

**Geoglossoid fungi in Slovakia II.
Trichoglossum octopartitum, a new species for the country**

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Some recent Slovak collections of *Trichoglossum* were identified as the rare species *T. octopartitum*. The species had not been reported before from Slovakia or central Europe. The identification was confirmed by comparing the collections with the type material originating from Belize.

Key words: Ascomycetes, grassland fungi, biodiversity, description, taxonomy.

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Niektoré recentné slovenské zbery rodu *Trichoglossum* sme určili ako *T. octopartitum*. Tento druh nebol doteraz udávaný zo Slovenska, ani zo strednej Európy. Určenie bolo overené aj porovnaním s typovým materiálom z Belize.

INTRODUCTION

Since the rediscovery of *Trichoglossum hirsutum* (Pers.) Boud. in 1994 (Mráz 1997), several geoglossoid fungi new to Slovakia have been collected and identified. In *Trichoglossum*, for example, *Trichoglossum walteri* (Berk.) E.J. Durand was reported in 2001 (Ripková et al. 2007) and *Trichoglossum variabile* (E.J. Durand) Nannf. in 2005 (Kučera et al. 2008). Our research of grassland fungi in Slovakia resulted in the discovery of the uncommon *Trichoglossum octopartitum* Mains, which is presented here and compared with similar taxa reported from Slovakia.

MATERIAL AND METHODS

The macro-morphological characters of our 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 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 (with 10th and 90th percentiles of the measurements in parenthesis). Thirty ascospores per herbarium specimen were measured.

Identification is based on monographs and keys by Mains (1940, 1954), Maas Geesteranus (1965), Gamundí (1979) and Læssøe and Elborne (1984). Acronyms for herbaria follow Index herbariorum (Holmgren et al. 1990). The specimens collected in Slovakia are deposited in the SAV herbarium. Position of the localities is presented by geographical coordinates and quadrant (Q) of the Central European grid mapping system (UTM). All descriptions are based on studied specimens.

RESULTS

Trichoglossum octopartitum Mains 1940, Amer. J. Bot. 27: 325.

Holotype: Belize, San Agustín, E. B. Mains (MICH 14435).

Description of Slovak collections. Ascocarps (20–)22–38(–39) mm high, clavate, stipitate, slender, scattered, solitary. Fertile part (8–)7–14(–15) × (2–)2.3–3(–4) mm, flattened clavate to lanceolate, sometimes curved, black or grey-black, occasionally vertically grooved, densely setose. Sterile part (10–)14–25(–27) × (1–)1.4–2.5 mm, clearly delimited, cylindrical or flexuous and/or compressed, concolorous with fertile part, densely setose [32 fruitbodies examined]. Hymenial setae brown (100–)130–206(–230) × 6–8 µm, acuminate, thick-walled, tapered at the base, dark brown, sparsely septate, sometimes protruding above hymenium. Asci (185–)188–210(–228) × 17–21 µm, 8-spored, cylindrical-clavate, narrowed below, apex rounded, their pores bluing in Melzer's reagent. Ascospores (99–)101–125(–138) × 5–6 µm, brown, fusoid to fusoid-clavate, soon pigmented, usually 7-septate. Paraphyses hyaline, filiform, 1.5–2.5 µm in diam., septate, when clavate the apical cell somewhat enlarged, 15–18 × 2.5–5.5 µm, straight to hooked at the apex.

Material studied

British Honduras [now Belize]

San Agustín, [distr.] El Cayo, on ground, 7 Aug. 1936, E. B. Mains (MICH 14435, holotype).



Fig. 1. *Trichoglossum octopartitum*, Slovakia, Oravská vrchovina Mts., Dolný Kubín – Srňacie, 27 Sept. 2009, leg. M. Švidroň (SAV 7561). Photo M. Švidroň.

Slovakia

Malé Karpaty Mts., village of Sološnica, mown meadow, c. 1.5 km SE of the village church, alt. c. 250 m, coord. 48° 27' 25" N, 17° 14' 42" E, Q 7569a, in grass, 26 Aug. 2008, leg. and det. V. Kučera (SAV 7559). – *ibid.*, 3 Sept. 2008, leg. and det. V. Kučera (SAV 7560).

Oravská vrchovina Mts., Dolný Kubín – Srňacie, c. 300 m S of the chateau, alt. c. 670 m, 49° 11' 57" N, 19° 21' 59" E, Q 6882a, occasionally grazed meadow, 27 Sept. 2009, leg. M. Švidroň, det. V. Kučera (SAV 7561).

DISCUSSION

Distribution and ecology

The species has been reported from all continents: North and South America – e.g. USA (Mains 1954, Seaver 1951), Belize (Mains 1940, Dennis 1970), Trinidad (Dennis 1970), Argentina (Gamundí 1979), Asia – e.g. China (Zhuang 1998), India, Pakistan (Maas Geesteranus 1965), Australia – New Zealand (Anon. 2010), Europe – Denmark (Læssøe and Elborne 1984), Germany (Schrimpl 2009), Slovakia (this paper).

The species occurs in managed meadows and is treated as a grassland fungus in Slovakia. The first site (Sološnica) represents a mown meadow, the second one (Dolný Kubín) is an occasional pasture.

Trichoglossum octopartitum is rare and probably an endangered species in Slovakia and might be included in the next edition of the Red list of Slovak fungi (for older versions, see Lizoň 2001) in the category “EN”.

According to the current Slovak collections, *Trichoglossum octopartitum* occurs in unfertilised meadows and pastures, whereas *T. walteri* prefers wet habitats such as peat-bogs and wet meadows (Ripková et al. 2007, specimens nos. 5967, 5954, and 8824 in the SAV herbarium). *T. variabile* occurs in unfertilised mesophilous meadows (Kučera et al. 2008, specimens nos. 0203 and 0204 in the SAV herbarium). *T. hirsutum* has probably no specific habitat requirements – it grows in peat-bogs, mesophilous and wet meadows (Kučera et al. 2008, Ripková et al. 2007, Antonín et al. 1995, Mráz 1997).

Habitat loss is the primary threat to most species of geoglossoid fungi. All of them are sensitive to environmental changes, which may cause their decrease. Despite the fact that they are listed as endangered in red lists, extensive field research focused on this group in Slovakia has led to the discovery of several taxa new for the country (Kučera et al. 2008, Ripková et al. 2007).

Notes on taxonomy

Mains (1940), in his description of *Trichoglossum octopartitum*, gives sizes of micro-morphological structures which are a little different than the ones we measured on the type material – asci 175–200 × 18–20 µm, setae up to 240 µm, ascospores 100–140 µm. Our measurements on part of the type (3 fruitbodies available) were as follows: asci 156–180 × 19–21 µm, setae 100–185 µm, ascospores 100–120 µm. The sizes measured on Slovak collections fit the original description (Mains 1940).

Many characters are too variable for a clear distinction of the members of *Trichoglossum*. After long-time studies, Durand (1908) stated that form and size of spores and number of their septa are the most stable characters for *Trichoglossum* species delimitation. Characters of the Slovak species are listed in a comparative table (Tab. 1).

	habitat	number of septa in spores	ascospore length (µm)	ascospore width (µm)
<i>T. hirsutum</i>	+/- indifferent	usually 15	80–170	5–7
<i>T. variabile</i>	mown meadows	(7)9–12(14)	(87.8–)98.4–117.1(–127.5)	(5–)5.2–6.2(–7)
<i>T. walteri</i>	wet meadows and peat-bogs	7	(77–)81–97(–110)	4–5.5(–6)
<i>T. octopartitum</i>	mown and/or occasionally grazed meadow	7	(99–)101–121(–135)	5–6

Tab. 1. *Trichoglossum* species in Slovakia. Spore data for *T. variabile* and *T. walteri* after Kučera et al. (2008), for *T. hirsutum* after Mráz (1997).

Trichoglossum octopartitum, *T. confusum* (Durand 1921), *T. kunmingense* (Tai 1944), *T. walteri* (Durand 1908), *T. peruvianum* (Cash 1958), and *T. hirsutum* var. *doassansii* (Patouillard 1909) form a group characterised by having 7-septate spores. Some authors (Mains 1954, Rifai 1963, Spooner 1987) assume that all these species should be treated as one taxon.

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