First discovery of the European \textit{Psilocybe magica} (\textit{Agaricales, Strophariaceae}) in America

GASTÓN GUZMÁN$^1$, MACHIEL E. NOORDELOOS$^2$ and JAMES M. TRAPPE$^3$

$^1$ Instituto de Ecología, Apartado Postal 63, Xalapa 91000, Veracruz, Mexico
gaston.guzman@inecol.edu.mx

$^2$ National Herbarium of the Netherlands, P.O. Box 9514, 2300 RA Leiden, The Netherlands
noordeloos@nhn.leidenuniv.nl

$^3$ Department of Forest Ecosystems and Society, Oregon State University, Corvallis, Oregon, USA
trappej@onid.orst.edu


This paper deals with the first record of the European species \textit{Psilocybe magica} from the North American continent. It was found growing in troops among mosses in a coniferous forest, in North Cascades National Park (Washington State, U.S.A.). Its infraspecific variation and relationships with \textit{Psilocybe montana} are discussed.

Key words: fungi, systematics, non-hallucinogenic species, \textit{Psilocybe}.


V článku je publikován první název z Evropy popsaného druhu \textit{Psilocybe magica} v severní Americe. Druh byl nalezen v jehličnatém les v národním parku North Cascades (štát Washington, USA). Je diskutována variabilita druhu a jeho vztah k \textit{Psilocybe montana}.

INTRODUCTION

\textit{Psilocybe magica} Svrček (Svrček 1989) was originally described from former Czechoslovakia (Central Bohemia) and subsequently reported from Denmark, United Kingdom (Scotland), Sweden and The Netherlands (Boekhout et al. 2002, Bon and Roux 2003, Horak 2005, Noordeloos 2001). However, it was not known to occur outside Europe. In 2004 an inventory of the macrofungi of the Stehekin Watershed of the North Cascades National Park in Washington State, U.S.A., was initiated by Trappe. The headwaters of Stehekin Watershed arise at the crest of North Cascade Mountains west of the Strait of Juan de Fuca. Moisture-bearing storms from the Pacific Ocean pass through the Strait to encounter the Cascades unabated, resulting in heavy precipitation, mainly in winter. The vegetation forms a gradient from an \textit{Abies/Tsuga/Picea} forest at the headwaters to a xeric \textit{Pinus/Pseudotsuga} forest at the outlet of the Stehekin River into Lake Chelan.
Guzmán and Trappe (2005) reported new records and a new species of *Psilocybe* from Washington State, mainly from the North Cascades National Park, updating the earlier knowledge of the genus in Washington in the world monograph by Guzmán (1983) and its supplement (Guzmán 1995). The present paper deals with the first North American record of an additional *Psilocybe* species from this area, viz. *P. magica*, which was originally described from Central Europe.

**Materials and Methods**

The specimens were dried on a portable, electric, forced air food dehydrator at ca. 30 °C. Hand sections of basidiomata were mounted in a 5 % KOH solution for microscopic study. Size of the spores included measurements of the length, width and thickness. Specimens are deposited in the Herbaria of the North Cascades National Park (NCNP), Oregon State University Department of Botany (OSC), Mycological Collection of the Instituto de Ecología at Xalapa, Mexico (XAL) and the National Herbarium of the Netherlands at Leiden (L). An additional study of the toptype of *P. magica* was also considered, because it was not possible to study the holotype.

**Results**

*Psilocybe magica* Svrček, Česká Mykol. 43: 82, 1986. Figs. 1–7

Pileus 5–10 mm wide, convex, slightly viscid, hygrophanous, orangish brown, fading to pale brown. Lamellae broadly adnate with decurrent tooth, dark brown. Stipe 12–22 × 1–1.5 mm, light orangish-brown, smooth to somewhat striate and covered by scattered, small, floccose white, appressed scaley velar remnants. Basidiospores 7–9(–10) × 4.5–5 × 4–5 μm (n: 25), oblong or sub-rhomboid in face-view, subellipsoid in side-view, yellowish-brown, with 0.8–1 μm thick wall, and a wide germ pore. Basidia 20–36 × 5–6 μm, hyaline, 4-spored. Pleurocystidia absent. Cheilocystidia (18–)22–32(–35) × (5.5)6–8(–9) μm, sublageniform or tibiform, with obtuse apex, 2–5 μm wide. Subhymenium with yellow oleiferous hyphae which protrude through the hymenium, as observed also in *P. montana* (Guzmán 1983). Hymenophoral trama regular to subregular, with hyphae and subcellular elements, 5–20 μm wide, with incrusted walls. Pileipellis as a ixocutis 25–60 μm thick or more, made up of hyaline 2–4 μm wide hyphae. Subpellis with inflated elements, 8–18 μm wide, incrusted with yellowish-brown pigment. Clamp connections present.

Habitat. Terrestrial, gregarious in troops, among mosses, in a clearing of a xeric *Pinus ponderosa-Pseudotsuga menziesii* forest.
DISCUSSION

In our material no veil remnants were observed on the pileus. This seems contradictory with the observations of Svrček (1989) and Noordeloos (2001) who described white appendiculate scales or flocks near and along the pileal margin, which disappear with age. However, the presence of velar remnants on the stipe

---

surface in our material are indicative that veil was present in young stages. Heavy rains in the days preceding collection probably washed off the veil remnants on the pilei and left only fragments on the stipe. *Psilocybe magica* is very close to *Psilocybe montana* (Pers.: Fr.) P. Kumm., but the two species differ mainly in the shape and size of cheilocystidia, which in *P. montana* are narrowly lageniform, with the apex 2–3.5 μm wide, whereas *P. magica* has cheilocystidia variable from sublageniform or tibiiform to flexuose-cylindric or moniliform, with apex 2–5(–8) μm wide, as observed in the toptotype and in the descriptions by Svrček (1989) and Noordeloos (2001) (see figs. 2, 4, 6, and 7). Furthermore, Noordeloos (2001) stressed the appendiculate veil on the cap margin of *P. magica* as a good field character to distinguish it from *P. montana*. Both *P. magica* and *P. montana* belong to section *Psilocybe* in the current classification of the genus (Guzmán 1983, 1995; Noordeloos 2001). None of them stain blue when bruised and are therefore considered non-hallucinogenic fungi according to the criterion of Guzmán (1983).

ACKNOWLEDGEMENTS

The authors wish to thank Etelvina Gándara and Florencia Ramírez-Guillén (both in XAL) for their assistance in the laboratory, and Laura Guzmán-Dávalos (IBUG) for her critical presubmission review of this paper. We thank also the Curator of PRM Herbarium for loan of important collections of *Psilocybe*. Manuel Hernández and Juan Lara Carmona, from XAL, supported with computation and duties in the herbarium, respectively. Trappe’s participation was supported in part by the USFS Pacific Northwest Research Station and a grant from the North Cascades National Park. Regina Rochefort and Kerry Olson of the Park were especially helpful in facilitating the field work.

REFERENCES


