

**DISTRIBUTION OF SOLENOPSORA CANDICANS
(LICHEN-FORMING FUNGI, CATILLARIACEAE)
IN HUNGARY**

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Solenopsora candicans was an overlooked lichen species in Hungary. The two old localities were revisited (one of them could be confirmed) and five new occurrences were discovered. Its current distribution in Hungary is presented and discussed.

Key words: biodiversity, lichen-forming fungi, *Solenopsora candicans*

INTRODUCTION

Solenopsora A. Massal., a genus of lichen-forming fungi with around 20 species worldwide, has a circumpolar distribution. Altogether 9 taxa have been recognized and accepted recently from Europe (*S. candicans*, *S. carpatica*, *S. cesatii* var. *cesatii*, *S. cesatii* var. *grisea*, *S. holophaea*, *S. liparina*, *S. marina*, *S. olivacea*, *S. vulturiensis*) (Bielczyk *et al.* 2004, Gilbert *et al.* 2009, Guttová *et al.* 2006, Kotlov 2004, Nimis and Martellos 2008). *Solenopsora candicans* (for detail description see e.g. Gilbert *et al.* 2009) shows a sub-Mediterranean-sub-Atlantic distribution in Europe with two extensions into the continent: 1) to Germany through France, Belgium and Luxembourg, where it occupies suboceanic habitats (Diederich and Sérusiaux 2000, Schindler 1937); 2) to the Carpathian Basin up to the Western Carpathians in Slovakia (via Croatia and Hungary), where it grows on calcareous conglomerate and dolomite rocks (Guttová 2000, Guttová *et al.* 2006).

In Hungary the first *Solenopsora candicans* specimen was found in Mt Nagy-Szénás (in Buda Mts near Budapest) by Vilmos Gyelnik in 1934. Further

two specimens were collected in the Keszthely Mts (“Rezi csere”) by Ödön Szatala jr in 1947. These records have never been published, either by Gyelnik, Szatala or Verseghy (1994). The occurrence of this taxon in Hungary was unknown until the discovery of it at another locality in the Keszthely Mts in 2007 (Bauer *et al.* 2008). Visiting habitats potentially suitable for *S. candicans*, further localities have been found since that time. All data currently known from Hungary are summarised.

MATERIAL AND METHODS

The recent field work was done in the period of 2010–2011. Specimens were deposited in the lichen herbaria BP and SAV. Coordinates were measured by Garmin eTrex Vista HCx handheld GPS receiver using WGS 84. The distribution map was drawn by Quantum GIS (QGIS) v. 1.6.0., based on the central European grid system (Borhidi 1984, Niklfeld 1971).

RESULTS AND DISCUSSION

Solenopsora candicans was a species not listed from Hungary until 2007 (e.g. Verseghy 1994) when it was found in the Keszthely and Bakony Mts (Bauer *et al.* 2008). During identification of the new collections we found three

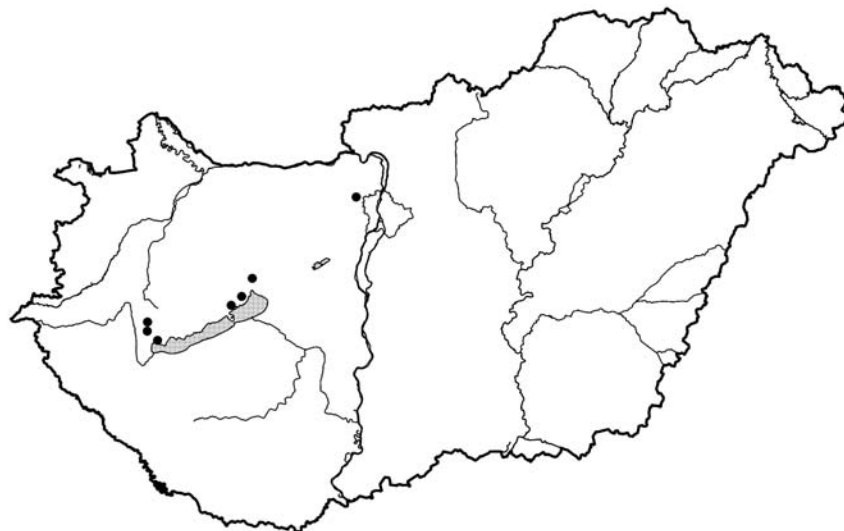


Fig. 1. Distribution map of *Solenopsora candicans* in Hungary

unpublished herbarium specimens (from two localities). We made several small expeditions to the old collecting localities and also to other places which might serve as potential habitat for *Solenopsora candicans*. As a result of these field excursions one of the old localities were confirmed (Mt Nagy-Szénás) and five

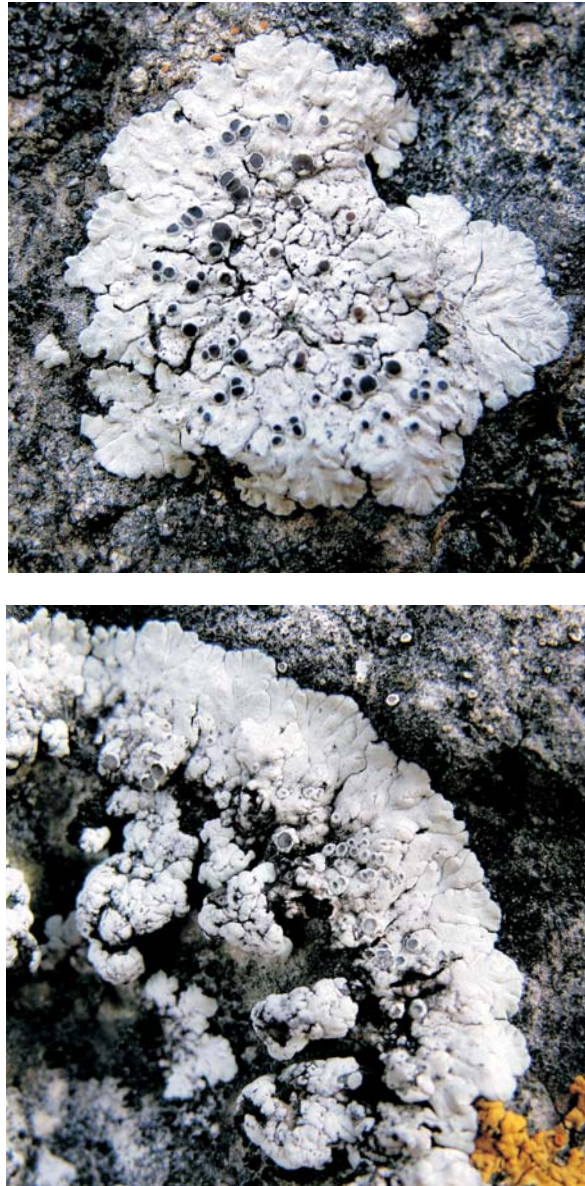


Fig. 2. Thalli of *Solenopsora candicans* in the Balaton-felvidék

further localities were discovered in four orographical units (Bakony, Balatonfelvidék, Budai-hegység, Keszthelyi-hegység) of the Transdanubian Mountain Range. A complete list of the localities and a distribution map (Fig. 1) are given in the followings.

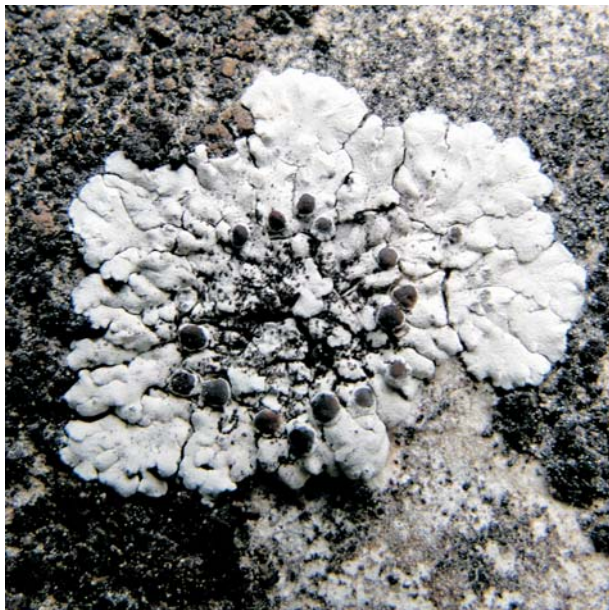


Fig. 3. Thalli of *Solenopsora candidans* in the Keszthely Mts (Rezi: Púpos-hegy)

Bakony Mts: Hajmáskér: Berek alja, dolomitic plateau ca 1.5 km SW of the village. Lat.: 47° 8' 3.80" N; long.: 18° 0' 2.00" E; alt.: ca 190 m a.s.l. Leg.: Farkas, E. and Lőkös, L., 27.07.2007. [BP]; *ibid.* Lat.: 47° 8' 4.90" N; long.: 18° 0' 4.90" E; alt.: ca 190 m a.s.l. Leg.: Farkas, E., Guttová, A., Lőkös, L. and Molnár, K., 13.05.2010. [BP, SAV].

Balaton-felvidék: Szentkirályszabadja: Kő-hegy, Ember-szikla. Lat.: 47° 2' 57.1" N; long.: 17° 59' 10.2" E; alt.: 235 m a.s.l. Leg.: Farkas, E. and Lőkös, L., 13.11.2010. [BP]. – Balatonfüred: Koloska-sziklák. Lat.: 46° 59' 27.47" N; long.: 17° 53' 3.42" E; alt.: 265 m a.s.l. Leg.: Farkas, E. and Lőkös, L., 24.04.2011. [BP] (Fig. 2).

Buda Mts: Inter pagos Pilisszentiván et Nagykovácsi, in montibus Nagyszénás, calcareicola. Leg.: Gyelnik, V., 15.04.1934. [BP 20417]. – Pilisszentiván: Nagyszénás. Lat.: 47° 35' 42.9" N; long.: 18° 52' 50.3" E; alt.: 380 m a.s.l. Leg.: Farkas, E. and Lőkös, L., 12.03.2011. [BP]. – Nagykovácsi: Nagyszénás. Lat.: 47° 35' 40.0" N; long.: 18° 52' 41.4" E; alt.: 450 m a.s.l. Leg.: Farkas, E. and Lőkös, L., 12.03.2011. [BP].

Keszthely Mts: Gyenesdiás: Kő-mell. Lat.: 46° 47' 03.2" N; long.: 17° 17' 17.0" E; alt.: 165 m a.s.l. Leg.: Bauer, N. and Lőkös, L., 15.06.2007. [BP]; *ibid.*



Fig. 4. Typical habitats for *Solenopsora candicans* (left = Balaton-felvidék: Koloska-sziklák, right = Buda Mts: Mt Nagyszénás)

Leg.: Farkas, E., Guttová, A., Lőkös, L. and Molnár, K., 11.05.2010. [BP, SAV]. – Rezi: Púpos-hegy, nyugati nyúlvány (western extension). Lat.: 46° 51' 58.8" N; long.: 17° 13' 21.3" E; alt.: 280 m a.s.l. Leg.: Farkas, E., Guttová, A., Lőkös, L. and Molnár, K., 11.05.2010. [BP, SAV] (Fig. 3). – Rezi: in collibus Rezi csere, ad saxa dolomitica. Leg.: Szatala, Ö. jun., 14.07.1947. [BP 7118, BP 20418].

To our recent knowledge, *Solenopsora candicans* has the richest populations at the northern side of Lake Balaton, especially in the Keszthely Mts, slightly decreasing in the Bakony Mts and Balaton-felvidék, and becoming quite rare in the Buda Mts. In Hungary it grows at low elevations from ca 190 m to 280 m a.s.l., on shaded (in most cases by planted Austrian Pine), more or less vertical, north-facing, calcareous (dolomite or limestone) rock faces of cliffs, boulders or rocks in almost all of its current Hungarian localities (Fig. 4). In Bakony Mts it interestingly grows also on relatively small rocks (up to 20 cm in diameter), semi-immersed in the soil. Usually it prefers those habitats where the lichen species *Caloplaca cirrochroa*, *C. flavescens*, *Dirina stenhammarii*, *Gyalecta jenensis*, *Lecidella stigmatea*, *Protoblastenia rupestris*, *Solorina saccata* and the alga species *Trentepohlia aurea* also occur. These have restricted occurrence in Hungary due to the limited availability of substrates.

These habitats on the northern, rocky slopes of calcareous hills in the Bakony, Balaton-felvidék, Buda and Keszthely Mts are mostly covered by the mixed karst forests (*Fago-Ornetum*) and rocky grassland associations (*Festuco pallenti-Brometum pannonici*, *Seslerietum sadlerianae*). These associations are usually considered to be rich in sub-Mediterranean elements, like *Asphodelus albus*, *Coronilla emerus*, *Daphne laureola*, *Dentaria trifolia*, *Himantoglossum adriaticum*, *Lathyrus venetus*, *Malva alcea*, *Scilla elisae*, *Ruscus aculeatus*, *R. hypoglossum*, *Tamus communis*, many of them reach the northern border of their distributional area here in the Transdanubian Mountain Range.

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