New records of *Cladonia monomorpha* (Cladoniaceae, lichenized Ascomycota) from Europe

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Abstract: KOWALEWSKA, A. & KUKWA, M. 2004. New records of *Cladonia monomorpha* (Cladoniaceae, lichenized Ascomycota) from Europe. – Herzogia **17**: 103–105.

The recently described lichen species, *Cladonia monomorpha*, is reported for the first time from Austria and Ukraine and for new localities in the Czech Republic, France, Poland and Slovakia. The species has been found on tree bark for the first time.

Zusammenfassung: KOWALEWSKA, A. & KUKWA, M. 2004. Neue Funde von *Cladonia monomorpha* (Cladoniaceae, lichenisierte Ascomycota) in Europa. – Herzogia **17**: 103–105.

Die kürzlich beschriebene Flechte *Cladonia monomorpha* wird von weiteren Fundorten gemeldet. Sie wird neu für Österreich und die Ukraine nachgewiesen. Neue Funde kommen aus Tschechien, Frankreich Polen und der Slowakei. Die Art wird erstmals auf Baumrinde gefunden.

Key words: *Cladonia*, lichen distribution.

Introduction

The lichen species *Cladonia monomorpha* Aptroot, Sipman & van Herk, which belongs to the taxonomically difficult *C. chlorophaea* complex, was recently described from several stands in Europe (APTROOT et al. 2001). It is known from Western Europe, Fennoscandia, the Iberian Peninsula and Central Europe where it has been recorded from single localities in the Czech Republic, Poland and Romania (APTROOT et al. 2001) and six localities in Slovakia (APTROOT et al. 2003).

During our studies on the *Cladonia chlorophaea* complex in Poland we found additional records of this species. Some specimens from the Bieszczady Mts were at first identified as *C. pyxidata* (L.) Hoffm., although it was noted that they did not fit exactly that species. After the description of *C. monomorpha*, their true identity became clear. Subsequently, *C. monomorpha* was also identified in the material from Austria and Ukraine. It is here reported for the first time for these countries and additional records are presented from the Czech Republic, France (Corsica) and Slovakia.

Materials and methods

The specimens were determined using morphological and chemical characters, with lichen substances identified by thin-layer-chromatography (TLC) according to the methods of ORANGE et al. (2001). The material is deposited in the lichen herbaria of the University of Gdańsk (UGDA), the University of Graz (GZU) and Gorce National Park (GPN).

Cladonia monomorpha Aptroot, Sipman & Herk

Lichenologist 33: 273 (2001).

Primary thallus well developed, of quite large and thick squamules, which are never coalescent; upper side greenish-grey, sometimes tinged with brown, lower side white in the younger parts, sometimes with greenish-grey areoles with gonidial layer, darkening toward the older parts; podetia up to 1.5 cm tall, with ± regular cups, up to 7 mm wide, simple, rarely with sterile scyphose or fertile branched proliferations; cups inside with bullate corticate plates; outer surface corticate areolate and also covered with bullate plates; apothecia present in one specimen, brown, simple or in glomerulose accumulations, formed on branched proliferations. Thallus contains fumarprotocetraric acid with satellite substances.

Ecology

Cladonia monomorpha is an acidophilous lichen. In most cases, earlier records, as well as in most of those presented here, were from acid soil, siliceous rocks or mosses and humus lying on rocks. One specimen from Ukraine was found on the bark of *Sorbus aucuparia*, a substratum from which the species has previously not been reported; however, this appears to be a marginal habitat since the podetia were small and partly deformed. Probably, due to the curvature of the trunk, with the lower part lying horizontally on the ground, it could be readily establish itself on the trunk; it was, however, not found on soil in the close vicinity of the tree.

C. monomorpha seems to be a photophilous species, which grows in open situations (e.g. sand dunes, see APTROOT et al. (2001), and rocky outcrops, see below), as well as in light pine forest (e.g. records from N Poland). When growing on soil in pine forest, it was usually associated with other *Cladonia* species [e.g. *C. arbuscula* (Wallr.) Flot. em. Ruoss, *C. fimbriata* (L.) Fr., *C. furcata* (Huds.) Schrad., *C. pleurota* (Flörke) Schaer., *C. pyxidata*], *Cetraria aculeata* (Schreb.) Ach. and mosses, whereas on soil and on rocks it was associated with *Parmelia sulcata* Taylor and the moss *Dicranum* sp. On the bark of *Sorbus aucuparia*, only few mosses were accompanying the lichen.

Discussion

Cladonia monomorpha is chemically identical with *C. pocillum* (Ach.) Grognot and *C. pyxidata*. These taxa can be distinguished by their morphology, as tabulated by APTROOT et al. (2001). Morphologically, the species is also similar to *C. borealis* S. Stenroos; however, that species has red pycnidia and apothecia and is yellowish tinged due to the presence of usnic acid (STENROOS 1989).

C. monomorpha is reported here for the first time from two countries in Central and Central Eastern Europe. In Poland it was previously known from only a single locality in the Bieszczady Mts. in SE Poland (APTROOT et al. 2001). It is reported here from the northern part of the country for the first time. It does not appear to be a common species in Poland, since ca. 200 specimens of the *C. chlorophaea* complex have been examined and only four proved to be *C. monomorpha*. The new locality in the Czech Republic is the first contemporary one; a record from 1920 is presented by APTROOT et al. (2001), who considered the species to be probably extinct in the Czech Republic. The present work confirms that it still occurs there, but it may be an endangered or rare taxon of the Czech lichen flora.

Taking into consideration all known localities of *C. monomorpha*, we are of the opinion that although it is quite widely distributed, it is probably rare and may be disappearing due to changes of habitats (see APTROOT et al. 2001).

Specimens examined:

Austria. Steiermark, Totes Gebirge, NE Bad Mitterndorf, MTB: 8449/2, Seehöhe: 1900 m, Lawinenstein, 17.09.1985, W. Maurer (Nr. 159) (GZU).

Czech Republic. District Rejšlejn, Losenice stream, Šafářův vršek, alt. 850 m, Popelna Obří hrad Mt., a boulder scree, MTB 7060, on soil among boulders, 15.04.2000, M. Kukwa s.n. (UGDA).

France. Corsica. Dept. Haute-Corse, Asco Tal, Forêt de Carrozzica, SW ober dem Ort Asco, ca 940 m, lockerer *Pinus nigra*-Wald mit Felsblöcken, über Moss, 02.11.1993, M. Krenn, H. Mayrhofer & E. Unger (GZU).

Poland. N part of the country, Tuchola Forest, near Loryniec, Wësków Bagna, 54°02'N/17°52'E, ATPOL grid square Bc 25, on ground in pine forest, 12.09.2002, A. Kowalewska s.n. (UGDA-L-7746); Tuchola Forest, 6 km N of Jeżewo, forest district Kotówka, forest section No 153, 53°34'N/18°30'E, ATPOL grid square Bc 79, on ground in fresh pine forest by the road, 03.09.2002, A. Kowalewska s.n. (UGDA); S part of the country, Bieszczady Mts, W of pass below Tarnica Mts., 49°05'N/22°44'E, ATPOL grid square Gg 60, on stones among *Vaccinium myrtillus*, 23.07.1998, P. Górski s.n. (UGDA); Gorce Mt, boulder field on the S slope of Twarogi Mt, above Ochotnica Dolna Barbarówka, alt. 530 m, ATPOL grid square Ge 22, on saxicolous mosses and humus, 05.11.1999, P. Czarnota s.n. (GPN/2175) (c.ap.).

Ukraine. Eastern Carpathians, Gorgany Mts., Koniec Gorganu Mt., SE part of Gorgan Pass, between spruce forest and *Pinus mugo* community, on bark of *Sorbus aucuparia*, 05.04.2001, M. Kukwa 953 (UGDA).

Slovakia. High Tatra Mts., Tatra National Park, Bielovodská dolina valley, S of Lysá Pol'ana, 49°13'N/20°07'E, on thin layer of soil on stone, 17.08.1999, M. Kukwa s.n. (UGDA).

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