  

# Nivicolous *Myxomycetes* from Tyrol (Austria). II.[1] The genus *Lamproderma*

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**Key words:** *Myxomycetes*, *Stemonitales*, *Lamproderma*. – Chorology, SEM, taxonomy. – *Myxomycota* of Austria.

**Abstract:** Nine nivicolous taxa of the genus *Lamproderma* collected around melting snow banks in montaneous and alpine areas of Tyrol are presented. They correspond to seven species: *Lamproderma atrosporum*, *L. carestiae*, *L. cribrarioides*, *L. echinosporum*, *L. ovoideum*, *L. pulchellum*, *L. sauteri*; and two varieties: *L. atrosporum* var. *pseudocribrarioides*, *L. sauteri* var. *pulchrum*. Detailed descriptions are given, accompanied by photographs of sporocarps and capillitia as seen with the light microscope, and SEM micrographs of spores and spore ornamentations.

**Zusammenfassung:** Neun nivicole Taxa der Gattung *Lamproderma*, gesammelt am Rande schmelzender Schneefelder in montanen und alpinen Zonen Tirols, werden vorgestellt. Es handelt sich hierbei um sieben Arten: *Lamproderma atrosporum*, *L. carestiae*, *L. cribrarioides*, *L. echinosporum*, *L. ovoideum*, *L. pulchellum*, *L. sauteri*; und zwei Varietäten: *L. atrosporum* var. *pseudocribrarioides*, *L. sauteri* var. *pulchrum*. Detaillierte Beschreibungen werden geboten, ergänzt mit lichtmikroskopischen Photos von Sporocarpien und Capillitien, und REM Micrographien von Sporen und Sporenornamentationen.

The basic work in the genus *Lamproderma* was done by MEYLAN (1932), who without doubt described most of the taxa of this genus. His work was cited by DENNISON (1945 a, b) and KOWALSKI (1968, 1970), who intensively studied the genus *Lamproderma*. According to them many of the taxa described by MEYLAN (1932) are valid; but some, which are based on slight differences of colour and spore size, are of little taxonomic value. They can be interpreted as responses to environmental conditions at the time of fructification and may be not genetically based.

In recent times only a few investigators have paid attention to this genus. The works of NOWOTNY (1989) and NEUBERT & al. (1989, 2000) in Austria should be

[1] The first part of this series is in press (Cryptogamie, Mycologie)

mentioned: These papers include colour photographs of sporocarps, detailed illustrations of spore ornamentation and keys to species.

In France the work of MEYER (1987) is outstanding, where a key to the species is presented.

Various – especially nivicolous – taxa of *Lamproderma* have recently been described as new for Europe. From Germany FLATAU (1982) has described a non-nivicolous species collected on bark of *Fagus sylvatica* L. named *Lamproderma hieroglyphicum* FLATAU.

NEUBERT & al. (1989) describe three new species and one variety; from Germany *Lamproderma album* NEUBERT, NOWOTNY & BAUMANN (nivicolous) and *Lamproderma mucronatum* NEUBERT, NOWOTNY & BAUMANN (non-nivicolous), and from Austria *Lamproderma longifilum* NEUBERT, NOWOTNY & BAUMANN (nivicolous), and the variety *Lamproderma arcyrioides* (SOMMERF.) ROSTAF. var. *leucofilum* NEUBERT, NOWOTNY & BAUMANN (non-nivicolous).

BOZONNET & al. (1991, 1997) describe a new nivicolous species from France, *Lamproderma pulveratum* MEYER & POULAIN, and from Iceland and France the nivicolous species *Lamproderma cacographicum* BOZONNET, MEYER & POULAIN.

From Germany, Austria and France MEYER & al. (1994) describe the new nivicolous species *Lamproderma spinulosporum* MEYER, NOWOTNY & POULAIN.

Apart from taxonomic works, ecological studies on *Lamproderma carestiae* (CES. & DE NOT.) MEYLAN were done by SCHINNER (1982), stressing the peculiar conditions required for the completion of the lifecycle. He showed that spore germination, development of myxamoebae and plasmodia is possible at 20°C, but for initiation of fructification continuous temperatures around zero are necessary.

**Material and methods**

From April to August 2000, 37 samples were collected in 10 different localities situated in Tyrol as indicated on the map (Fig. 1). Some localities are too close to each other to be shown individually and are indicated on the map as one; they differ mainly in altitude.

1. Kaisers, below Kaiserjochhaus (2581 m s. m.)
2. Gramais (1328 m s. m.)
3. Gramais, near Gampenjoch (2132 m s. m.)
4. Stanzach (939 m s. m.)
5. Stanzach, Fallerscheinalpe (1302 m s. m.)
6. Innsbruck, near Bodensteinalm (1661 m s. m.)
7. Innsbruck, near Höttinger Bild (905 m s. m.)
8. Innsbruck, Seegrube
9. Kolsassberg, near Studlalm (1600 m s. m.)
10. Gallzein (1200 m s. m.)

The specimens are deposited in the herbaria AH and IB.

The material collected was mounted in Hoyer's medium and studied with a Nikon (Optiphot) microscope. Scanning electron microscopy (SEM) micrographs were taken in the University of Alcalá de Henares using a Zeiss DSM-950.

SEM-preparation: Sporocarps were rehydrated in concentrated ammonium hydroxide (28-30%) for 30 min, dehydrated in aqueous ethanol (70%) for 30 min, fixed for 2 h in pure ethylene glycol dimethyl ether (= 1,2-dimethoxymethane) and finally immersed in pure acetone for at least 2 h followed by critical point drying and sputtering with gold-palladium.

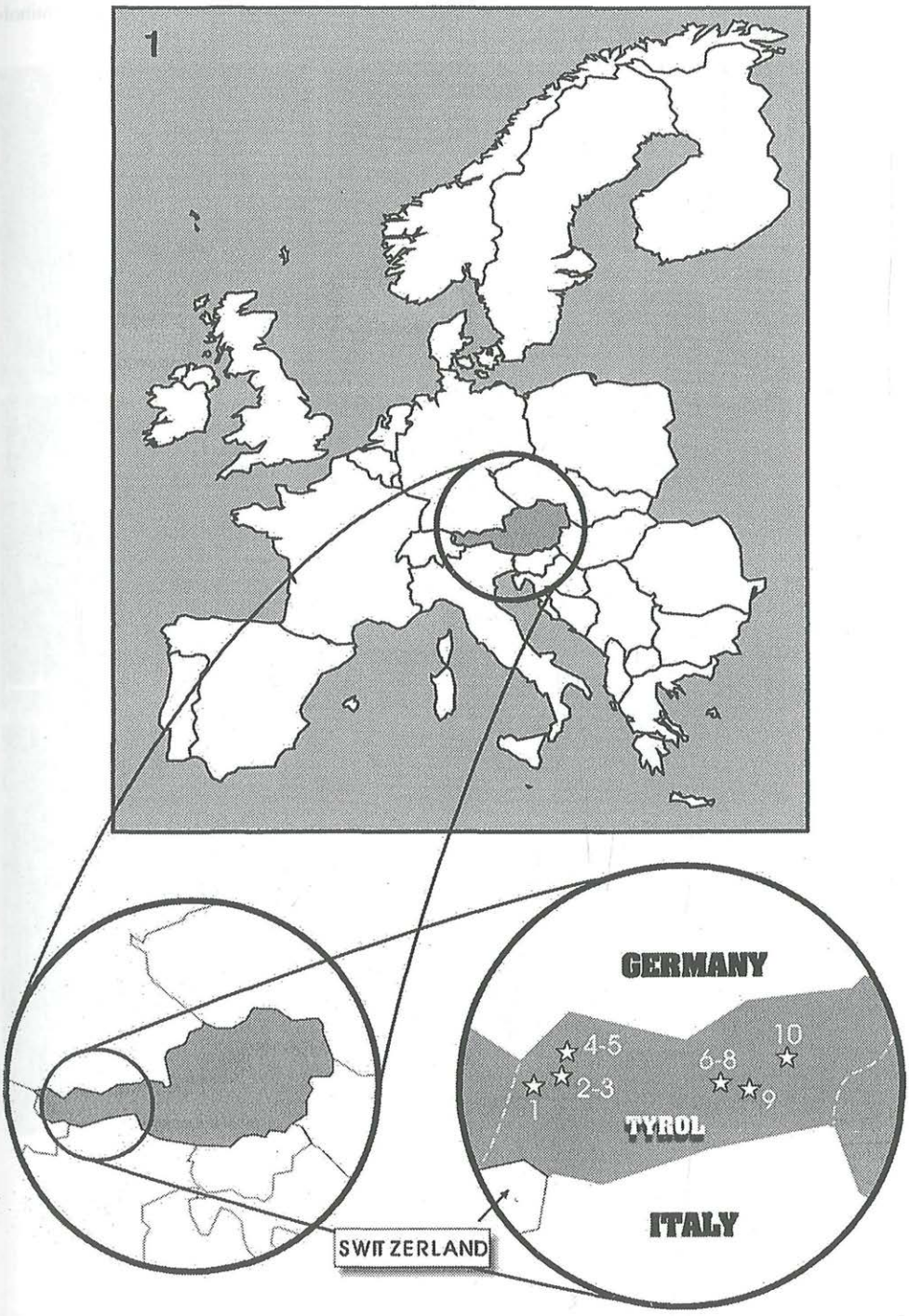
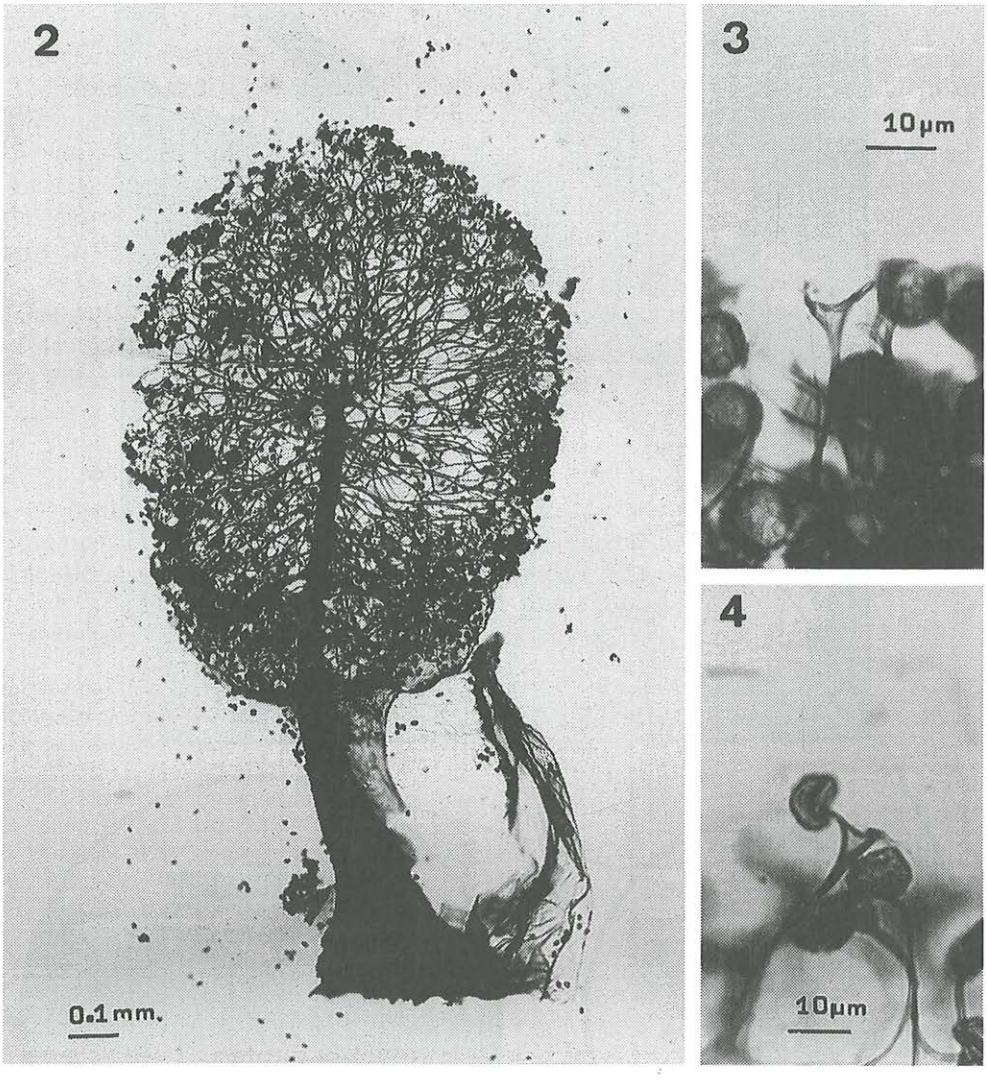
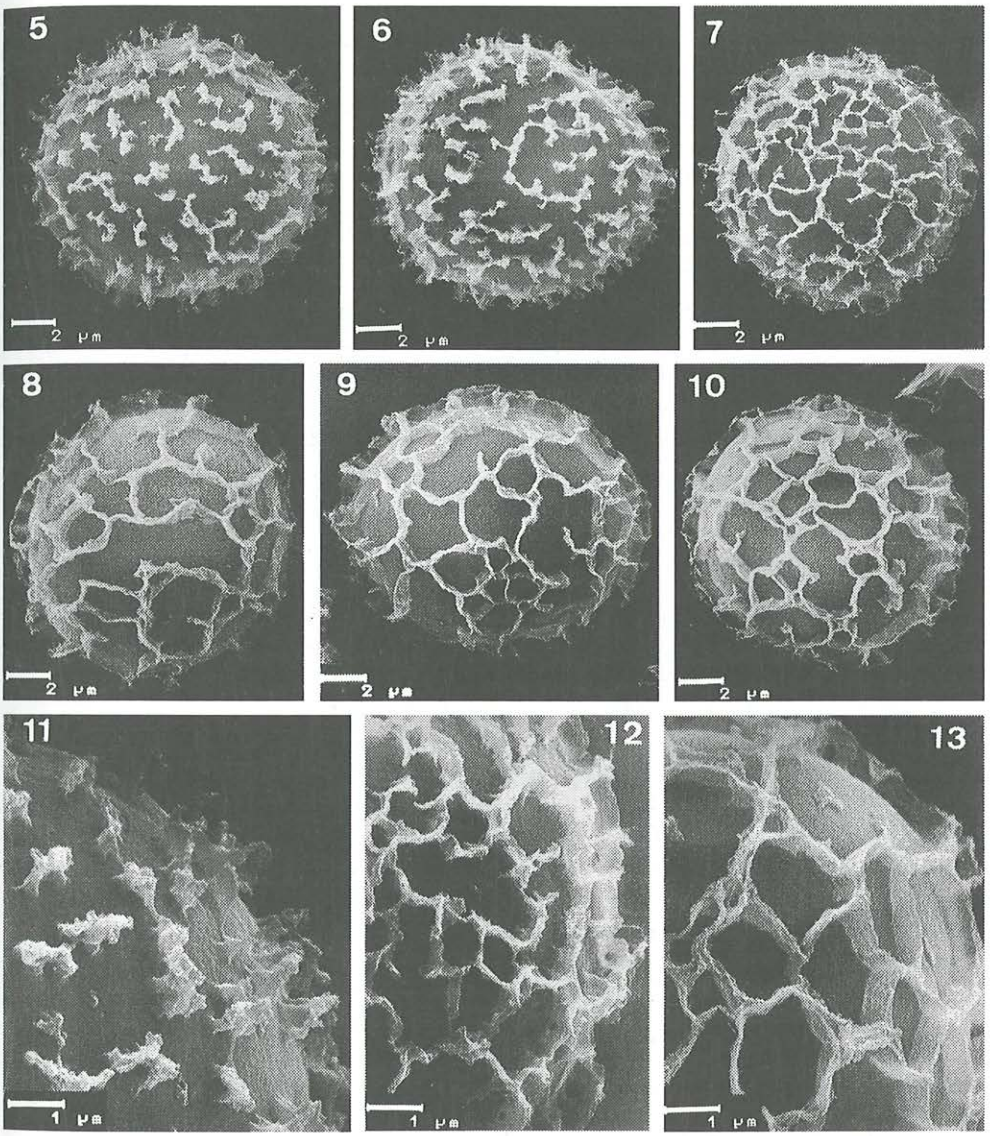



Fig. 1. Map showing the location of Tyrol and the localities from where material has been studied.

The terminology of the spore-producing stages follow DÖRFELT & MARX (1990) and LADO & PANDO (1997). The spore wall ornamentation as seen in SEM is described according to the terminology proposed by RAMMELOO (1975 a, b).




Figs. 2-4. *Lamproderma atrosporum* var. *atrosporum* (IB 2000/0261). 2. Sporocarp. 3-4. Details of capillitium with funnel-shaped free ends.




Figs. 5-13. *Lamproderma atrosporum* var. *atrosporum* (5-6 and 11: AH 27373; 7 and 12: IB 2000/0261) and *Lamproderma atrosporum* var. *pseudocribrarioides* (8-10 and 13: IB 2000/0260). Spores and variations of spore ornamentation.

***Lamproderma atrosporum*** **MEYLAN,** Bull. Soc. Vaud. Sci. Nat. **46**: 51. 1910. (Figs. 2-13)

**Characters:**
Sporocarps gregarious or clustered, sessile or stalked, ovoid, rarely globose, 0.5-1 mm broad, 1-1.5 mm high, 1-2.5 mm total height. Columella cylindrical, occasionally thickened at the apex, attaining up to two-third the height of the sporotheca, dark brown to black, usually with membranous expansions in the upper part of the columella, from which the primary branches of the capillitium arise. Capillitium arising from the length of the columella, rigid, straight, dense, branching and anastomosing, dark brown to black, forming a net with free ends which are funnel-shaped and attached to small pieces of the peridium. Peridium usually evanescent, black, usually not iridescent, often persistent in the lower part where minute pieces remain attached to the tips of the capillitium. Stalk up to 1 mm, attaining half the length of the sporotheca, black. Hypothallus black at the centre, dark brown at the margins. Spores globose, 12-15 µm in diam., black in the mass, dark purple-brown by transmitted light, spines forming crests, more or less reticulate. With SEM spore ornamentation very variable, formed by irregular crests, sinuose, more or less subreticulate, sometimes a complete reticulum, then with irregular meshes of different diameters and without verrucae.

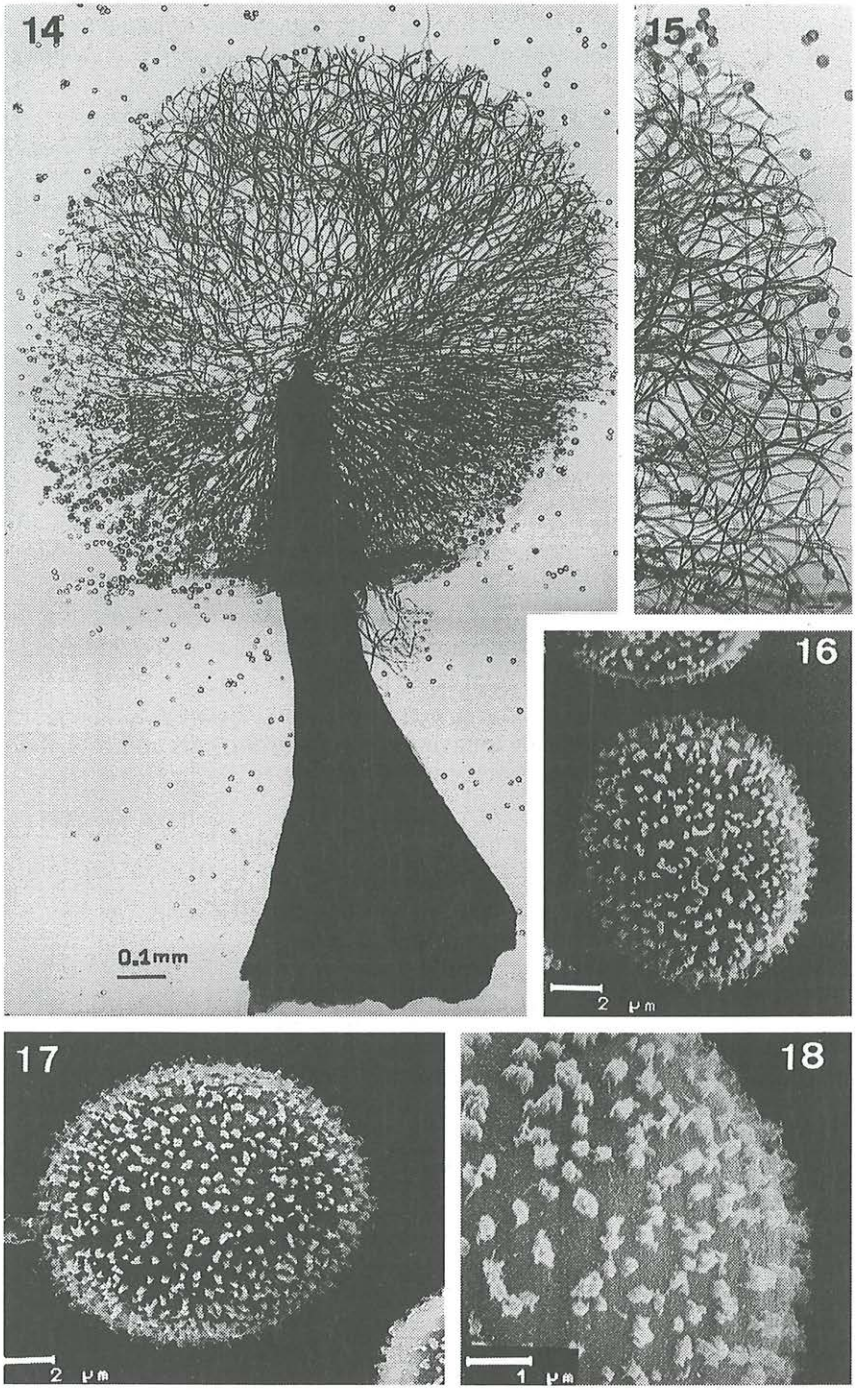
**Specimens examined:** (2) living woody plant, partly covered by snow, 26. 4. 2000, leg. H. SINGER (IB 2000/0261); (2) living woody plant, partly covered by snow, 26. 4. 2000, leg. H. SINGER (IB 2000/0262); (7) rotten trunk beside avalanche, 13. 5. 2000, leg. H. SINGER (AH 27374); (9) living moss beside snow and living woody plant beside snow, 5. 5. 2000, leg. M. KIRCHMAIR (AH 27373); (10) living woody plant beside snow, 22. 4. 2000, leg. H. SINGER (IB 2000/0260).

**Notes:**
*Lamproderma atrosporum* is characterized by ovoid, dark brown to blackish brown sporothecae, evanescent peridium, capillitium with funnel-shaped free ends and spores bearing crests which are arranged in a more or less subreticulate way. Some of our collections (IB 2000/0260, IB 2000/0261) have spores which are completely reticulate and without verrucae. These specimens correspond to *L. atrosporum* var. *pseudocribrarioides* described by MEYER (not published), a variety which in our opinion should be considered as a distinct taxon. *Lamproderma cribrarioides* (FR.) R. E. FRIES can be confused with the latter variety, but differs in its globose sporothecae and its lax capillitium without funnel-shaped free ends.

***Lamproderma carestiae*** **(CES. & DE NOT.) MEYLAN,** Bull. Soc. Vaud. Sci. Nat. **57**: 368. 1932. (Figs. 14-18)

**Characters:**
Sporocarps clustered, sessile or stalked, globose to ovoid, 0.5-1.5 mm in diam., 1-2 mm total height. Columella tapering slightly towards the apex, attaining up to two-thirds of the height of the sporotheca, dark brown to black. Capillitium arising along the length of the columella, branching and anastomosing to form a flexuous net, dark reddish-brown, hyaline at the tips. Peridium usually persistent, iridescent, greyish, reddish or light bluish. Stalk up to 0.5 mm. Hypothallus black at the centre, reddish-




Figs. 14-18. *Lamproderma carestiae* (14-15: AH 27377, 16-18: IB 2000/0265). 14. Sporocarp. 15. Detail of capillitium. 16-18. Spores and detail of spore ornamentation.

brown at the margins. Spores globose, 10-12 µm in diam., dark brown in the mass, purple-brown by transmitted light, spinulose. With SEM spore ornamentation formed by short baculae, densely and irregularly arranged, sometimes with two or three fusing to form short crests.

**Specimens examined:** (6) grass beside snow, 10. 5. 2000, leg. H. SINGER (AH 27375); (8) living grass beside snow, 21. 5. 2000, leg. H. SINGER (AH 27376); (9) living raspberry bush beside snow, 5. 5. 2000, leg. M. KIRCHMAIR (IB 2000/0263); (9) living bush beside snow, 5. 5. 2000, leg. M. KIRCHMAIR (IB 2000/0264); (9) living bush beside snow, 5. 5. 2000, leg. M. KIRCHMAIR (IB 2000/0265); (9) living grass beside snow, 5. 5. 2000, leg. M. KIRCHMAIR (AH 27377).

**Notes:**

*Lamproderma carestiae* is characterized by generally globose sporothecae, capillitium forming a flexuous net consisting of dark reddish-brown filaments with hyaline tips, and by small spores, 10-12 µm in diameter.

*Lamproderma carestiae* is a very variable species which is difficult to distinguish from other species with the same spore size and spore ornamentation. For example, *Lamproderma pulchellum* MEYLAN differs only in generally sessile sporocarps and scarcely coloured capillitium. Therefore KOWALSKI (1975) proposes that the latter species is simply a form or pale variant of *L. carestiae*. Nevertheless MARTIN & ALEXOPOULOS (1969) and NEUBERT & al. (1989) distinguish *L. pulchellum*.

*Lamproderma album* is a species very close to *L. pulchellum*, presenting the same spore diameters and also a pale capillitium, differing from the latter species only in the presence of a large stalk (NEUBERT & al. 1989).

*Lamproderma fuscatum* MEYLAN is a species recognized by KOWALSKI (1975) and NEUBERT & al. (1989) as distinct, having the capillitium, peridium and spores uniformly rust coloured. MARTIN & ALEXOPOULOS (1969) consider this species as a synonym of *L. carestiae*.

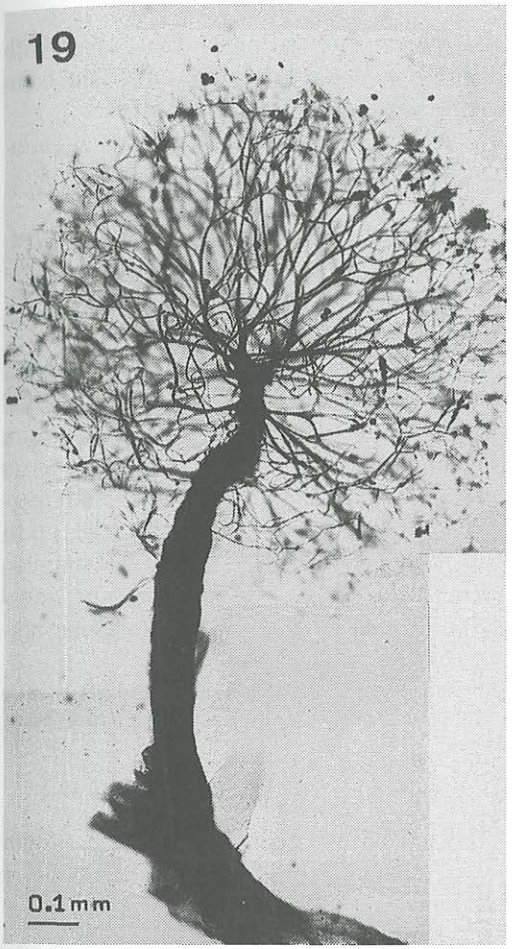
***Lamproderma cribrarioides* (FR.) R. E. FRIES,** Svensk Bot. Tidskr. **4**: 259. 1910. (Figs. 19-23)

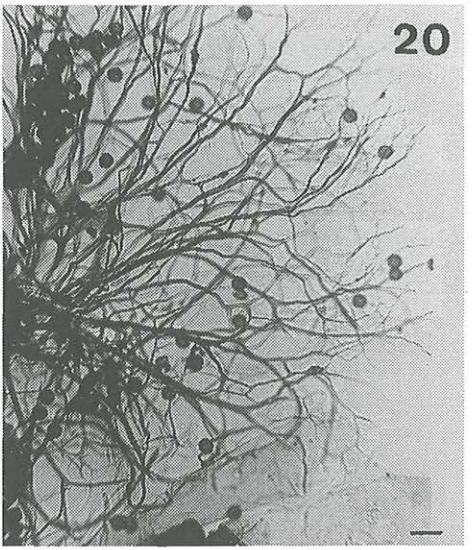
**Characters:**

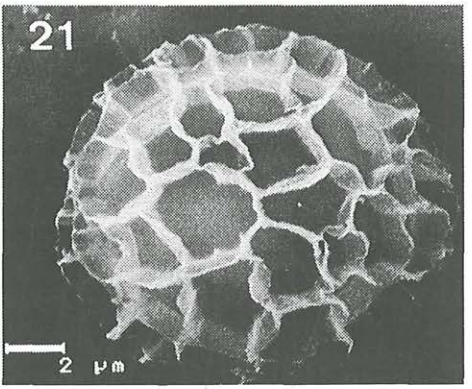
Sporocarps scattered or clustered, sessile or rarely stalked, globose, 0.5-1.5 mm in diam., 0.5-2 mm total height, rarely two sporocarps fusing. Columella cylindrical, attaining up to one-half the height of the sporotheca, dark brown to black, usually with membranous expansions in the upper part of the columella, from which the primary branches of the capillitium arise. Capillitium usually arising from the length of the columella, rigid, straight, branching and anastomosing, often with broad ramifications, forming a weak net with many pointed free ends, reddish-brown, paler at the tips. Peridium usually persistent, dark brown to black with a silver shine, slightly iridescent. Stalk up to 1 mm, black. Hypothallus black at the centre, reddish-brown at the margins. Spores globose, 14-15 µm in diam., black in the mass, dark purple-brown by transmitted light, covered with a complete reticulum, with ridges up to 1 µm.

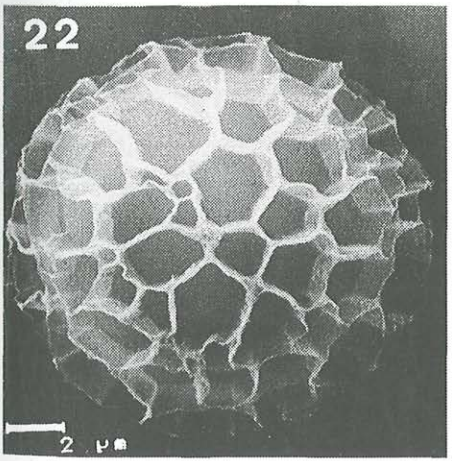
**Specimens examined:** (8) grass beside snow, 21. 5. 2000, leg. H. SINGER (AH 27378); (8) grass beside snow, 21. 5. 2000, leg. H. SINGER (AH 27379); (8) grass beside snow, 21. 5. 2000, leg. H. SINGER (IB 2000/0266); (8) leaf and grass beside snow, 21. 5. 2000, leg. H. SINGER (IB 2000/0256).

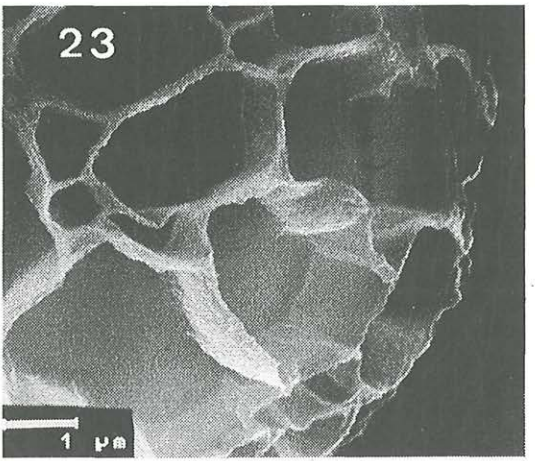
  




Figs. 19-23. *Lamproderma cribrarioides* (19-20: IB 2000/0256; 21-23: IB 2000/0266). 19. Sporocarp. 20. Detail of capillitium. 21-23. Spores and detail of spore ornamentation.

**Notes:**
*Lamproderma cribrarioides* is characterized by generally stipitate sporocarps with globose sporothecae, lax capillitium, reddish-brown with paler free ends and completely reticulate spores, with meshes of variable size, without warts or spines.

*Lamproderma cribrarioides* can only be confused with *L. atrosporum* var. *pseudocribrarioides*, whose differences are indicated above.

***Lamproderma echinosporum*** **MEYLAN,** Bull. Soc. Vaud. Sci. Nat. **55**: 241. 1924. (Figs. 24-28)

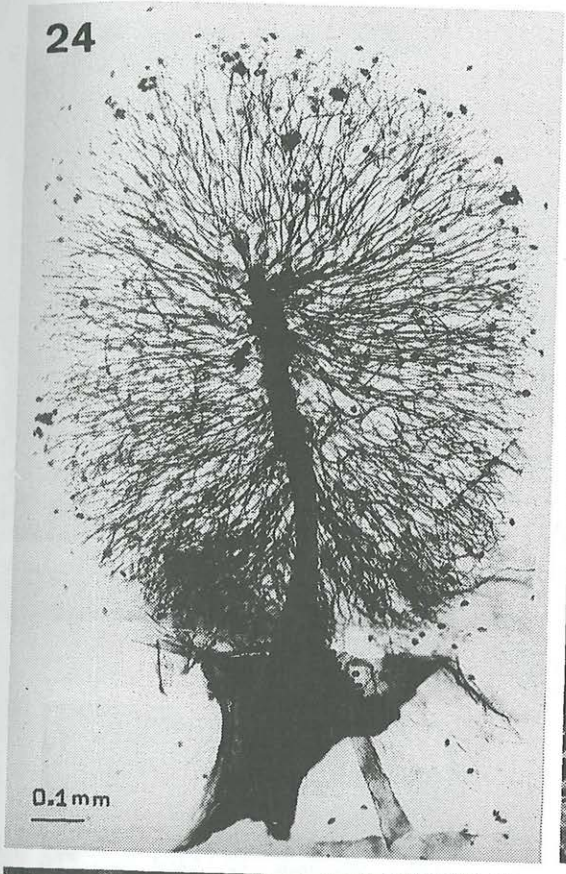
**Characters:**
Sporocarps clustered or loosely scattered, sessile or stalked, globose or ovoid, 1-1.5 mm in diam., up to 1.8 mm total height. Columella cylindrical, occasionally thickened at the apex, attaining up to two-thirds the height of the sporotheca, black. Capillitium arising from the length of the columella, branching and anastomosing, forming a dense net with many free ends, dark brown to black, paler at the tips. Peridium usually persistent, shining silver, with depressed dark areas, appearing pock-marked. Stalk up to 0.5 mm, black. Hypothallus brown at the centre, nearly colourless at the margins. Spores globose, 14-18 µm in diam., dark brown in mass, dark purple-brown by transmitted light, spinose. With SEM ornamentation formed by baculae with irregular apices, sometimes bifurcated.

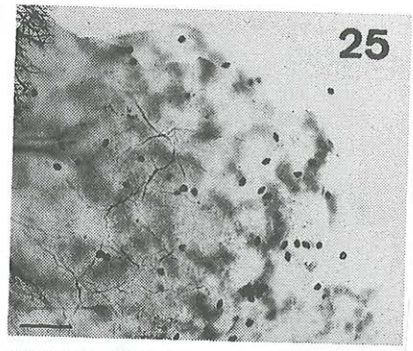
**Specimens examined:** (3) moss over stone beside snow, 12. 6. 2000, leg. H. SINGER (AH 27381); (8) living bush beside snow, 28. 5. 2000, leg. H. SINGER (IB 2000/0267); (8) living bush beside snow, 28. 5. 2000, leg. H. SINGER (AH 27380).

**Notes:**
*Lamproderma echinosporum* can easily be recognized by usually persistent peridium with depressed dark areas (Fig. 25) and by spores bearing spines, clearly visible under the light microscope.

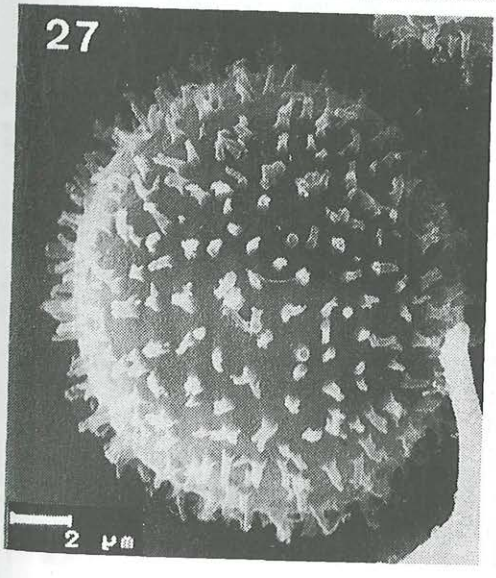
***Lamproderma ovoideum*** **MEYLAN,** Bull. Soc. Vaud. Sci. Nat. **57**: 373. 1932. (Figs. 29-33)

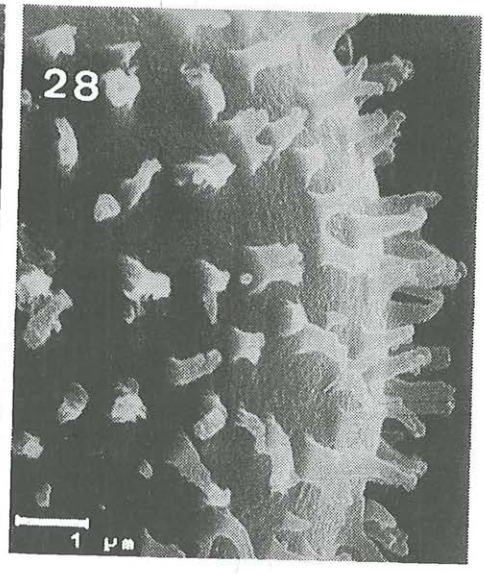
**Characters:**
Sporocarps clustered or scattered, stalked, 0.8-1.2 mm broad, 1-1.8 mm high, up to 2 mm total height. Columella cylindrical, occasionally thickened at the apex, attaining up to three-fourth the height of the sporotheca, black, usually with membranous expansions in the upper part. Capillitium arising from the length of the columella with stout branches, rigid, dark brown to black, forming a dense net at the periphery, with many pointed paler free tips. Peridium black, usually persistent, at least in the lower part which forms a cup. Stalk up to 0.5 mm, usually broad and triangular at the base, black. Hypothallus dark brown at the centre, light brown at the margins, often fusing with adjacent hypothalli. Spores globose, 13-16 µm in diam., black in the mass, dark brown by transmitted light, spinulose. With SEM spore ornamentation formed by densely arranged baculae, rarely fusing into small crests.



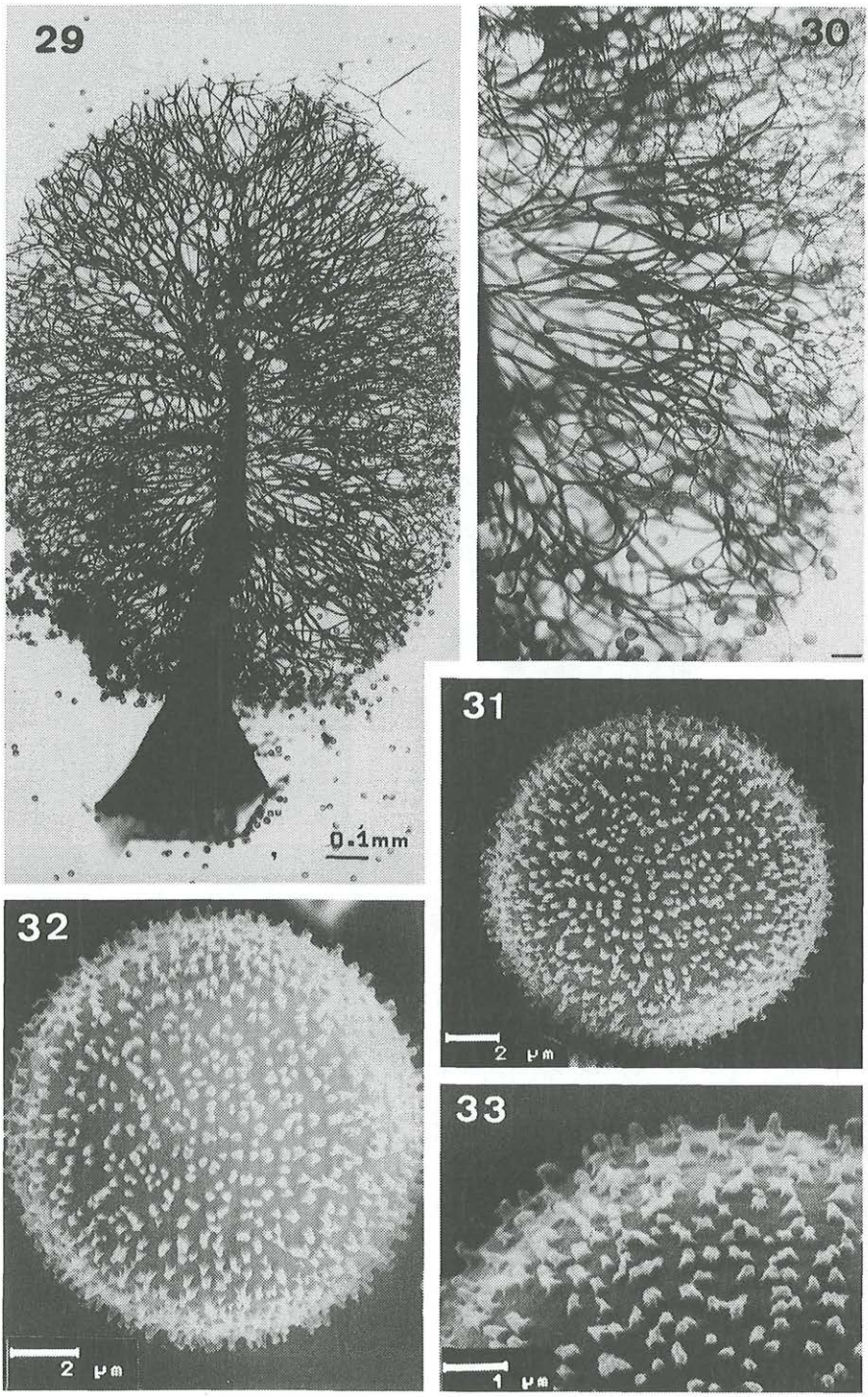





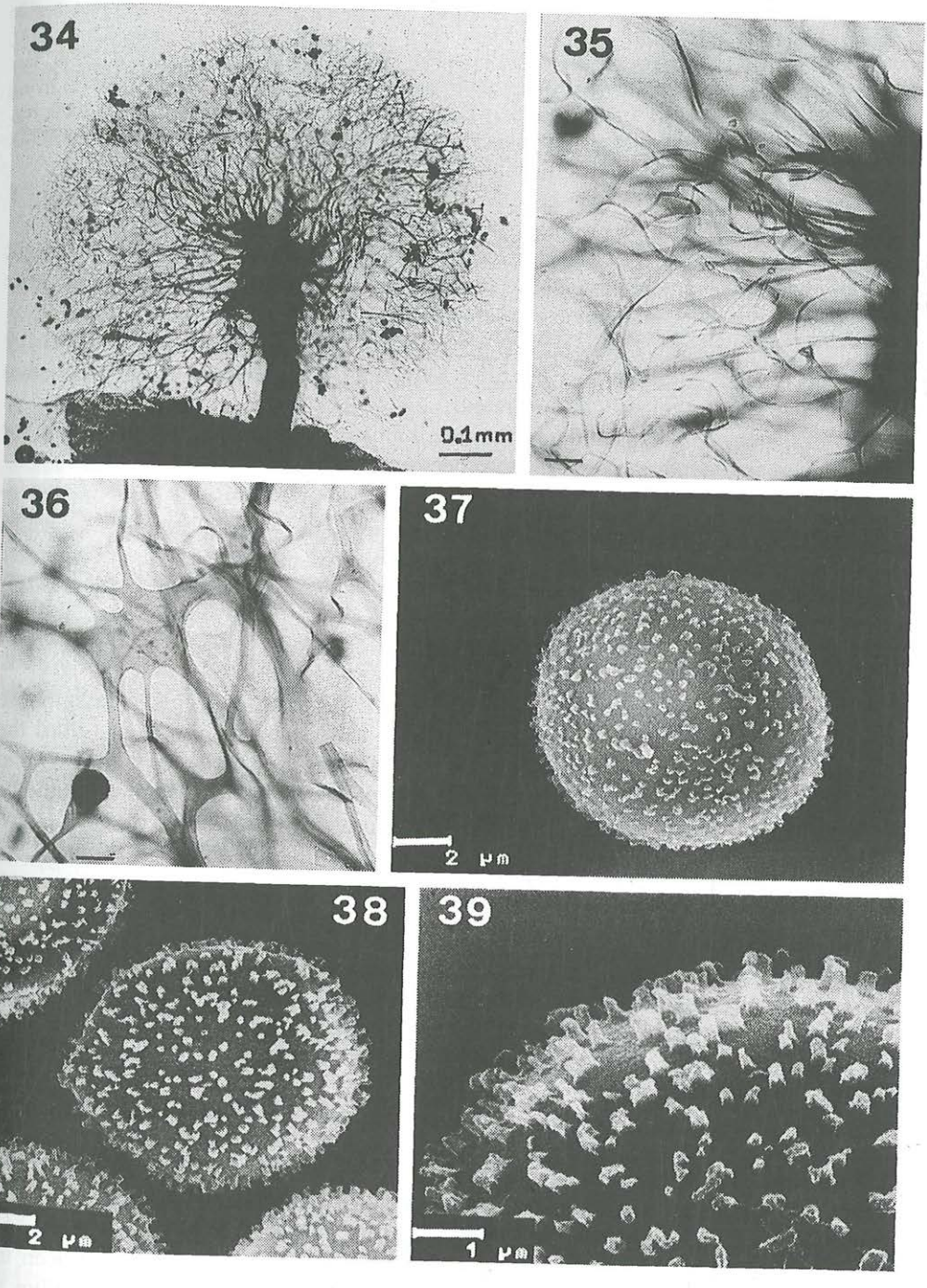



Figs. 24-28. *Lamproderma echinosporum* (24-27: IB 2000/0267; 28: AH 27380). 24. Sporocarp. 25. Peridium with dark, depressed areas. 26. Detail of capillitium. 27-28. Spore and detail of spore ornamentation.




Figs. 29-33. *Lamproderma ovoideum* (29-30: IB 2000/0269; 31-33: AH 27382). 29. Sporocarp. 30. Detail of capillitium. 31-33. Spores and detail of spore ornamentation.




34-39. *Lamproderma pulchellum* (34-37: AH 27387; 38-39: IB 2000/0274). 34. Sporocarp. 35-36. Details of capillitium. 37-39. Spores and detail of spore ornamentation.

**Specimens examined:** (1) grass beside snow, 9. 8. 2000, leg. H. SINGER (AH 27385); (2) living wood plant, partly covered by snow, 26. 4. 2000, leg. H. SINGER (IB 2000/0271); (4) fern beside snow, 21. 4. 2000, leg. H. SINGER (IB 2000/0268); (4) living woody plant beside snow, 22. 4. 2000, leg. H. SINGER (IB 2000/0269); (4) living woody plant, partly covered by snow, 22. 4. 2000, leg. H. SINGER (IB 2000/0270); (5) plant in snow, 28. 4. 2000, leg. H. SINGER (IB 2000/0272); (5) living bush beside snow, 28. 4. 2000, leg. H. SINGER (IB 2000/0273); (6) twig beside snow, 10. 5. 2000, leg. H. SINGER (AH 27384); (9) living bush beside snow, 5. 5. 2000, leg. M. KIRCHMAIR (AH 27382); (9) living bush beside snow, 5. 5. 2000, leg. M. KIRCHMAIR (AH 27383).

**Notes:**
*Lamproderma ovoideum* is characterized by broadly ovoid sporothecae, short stalk generally bearing a conical base, dense capillitium consisting of dark threads and large spores (13-16 µm diam.) with dense ornamentation.

This species first was considered as a synonym of *Lamproderma sauteri* ROST. by KOWALSKI (1970). After revising the type, KOWALSKI (1975) came to the conclusion that these two taxa can clearly be separated.

*Lamproderma sauteri* has identical spore diameters and spore ornamentation, but clearly differs in the morphology of sporotheca and capillitium.

We consider the two species to be different, as commented here under *Lamproderma sauteri*.

***Lamproderma pulchellum*** **MEYLAN,** Bull. Soc. Vaud. Sci. Nat. **57**: 369. 1932. (Figs. 34-39)

**Characters:**
Sporocarps gregarious or clustered, sessile on a constricted base or stalked, subglobose or globose, 0.6-1 mm in diam. Columella usually short, attaining up to one-third the height of the sporotheca, dark brown. Capillitium flattened, bahamoid, branching and anastomosing, forming a dense net, expanded at the nodes, brown near the columella, becoming progressively paler and eventually colourless towards the extremities. Peridium usually persistent, upper part of the peridium violaceous-blue, iridescent, dark brown, not iridescent, the lower part distinctly separated and often remaining as a cup. Stalk up to 0.6 mm, black. Hypothallus reddish-brown at the centre, paler at the margins. Spores 10-12 µm in diam., globose, blackish brown in the mass, greyish-brown by transmitted light. With SEM spore ornamentation formed by short baculae, densely arranged and irregularly distributed, sometimes two or three fusing to for short crests.

**Specimens examined:** (3) grass beside snow, 12. 6. 2000, leg. H. SINGER (AH 27387); (8) living bush beside snow, 28. 5. 2000, leg. H. SINGER (IB 2000/0274); (8) living bush beside snow, 28. 5. 2000, leg. H. SINGER (AH 27386).

**Notes:**
*Lamproderma pulchellum* is characterized by small, globose sporothecae, pale or hyaline capillitium, short stalk and, microscopically, by spores which are similar in diameter and morphology to those of *L. carestiae*.

This species forms part of the *Lamproderma carestiae* complex and has been interpreted in different ways. KOWALSKI (1975), for example, considers *L. pulchellum* to be a synonym of *L. carestiae* or a variety with pale capillitium. Nevertheless, MARTIN & ALEXOPOULOS (1968) and NEUBERT & al. (1989) recognize this species as distinct. We follow the latter treatment.

*Lamproderma album* is a species recently described by NEUBERT & al. (1989), which differs from *L. pulchellum* only in the presence of a stalk. As we do not observe other distinctive micro- or macroscopical characters, we prefer to place our specimens with stalks (IB 2000/0274, AH 27386) within the concept of *L. pulchellum*.

***Lamproderma sauteri* ROST. var. *sauteri*,** Mon. 205. 1875. (Figs. 40-44)

**Characters:**
Sporocarps gregarious or clustered, sessile or stalked, globose, rarely ovoid, 1-1.5 mm in diam., up to 2 mm total height. Columella cylindric, occasionally expanding towards the apex, attaining up to one-half the height of the sporotheca, black, usually with membranous expansions in the upper part of the columella, from which the primary branches of the capillitium arise. Capillitium arising only from the apex of the columella, rigid, straight, branching and anastomosing, often with broad ramifications, light brown to dark brown, forming a dense net with many free ends which are paler at the tips. Peridium usually persistent, brown with a silver shine or sometimes iridescent violet. Stalk up to 1 mm, black. Hypothallus dark brown at the centre, becoming paler at the margins, fusing with adjacent hypothalli. Spores globose, 12-14 µm in diam., black in the mass, purple-brown by transmitted light, spinulose. With SEM spore ornamentation formed by densely arranged baculae which occasionally fuse to form small crests.

**Specimens examined:** (5) living bush beside snow, 28. 4. 2000, leg. H. SINGER (IB 2000/0275); (6) grass beside snow, 10. 5. 2000, leg. H. SINGER (AH 27389); (9) living bush beside snow, 5. 5. 2000, leg. M. KIRCHMAIR (IB 2000/0276); (9) living bush beside snow, 5. 5. 2000, leg. M. KIRCHMAIR (AH 27388).

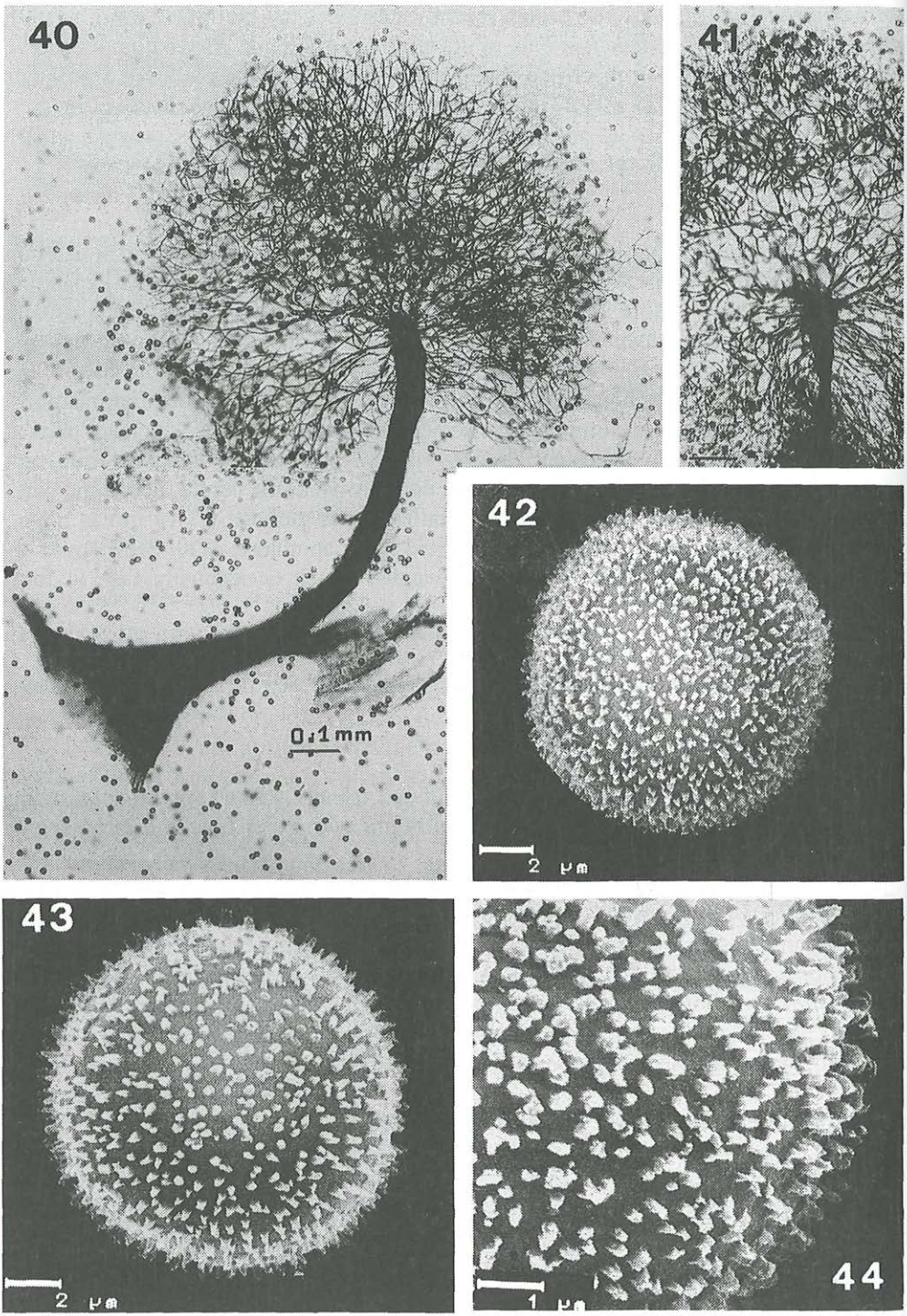
**Notes:**
*Lamproderma sauteri* is characterized by globose, usually stalked sporothecae, cylindrical columella, radiating, dark brown capillitium with paler tips, and large spores with 12-14 µm in diam.

Microscopically *Lamproderma sauteri* has large spores which are similar to those of *Lamproderma ovoideum*, thus KOWALSKI (1970) first considered these two species to be synonymous. However, after examining MEYLAN's material (KOWALSKI 1975) he recognized them as distinct taxa, but subordinated *Lamproderma ovoideum* to *L. carestiae*, creating the variety *L. carestiae* var. *ovoideum* (CES. & DE NOT.) KOWALSKI. We follow the taxonomic treatment of NEUBERT & al. (1989) and distinguish clearly between the two species.

***Lamproderma sauteri* ROST. var. *pulchrum* MEYLAN,** Bull. Soc. Vaud. Sci. Nat. **57**: 366. 1932. (Figs. 45-47)

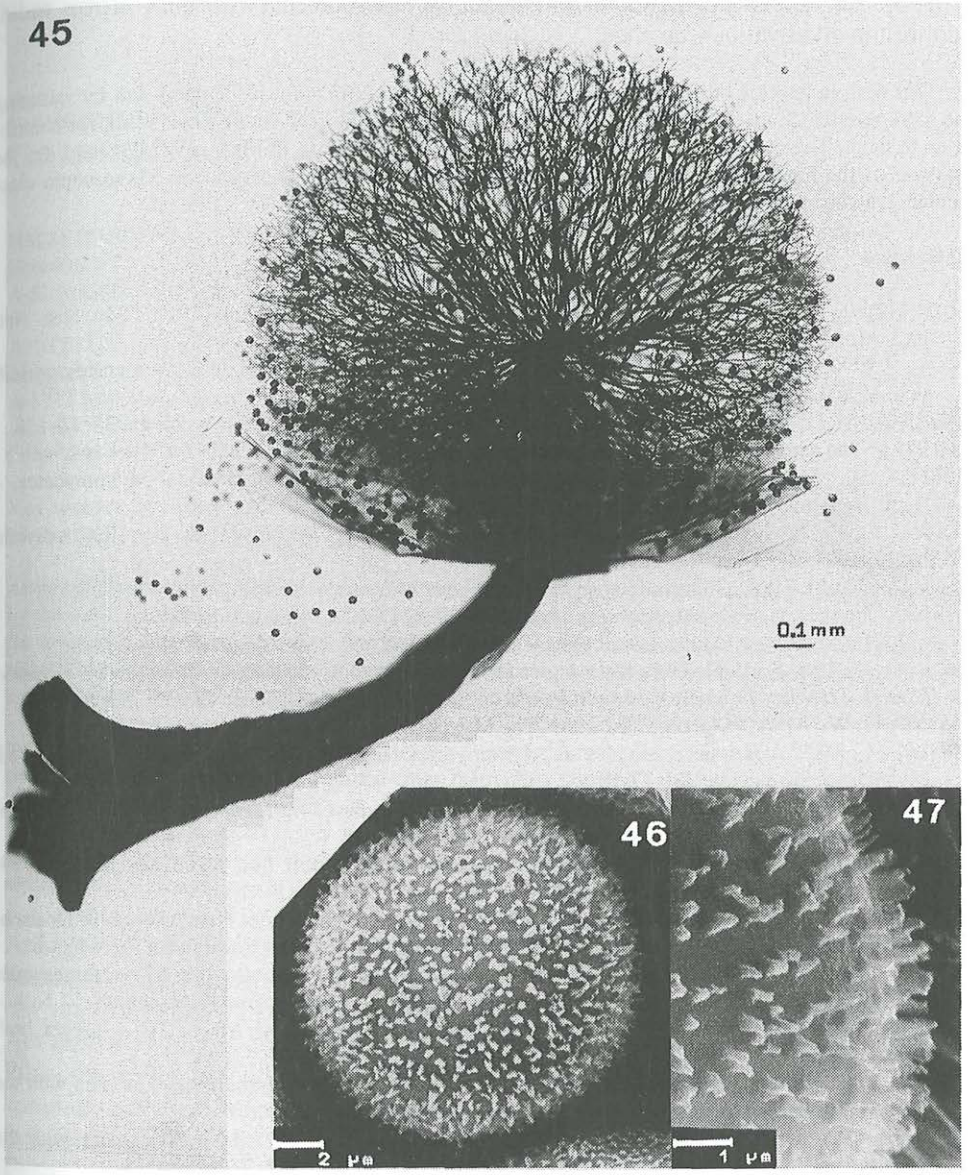
**Specimens examined:** (3) grass and rock beside snow, 12. 6. 2000, leg. H. SINGER (AH 27390); (4) maple leaf beside snow, 28. 4. 2000, leg. H. SINGER (IB 2000/0277).

**Notes:**
Our collections show micro- and macroscopical characteristics similar to those of *Lamproderma sauteri* var. *sauteri*. The only clear difference is the larger spore size




Figs. 40-44. *Lamproderma sauteri* var. *sauteri* (40-42 and 44: AH 27388; 43: IB 2000/0275). 40. Sporocarp. 41. Columella and detail of capillitium. 42-44. Spores and detail of spore ornamentation.




Figs. 45-47. *Lamproderma sauteri* var. *pulchrum* (45: AH 27390; 46-47: IB 2000/0277). 45. Sporocarp. 46-47. Spore and detail of spore ornamentation.

(15-18 µm in diam.). With SEM the spore ornamentation is formed by densely arranged baculae, sometimes fusing into small crests, as seen in *L. sauteri* var. *sauteri*.

KOWALSKI (1975) points out that *Lamproderma sauteri* var. *pulchrum* is a synonym of *L. sauteri* var. *pyriforme* (MEYLAN) MEYLAN. However, we agree with NEUBERT & al. (1989) that *L. sauteri* var. *pyriforme* is a synonym of *L. ovoideum*. Therefore we prefer to maintain the variety *L. sauteri* var. *pulchrum*, characterized by

large spores (15-18 µm in diam.), and globose sporothecae with dark brown radial capillitium and hyaline free ends.

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