ACTA MYCOLOGICA
Vol. 42 (2): 287-290
2007

Dedicated to Professor Alina Skirgiełło on the occasion of her ninety-fifth birthday

Rinodina griseosoralifera, a lichen species new to the Western Carpathians

PAWEŁ CZARNOTA[1] and MARTIN KUKWA[2]

[1]Scientific Laboratory of the Gorce National Park, Poręba Wielka 590
PL-34-735 Niedźwiedź, pawel.czarnota@gpn.pl
[2]Department of Plant Taxonomy and Nature Protection, University of Gdańsk
Al. Legionów 9, PL-80-441 Gdańsk, dokmak@univ.gda.pl

Czarnota P., Kukwa M.: *Rinodina griseosoralifera, a lichen species new to the Western Carpathians*. Acta Mycol. 42 (2): 287-290, 2007.

Rinodina griseosoralifera Coppins is reported for the first time from Poland and the Western Carpathians. It is known there from the Gorce Mts, only locality up to now. Details of the chemistry, morphology and general distribution are provided and similar taxa are discussed.

Key words: *Rinodina*, sorediate lichens, atranorin, zeorin, Carpathians, Poland

INTRODUCTION

Lichen genus *Rinodina* (Ach.) Gray is comprised of crustose lichens with lecanorine apothecia and brown, characteristically septate spores (for full description see Nowak 1998; Mayrhofer, Moberg 2002). Most of the taxa reproduce by spores, but a few possess vegetative soredia and isidia; these are usually sterile and usually difficult to identify since many other, even unrelated, species are superficially similar. In such cases, secondary chemistry is invaluable in their determination (e.g. Tønsberg 1992).

In Poland, only two sorediate epiphytic *Rinodina* species, *R. colobina* (Ach.) Th. Fr. and *R. efflorescens* Malme, have been reported to date (Fałtynowicz 2003). During the identification of some sterile crustose lichens we came across a specimen resembling *R. efflorescens*, but thin layer chromatography revealed the presence of atranorin and zeorin. The chemistry and morphology matches *R. griseosoralifera* Coppins, a taxon not known from our country.

This paper presents the first record of *R. griseosoralifera* for Poland and the Western Carpathians, provides information on its chemistry, morphology and general distribution, and discusses its affinities to several sorediate, usually sterile, taxa.

MATERIAL AND METHODS

Morphology of the specimen was studied with the aid of a stereomicroscope and chemical analyses were carried out using thin layer chromatography (TLC) according to Orange et al. (2001). The material is stored in GPN, with a duplicate donated to UGDA-L.

RESULTS

Rinodina griseosoralifera Coppins – Lichenologist 21: 169. 1989

Morphology and chemistry. *R. griseosoralifera* is a crustose lichen forming an episubstratal thallus and consisting of greenish-white to brown areoles which usually entirely dissolve into soredia, as in the Polish collection. Soralia are blue-grey, formed at the top of areoles, discrete (Fig. 1A) or forming a more or less continuous sorediate crust (Fig. 1B). Apothecia were not observed in the Polish collection.

The species produces atranorin and zeorin. Tønsberg (1992) also reported possible traces of unidentified terpenoids, but we did not detect any additional substances.

Affinities. Due to its blue-grey external soredia *R. griseosoralifera* is superficially similar to several taxa: *Buellia griseovirens* (Turner & Borrer ex Sm.) Almb., *Caloplaca chlorina* (Flot.) Sandst., *Rinodina colobina* and *R. efflorescens*. The most significant character is the chemistry. *B. griseovirens* produces norstictic acid and atranorin as major compounds (squash preparation reacts K+ yellow turning orange and forming needle-like crystals), *C. chlorina* does not contain lichen substances, *R. colobina* has substances called 'colobina unknows' in the thallus, and *R. efflorescens* has pannarin (with additional substances) causing P+ orange-red reaction of soralia (Tønsberg 1992). Additional characters differentiating these taxa are shown in the Table 1.

Ecology. In the Polish locality the species covered eutrophic bark and occasionally mosses at the base of an old *Pyrus*, forming large patches up to ca 10 dm^2. It was associated with *Acrocordia gemmata* (Ach.) A. Massal., *Bacidia subincompta* (Hoffm.) A. Massal., *Caloplaca obcurella* (J. Lahm) Th. Fr., *Candelariella xanthostigma* (Ach.) Lettau, *Lepraria vouauxii* (Hue) R. C. Harris, *Normandina pulchella* (Borrer) Nyl. and *Phaeophyscia endophoenicea* (Harm.) Moberg. The Polish habitat corresponds to that described by Palice (1999), suggesting that it may by a more frequent species in old orchards or solitary trees in Poland, but overlooked due to its usually sterile form and the necessity to examine it by TLC.

Distribution. In Poland, *R. griseosoralifera* is known from a single locality in the Gorce Mts, but it may be more widely distributed since suitable habitats are common in the country.

In Europe, the species is rather uncommon, but widely distributed. To date, it has been reported from Austria and Britain (Coppins 1989), Ireland (Seaward 1994), Czech Republic (Palice 1999), Germany (Scholz 2000), the Netherlands (Aptroot et al. 2001), Norway (Coppins 1989; Tønsberg 1992), Spain (Llimona, Hladun 2001), Switzerland (Dietrich, Scheidegger 1996) and Ukraine (Eastern

Table 1
Comparison of *Rinodina griseosoralifera* and superficially similar taxa occurring in Poland (acc. to Tønsberg 1992 and author's studies)

Feature	Taxa				
	Rinodina griseosoralifera	*Rinodina efflorescens*	*Rinodina colobina*	*Caloplaca chlorina*	*Buellia griseovirens*
Non-soraliate parts of thallus	indistinct, small areolae, early dissolving into soralia or sorediate crust	areolate to subsquamulose, often dissolving into soralia	areolate to warted, ±disappearing, early becoming sorediate	mostly quite thick, at least partially distinctly areolate to ±leprose	mostly distinct, areolate to more or less continuous
Prothallus	indistinct, brown visible around the areolae	indistinct, between areolae, sometimes brownish black	absent	sometimes distinct, brownish to brownish violet	usually present, brownish, often bluish tinged
Colour of soralia	bluish-grey to pale greyish green	brown, greyish brown, pale to dull greenish yellow	grey-black to bluish-grey, rarely greyish green	grey to bluish grey	greyish white, yellowish, greenish to dark grey, often with a bluish tinge
Shape of soralia	±circular, plane to convex, discrete or confluent, bursting from areolae	punctiform, ±flat to hemispherical bursting from areolae or substratum	not well defined, mostly irregular and efflorescent, sometimes marginal at areolae	marginal at areolae, punctiform to confluent forming leprose sorediate crust	mostly circular, convex, plane or crateriform
Chemistry (major compounds)	atranorin, zeorin; K–, P– or ±yellowish, C–	pannarin, efflorescens unknown (pigment), ±zeorin; K–, P+ red, C–	'colobina unknowns'; at least partially K± violet, P–, C–	no substances; at least partially K± violet, N± violet, P–, C–	atranorin, norstictic acid ±griseovirens unknowns; K+ yellow (forming crystals), P+ yellow, C– or ±yellowish
Pigmentation of external soredia	bluish-grey, K+ brown, N–	often brown, K+ fuscous brown, N–	grey-black, K+, C+, N+ violet	bluish, K+ violet, N+ violet	brown, often bluish tinged, K+ fuscous brown, N–

Carpathians) (Kondratyuk, Coppins 2000). Outside Europe, it is known from the Canary Islands (Tønsberg 2002) and North America (Tønsberg 1993).

Polish specimen examined. Western Beskidy Mts, Gorce Mts, Poręba Wielka village, old Wodzicki's manor park, 49°37'02"N/20°03'57"E, alt. 530 m, on bark of old *Pyrus communis* in old fruit orchard, 18.04.2007, *leg. P. Czarnota 5147* (GPN, duplicate in UGDA-L–14058).

Additional specimen examined. Norway, Hordaland, Bergen, Arna, Arna Church, UTM 32V LN 0503, alt. 10 m, on *Acer platanoides*, 22.07.1990, *leg. T. Tønsberg 13338* (BG L-24513).

Acknowledgements. We are indebted to an anonymous reviewer for suggestions on the manuscript, as well as to Professor Mark Seaward (Bradford, UK) for English correction and some improvements.

REFERENCES

Aptroot A., Sparrius L., van Herk K., de Bruyn U. 2001. Origin and distribution of recently described lichens from the Netherlands. Aktuelle Lichenologische Mitteilungen 5: 13–25.

Coppins B.J. 1989. *Rinodina griseosoralifera*, a new corticolous sorediate lichen from western Europe. Lichenologist 21: 169–172.

Dietrich M., Scheidegger C. 1996. The importance of sorediate crustose lichens in the epiphytic lichen flora of the Swiss Plateau and the Pre-Alps. Lichenologist 28: 245–256.

Fałtynowicz W. 2003. The lichens, lichenicolous and allied fungi of Poland – an annotated checklist. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków, 435 pp.

Kondratyuk S.Ya., Coppins B.J. 1999. Basement for the lichen monitoring in Uzhansky National Nature Park, Ukrainian part of the Biosphere Reserve 'Eastern Carpathians'. Roczniki Bieszczadzkie 8: 149–192.

Llimona X., Hladun N.L. 2001. Checklist of the lichens and lichenicolous fungi of the Iberian Peninsula and Balearic Islands. Bocconea 14: 1–581.

Mayrhofer H., Moberg R. 2002. *Rinodina*. Nordic Lichen Flora 2: 41–69.

Nowak J. 1998. Porosty (Lichenes). VI. 2. *Buelliaceae*. (In:) Rośliny zarodnikowe Polski i ziem ościennych. Instytut Botaniki im. W. Szafera PAN, Kraków, 236 pp.

Orange A., James P.W., White F.J. 2001. Microchemical methods for the identification of lichens. British Lichen Society, London, 101 pp.

Palice Z. 1999. New and noteworthy records of lichens in the Czech Republic. Preslia 71: 289–336.

Scholz P. 2000. Katalog der Flechten und flechtenbewohnenden Pilze Deutschlands. Schriftenreihe für Vegetationskunde 31: 1–298.

Seaward M.R.D. 1994. Vice-county distribution of Irish lichens. Proceedings of the Royal Irish Academy 94 B: 177–194.

Tønsberg T. 1992. The sorediate and isidiate, corticolous, crustose lichens in Norway. Sommerfeltia 14: 1–331.

Tønsberg T. 1993. Additions to the lichen flora of North America. Bryologist 96: 138–141.

Tønsberg T. 2002. *Halecania viridescens* and *Rinodina griseosoralifera* new to Africa from the Canary Islands. Graphis Scripta 13 (2): 52–54.

Rinodina griseosoralifera, gatunek porostu nowy dla Karpat Zachodnich

Streszczenie

Rinodina griseosoralifera jest nadrzewnym porostem skorupiastym wytwarzającym soredia. Plecha tego gatunku składa się z areolek, z których większość przekształca się w oddzielone od siebie (Fig. 1A) lub zlewające się (Fig. 1B) soralia; soredia mają kolor niebiesko-szary. Obecność wtórnych metabolitów, atranoryny i zeoryny, pozwala odróżnić ten gatunek od innych, morfologicznie bardzo podobnych 'sorediowanych' przedstawicieli rodzaju *Rinodina*, tj. *R. colobina* i *R. efflorescens*, jak również od *Buellia griseovirens* i nadrzewnych form *Caloplaca chlorina*. Cechy chemiczne i morfologiczne ułatwiające identyfikację sterylnych form tych pięciu gatunków przedstawiono w tabeli 1.

R. griseosoralifera jest nowym składnikiem bioty porostów Polski i jednocześnie Karpat Zachodnich. Pierwsze jego stanowisko zostało znalezione w Gorcach, w starym sadzie podworskim we wsi Poręba Wielka. Gatunek ten rośnie na korze *Pyrus communis*, a towarzyszą mu m.in. *Acrocordia gemmata*, *Bacidia subincompta*, *Caloplaca obscurella*, *Normandina pulchella* i *Phaeophyscia endophoenicea*.

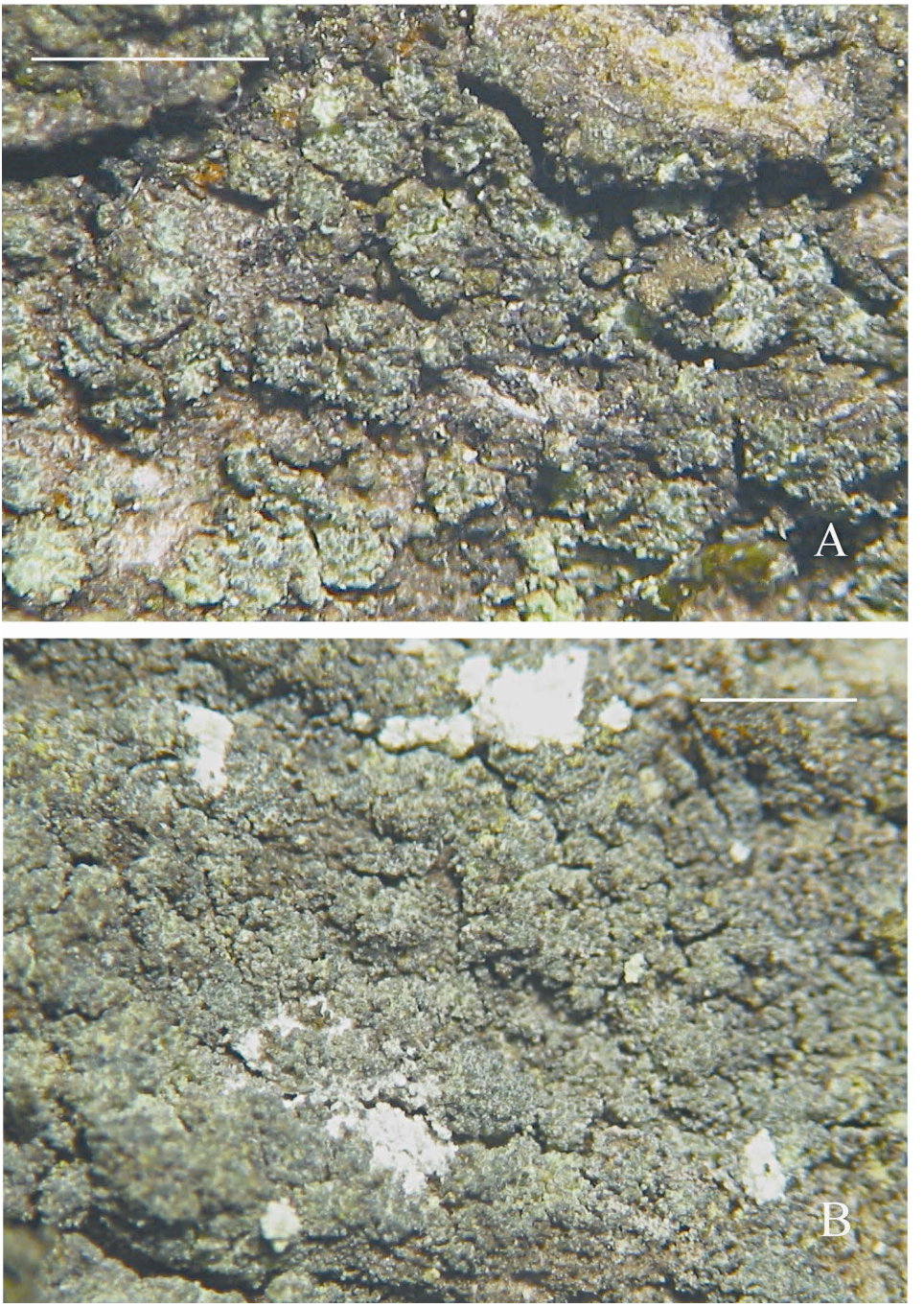

Fig. 1. Habit of *Rinodina griseosoralifera* (Czarnota 5147, GPN); A – distinct soralia; B – confluent soralia; scale bars = 1 mm.