

## GEOGLOSSACEOUS FUNGI IN SLOVAKIA IV. *Geoglossum alveolatum*, a new species for the country

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**Key words:** Ascomycetes, biodiversity

### INTRODUCTION

Since the rediscovery of *Trichoglossum hirsutum* in Slovakia (Mráz, 1997), several geoglossaceous fungi new in this country have been collected and identified. In *Trichoglossum*, *T. walteri* was reported in 2001 (Ripková & al., 2007) and *T. variabile* in 2005 (Kučera & al., 2008). Our research of grassland fungi in Slovakia resulted in discovery of quite rare *Trichoglossum octopartitum* (Kučera & al., 2010). We referred also about members of *Microglossum* (Ripková & Kučera, 2006; Kučera & al., 2008) and *Geoglossum* (Kučera & Lizoň, 2012). Now we would like to draw attention to *Geoglossum alveolatum*, another new member of Slovak mycoflora.

### MATERIAL AND METHODS

The macro-morphological characters of collections were observed in fresh material. The micro-morphological structures were observed in dried material using a light microscope with an oil immersion lens. Fragments of fruit-bodies were examined in tap water, 5% KOH, Melzer's reagent and a solution of Congo red in ammonia. Values of micro-morphological characters were evaluated as average plus and minus standard deviation of 30 measurements for each character (minimum/maximum values of the measurements are in parenthesis). Thirty ascospores per herbarium specimen were measured. Identification and nomenclature is based on Durand (1908), Mains (1954) and Nannfeldt (1942). Locality is georeferenced and the coordinates are in WGS 84 system. Description is based on voucher specimen that is deposited in the herbarium of the Institute of Botany, Slovak Academy of Sciences (SAV).

### RESULTS

***Geoglossum alveolatum*** (Rehm) E. J. Durand

Ascocarps (16)19–28 mm high, clavate, stipitate, scattered, solitary. Fertile part (5)7–12(15) × 2–4 mm, lanceolate to mace-shaped, apex obtuse, black, vertically grooved, glabrous. Sterile part (10)13–22 × 1–2 mm, delimited from the fertile part, cylindrical, slender or robust, when fresh conspicuously hairy (dark brown setose septate hairs in tufts arising

from superficial hyphae in upper part of the stipe), brownish black to black [examined 6 fruitbodies]. Asci (182)185–198(206) × (16)18–20 μm, clavate, apex rounded, pore blue in Melzer's reagent, narrowed below, 8-spored. Spores (77)85–88(95) × 5(6) μm, straight or slightly curved, sometimes tapering towards one end, at first non-septate, than 7-septate, finally 11–14 septate, translucent, hyalin, finally in some asci becoming pale brown or fuliginous. Paraphyses pale brown in the apical part, remotely septate, immersed in brown amorphous mater, apical cells usually abruptly elliptical to globose thickened, 16–25 × 6–8 μm.

HABITAT. On wooden detrit, in mixed forest.

DISTRIBUTION. North America, India, Japan, Papua New Guinea?, Asia (Durand, 1908; Spooner, 1987; Mains, 1954; Imai, 1941).

SPECIMEN STUDIED. Slovakia, Spišské vrchy Mts., Bijacovce, ca 2 km NNE from the village, mixed forest, wooden detrit, Q 6990d, N49°02'30.02" E20°48'14.09", alt. 748 m, 24. 10. 2007, V. Kučera (SAV 10530).

#### DISCUSSION

Taxon was described by Rehm (1904) based on Durand's specimen from the USA. Original material is deposited in Rehm herbarium in Stockholm (Nannfeldt, 1947) and isotype is held in the herbarium CUP, Cornell University, Ithaca, USA (Mains, 1954).

So far this is the only Slovak *Geoglossum* with hyaline spores, setose hairs on the stipe and paraphyses immersed in a brown matter. According to Durand (1908) sometimes is possible to find brown or fuliginous spores in some asci but are rare. The number of compartments is up to 15. It grows in the woods.

According to recently published data on *Geoglossum* in Slovakia (Kučera et al., 2012), *G. alveolatum* is macroscopically differentiated by brown setose hairs on the stipe (at least in the upper part) and by growth on decomposed wood. Microscopical differences are mainly in spore septation. *Geoglossum alveolatum* has spores with septas up to 15, *G. glabrum* – 7, *G. umbratile* – 7, *G. cookeanum* – 7, *G. glutinosum* – 7, *G. fallax* – up to 12. *G. alveolatum* has mainly hyaline spores but in other Slovak geoglossaceous fungi spores are fuliginous or brown. Visit of the collection site in 2011 brought no collections do to extremely dry period.

This is not only first record for Slovakia but probably also for Europe. *Geoglossum alveolatum* is a rare and an endangered species in Slovakia and should be included in the next edition of the Red list of Slovak fungi (for older versions, see Lizoň, 2001) in the category "EN". Fungus was

growing in mixed forest which might be a pasture before (with old *Juniperus communis* shrubs). Fungus was accompanied by *Trichoglossum hirsutum* and *Clavaria* sp.

RELATED SPECIES. According to Durand (1908), Mains (1954) and Nannfeldt (1942) *Geoglossum intermedium*, *G. elongatum* and *G. alveolatum* have similar tufts of setose hairs. The main differences from our species are in the spore size (*G. elongatum* and *G. intermedium* have shorter spores) and in the number of septa (*G. elongatum* and *G. velugelianum* have less septate spores). *Geoglossum starbaeckii* lacks brown matter around paraphyses. None of the related species have been mentioned from Slovakia.

#### ACKNOWLEDGEMENTS

I would like to thank Slavomír Adamčík and Soňa Jančovičová for assistance in the field and Pavel Lizoň for commenting the draft of the manuscript. This study was supported by grant VEGA 2/0062/10.

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*Geoglossum alveolatum* je zriedkavý druh, pred rokom 2007 na Slovensku neznámy. Patrí medzi vzácne a ohrozené druhy našej mykoflóry. Rástol na odumretom dreve v zmiešanom lese pri Bijacovciach na Spiši.