

**Myriosclerotinia caricis-ampullaceae on Carex rostrata and
C. lasiocarpa – the first records for Austria, and two further
Austrian localities for Lanzia henningsiana**

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Krisai-Greilhuber, I. (1996): *Myriosclerotinia caricis-ampullaceae* on *Carex rostrata*: the first records for Austria and two further Austrian localities for *Lanzia henningsiana*. – *Czech Mycol.* 48: 265–271

The first Austrian records of *Myriosclerotinia caricis-ampullaceae* are presented. It is a northerly distributed species, rare in Central Europe, where only two localities in the Czech Republic are hitherto known. A detailed description of the Austrian collection is given, and the ecology and distribution of the species are discussed. Further, two new Austrian localities for *Lanzia henningsiana* are given.

Key words: Ascomycetes, Sclerotiniaceae, *Myriosclerotinia caricis-ampullaceae*, *Lanzia henningsiana*, Austrian mycoflora.

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Jsou publikovány první rakouské nálezy *Myriosclerotinia caricis-ampullaceae*. Jedná se o druh se severským rozšířením, vzácný ve střední Evropě, kde jsou doposud známy pouze dvě lokality z České republiky. Rakouské sběry jsou detailně popsány a je diskutována ekologie, rozšíření a možnosti ochrany tohoto druhu. Rovněž jsou publikovány dvě nové rakouské lokality *Lanzia henningsiana*.

INTRODUCTION

Fungal species composition of bogs mostly is very characteristic, but rather uniform worldwide. In Austrian bogs, for instance, *Dermocybe palustris* (Moser) Moser, *D. sphagneti* (Orton) Moser, *Galerina paludosa* (Fr.) Kühner, *G. tibiicystis* (G. F. Atk.) Kühner, *Hygrocybe coccineocrenata* (Orton) Moser, *Omphalina oniscus* (Fr.: Fr.) Quél., *O. sphagnicola* (Berk.) Moser and *Russula paludosa* Britzelm., are very typical and common fungi, to mention some of these (see also Einhellinger 1976, 1977; Favre 1948; Krisai I. 1987). So it was rather surprising to find a Sclerotiniaceae in June 1994 and 1995 quite abundantly, which proved to be the very rare *Myriosclerotinia caricis-ampullaceae* (Nyberg) N. F. Buchw. During a revision of my Sclerotiniaceae herbarium specimens J. T. Palmer identified a further collection as *M. caricis-ampullaceae*, already collected in 1985. He further

revised two specimens as *Lanzia henningsiana* (Plötn.) Svrček, which has only known from Tyrol, so far (Palmer 1995).

MATERIAL AND METHODS

Collections examined: *M. caricis-ampullaceae*: (1) Austria: Salzburg, Lungau, district Tamsweg, community Tamsweg, Prebersee, bog Wirtsalmmoor, on *Carex lasiocarpa* Ehrh., 1514 m s. m., map grid 8849/1, 1. 7. 1985, leg. I. Krisai, rev. J. T. Palmer (herbarium IK 3775). (2) Austria: Lower Austria, Waldviertel, district Zwettl, community Pertenschlag-Melon, bog Altmelon Au, on *Carex rostrata* Stokes ex With., 860 m s. m., map grid 7555/2, 2. 6. 1994, leg. J. Greilhuber, I. Krisai-Greilhuber, H. Voglmayr, confirm. J. T. Palmer (herbaria WU 12973, J. T. Palmer and IK 6301); (3) same locality as (2), 19. 6. 1995, leg. A. Tribsch, det. I. Krisai-Greilhuber (herbarium IK 6278).

Lanzia henningsiana: (1) Austria: Salzburg, Lungau, district Tamsweg, community Tamsweg, Prebersee, bog Wirtsalmmoor, on *Carex rostrata*, 1514 m s. m., map grid 8849/1, 1. 7. 1985, leg. I. Krisai, det. J. T. Palmer (herbarium IK 3774). (2) same community, Überlingberg, bog at the Dürreneggsee, on *Carex* sp., 1700 m s. m. map grid 8849/1, 4. 7. 1985, leg. I. Krisai, det. J. T. Palmer (herbarium IK 3786).

Light microscopic investigations were made of fresh or herbarium material in L4 or 3% KOH and in Melzer's reagent (prepared after Moser 1983) and viewed in a Reichert Diavar microscope. Ascospore measurements and the calculated means are based on 20 mature ascospores. Drawings were made with a drawing tube. The herbarium abbreviation follows Holmgren et al. (1990) and the citation of authorities Kirk and Ansell (1992).

DESCRIPTION OF THE AUSTRIAN COLLECTIONS OF *Myriosclerotinia caricis-ampullaceae*

Macroscopic characters (Fig. 1 a). Apothecia: stipitate, receptacle 12-45 mm in diameter, cupulate, young completely even, older basal part at the inside with ridges, at the outside just slightly undulating, inner surface smooth, outer surface finely tomentose, inside and outside light brown, cinnamon, raw Sienna, hazelnut brown, up to dark brown in very wet condition (Kornerup and Wanscher 1981: 6D7-8, 6E-F7-8), receptaculum gradually tapering into the stipe, stipe 65-110 mm long, 2-5 mm broad, long and cylindrical, bent several times, apex concolorous with the receptaculum, gradually darkening towards the base up to pure black, completely finely tomentose, at the base even more prominently tomentose, several apothecia arising from one sclerotium, sclerotia 87-135 mm long

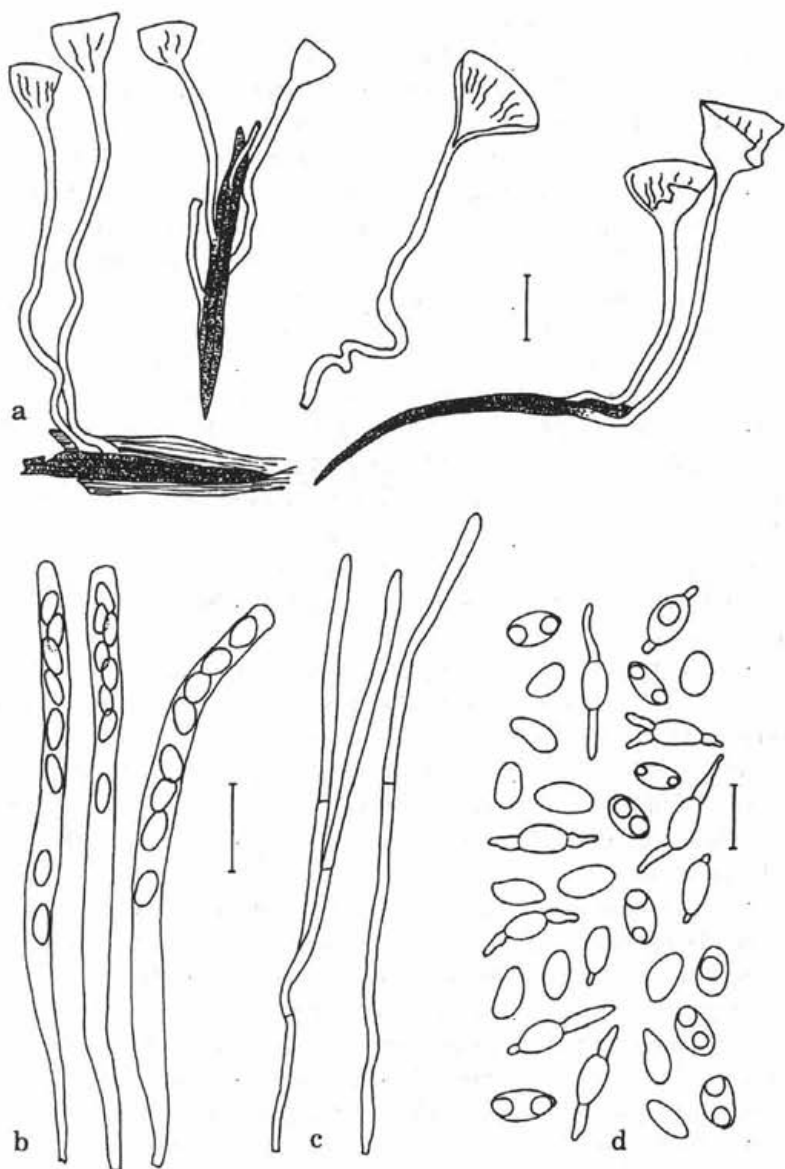


Fig. 1 *Myriosclerotinia caricis-ampullaceae*, IK 6301. a Habitus of apothecia and sclerotia, bar: 2 cm. b. Asci, bar: 30 μm . c. Paraphyses, bar: 30 μm . d. Ascospores, some germinating, bar: 15 μm .

(in collection 3775 only up to 30 mm), 4–8 mm broad, ventricose, tapering into a whip-like tip at the upper end and more abruptly attenuating at the lower end, sometimes bent, surface black and longitudinally striate, striae following the vessels of the host culm, internally white.

Microscopic characters: Asci: 8-spored, cylindrical, J+, (156-)195–210 × 8–12 μm (Fig. 1 b), paraphyses hyaline, thin cylindrical, only very slightly enlarged at the tip, septate, sometimes branched in the lower part, 200–225 × 3–4.5 μm (Fig. 1 c), ascospores hyaline, one-celled, uni- or incompletely biserial, broadly ellipsoid to ovoid, sometimes slightly pear-shaped, mostly eguttulate, but also uni- or biguttulate, frequently germinating already on the receptacle, with one or two (rarely three) germinating hyphae, (11.8-)12.3–14.4(-15.0) × (5.3-)6.4–8.6, mean: 13.14 (S. D.: 0.84 μm, S. E.: 0.18) × 6.83 (S. D.: 0.81 μm, S. E.: 0.18 μm), length/width: (1.56-)1.7–2.4, mean: 1.9 (S. D.: 0.2, S. E.: 0.05 μm) (Fig. 1. d), [ascospores of collection 3775: (8.8-)10.4–12.3–15.2 × 4.8–5.3–6.4 μm].

Microconidial anamorph not observed, probably due to lack of sufficient host material.

Selected iconography: Ryman and Holmåsén (1992: p. 653, colour), Palmer (1988: p. 37, black & white), Schumacher and Kohn (1985: figs. 42–44, drawings).

Ecology: Collection 3775 was made in a raised bog on *Carex lasiocarpa*, previously not known as host of this fungus, in a Caricetum lasiocarpae. This plant association is dominated by *Carex lasiocarpa*, partly intermingled with *C. rostrata* and *Sphagnum* species. The locality is situated in the Lungau in the Nedere Tauern, which are part of the Central Alps, an Austrian region very rich in bogs over silicate rock. The climate is suboceanic. A detailed description of bogs in the Lungau is given in Krisai et al. (1991).

The other two collections were made in two subsequent years in an acidic-mesotrophic "Durchströmungsmoor" (ss. Steiner 1992) on *Carex rostrata* in a Caricetum rostratae in the Waldviertel. The Caricetum rostratae in this region is very poor in plant species, the most characteristic ones being *Carex rostrata* itself together with *Sphagnum fallax* Klinggr. Further, this subassociation with *Sphagnum fallax* is the most frequent type of the Caricetum rostratae. The Waldviertel is part of the Austrian Granit- and Gneishochland and does not belong to the Alps. As the Lungau, this is also a bog-rich region on granitic soil. But most of them have been destroyed for peat extraction. These old peat-extraction sites have somehow regenerated and the collection locality exactly is such an old peat site (for a further characterization of Austrian bogs see Steiner 1992). The suboceanic climate in the Waldviertel is already subcontinentally influenced.

In the Lungau, once even in the same bog (Wirtsalmmoor), a further Sclerotiniaceae could be found: *Lanzia henningsiana*. Ecologically, it also occurs on *Carex* species in bogs in the same humidity conditions as *Myriosclerotinia caricis-*

ampullaceae. Its generic placement is still unclear. Schumacher and Kohn (1985) accommodate it in the genus *Poculum*. A thorough discussion on the genus and a detailed description of another Austrian specimen collected in Tyrol is given in Palmer (1995). Microscopic characters of the specimens of Salzburg are: asci $150\text{--}194 \times 8\text{--}11 \mu\text{m}$, ascospores $12.2\text{--}18.0 \times 5.0\text{--}8.0 \mu\text{m}$. Together with the Tyrolean record, three localities are now known for this species in Austria.

Table 1 Comparison of spore sizes of *Myriosclerotinia caricis-ampullaceae*

Source	Spore size (μm)	Mean spore size (μm)
Nyberg 1933	11–15 \times 6.5–9	
Schumacher and Kohn 1985	11.0–16.5 \times 7.0–10.2	13.2 \times 8.5
Palmer 1988 (J. T. P. 4256)	11.4–16.0 \times 6.5–9.8	
(J. T. P. 4157)	9.8–15.5 \times 6.5–9.0	
(J. T. P. 3226)	11.7–14.7 \times 6.5–8.2	
Ryman and Holmäsén 1992	10.0–15.0 \times 6.5–9	
Tondl 1992	13.2–16.5 \times 8.2–9.8	
Austrian collections (IK 6301)	11.8–15.0 \times 5.3–8.6	13.14 \times 6.83
(IK 3775)	8.8–15.2 \times 4.8–6.4	

DISCUSSION

Besides macro- and microscopical features *Myriosclerotinia* species are characterized by producing sclerotia inside the culms of Cyperaceae or Juncaceae (Schumacher and Kohn 1985). Fully developed, *M. caricis-ampullaceae* easily can be determined as it has the largest apothecia and sclerotia of the genus. Nevertheless, the spore size shows a considerable range of variation both in length and width (Table 1). The spores of the Austrian specimens are slightly thinner than those of North American ones, but their dimensions are compatible with the other European measurements. Collection 3775 has the thinnest spores. It also had smaller apothecia and smaller sclerotia and grew on the new host, *Carex lasiocarpa*. Probably, these variations may be due to the host species and I think they are well within the ecological variability of the species and does not merit a further taxonomic distinction.

E c o l o g y: *Myriosclerotinia caricis-ampullaceae* exclusively grows on *Carex* species, which belong to the family Cyperaceae. The host species hitherto known are *Carex aquatilis* Wahlenb., *C. aquatilis* var. *altior* (Rydb.) Fern. and *C. rostrata* (Schumacher and Kohn 1985). *Carex lasiocarpa*, the host of one Austrian collection adds a further species to this list. Altogether *M. caricis-ampullaceae* prefers wet habitats, mostly bogs with *Carex* and *Sphagnum* species, once it was found on *Carex*

rostrata in a sphagnum-filled World War II bomb crater (Palmer 1988). In both Austrian localities the apothecia raised from sclerotia in submerged overwintered and dead culms of the host. This is typical for all species of the genus (Schumacher and Kohn 1985).

Distribution: *Myriosclerotinia caricis-ampullaceae* occurs in the northern hemisphere. It is known in North America (USA, Canada), in the former USSR (northern Ural), in Europe (Finland, Sweden, Belgium and in Czechoslovakia) (see Schumacher and Kohn 1985, Palmer 1988). Recently a new locality in the Czech Republic was presented by Tondl (1992). There, the fungus grew on *Carex rostrata* in a Caricion fuscae of a peat bog in SW Bohemia, c. 1050 m s. m., where it was recorded in two subsequent years, on June 26, 1991 and on June 18, 1992. The Austrian collection sites up to now are the two southernmost localities in Europe.

Conservation aspects: In Central Europe, both species, *M. caricis-ampullaceae* and *Lanzia henningsiana* are highly endangered, as they exclusively grow in bogs. In the Alps these habitats are not so much in danger to be exploited for peat extraction, but grazing of cows or sheep is a great problem and quite heavy disturbs these sensible ecosystems. Outside of the Alps in the Lowlands, these wet habitats are steadily vanishing due to draining and subsequent afforestation or conversion into fields and meadows, or are ruthlessly exploited for peat. Thus, in Central Europe both species need to be protected by habitat conservation policy (see also Krisai R. et al. 1991).

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REFERENCES

- EINHELLINGER A. (1976): Die Pilze in primären und sekundären Pflanzengesellschaften oberbayerischer Moore. Teil 1. – Ber. Bayer. Bot. Ges. 47: 75-149.
- EINHELLINGER A. (1977): Die Pilze in primären und sekundären Pflanzengesellschaften oberbayerischer Moore. Teil 2. – Ber. Bayer. Bot. Ges. 48: 61-146.
- FAVRE J. (1948): Les associations fongiques des hauts-marais jurassiens et de quelques régions voisines. – Matér. Flore Cryptog. Suisse 10: 1-228.
- HOLMGREN P. K., HOLMGREN N. H. and BARNETT L. C. (1990): Index Herbariorum. Part 1. The herbaria of the world. 8th edn. – New York, 693 pp.
- KIRK P. M. and ANSELL A. E. (1992): Authors of fungal names. – Index of Fungi Supplement.
- KORNERUP A. and WANSCHER J. H. (1981): Taschenlexikon der Farben. Ed. 3. – Zürich, Göttingen, 242 pp.
- KRISAI I. (1987): Über den sommerlichen Pilzaspekt in einigen subalpinen Mooren des Oberen Murtales (hauptsächlich des östl. Lungaus) (Österreich). – Nova Hedwigia 45: 1-39.
- KRISAI I., BURGSTALLER B., EHMER-KÜNKELE U., SCHIFFER R. and WURM E. (1991): Die Moore des Ost-Lungaus. Heutige Vegetation, Entstehung, Waldgeschichte ihrer Umgebung. – Sauteria 5: 1-240.
- MOSER M. (1983): Die Röhrlinge und Blätterpilze. Ed. 5. – In: Gams H. Kleine Kryptogamenflora IIB/2. Stuttgart, New York, 533 pp.

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- NYBERG W. (1934): Några i Borgå och dess omnejd funna, saelsyntare svamp-arter. – Mem. Soc. Fauna Fl. Fenn. 10: 20-23.
- PALMER J. T. (1988): Some interesting Belgian Sclerotiniaceae and circumpolar species from northern Britain and Alaska. Investigations into the Sclerotiniaceae – VII. – Lejeunia 127: 1-38.
- PALMER J. T. (1995): Myrioconium Spermodochidien auf Eriophorum. – Österr. Z. Pilzk. 4 (in press).
- RYMAN S. and HOLMÅSEN I. (1992): Pilze. – Braunschweig, 718 pp.
- SCHUMACHER T. and KOHN L. M. (1985): A monographic revision of the genus Myriosclerotinia. – Canad. J. Bot. 63: 1610-1640.
- STEINER G. M. (1992): Österreichischer Moorschutzkatalog. Ed. 4. – Grüne Reihe des Bundesministerium f. Umwelt, Jugend u. Familie 1.
- TONDL F. (1992): Myriosclerotinia caricis-ampullaceae (Nyberg) Buchw. na Šumavě. – Mykol. Listy 48: 4-7.