

## NOTES ON THE DISTRIBUTION OF *SPHINCTRINA ANGLICA* AND ITS HOST IN POLAND

DARIUSZ KUBIAK, PIOTR ZANIEWSKI & MARTA WRZOSEK

Dariusz Kubiak, Department of Mycology, Faculty of Biology, Warmia and Mazury University in Olsztyn, Oczapowskiego 1A, 10-957 Olsztyn, Poland; e-mail: darkub@uwm.edu.pl

Piotr Zaniewski, Department of Plant Molecular Ecophysiology, Faculty of Biology, University of Warsaw, Miecznikowa 1, 02-096 Warszawa; e-mail: piotrzaniewski@biol.uw.edu.pl

Marta Wrzosek, Department of Systematics and Plant Geography, Faculty of Biology, University of Warsaw, Al. Ujazdowskie 4, 00-478 Warszawa; e-mail: mwrzosek@biol.uw.edu.pl

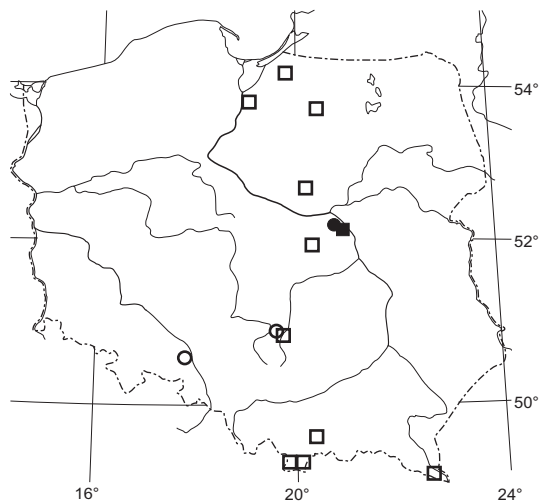
We collected several specimens of *Protoparmelia hypotremella* van Herk, Spier & V. Wirth during lichenological investigations in the Las Bielański Nature Reserve in Warsaw 2009, and our detailed examination also turned up *Sphinctrina anglica* Nyl. in this material. *S. anglica* is an inconspicuous caelicioid fungus characterized by short-stalked black apothecia. The species is probably a highly specialized parasite restricted to lichens of the genera *Protoparmelia* (Aptroot *et al.* 1997). *S. anglica* was known previously in Poland from only two older reports (Stein 1879; Czyżewska 1981; see also Czyżewska & Kukwa 2009). *P. hypotremella* has been recorded frequently but probably is still overlooked or not distinguished in Poland because its sterile thalli are fine and inconspicuous. These two interesting taxa are presented here.

### *Sphinctrina anglica* Nyl.

For the species description see Löfgren and Tibell (1979) and Tibell (1999).

*Sphinctrina anglica* was first found in Poland by Stein (1879) in Pruszków near Opole (SW Poland). The second locality of the species was recorded by Czyżewska (1981) from the Niecka Włoszczowska basin in the central part of the country (Fig. 1). In both cases it was considered a lichenized fungus. The lichenicolous behavior of the species in Poland was first mentioned by Kukwa (2000; see also comments under the species by Czyżewska & Kukwa 2009).

The biology of *Sphinctrina anglica* was long unrecognized. According to recent reports it is an obligatory parasitic fungus occupying thalli of *Protoparmelia oleagina* and *P. hypotremella* (e.g., Aptroot *et al.* 1997; Kukwa 2000). Its occurrence depends on the habitat preferences of its host. *S. anglica* is reported mostly from lichens growing on the bark of trees, and also on wood (Santesson *et al.* 2004; Svensson *et al.* 2005; Spribille *et al.* 2008).



**Fig. 1.** Distribution of *Sphinctrina anglica* Nyl. and *Protoparmelia hypotremella* van Herk, Spier & Wirth in Poland: ○ – localities of *S. anglica* known from literature, ● – new locality of *S. anglica*, □ – localities of *P. hypotremella* known from literature, ■ – new locality of *P. hypotremella*.

*Sphinctrina anglica* is reported generally from Western and Central Europe and North America (Tibell 1994, 1999). It is also known from India (Saxena *et al.* 2007) and Africa (Giavarini & Purvis 2009). In Europe, besides Poland it has been reported from Austria (Hafellner & Türk 2004), the Czech Republic (Vězda & Liška 1999), Finland and Sweden (Santesson *et al.* 2004), Germany (Scholz 2000), Great Britain (Giavarini & Purvis 2009), the Netherlands (Aptroot *et al.* 1997), Romania (Ciurchea 2009), Spain (Llimona & Hladun 2001) and Ukraine (Kondratyuk *et al.* 1998).

SPECIMEN EXAMINED. POLAND. KOTLINA WARSZAWSKA BASIN: [ATPOL grid square De 16] Warsaw, Las Bielański Nature Reserve, forest section no. 6, 52°17'41"N, 20°57'23"E, oak-linden-hornbeam forest *Tilio-Carpinetum*, on thallus of *Protoparmelia hypotremella* on oak branch, 17 Oct. 2009, leg. P. Zaniewski (WA 17570, OLTC L-3406).

***Protoparmelia hypotremella*** van Herk, Spier & V. Wirth

For the species description see Aptroot *et al.* (1997) and Brodo and Aptroot (2005).

*Protoparmelia hypotremella* was known previously from ten localities in Poland (Fig. 1), distributed in the northern (Kubiak 2005; Kukwa 2005; Szymczyk & Zalewska 2008), central (Czyżewska 1981, 2003; Kukwa 2000; Kubiak 2009) and southern parts of the country (Kościelniak & Kiszka 2006; Śliwa 2006; Czarnota & Wójnarowicz 2008).

*Protoparmelia hypotremella* is a toxitolerant crustose lichen, reported mostly on the bark of mature wayside trees. In Western Europe it is spreading very rapidly in favorable habitats (Aptroot *et al.* 1997). Interestingly, at the newly discovered localities of *P. hypotremella* in the Las Bielański Nature Reserve it was recorded exclusively on twigs and branches of old oaks. It seems that *P. hypotremella* is a regular constituent of canopy lichen communities (especially in old-growth forest stands). That habitat was rarely studied in the past, and this is probably why the species has not been recorded often. Associated species found with *P. hypotremella* include *Cladonia* sp., *Lecanora conizaeoides*, *Lepraria incana*,

*Parmelia saxatilis*, *P. sulcata* and *Scoliciosporum sarothamnii*. Most of them are rather acidophilous lichens (van Herk 1999, 2002). This suggests that *P. hypotremella* found favorable conditions in the reserve due to acidification of the environment and the disappearance of species more sensitive to air pollution.

*Protoparmelia hypotremella* is known from Western and Central Europe as well as North America (Aptroot *et al.* 1997; Brodo & Aptroot 2005). In Europe, besides Poland it has been reported from Austria (Hafellner & Türk 2001), Belgium (Diederich & Sérusiaux 2000), Germany (Scholz 2000), France (Aptroot *et al.* 2001), the Netherlands (Aptroot *et al.* 2004), Switzerland (Clerc 2004) and Sweden (Santesson *et al.* 2004). The species is also known from Canary Islands (Boom 2007).

SPECIMENS EXAMINED. POLAND. KOTLINA WARSZAWSKA BASIN: [ATPOL grid square De 16], Warsaw, Las Bielański Nature Reserve, forest section no. 1, 52°17'59"N, 20°57'26"E, oak-linden-hornbeam forest *Tilio-Carpinetum*, on fallen branch of *Quercus* sp., 12 June 2009, leg. D. Kubiak (OLTC L-3405); *ibid.*, forest section no. 6, 52°17'39"N, 20°57'17"E, *Tilio-Carpinetum*, on fallen branch of *Quercus robur*, 17 Oct. 2009, leg. P. Zaniewski (WA 17571, WA 17572, OLTC L-3389); *ibid.*, forest section no. 9, 52°17'20"N, 20°57'59"E, *Tilio-Carpinetum*, on fallen branch of *Quercus* sp., 30 May 2009, leg. D. Kubiak (OLTC L-3369); *ibid.*, forest section no. 11, 52°17'15"N, 20°58'00"E, *Tilio-Carpinetum*, on fallen branch of *Quercus robur*, 8 Nov. 2009, leg. P. Zaniewski (WA 17573); *ibid.*, forest section no. 12, 52°17'13"N, 20°58'16"E, *Tilio-Carpinetum*, on fallen branch of *Quercus robur*, 17 Oct. 2009, leg. P. Zaniewski (WA 17574).

ACKNOWLEDGEMENTS. We are grateful to the anonymous reviewer for valuable remarks on the manuscript.

## REFERENCES

- APTROOT A., SPARRIUS L. B., VAN HERK C. M. & DE BRUYN U. 2001. Origin and distribution of recently described lichens from the Netherlands. *Aktuelle Lichenologische Mitteilungen NF* 5: 13–25.
- APTROOT A., VAN HERK C. M., SPARRIUS L. B. & SPIER J. L. 2004. Checklist van de Nederlandse Korstmossen en korstmosparasiten. *Buxbaumia* 69: 17–55.

- APTROOT A., DIEDERICH P., VAN HERK C. M., SPIER L. & WIRTH V. 1997. *Protoparmelia hypotremella*, a new sterile corticolous species from Europe, and its lichenicolous fungi. *Lichenologist* **29**: 415–424.
- BOOM VAN DEN P. P. G. 2007. New and interesting lichenized and lichenicolous fungi from the Canary Island La Palma. *Ann. Naturhist. Mus. Wien* **108B**: 153–166.
- BRODO I. M. & APTROOT A. 2005. Corticolous species of *Protoparmelia* (lichenized Ascomycotina) in North America. *Canad. J. Bot.* **83**: 1075–1081.
- CIURCHEA M. 2009. Checklist of lichens and lichenicolous fungi of Romania. Preliminary version 1 May 2009. [http://www.biologie.uni-hamburg.de/checklists/lichens/europe/romania\\_1.htm](http://www.biologie.uni-hamburg.de/checklists/lichens/europe/romania_1.htm).
- CLERC P. 2004. Les champignons lichénisés de Suisse. Catalogue bibliographique complété par des données sur la distribution et l'écologie des espèces. *Cryptog. Helv.* **19**: 1–320.
- CZARNOTA P. & WOJNAROWICZ A. 2008. Lichens and lichenicolous fungi of the northern part of Lubań range in the Gorce Mts (Carpathians, Poland). *Ochrona Beskidów Zachodnich* **2**: 21–49 (in Polish with English summary).
- CZYŻEWSKA K. 1981. Lichen flora of Radomszczańskie Hills and their borders. *Acta Univ. Lodzi., Folia Bot.* **1**: 225–256 (in Polish with English summary).
- CZYŻEWSKA K. 2003. Lichens and lichenicolous fungi in the Bolimów Landscape Park. *Monogr. Bot.* **92**: 233–277.
- CZYŻEWSKA K. & KUKWA M. 2009. Lichenicolous fungi of Poland. A catalogue and key to species. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków.
- DIEDERICH P. & SÉRUSIAUX E. 2000. The lichens and lichenicolous fungi of Belgium and Luxembourg. An annotated checklist. Musée National d'Histoire Naturelle, Luxembourg.
- GIAVARINI V. & PURVIS O. W. 2009. *Sphinctrina* Fr. In: C. W. SMITH, A. APTROOT, B. J. COPPINS, A. FLETCHER, O. L. GILBERT, P. W. JAMES & P. A. WOLSELEY (eds.), *The lichens of Great Britain and Ireland*, pp. 847–848. The British Lichen Society, London.
- HAFELLNER J. & TÜRK R. 2001. Die lichenisierten Pilze Osterreich – eine Checkliste der bisher nachgewiesenen Arten mit Verbreitungsangaben. *Stapfia* **76**: 3–167.
- KISZKA J. & KOŚCIELNIAK R. 2006. New and rare lichen species in the Bieszczady National Park and its environs – part VIII. *Roczniki Bieszczadzkie* **14**: 135–138 (in Polish with English summary).
- KONDRATYUK S. Y., KHODOSOVTSSEV A. Y. & ZELENKO S. D. 1998. The second checklist of lichen forming, lichenicolous and allied fungi of Ukraine. Phytosociocentre, Kiev.
- KUBIAK D. 2005. Lichens and lichenicolous fungi of Olsztyn town (NE Poland). *Acta Mycol.* **40**(2): 293–332.
- KUBIAK D. 2009. Lichens of the 'Dzięktarzewo' nature reserve. *Parki Narodowe i Rezerwy Przyrody* **28**(2): 45–55 (in Polish with English summary).
- KUKWA M. 2000. *Protoparmelia hypotremella* in Poland and its distribution in Europe. *Acta Mycol.* **35**(1): 121–123.
- KUKWA M. 2005. New localities of rare and interesting lichens in Gdańsk Pomerania. Part III. *Acta Botanica Cassubica* **5**: 95–111 (in Polish with English summary).
- LLIMONA X. & HLADUN N. L. 2000. Checklist of the lichens and lichenicolous fungi of the Iberian Peninsula and Balearic Islands. *Bocconea* **14**: 1–581.
- LÖFGREN O. & TIBELL L. 1979. *Sphinctrina* in Europe. *Lichenologist* **11**: 109–137.
- SANTESSON R., MOBERG R., NORDIN A., TØNSBERG T. & VITIKAINEN O. 2004. Lichen-forming and lichenicolous fungi of Fennoscandia. Museum of Evolution, Uppsala University.
- SAXENA S., UPRETI D. K. & SHARMA N. 2007. Heavy metal accumulation in lichens growing in north side of Lucknow city, India. *J. Environ. Biol.* **28**(1): 49–51.
- SCHOLZ P. 2000. Katalog der Flechten und flechtenbewohnenden Pilze Deutschland. *Schriftenreihe für Vegetationskunde* **31**: 1–298.
- ŚLIWA L. 2006. Additions to the lichen flora of the Tatry National Park and its surroundings (Polish Carpathians). In: A. LACKOVIČOVÁ, A. GUTTOVÁ, E. LISICKÁ & P. LIZOŇ (eds), *Central European lichens – diversity and threat*, pp. 305–314. Mycotaxon Ltd., Ithaca.
- SPRIBILLE T., THOR G., BUNNELL F. L., GOWARD T. & BJÖRK C. R. 2008. Lichens on dead wood: species-substrate relationships in the epiphytic lichen floras of the Pacific Northwest and Fennoscandia. *Ecography* **31**: 741–750.
- STEIN B. 1879. Flechten. In: *Cohn's Kryptogamen Flora von Schlesien. Jahrb. Schles. Ges. Vaterl. Cult.* **2**(2): 1–400.
- SVENSSON M., JOHANSSON P. & THOR G. 2005. Lichens of wooden barns and *Pinus sylvestris* snags in Dalarna. *Ann. Bot. Fenn.* **42**: 351–363.
- SZYMCZYK R. & ZALEWSKA A. 2008. Lichens in the rural landscape of the Warmia Plain. *Acta Mycol.* **43**(2): 215–230.
- TIBELL L. 1994. Distribution patterns and dispersal strategies of Caliciales. *Bot. J. Linn. Soc.* **116**: 159–202.
- TIBELL L. 1999. Calicioid lichens and fungi. In: T. AHTI, P. M. JØRGENSEN, H. KRISTINSSON, R. MOBERG., U. SØCHTING & G. THOR (eds), *Nordic Lichen Flora. 1. Introductory Parts. Calicioid lichens and fungi*, pp. 20–94. Nordic Lichen Society, Uddevalla.
- VAN HERK C. M. 1999. Mapping of ammonia pollution with epiphytic lichens in the Netherlands. *Lichenologist* **31**: 9–2.

- VAN HERK C. M. 2002. Epiphytes on wayside trees as an indicators of eutrophication in the Netherlands. In: P. L. NIMIS, C. SCHEIDEGGER & P. A. WOLSELEY (eds), *Monitoring with Lichens – Monitoring Lichens*, pp. 285–289. Kluwer Academic Publisher, Dordrecht.
- VĚZDA A. & LIŠKA J. 1999. A catalogue of lichens of the Czech Republic. Institute of Botany, Academy of Science of Czech Republic, Průhonice (in Czech with English introduction).

Received 15 March 2010