolutum* is a species with an Atlantic distribution. It has been reported from several countries and seems to be a locally frequent species in Europe. It has been found in Belgium (Lambinon & Sérusiaux 1985; Diederich & Sérusiaux 2000), the Czech Republic (Černohorsky *et al*. 1956; Smola 1959), Denmark (Alstrup 1978), Germany (Wirth 2001), Great Britain (Purvis *et al*. 1995), Estonia (Randlane & Saag 1999), Finland (Vitikainen *et al*. 1997), France (Diederich & Sérusiaux 2000), Ireland (Purvis *et al*. 1995), Luxembourg (Lambinon & Sérusiaux 1985; Diederich & Sérusiaux 2000), Norway (Santesson 1993), Slovakia (Pišút *et al*. 1996), Spain (Canary Islands, Madeira) (Dombrovskaya 1996), Sweden (Santesson 1994) and Turkey (Yazici & Aslan 2002).

SPECIMEN EXAMINED. POLAND. WYŻYNA POLANOWSKA UPLAND, Trzcinno forest district, forest unit no. 168, on boulder at the edge of pine forest, 31 August 1978, *leg. I. Izydorek* (SLTC). Species does not exist at this place anymore. – BORY TUCHOLSKIE FOREST, Kręgi Kamienne Reserve, on boulder in pine forest. May 2002, *leg. M. Opanowicz & W. Fałtynowicz* (WRSL).

ACKNOWLEDGEMENTS. We thank Professor Antonin Vězda for providing specimens of *Stereocaulon evolutum* and *S. saxatile* for comparison.

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MONOMASTIX MINUTA AND *M. OPISTHOSTIGMA* (CHLOROPHYTA, PRASINOPHYCEAE), TWO SPECIES NEW TO POLISH FLORA

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Psammic algal communities from moist sandy beaches or from inland wet sandy habitats have been insufficiently researched worldwide (Davies 1971; Fott 1971; Pociene 1976; Round 1984; Picińska-Fałtynowicz 1992; Garcia-Baptista 1993). Studies were conducted in 1994–1995 on eupsammic algae in deflation hollows of the Mierzeja Łebska bar, situated in the middle part of the Polish Baltic coast within Słowiński National Park, a Biosphere Reserve (Fig. 1). Deflation hollows feature a specific climate; they are cooler throughout the year and their relative humidity is higher than that of neighboring dunes (Rabski 1987). The substratum consists of fine- or medium-grained sand, composed almost entirely of calcium-free quartz (Dzięciołowski 1975) and is

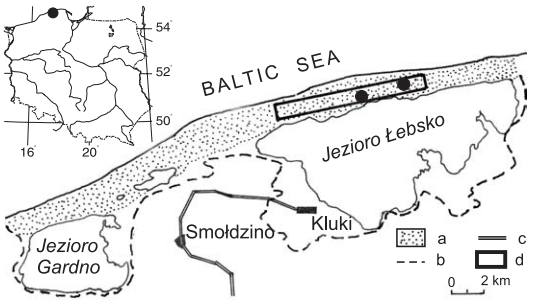

Fig. 1. Sketch map of the study area. a – Mierzeja Łebska bar, b – boundary of Słowiński National Park, c – roads, d – area where mobile dunes and deflation hollows are concentrated, ● – localities of *Monomastix* species.

oligotrophic and saturated with fresh groundwater of pH 6–7 (Piotrowska 1991). In such conditions, algae appear as pioneer organisms and create well-distinguishable communities composed of representatives of nearly all taxonomic groups of microalgae (Picińska-Fałtynowicz 1992).

Two species were discovered at two localities of the investigated area: *Monomastix minuta* Skuja and *M. opisthostigma* Scherffel (Prasinophyceae). They appeared to be new to Polish flora. The specimens correspond to their original descriptions exactly (Skuja 1956; Scherffel 1912).

The specimens of *M. minuta* from the Mierzeja Łebska bar are characterized by distinctly flattened cylindrical-ellipsoidal cells 8.5–10.8 μm long, 2.5–3.7 μm wide and 1.5–2.0 μm thick, with one greenish chloroplast including two pyrenoids and one basal stigma, one flagellum at the apex shorter than the length of the cell, hardly visible

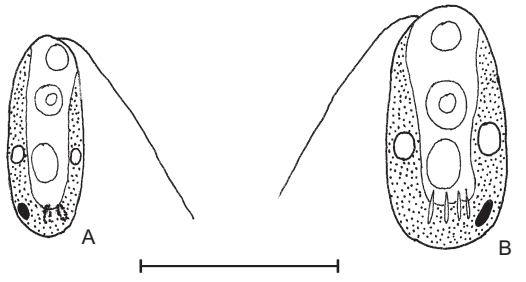

Fig. 2. A – *Monomastix minuta* Skuja, B – *M. opisthostigma* Scherffel. Scale bar = 10 μm.

trichocysts in the basal part and one contractile vacuole in the apical part (Fig. 2A).

The cells of *M. opisthostigma* are cylindrical, slightly flattened, 14.0–16.5 μm long, 5.5–6.0 μm wide and 5.0–5.5 μm thick, with one greenish chloroplast consisting of two lobes with two pyrenoids (each in one lobe), and with a distinct red basal stigma; one flagellum is inserted at the apical part, 3–5 trichocysts in the basal part, and one big contractile vacuole in the apical part (Fig. 2B).

The species were detected in May, September and October in the years of the study. They were represented by numerous populations occurring in moist sand of the initial parts of the deflation hollows as well as in the areas where vascular plant succession had begun, that is, where seedlings and juvenile individuals of a few species such as *Ammophila arenaria* (L.) Link, *Corynephorus canescens* (L.) P. Beauv., *Agrostis stolonifera* L., *Juncus articulatus* L. and *Carex arenaria* L. appeared (Piotrowska 1991).

Monomastix minuta is a rare species known so far from rock pools in the neighborhood of Uppsala (Sweden), peat bog pools in Tyrol (Austria), and sporadically from small water bodies in Denmark and former Czechoslovakia (Ettl 1983). *Monomastix opisthostigma* is a common and widely distributed plankton organism, especially in cold seasons, reported also from peat bog pools (e.g., Hindák 1978; Ettl 1983).

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HAPLOPORUS TUBERCULOSUS, A NEW POLYPORE GENUS AND SPECIES IN BELARUS, WITH A NEW COMBINATION IN *HAPLOPORUS*

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Until recently *Haploporus* Singer was considered to be a monotypic genus with a single species, *Haploporus odorus* (Sommerf.: Fr.) Singer, but lately Dai *et al*. (2002) concluded that *Pachykytospora* Kotl. & Pouzar is congeneric with *Haploporus* and in consequence the authors combined within it four species of that former genus. In the newly defined genus there are now two species in Europe, *H. odorus* and *H. tuberculosus* (Fr.) Niemelä & Y. C. Dai, better known as *Pachykytospora tuberculosa* (Fr.) Kotl. & Pouzar. *Haploporus odorus* is a truly boreal species, reported in Europe almost exclusively from Fennoscandia (Niemelä 1971). *Haploporus tuberculosus*, in contrast, is restricted mostly to Central and Southern Europe, being rare in Fennoscandia and known there only in southern parts of Norway and Sweden (Ryvarden & Gilbertson 1994). The two species have not been reported from Belarus until now (Bondartsev 1953; Ryvarden & Gilbertson 1993, 1994).

Working in the herbarium of Stanisław Domański (KRAM-Domański) I found specimens of *Haploporus tuberculosus* collected by P. K. Michalewicz in the Belarusan part of the Białowieża Primeval Forest. The collection reported here is the first record of the genus *Haploporus* in Belarus. It should be noted that *H. tuberculosus* has not been found so far in the Polish part of the Białowieża Forest, and from Poland it was noted only by Ryvarden and Gilbertson (1994) without a location given. The Białowieża Primeval Forest is a refuge for many interesting polypores in both the Polish (Domański 1967) and Belarusan parts (Ko-

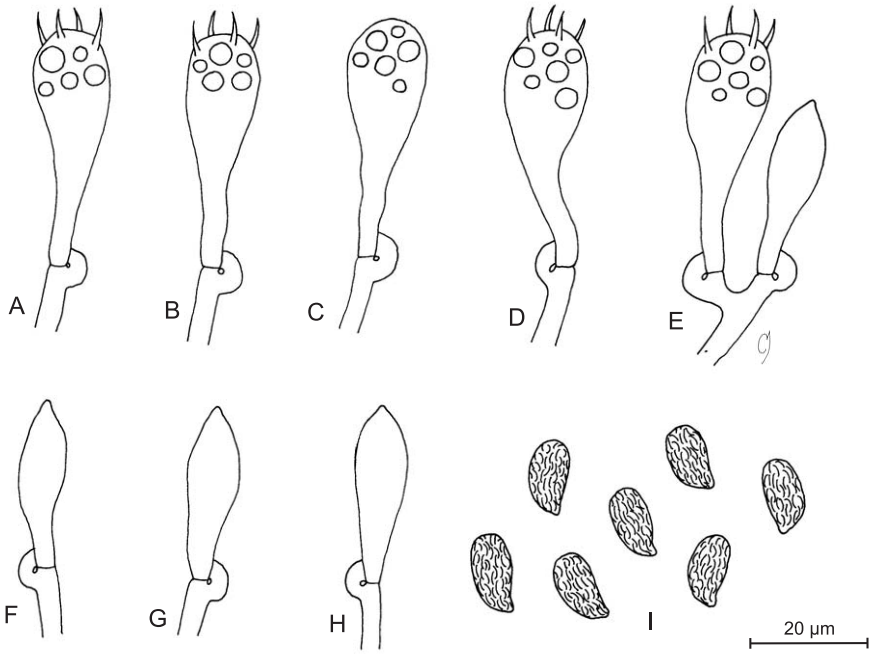

Fig. 1. *Haploporus tuberculosus* (Fr.) Niemelä & Y. C. Dai: A–D – basidia, E – basidium + cystidiole, F–H – cystidioles, I – basidiospores (drawn by Jolanta Cabała from KRAM-Domański 7126).

marova *et al*. 1968), and here another characteristic taxon is added to its mycota. The newly found specimens perfectly matched descriptions of the species in the literature: basidiomes resupinate, effused up to 12 cm, tuberculate, and pore surface isabelline to light buff. Pores rounded, 2–3 per mm, context cream to light buff, 5 mm thick, tube layer concolourous with context, 3 mm thick. Hyphal system trimitic with thick-walled skeletal hyphae which are non-septate, almost unbranched, up to 5 µm in diameter. Binding hyphae thick-walled, branched, non-septate, 3–4 µm in diameter, generative hyphae thin-walled, with clamps, 3–4 µm in diameter. Fusoid cystidioles present in hymenium; basidia clavate with narrow base, oil drops, and basal clamp, 30–40 × 10–12 µm. Basidiospores cylindric-ellipsoid, hyaline, minutely rough, with tubercles arranged in longitudinal striae, 12–15 × 6–8 µm (Fig. 1).

Haploporus tuberculosus is reported almost exclusively from *Quercus*, on which it usually appears high above the ground on dead branches still attached to the tree, rarely on dead fallen branches or trunks. It is a widespread fungus within the range of *Quercus*, present but rare in both North America (Gilbertson & Ryvarden 1987) and Europe (Ryvarden & Gilbertson 1994).

SPECIMENS EXAMINED. BELARUS. Białowieża Primeval Forest, ad ramum *Quercus* (*sessilis*) *petraeae*, Oct. 1973, *leg. P. K. Michalewicz* (KRAM-Domański 7126).

When I worked on the present note I found that *Pachykytospora nepalensis* T. Hattori, recently described from Nepal (Hattori *et al*. 2002), should be transferred to the genus *Haploporus* sensu Y. C. Dai and Niemelä (in Dai *et al*. 2002). Accordingly, the following new combination is made:

Haploporus nepalensis (T. Hattori) Piątek, *comb. nov*.

Basionym: *Pachykytospora nepalensis* T. Hattori, Bull. Natl. Sci. Mus., Tokyo, B **28**: 29. 2002.

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PUCCINIA LAGENOPHORAE (UREDINIOMYCETES), A NEOMYCETE NEW IN POLAND

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In preceding years some introduced plant-parasitic fungi have become established in Poland. Most of them are powdery mildews (Erysiphales, see: Piątek 2000, 2002; Wołczańska 1995; Wołczańska & Mułenko 2002, and literature cited therein), but a few species from other fungal taxa (Uredinales, Peronosporales) have also successfully invaded Poland (Mańka 1988; Mułenko & Matejko-Gosztyła 1997; Piątek *et al*. 2001; Wołczańska 1999). Fungi introduced to an area in historical times and able to establish in natural or cultivated habitats are called neomycetes (Kreisel & Scholler 1994). In 1998 an additional neomycete, the asteraceous Australasian rust species *Puccinia lagenophorae* Cooke, was found in Poland. In his rust mycota of Poland, Majewski (1979) already predicted the introduction of this species.

Puccinia lagenophorae, an autoecious species forming only spore states I (aecia) and III (telia), appeared in Europe in the 1960s (Mayor 1962; Wilson *et al*. 1965; Scholler 1994) and in North America in 2000 (Scholler & Koike 2001; Koike & Scholler 2001). In 1997 it was already well established in Europe except for the northern and eastern parts of the continent (Scholler 1997). The most common host species is *Senecio vulgaris* L. Other *Senecio* spp. and *Calendula officinalis* L.

were found to be infected rarely. In the 1960s the fungus started to infect *Bellis perennis* L. In some regions *Bellis perennis* is a more common host than *Senecio vulgaris* (Scholler 1997). The fungus was collected in Poland for the first time in 1998: in Tarnów in southern Poland and in Warsaw in central Poland (T. Majewski, pers. comm.). In 2002 it was frequently observed in Kraków on both *Bellis perennis* (wild plants and cultivars) and *Senecio vulgaris* (Fig. 1). The species may have appeared in Poland before 1998. According to M. Scholler (pers. comm.) this fungus was collected fairly often in Germany close to the Polish border. He assumes that the fungus may have been in (Western) Poland for almost ten years. Infected plants die much earlier than uninfected ones. This was observed especially in *Senecio vulgaris*. Many plants died already in midsummer.

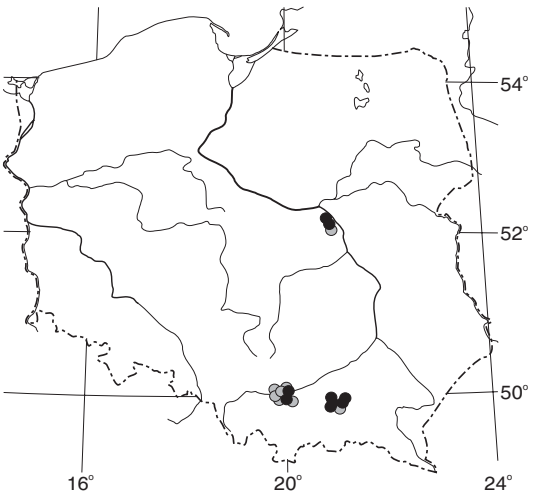

Fig. 1. *Puccinia lagenophorae* Cooke in Poland. Black dots – on *Senecio vulgaris* L., grey dots – on *Bellis perennis* L.

SPECIMENS EXAMINED. On *Senecio vulgaris* L. – KOTLINA SANDOMIERSKA BASIN: Tarnów, Sanguszków Park (at Gumniska St.), 2 July 1998, *leg. M. Piątek* (KRAM F-52194), 29 Aug. 1998, *leg. M. Piątek* (KRAM F-52193); Tarnów, Kwiatkowskiego Park (at Czerwonych Klonów St.), 21 July 1998, *leg. M. Piątek* (KRAM F-52195); Tarnów, at Chemiczna St., 8 Aug. 2002, *leg. M. Piątek* (KRAM F-52588); Tarnów, at Lwowska St. near Pod Dębem Inn, together with *Golovinomyces cichoracearum* var. *fischeri*, 9 Oct. 2002, *leg. M. Piątek* (KRAM F-52590); Kraków, at intersection of Bieżanowska St. and Ogórkowa St., 14 July 2002, *leg. J. Cabała & M. Piątek* (KRAM F-52589); BRAMA KRAKOWSKA GATE: Kraków, Botanic Garden (at Kopernika St.), 1 July 1998, *leg. M. Piątek* (KRAM F-52341); NIZINA ŚRODKOWOMAZOWIECKA LOWLAND: Warsaw–Bielany, at Libawska St., 7 Oct. 2000, *leg. T. Majewski* (WAUF); Warsaw–Ursynów, together with *Bremia lactucae*, 17 Aug. 2001, *leg. T. Majewski* (WAUF); WEST CARPATHIANS: Tarnów, at city limits (at Krakowska St.), 26 Aug. 2002, *leg. M. Piątek* (KRAM F-52586).

On *Bellis perennis* L. – NIZINA ŚRODKOWOMAZOWIECKA LOWLAND: Warsaw–Ursynów, 11 Sept. 1998, *leg. C. Zamorski & T. Majewski* (WAUF); BRAMA KRAKOWSKA GATE: Kraków, at A. Mickiewicza St., 11 May 2002, *leg. M. Piątek* (KRAM F-52338); Kraków, Rondo Mateczny traffic circle, 13 May 2002, *leg. J. Cabała & M. Piątek* (KRAM F-52337); Kraków, Plac Kolejowy square, 21 May 2002, *leg. J. Cabała* (KRAM F-52339); Kraków, at Lubicz St., 28 May 2002, *leg. J. Cabała* (KRAM F-52335); Kraków, near Wawel Castle, 20 Aug. 2002, *leg. J. Cabała & M. Piątek* (KRAM F-52592); KOTLINA SANDOMIERSKA BASIN: Tarnów, at intersection of G. Narutowicza St. and Krakowska St., 26 May 2002, *leg. M. Piątek* (KRAM F-52340); Kraków, at intersection of Bieżanowska St. and Ogórkowa St., 30 May 2002, *leg. J. Cabała & M. Piątek* (KRAM F-52336).

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