

## PYRENOLICHENS OF THE HUNGARIAN LICHEN FLORA II *SARCOPYRENIA GIBBA* (NYL.) NYL. NEW TO HUNGARY

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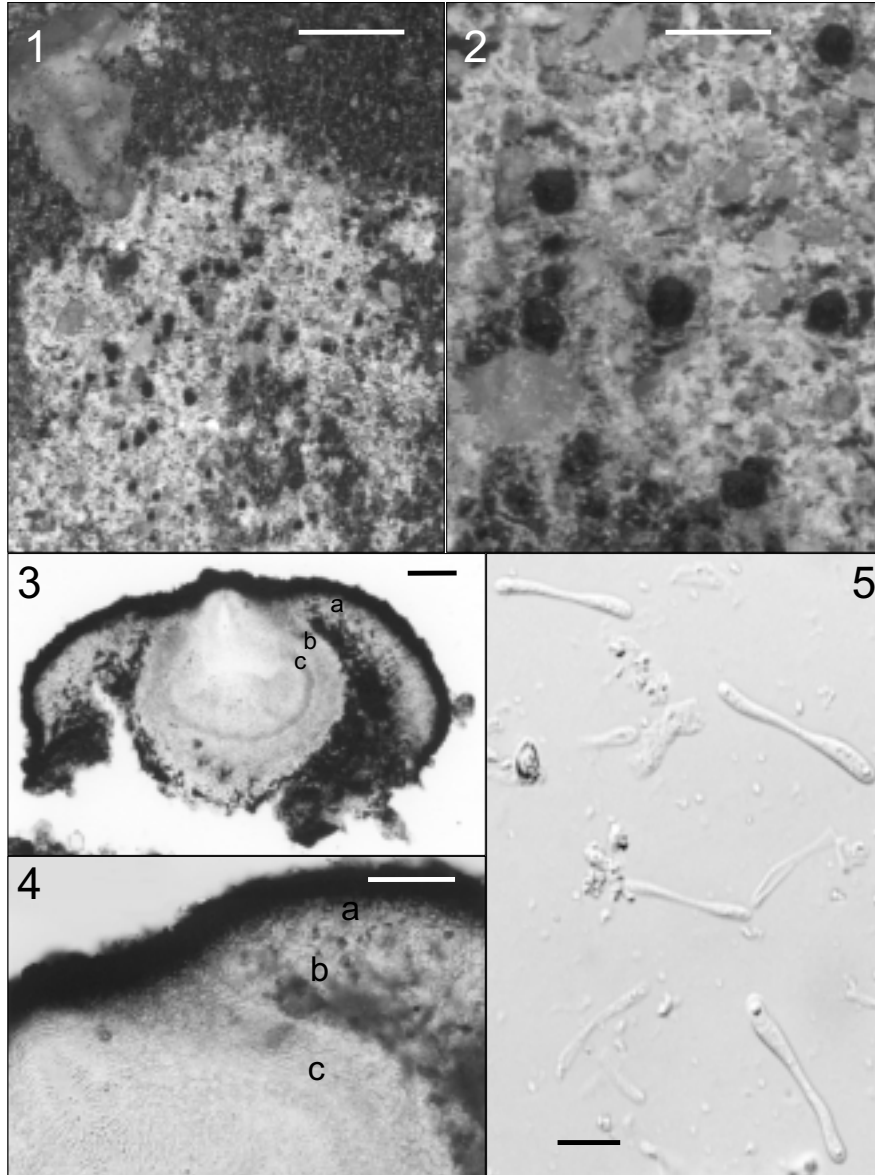
*Sarcopyrenia gibba* was discovered as new to Hungary recently. Specimens were collected throughout the country at 11 localities mainly on anthropogenic substrates (concrete, asbestos roof, stone walls, etc.) from 1982. The floristically new species seems to be spreading in Hungary probably due to the effect of urbanisation.

Key words: Hungary, pyrenolichens, *Sarcopyrenia gibba*

### INTRODUCTION

The genus *Sarcopyrenia* including 7 lichenicolous species found in Europe, North Africa and Northern America (Navarro-Rosinés and Hladun 1990, Aguirre-Hudson 1991). It was separated from the genus *Verrucaria* by Nylander in 1857 (Nylander 1857, 1858). The three-layered wall structure of the perithecium is unique among pyrenocarpous lichens. The type species, *S. gibba* (as *Verrucaria gibba*) was collected in Algeria (Nylander 1853, 1854). The level of lichenisation is discussed in this genus. Most of the recent publications mention *Sarcopyrenia* species among the lichen parasites (Navarro-Rosinés and Hladun 1990, Aguirre-Hudson 1991, Türk and Poelt 1993).

Following the traditions and the Ainsworth and Bisby's Dictionary of the Fungi (Kirk *et al.* 2001) we treat *S. gibba* among pyrenolichens as a crustose lichen living on crustose lichens among natural conditions on calcareous rocks. It colonises also anthropogenic substrates. Its thallus seems to be an uncolonised patch among other lichens growing on asbestos roof or on concrete walls (Figs 1–2). The endolithic thallus is much better seen by the contrast with other thalli. This feature is explained by allelopathic effects (Purvis *et al.* 1992).



Figs 1–5. *Sarcopyrenia gibba*. – 1 = Thallus of *Sarcopyrenia gibba* (Miskolc 1999, BP 91424) (bar = 5 mm). – 2 = Thallus detail of *Sarcopyrenia gibba* with perithecia (Miskolc 1999, BP 91424) (bar = 2 mm). – 3 = Cross-section of the perithecium (bar = 100 µm). a = outer wall of the excipulum of thick-walled, isodiametric cells, b = middle wall of the excipulum of thin-walled, isodiametric cells, c = inner wall of the excipulum of laterally compressed cells (Gödöllő 2001, BP 91408). – 4 = Cross section of the perithecium, detail (bar = 50 µm). a, b, c – see Fig. 3. (Gödöllő 2001, BP 91408). – 5 = Ascospores (Gödöllő 2001, BP 91408) (bar = 10 µm)

*Sarcopyrenia gibba* (Nyl.) Nyl.

*Verrucaria gibba* Nylander 1853, Ann. sci. nat., ser. 3, Bot. 20: 315. – *Sarcopyrenia gibba* (Nyl.) Nyl. 1857, Mém. Soc. Impér. scienc. nat. Cherbourg 5: 337. – *Leptorhaphis gibba* (Nyl.) Boist. 1903, Nouv. Flore Lich., Part 2, p. 287. – *Sarcopyreniomyces gibbae* Cif. et Tomas. 1953, Atti Ist. bot. Univ. Lab. crittog. Pavia, sér. 5, 10(1): 32, 60.

Thallus crustose, immersed, inconspicuous. Perithecia simple, black, hemispherical with papillate ostiole, superficial, scattered, wall of the perithecia 3-layered (Figs 3–4). Asci 8-spored. Ascospores  $20\text{--}42.5\text{ }\mu\text{m} \times 3\text{--}4.5\text{ }\mu\text{m}$ , simple, colourless, cylindrical-vermiform, slightly swollen (clavate) at both ends (Fig. 5). Specimens were found throughout the country at 11 localities (see List of localities, Fig. 6). All Hungarian specimens seem to belong to var. *geisleri* (cf. Navarro-Rosinés and Hladun 1990).

## List of localities in Hungary

1. Balatonvilágos: Balatonvilágospuszta (Tsz-major) közelében, "Belső-Varga-telek", romos épület palatetőjéről, leg. Farkas, E. & Lőkös, L., 1982.X.17. [VBI 8205/A]
2. Aggtelek: Camping, 27. sz. faház hullámpala tetőjéről, leg. Lőkös, L., 1999.IV.25. [BP 91409]

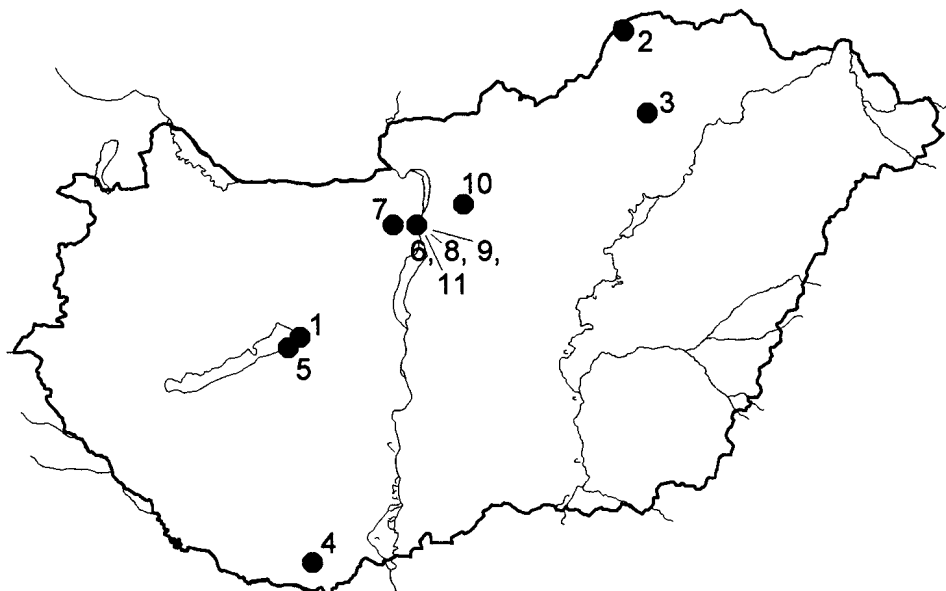


Fig. 6. Distribution of *Sarcopyrenia gibba* in Hungary (see numbers in List of localities)

3. Miskolc: Diósgyőri vár, Ny-i oldali kőkerítés vakolatáról, leg.: Farkas, E., Lőkös, L. & Zagyva, A., 1999.V.9. [BP 91424]
4. Siklós: Máriagyűd felett ca 0,5 km-re É-ra, Felső-legelő, a kék turistajel mentén, nyílt sziklagyepben, alt. ca. 300 m, mészkőről, leg. Lőkös, L., 2000.V.5. [BP 90813]
5. Balatonvilágos: a Tanács utcai kilátónál a Csók István utcát és a Zrínyi Miklós utcát összekötő betonlépcsőről, ca. 150 m s. m., leg.: Lőkös, L. & Lőkös, D., 2000.IX.16. [BP 90526]
6. Budapest: II. kerület, Zöldmáli lejtő 5, betonkerítésen, Lőkös, L., 2001. II.10. (obs.)
7. Budakeszi: Fekete-hegyek, Szarvas-árok, "Sziklafal", az "Erzsébet erdőszlaktól" ca 1.5 km-re ÉK-re, kitett mészkősziklafalon, Lőkös, L., 2001.V.4. [BP 91081]
8. Budapest: II. kerület, Zöldkő utca 17, betonkerítésen, Lőkös, L., 2001. IX.29. (obs.)
9. Budapest: II. kerület, Cseppkő utca 23/b, betonjárdáról, leg.: Lőkös, L., 2001.IX.29. [BP 91410]
10. Gödöllő: Babatpuszta, az 1–2. sz. babati tónál, betonvályúról, leg.: Lőkös, L. & Lőkös, D., 2001.V.26. [BP 91408]
11. Budapest, III. kerület, Tábor-hegy, Kőtaraj, mészkőszikláról, Lőkös, L., 2003. [BP 91411]

## DISCUSSION

The presence of *S. gibba* was unknown from Hungary, not mentioned in either the lichenological, or the floristical literature (Hazslinszky 1884, Szatala 1927, Verseghegy 1994). The first Hungarian specimen was collected on asbestos roof of a ruinous old building in Balatonvilágos in 1982.

In 1999 two further occurrences were detected in Aggtelek (on asbestos roof) and in Miskolc (on mortar in the wall around the Diósgyőr Castle). All these three places were in sunny, exposed situation, frequently visited by birds. Later *S. gibba* was found also in other parts of Hungary: Budai-hegység, Villányi-hegység, Gödöllői-dombság (Babatpuszta). Altogether 11 localities are known (Fig. 6). Most of them were collected from anthropogenic substrates. Thalli of *S. gibba* were also found in natural conditions on limestone rocks in open rocky grassland vegetation (Budai-hegység, Villányi-hegység). The species is associated with various lichen species, among them most frequently: *Candelariella aurella*, *Lecanora dispersa*, *Rinodina bischoffii*, *Verrucaria nigrescens*, etc. The number of *Sarcopyrenia gibba* records is increasing continuously in the last decades. The species seems to be spreading in Hungary. It can be explained by the effect of urbanisation, since the anthropogenic substrates are now widely available throughout the country. From these habitats natural and seminatural surfaces might be colonised.

*S. gibba* occurs in Austria (Türk and Poelt 1993) of the neighbouring countries only, while it is missing from Slovakia (Pišút *et al.* 1993), Ukraine (Konratyuk *et al.* 1998), Romania (Ciurchea 1998), Serbia, Croatia (Kušan 1953)

and Slovenia (Suppan *et al.* 2000). It may be overlooked so far and will be found in other countries similarly to our results.

Two varieties of *S. gibba* are separated on the basis of ascospore morphology (Navarro-Rosinés and Hladun 1990). *S. gibba* var. *gibba* is characterised by flexuose, twisted, coiling ascospores not found in our material. All the Hungarian specimens seems to belong to var. *geisleri* producing elongated ascospores swollen at both ends, however much shorter ascospores (of *ca* 20 µm) also occur in our material than the length mentioned in the literature. Since no other species is known in Hungary with similar ascospore shape (morphology), it makes the identification easier. It would be interesting to know more about the distribution of the two varieties to be able to find out more about the ecological role of the different types of the ascospores.

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