

Kjære leser,

Vi har gleden av å presentere dette spesialvolumet av AGARICA som omhandler Pezizomycetes i Grimsdalen. Dette volumet er tilpasset materialet vi i redaksjonen og – ikke minst – forfatteren ønsket å formidle, og er ikke blindt fagfellevurdert, men grundig revidert av en dyktig kollega.

Forfatteren, Professor emeritus Trond Schumacher ved Universitetet i Oslo, har en lang karriere bak seg som mykolog ved Universitetet i Oslo. I sitt virke har han hatt en forkjærlighet for ascomyceter; i doktorgraden jobbet han med systematikk innen slekta *Scutellinia* og de siste årene har *Helvella* stått i sentrum. Han har også hatt et langt og nært forhold til Grimsdalen hvor mye av feltarbeidet hans har funnet sted. I dette nummeret av AGARICA presenterer Trond funn fra kolleksjoner i Grimsdalen fra 1979-1985, supplert av flere kolleksjoner i senere år. For oss redaktører er det viktig å fremheve viktigheten av slike arbeider. Mye av vår kunnskap om sopper i fjellet er basert på noen få personers arbeidslivslange forhold til sine soppgrupper og spesielle fjellområder, og det er essensielt at denne kunnskapene ikke går tapt! Vi takker Trond for en iherdig innsats, hans lange erfaring og entusiasme innen feltet og en eksemplarisk taksonomisk kunnskap, som muliggjør publiseringen av denne utgaven.

God lesning!

Dear reader,

We have the pleasure of presenting this special issue of AGARICA about the Pezizomycetes in Grimsdalen, Norway. This volume is adjusted to the material that we in the editorial board and the author would like to communicate, and has thus not formally been blind peer reviewed, but reviewed by an experienced colleague.

The author, Professor emeritus Trond Schumacher, has had a long career as a mycologist at the University of Oslo. In his work, he has been particularly affectionate towards Ascomycetes; he did his doctoral degree in systematics in the genus *Scutellinia* and the last years the genus *Helvella* has been in focus. In this volume, Trond presents his findings from collections made in Grimsdalen from 1979-1985, where most of his fieldwork has taken place, supplied with more recent collections. It is important for us, as editors, to highlight the importance of such works. Much of our knowledge about Norwegian alpine fungi is based on a few individuals' lifelong relationships to their fungal groups and special alpine areas, such as Grimsdalen, and we believe that it is essential that this knowledge is not lost, but made available through publication. We would like to thank Trond for his insistent efforts, his long experience and enthusiasm within the field, as well as an exemplary taxonomic knowledge, that makes the publication of this volume possible.

Enjoy!

Ella Thoen og Anders K. Wollan

The Pezizomycetes of Grimsdalen, Dovre, South Norway

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SUMMARY

We report on an annotated list of 115 operculate discomycetes (Pezizomycetes) from sub-alpine and alpine habitats in the mountain massif of Grimsdalen, Dovre, South Norway. Five-hundred-and-sixty-five collections that originate from fieldwork in Grimsdalen in the years from 1979 to 1985, supplemented with an additional ca. 110 collections from repetitive excursions to the area in more recent years, are determined and assigned to species in the present survey.

INTRODUCTION

An early contribution to the discomycete flora of Grimsdalen is the photofunga 'Arctic and Alpine Fungi – 4' by Schumacher & Mohn Jenssen (1992). Here the authors provide macro- and micrographs and descriptions of 25 species of Pezizomycetes and Leotiomycetes and give introductory remarks on the more important vegetation types, and genera and species number of Pezizomycetes known to colonize this mountaineous area of Norway. Contemporary and subsequent taxonomic and ecological studies by Schumacher and co-authors also include specimens of Pezizomycetes from Grimsdalen (Schumacher 1987, 1990, 1992, 1993a, b, Kristiansen & Schumacher 1993, Gaarder et al. 1996, Landvik et al. 1998, Landvik et al. 1999, Skrede et al. 2017, Hansen et al. 2019, Løken et al. 2019), but a complete annotated species list is lacking.

A synopsis of taxonomic and ecological groups of Grimsdalen's fungi, including a short-list of earlier records of specific taxonomic and ecological groups of species from Grimsdalen and the surrounding mountains, is included in Gaarder et al. (1996). Later,

Jeppson (2011) gave an account to the Gastromycetes of Grimsdalen, providing confirmative description(s) and illustration(s) of the pertinent species. A short overview of the natural and cultural heritage of the Grimsdalen valley was included in Jeppson (2011) as well. The framework of the presentation of the Pezizomycetes from the area follows Jeppson (2011), which implies that only a subset of the more interesting and rare taxa is shortly commented upon.

MATERIALS AND METHODS

Apothecia from fresh and dried specimens were studied by light microscopy in squash mounts and sections cut by hand embedded in water, Melzer's reagent and methylene blue in lactic acid (Cotton blue). Microscopic examinations were carried out on fresh collections, when available or from dried fungarium specimens rehydrated in water. Apothecia were fixed in formalin-acetoalcohol (5 ml formalin, 5 ml glacial acetic acid, 90 ml 70% ethyl-alcohol), then dehydrated in a graded butyl alcohol series, embedded in paraffin, and sectioned at 8-10 µm thickness, the staining of apothecial sections following the protocol of Johansen (1940). SEM of ascospores from fresh or dried specimens follows the techniques outlined by Schumacher (1990, 1991). We record photomicrographs taken with a 35 mm camera mounted on a Zeiss WL microscope, and SEM of ascospores with a JEOL JSM-1 scanning electron microscope. Microanatomical terminology follows Starbäck (1895) and Korf (1973).

RESULTS

The revised list of Pezizomycetes from Grimsdalen includes 115 species.

The most collected genera are *Helvella* (Helvellaceae), *Scutellinia* (Pyronemataceae) and *Peziza* (Pezizaceae) with twenty-two, fifteen and twelve species, respectively.

Twenty-seven taxa are true arctic-alpine species that occasionally follow river beds and road verges down to prealpine sites (marked **AA**), while eighty-one species are distributed in the lowlands as well as in arctic-alpine habitats (marked **LA**) of Norway. Norwegian names of the species, whenever available, are included (e.g. N: name, followed by an [AA] or [LA] mark).

Recent molecular studies of Pezizomycetes have largely dealt with high-level systematics and circumscription of monophyletic genera of the group. This has to a large degree been incorporated in the work by Baral (2016). Molecular approaches with the aim of gaining knowledge of species limits and cryptic speciation at effect in this group of fungi, are still rather few. Important contributions that have influenced the taxonomic conclusions of the current annotated species list apply to the genera *Otidea* (Hansen & Olariaga 2015, Olariaga et al. 2015), *Cupulina* (Dougoud et al. 2015), *Tarzetta* (Van Vooren et al. 2019), *Trichophaea* (Van Vooren 2016), *Tricharina* (Van Vooren et al. 2017), *Helvella* (Skrede et al. 2017, Løken et al. 2020), *Dissingia* (Hansen et al. 2019) and *Balsamia* (Hansen et al. 2019).

ANNOTATED SPECIES LIST

The suprageneric classification follows Baral (2016).

ASCOBOLACEAE Boud. ex Sacc.

Ascobolus Pers.

(1) *Ascobolus carbonarius* P. Karst., Fungi Fenn. no. 463. 1866; Notis. Sällsk. Fauna Fl. Förh. 11: 202. 1870. '1871'

N: **Bålprykkbejer** [LA] Plate I A; Fig. 1

- Buåi, at fire pit, 17 Sept. 1983, T. Schumacher & K. Østmoe D140/83 (O).
- Tverråi, at fire pit, 18 Sept. 1983, T. Schumacher & K. Østmoe D 211/83, D 212/83 (O - 2 coll.).
- Tverråi estuary, at fire pit, 19 Sept. 1983, T. Schumacher & K. Østmoe D 229/83 (O).
- Tverrliseter, burnt site at river Grimsa, 19 Sept. 1983, T. Schumacher & K. Østmoe D 223/83 (O).
- Grimsdalshytta, at fire pit, 6 Aug. 1989, T. Schumacher G 59/89 (O).

Confirmative description and illustration:

Brummelen (1967): 147-150.

Commentary. The species is common on burnt sites in the investigation area.

(2) *Ascobolus cervinus* Berk. & Broome, J. Linn Soc. Lond. (Bot.) 15: 85. 1876.

N: no vernacular

[LA] Plate I B

- Storberget, in subalpine birch forest, on dung of moose, 5 Aug. 1983, T. Schumacher & K. Østmoe D 87/83 (O).
- Grimsa at Storberget, river terrace, on dung of moose, 26. June 1984, T. Schumacher & K. Østmoe D 12/84 (O).

Confirmative description and illustration:

Brummelen & Kristiansen (1998): 119-122.

Commentary. The species is common on moose dung in North and South Norway although the number of registrations (5) in the files of Norwegian Biodiversity Information Centre is few. The species produces apothecia in early season. Brummelen & Kristiansen (1998) recorded a few additional collections from Norway.

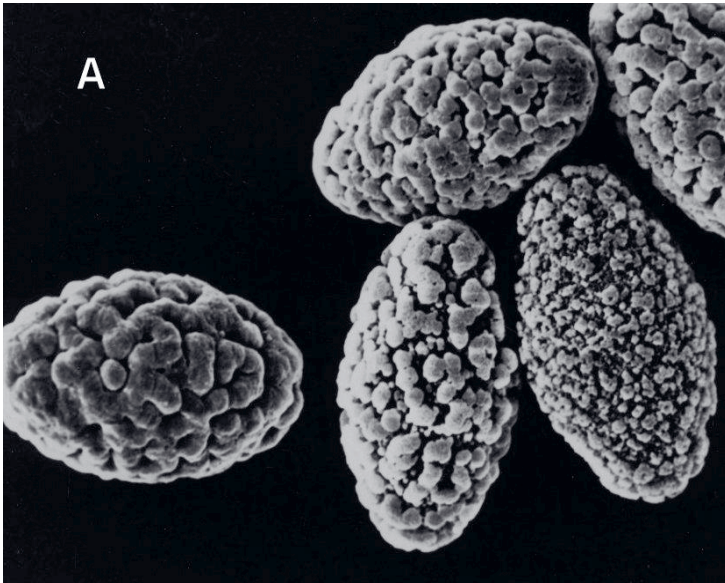


Plate I. Ascospore ornamentation in *Ascobolus* spp. **A** – *A. carbonairus*, coll. D140/83;
B – *A. cervinus*, coll. D12/84.

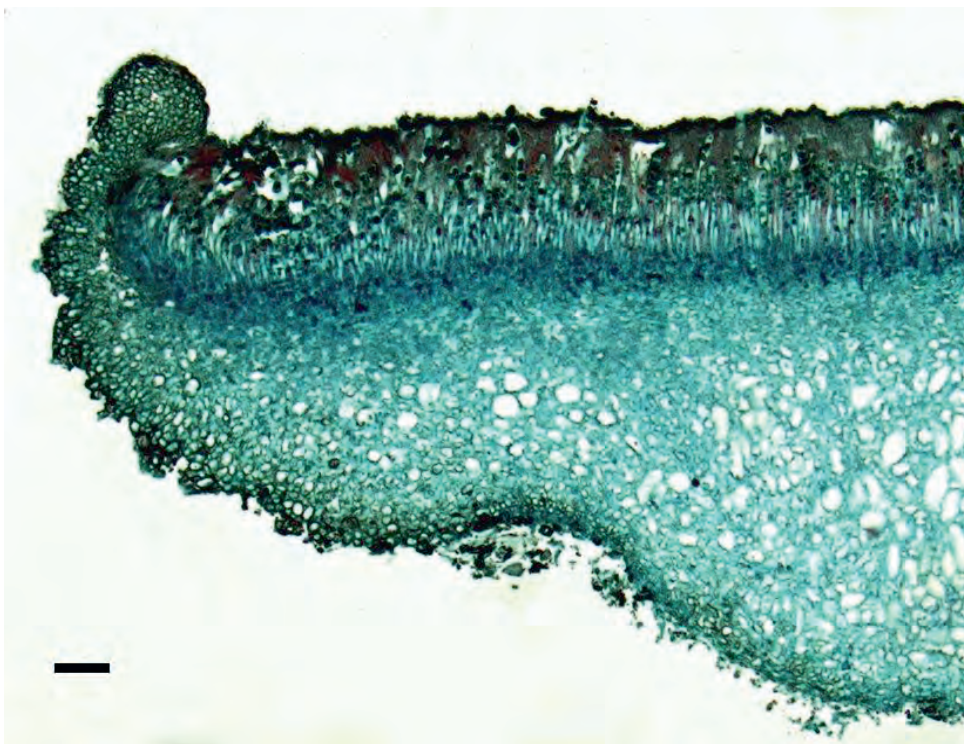


Figure 1. Median section of hymenium and excipulum *Ascobolus carbonarius*, coll. D140/83. Bar = 50 μ m.

(3) *Ascobolus furfuraceus* Pers., Neues Mag. Bot. 1: 115. 1794 – *nom. sanct.* N: no vernacular [LA]

N: **Gulgrønt prikkbeger** [LA]

- Pundarvangen, cow dung in grassland, 16 June 2019, E. Johannesen & T. Schumacher (O).

- Grimsa 500 m N Tverrgejet, on manured toilet paper outdoors, 19 Sept. 1983, T. Schumacher & K. Østmoe D 205/83 (O).

Confirmative description and illustration:
Brummelen (1967): 128-130.

Confirmative description and illustration:
Brummelen (1967): 106-109.

(4) *Ascobolus lignatilis* Alb. & Schw., Consp. Fung. 347. 1805 – *nom. sanct.*

Commentary. The species typically exhibits relatively large (2–6 mm), broad-stalked yellow-green apothecia. The species is apparently rare in Norway. It seems to prefer manured toilet paper outdoors.

***Saccobolus* Boud.**

(5) *Saccobolus versicolor* (P. Karst.) P. Karst., Acta Soc. Fauna Flora fenn. 2 (no. 6): 123. 1885.

Basionym: *Ascobolus versicolor* P. Karst., Bidr. Känn. Finl. Nat. Folk 19: 79. 1871.

N: **Dvergprykkbeger** [LA]

- Pundarvangen, cow dung in grassland, 16 June 2019, E. Johannesen & T. Schumacher (O).

Confirmative description and illustration:
Brummelen (1967): 186-189.

PEZIZACEAE Dumort.

***Adelphella* Pfister, Matočec & I. Kušan**

(6) *Adelphella babingtonii* (Berk. & Broome) Pfister, Matočec & I. Kušan, Mycologia Montenegrina 11: 14. 2009. '2008'

Basionym. *Peziza babingtonii* Berk. & Broome, Ann. Mag. nat. Hist., Ser. 2 7: 179. 1851.

Synonyms. *Psilopezia babingtonii* (Berk. & Broome) Berk., Outl. Brit. Fung.: 373. 1860. *Pachyella babingtonii* (Berk. & Broome) Boud., Hist. Class. Discom. Eur.: 51. 1907.

N: **Klattbeger** [LA]

- Grønbakktjønnin, 4 Aug. 1989, T. Schumacher G20/89 (O)

Confirmative descriptions and illustrations:
Breitenbach & Kränzlin (1981): 80, Fig. 56; Pfister et al. (2009): 10-14.

Commentary. The species was earlier included in *Psilopezia* or *Pachyella*, but is now accommodated in the segregate genus *Adelphella* (Pfister et al. 2009).

***Boudiera* Cooke**

(7) *Boudiera dennisii* Dissing & Sivertsen in Dissing, Kew Bull. 31: 755. 1977.

N: **Fjellputebeger** [AA] Plate II A

- Grimsa E Gråsida, on river bank, 9 Aug. 1981, T. Schumacher & K. Østmoe 14/81 (O); Ibid., 4 Aug. 1983, T. Schumacher & K. Østmoe D 79/83 (O); Ibid., 15 Aug. 2001, T. Carlsen & T. Schumacher (O).
- Grimsa at Verkenseter, on river bank, 5 Aug. 1989, T. Schumacher G45/89 (O); Ibid., 11 Aug. 1990, T. Schumacher F9/90 (O).

Confirmative descriptions and illustrations:
Dissing (1977): 755-758; Schumacher & Mohn Jenssen (1992): 23-24.

Commentary. A few specimens of *B. dennisii* from Grimsdalen were included in Dissing & Schumacher (1979).

***Iodophanus* Korf**

(8) *Iodophanus carneus* (Pers.) Korf in Kimbr. & Korf, Amer. J. Bot. 54: 19. 1967.

Basionym: *Ascobolus carneus* Pers. ('carnea'), Syn. meth. fung. 2: 676. 1801.

N: **Trøbbelbeger** [LA] Plate II B

- Grimsdalen at Buåi, on dung (human), 17 Sept. 1983, T. Schumacher & K. Østmoe D 147/83, D 148/83 (O – 2 coll.).

Confirmative description and illustrations:
Kimbrough et al. (1969): 1196.

(9) *Iodophanus hyperboreus* T. Schumach., Mycotaxon 43: 40. 1992.

N: **Polartøbbelbeger** [AA] Plate II C

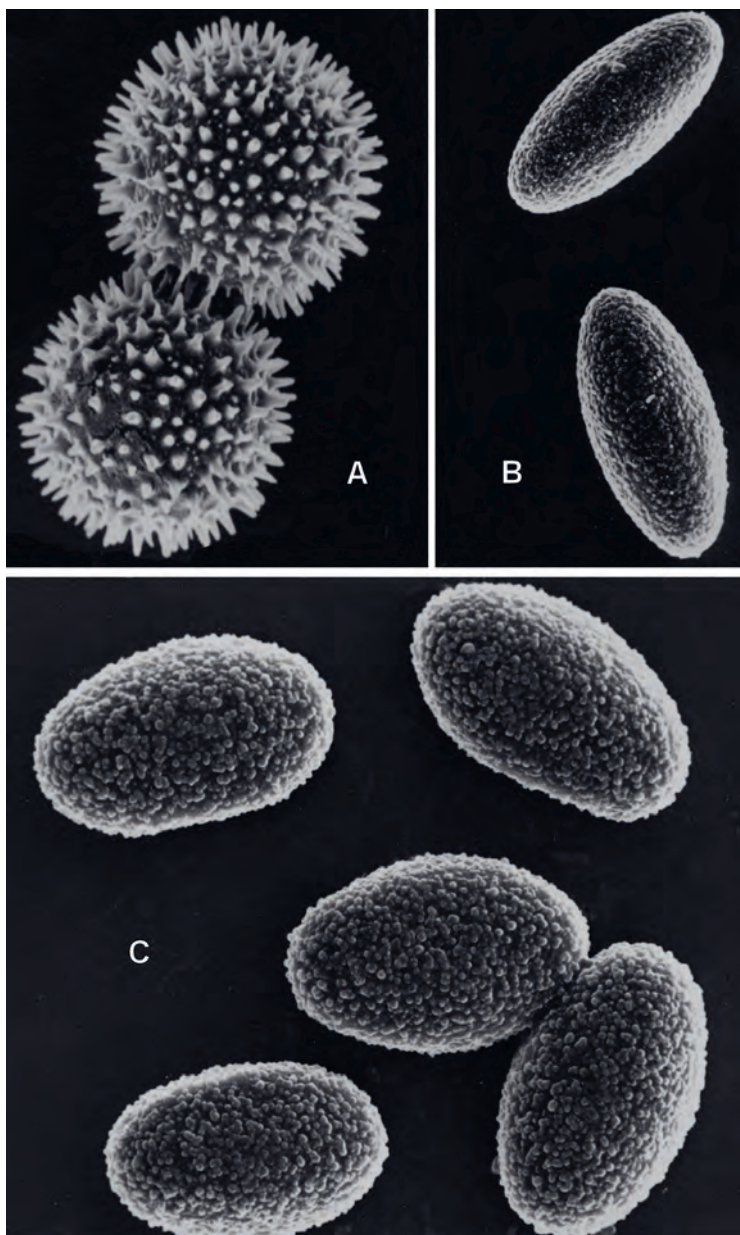


Plate II. Ascospore ornamentation in *Boudiera* and *Iodophanus* spp. **A** – *Boudiera dennisii*, coll. D79/83; **B** – *Iodophanus carneus*, coll. D147/83; **C** – *I. hyperboreus*, coll. S2/90.

- Grimsa at Gråsida, 1 km NE Tverrgjelet, 1000 m a.s.l., 4 Aug. 1983, T. Schumacher & K. Østmoe D. 68/83 (O); Ibid., 6 Aug. 1989, T. Schumacher G 44/89 (O-*holotype*); Ibid., 11 Aug. 1990, T. Schumacher (O); Ibid., 20 Aug. 1999, T. Schumacher (O).

Confirmative descriptions and illustrations:
Schumacher (1992): 40-44; Schumacher & Mohn Jenssen (1992): 37-38.

Commentary. *Iodophanus hyperboreus* is a true arctic-alpine species, which was originally described based on a specimen from Verkenseter in Grimsdalen (Schumacher 1992). The species has later been recorded from Svalbard, Greenland and the French Alps (Schumacher & Mohn Jenssen 1992, Van Vooren 2015).

(10) *Iodophanus testaceus* (Moug.) Korf, Am. J. Bot. 54: 19. 1967.

Basionym: *Peziza testacea* Moug., in Fr., Elench. fung. 2: 11. 1828.

N: no vernacular

[LA]

- Tverråi 940 m a.s.l., on burnt site, 6 Aug. 1984, T. Schumacher & K. Østmoe D 146/84 (O).

Confirmative description and illustrations:
Kimbrough et al. (1969): 1197.

Commentary. *Iodophanus testaceus* occurs on charcoal in burnt sites. It resembles *Iodophanus carneus*, and has even been synonymized with the latter, but deviates distinctly in ecology and microanatomical details.

***Marcelleina* Brumm., Korf & Rifai**

(11) *Marcelleina personii* (P. Crouan & H.

Crouan) Brumm., *Persoonia*, Suppl. 1: 233. 1967.

Basionym: *Ascobolus personii* P. Crouan & H. Crouan, *Florule Finistère* (Paris): 56. 1867.

N: **Lillabeger**

[LA] **Plate III A-B**

- Sjøberget, 1150 m a.s.l., on polygone ground in Dryadetum, 10 Aug. 1981, T. Schumacher & K. Østmoe 29/81 (O).

- Kattuglehøi, 1050 m a.s.l., on calcareous soil under leaves of *Tussilago*, 12 Aug. 1981, T. Schumacher & K. Østmoe TS 277/81 (O); Ibid., 17 Sept. 1983 D 162/83 (O).

Confirmative description and illustrations:
Moravec (1987): 477, Figs. 1-4.

(12) *Marcelleina rickii* (Rehm) Graddon, Trans. Br. mycol. Soc. 66: 170. 1976.

Basionym: *Barlaea rickii* Rehm, in Rick, Öst. bot. Z. 48: 61. 1898.

N: **Småsporet lillabeger**

[LA]

Plate III C; Fig. 2

- Grimsa at Storberget, 7 Aug. 1976, T. Schumacher (O).

- Grimsa W Gråsida, in middle inundation zone, 9 Aug. 1981, T. Schumacher & K. Østmoe 16/81 (O).

- Tverråi estuary, on river terrace, 10 Aug. 1981, T. Schumacher & K. Østmoe 39/81 (O).

- Tverråi, on river slopes, 10 Aug. 1983, T. Schumacher & K. Østmoe D 127/83 (O); Ibid., 18 Sept. 1983, T. Schumacher & K. Østmoe D 197/83 (O).

- Grimsa at Tverrliseter, on sandy soil at the road, 19 Sept. 1983, T. Schumacher & K. Østmoe D 236/83 (O).

- Grønbakkin, on sandy soil at road verge, 1200 m a.s.l., 4 Aug. 1989, T. Schumacher G 17/89; Ibid., 5 Aug. 1989, T. Schumacher

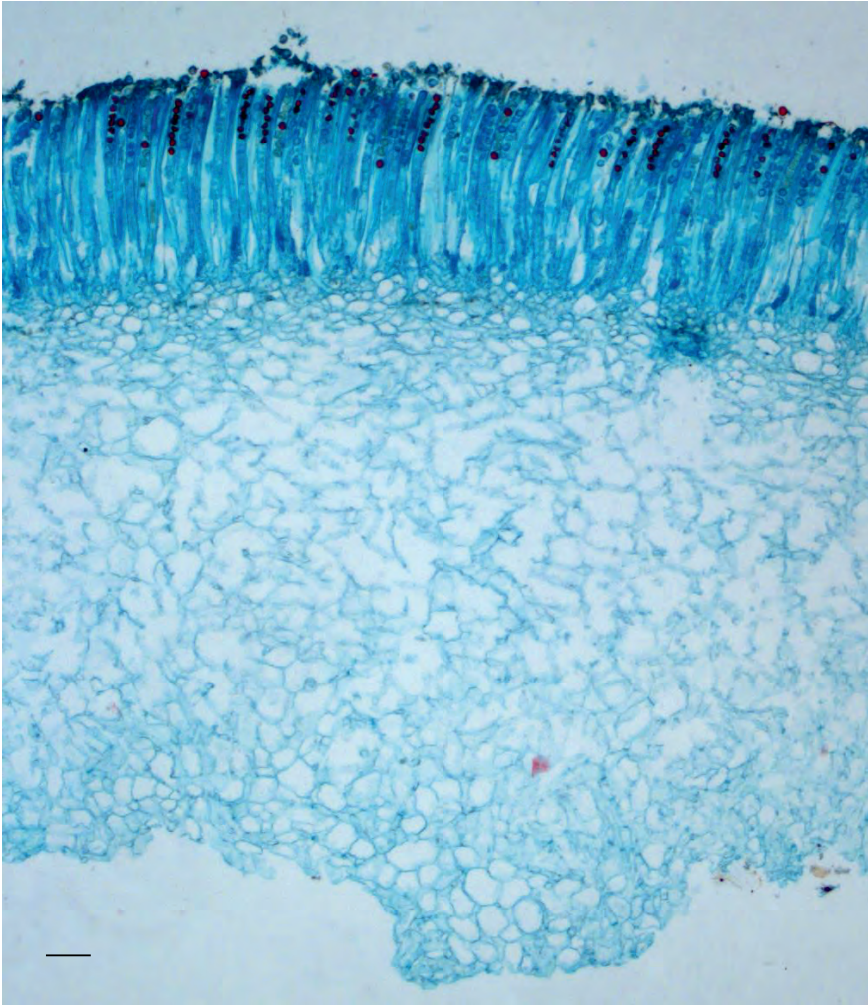


Figure 2. Median section of hymenium and excipulum in *Marcelleina rickii*, coll. G17/89.
Bar = 50 μ m.

G 22/89 (O).

Confirmative descriptions and illustrations:
Moravec (1987): 479, Figs. 5-6; Schumacher
& Mohn Jenssen (1992): 41-42.

Commentary. Three additional collections
are registered in the Norwegian Biodiversity
Information Centre. Schumacher & Mohn
Jenssen (1992) provided a description and
photograph of a vital specimen from the area.

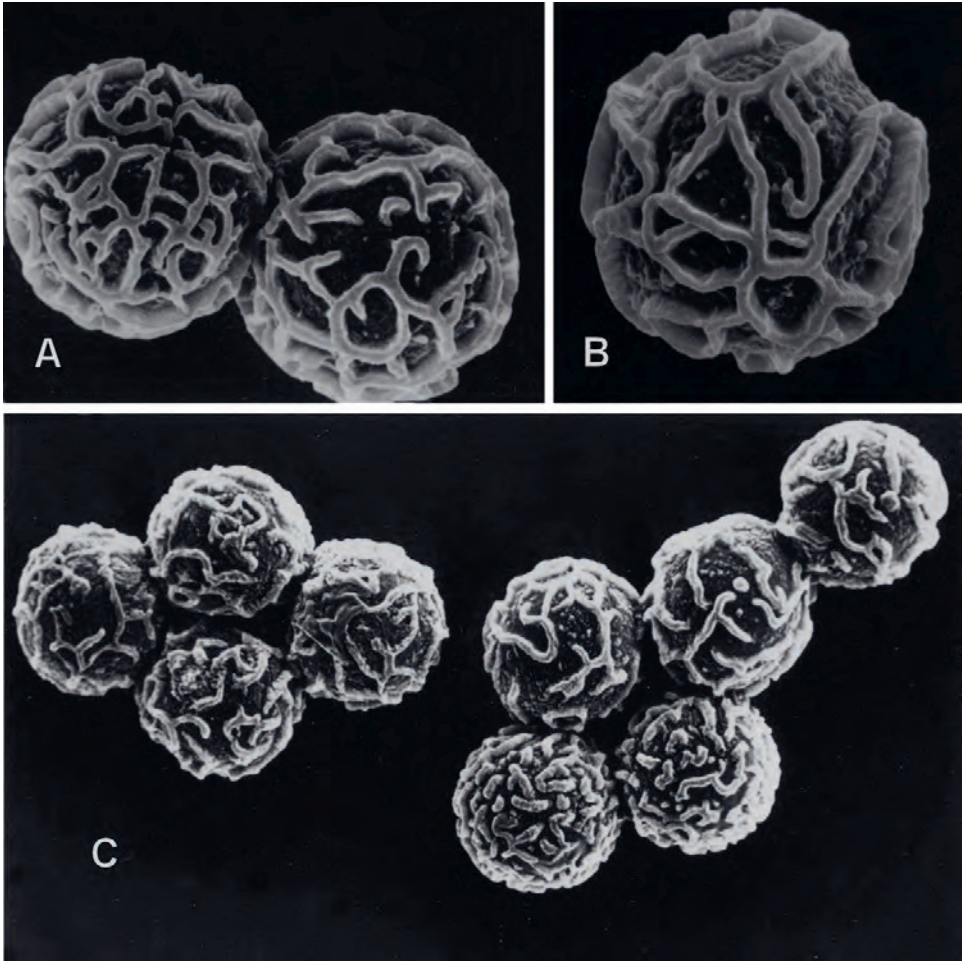


Plate III. Ascospore ornamentation in *Marcelleina* spp. **A** – *Marcelleina persoonii*, coll. D162/83; **B** – coll. 277/81; **C** – *M. rickii*, coll. D236/83.

***Peziza* L.**

(13) *Peziza alaskana* Cash, J. Washington Acad. Sci. 44(2): 44. 1954.

- Grimsa at Tverrliseter, dried up river bed, 28 July 1979, T. Schumacher (O).
- Svartknattin, in *Dryas* vegetation, 11 Aug. 1982, T. Schumacher & K. Østmoe 289/82 (O).

N: Polarbegersopp

[AA]

Plates IV A, B; V A

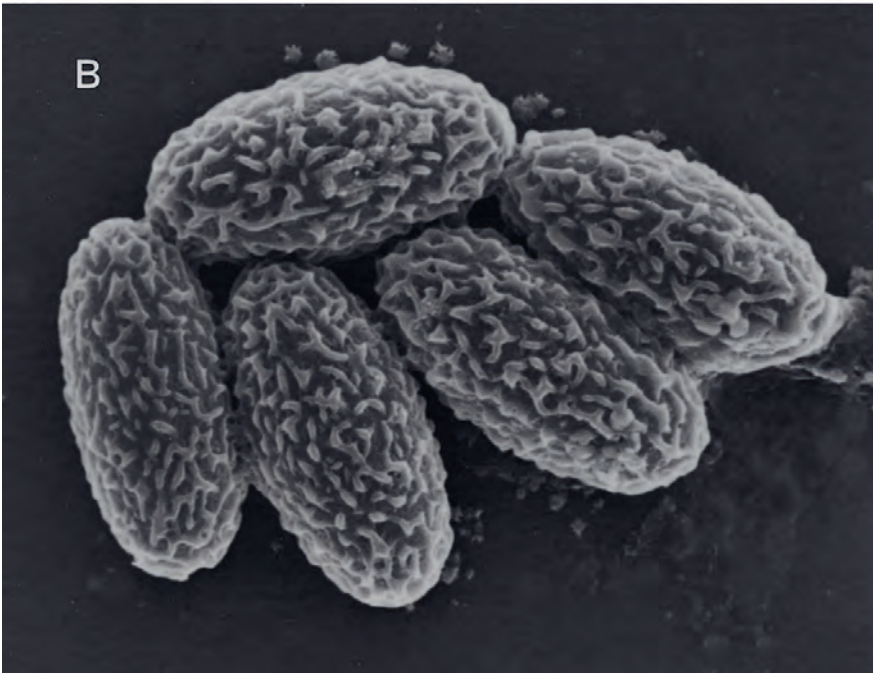
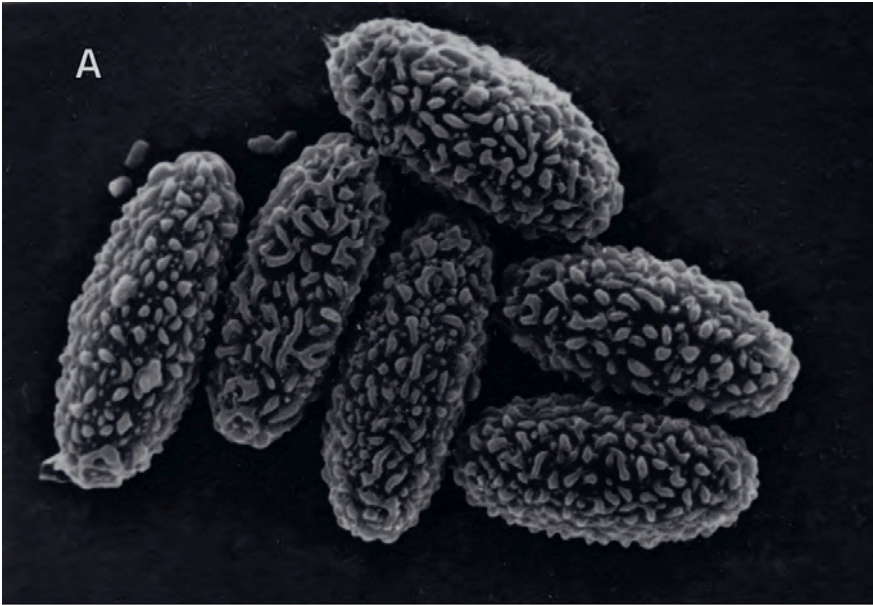


Plate IV. Ascospore ornamentation in *Peziza* spp. **A** – *P. alaskana*, coll. G4/89; **B** – coll. G24/89.

- S Tverråi N Kattuglehøi, 7 Aug. 1982, T. Schumacher & K. Østmoe 32/82 (O).
- Tverrgjellbekken, middle inundation zone on sandy soil, 26 July 1984, T. Schumacher & K. Østmoe D 59/84, D 60/84, D 68/84 (O – 3 coll.); Ibid., on open soil in Dryadetum along river, 19 July 1980, T. Schumacher (O).
- Grimsa at Storberget, 9 Aug. 1982, T. Schumacher & K. Østmoe 157/82 (O).
- N Hornsjøhøi, sandy soil in rivulet, 11 Sept. 1982, T. Schumacher & K. Østmoe 499/82 (O).
- Buåi at S Kattuglehøi, 12 Aug. 1981, T. Schumacher & K. Østmoe 271/81, 190/81 (O – 2 coll.); 17 Sept. 1983, T. Schumacher & K. Østmoe D 169/83, D 171/83 (O – 2 coll.); 2 Aug. 1989, T. Schumacher G 4/89 (O).
- Road to Haverdalseter, 1200 m a.s.l., 5 Aug. 1989, T. Schumacher G 24/89 (O).
- Grimsa at Jegerhøi, middle inundation zone, 9 Aug. 1981, T. Schumacher & K. Østmoe 13/81 (O).
- Grimsa at Grimsdalshytta, 20 Aug. 1996, T. Schumacher (O); 22 Aug. 1997, T. Schumacher (O).
- Tverråi, on river terraces, 6. Aug. 1982, T. Schumacher & K. Østmoe 11/82 (O); 24 July 1983, T. Schumacher & K. Østmoe D 51/83 (O); 27 July 1984, T. Schumacher & K. Østmoe D 76/84 (O); 6 Aug. 1984 T. Schumacher & K. Østmoe, D 126/84, D 133/84, D 138/84 (O – 3 coll.); 10 Aug. 1983, T. Schumacher & K. Østmoe D 123/83, D 133/83 (O – 2 coll.); 14 Aug. 2001, T. Schumacher (O).
- Grimsa at Verkenseter, 9 Aug. 1984, T. Schumacher & K. Østmoe D 172/84 (O).
- Grimsa 500 m SW Verkenseter, 10 Sept. 1983, T. Schumacher & K. Østmoe D 177/83 (O); 18 Sept. 1983, T. Schumacher & K. Østmoe D 186/83 (O).
- Grimsa at Tverrliseter, 19 Sept. 1983, T. Schumacher & K. Østmoe D 243/83 (O).

Confirmative description and illustrations:
Schumacher & Mohn Jenssen (1992): 25-26

Commentary. *Peziza alaskana*, originally described from Alaska (Cash 1954), is a common member of the arctic-alpine fungal of the North American and the European continents. Schumacher & Mohn Jenssen (1992) provided a description and photograph of a vital specimen from Grimsdalen.

(14) *Peziza badia* Pers., Obs. mycol. 2: 78. 1800. '1799' – *nom. sanct.*

N: **Brun begersopp** [LA]

- Buåi estuary, along the road, 12 Aug. 1996, T. Schumacher (O).
- Buåi, on track in birch forest, 11. Sept. 1982, T. Schumacher & K. Østmoe 475/82 (O); 29 July 1984, T. Schumacher & K. Østmoe D 98/84 (O).
- Tverråi, on river terrace, 6 Aug. 1984, T. Schumacher & K. Østmoe D 141/84 (O).

Confirmative description and illustration:
Donadini (1979c): 49-50, Plate 1. Fig. 1.

(15) *Peziza badiofuscooides* Donadini, Bull. Soc. Linn. Provence 31: 21. 1979. '1978'

N: no vernacular [LA] **Plates V B; VI A-D**

- Buådalen, on track, 12 Aug. 1981, T. Schumacher & K. Østmoe 194/81, 278/81 (O – 2 coll.); 5 Aug. 1989, T. Schumacher G 18/89, G 48/89 (O – 2 coll).

Confirmative description and illustrations:
Donadini (1979c): 56, Plate 2 fig. 9.

Commentary. Not recorded from Norway earlier. Macroscopically it resembles *P. badia*, however, the microanatomy clearly

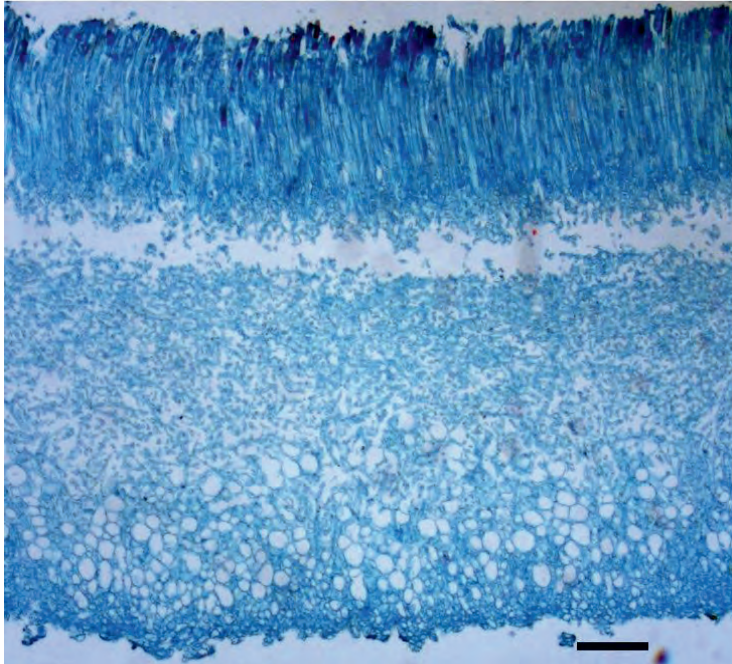
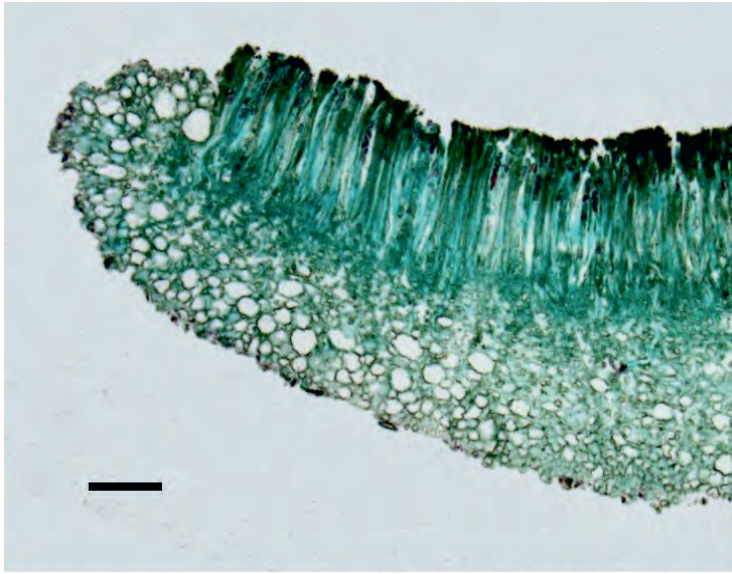


Plate V. Median section of hymenium and excipulum in **A** – *Peziza alaskana*, coll. D133/84 and **B** – *Peziza badiofuscoides*, coll.G18/89. Bars = 50 μ m.

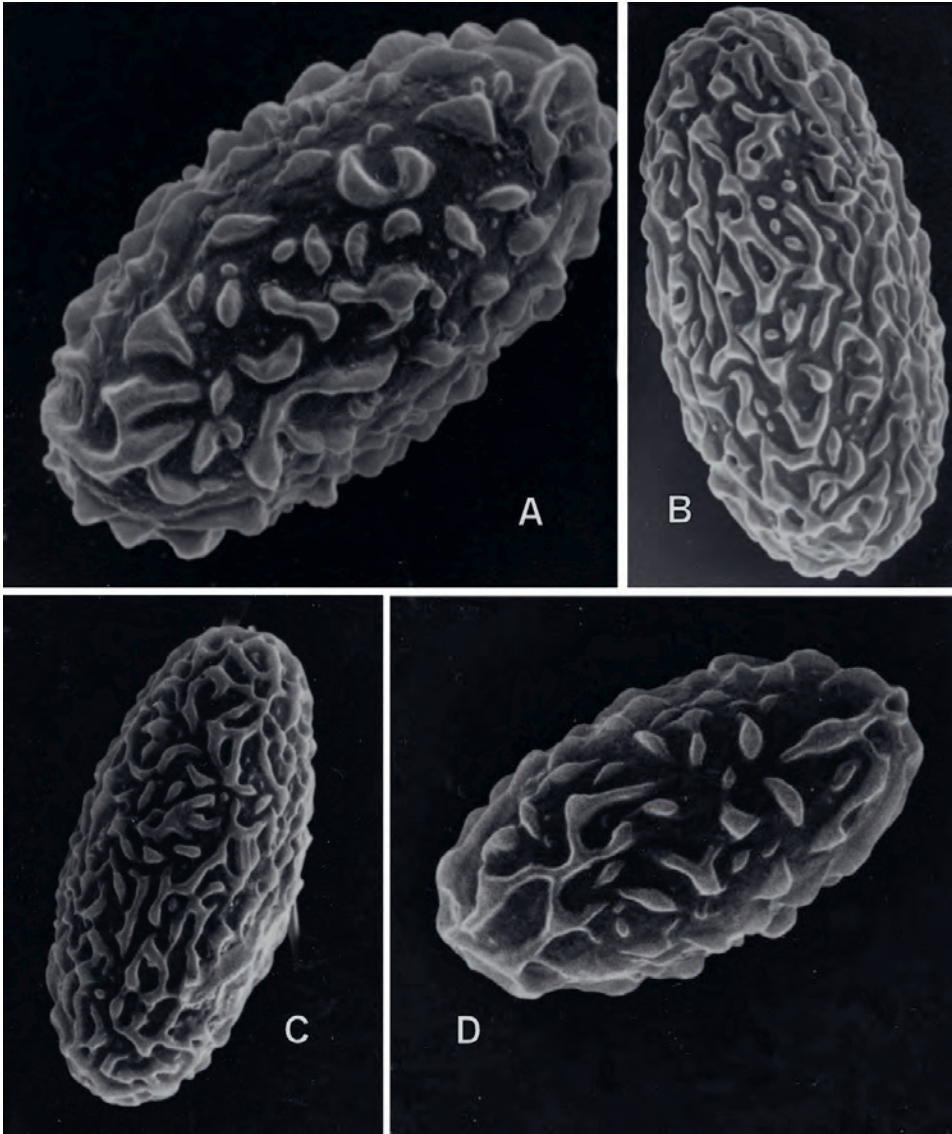


Plate VI. Ascospore ornamentation in *Peziza badiofuscoides*, **A** – coll. 278/81; **B** – coll. 618/89; **C** – coll. G48/89.

distinguishes the two species. The ascospores in *P. badiofuscoides* are obtusely ellipsoid, 14–16 x 7.8–9.2 μm, with partly anastomosing

ridges building an incomplete reticulum on the ascospore wall.

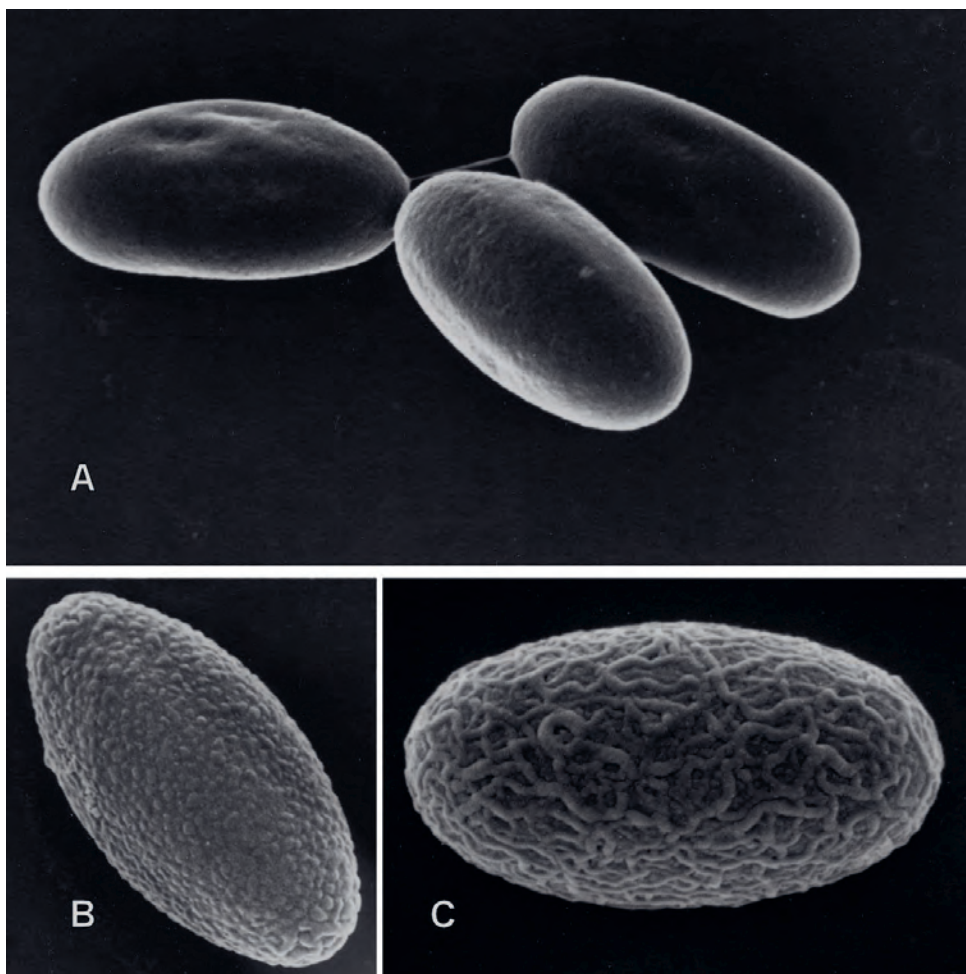


Plate VII. Ascospore ornamentation in *Peziza* spp. **A** – *P. boudieri*, coll. G2/89; **B** – *P. buxea*, coll. 168/81; **C** – *P. luteoloflavida*, coll. D170/83.

(16) *Peziza boudieri* (Cooke) Donadini, *Docums Mycol.* 9 (no. 36): 25. 1979. *Basionym.* *Peziza granulosa* var. *boudieri* Cooke, *Mycogr.*, Vol. 1. *Discom.* (no. 6): 232. 1879.
Synonym. *Aleuria granulosa* var. *boudieri* (Cooke) Boud., *Icon. Mycol. livr.* 5: no. 14, pl. 273. 1905.

N: no vernacular

[AA] Plate VII A

- Grimsa at Tverrliseter, on silt underneath *Juncus arcticus*, 19 Sept. 1983, T. Schumacher & K. Østmoe D 241/83 (O); on silt under *Salix*, 7 Aug. 1989, T. Schumacher G 63/89 (O).
- Tverråi, on silt underneath *Salix*, 5 Aug.

1989, T. Schumacher G 67/89 (O).
- Grønbackkin, N Hornsjøhøi, on gravel under-
neath *Salix arbuscula*, 5 Aug. 1989, T.
Schumacher G 2/89, G 3/89, G 28/89 (O – 3
coll.).

Confirmative description and illustrations:

Donadini (1979b): 25, Plate 4 Fig. 17, Plate 8
Fig.17; Boudier (1905): Plate 273, as *Aleuria*
granulosa var. *boudieri*.

Commentary. The species was re-combined in
Peziza by Donadini (1978), however, without
citing the correct basionym; this was corrected
later (Donadini 1979b), also meeting the
requirement of Art. 41. 8 (ICN 2018), thus the
combination *P. boudieri* (Cooke) Donadini is
valid. *Peziza boudieri* grows on silt in prealpine
and alpine riverbeds and rivulets of the
investigated area.

The status of the species in Norway is
unknown. Additional specimens from
Norway may have entered the files of
Norwegian Biodiversity Information Centre
under the illegitimate name *Peziza granulosa*
Schumach. sensu Boudier (see also no. 19 of
this list).

(17) *Peziza buxea* Quel., C. R. Ass. franc.
Av. Sci. Rouen 12: 509. 1883. '1884'
Synonym. *Peziza buxoides* Donadini, Bull.
Soc. Linn. Prov. 31: 15. 1978. '1977'

N: no vernacular [LA] Plate VII B

- Buåi, on river terrace, 12 Aug. 1981, T. Schu-
macher & K. Østmoe 168/81 (O).

Confirmative description and illustrations:

Donadini (1978): 71-73, Plate 3 Fig. 15,
Plate 8 Fig. 15.

Commentary. The species is new to Norway.
The present species concept coincides with
that outlined by Donadini (1978). For

unknown reasons, the species was later
referred to as a new species *P. buxoides* by
Donadini (1979a). The ascospores appear
smooth under the lense, and irregularly
verruculose in SEM (cf. Plate VII B). A
gregarious growth habit when 'fruiting' is
characteristic.

(18) *Peziza gerardii* Cooke, Hedwigia 14:
81. 1875.

Synonym. *Peziza ionella* Quel., Bull. Soc.
bot. Fr. 24: 328. 1877.

N: **Irisbegersopp** [LA] Plate VIII

- Sjøberget, in Dryadetum, 10 Aug. 1981 T.
Schumacher & K. Østmoe 28/81 (O).
- Buåi valley, on solifluction lobes along the
river, 12 Aug. 1981, T. Schumacher & K.
Østmoe 263/81 (O); Ibid., 8 Aug. 1989, T.
Schumacher G55/89 (O).
- Tverråi, on river slopes, 9 Aug. 1982, T.
Schumacher & K. Østmoe 154/82 (O); Ibid.,
27 July 1984 D 78/84, D 82/84 (O – 2 coll.).

Confirmative descriptions and illustrations:

Donadini (1980): 244-246; Schumacher &
Mohn Jenssen (1992): 27-28.

Commentary. Schumacher & Mohn Jenssen
(1992) provided a description and photograph
of a vital specimen from the area.

The species is aberrantly placed in *Peziza*
sensu stricto, however, its generic
affiliation awaits further studies. The species
has discoid, violaceous to purplish brown
apothecia, amyloid asci along their whole
length, and large, fusoid ascospores. The
ascospore wall exhibits longitudinal
anastomosing ridges in SEM (cf. Schumacher
& Mohn Jenssen 1992, Pl. I.D). *Peziza*
gerardii may easily be mistaken for a
Marcellina species in the field.

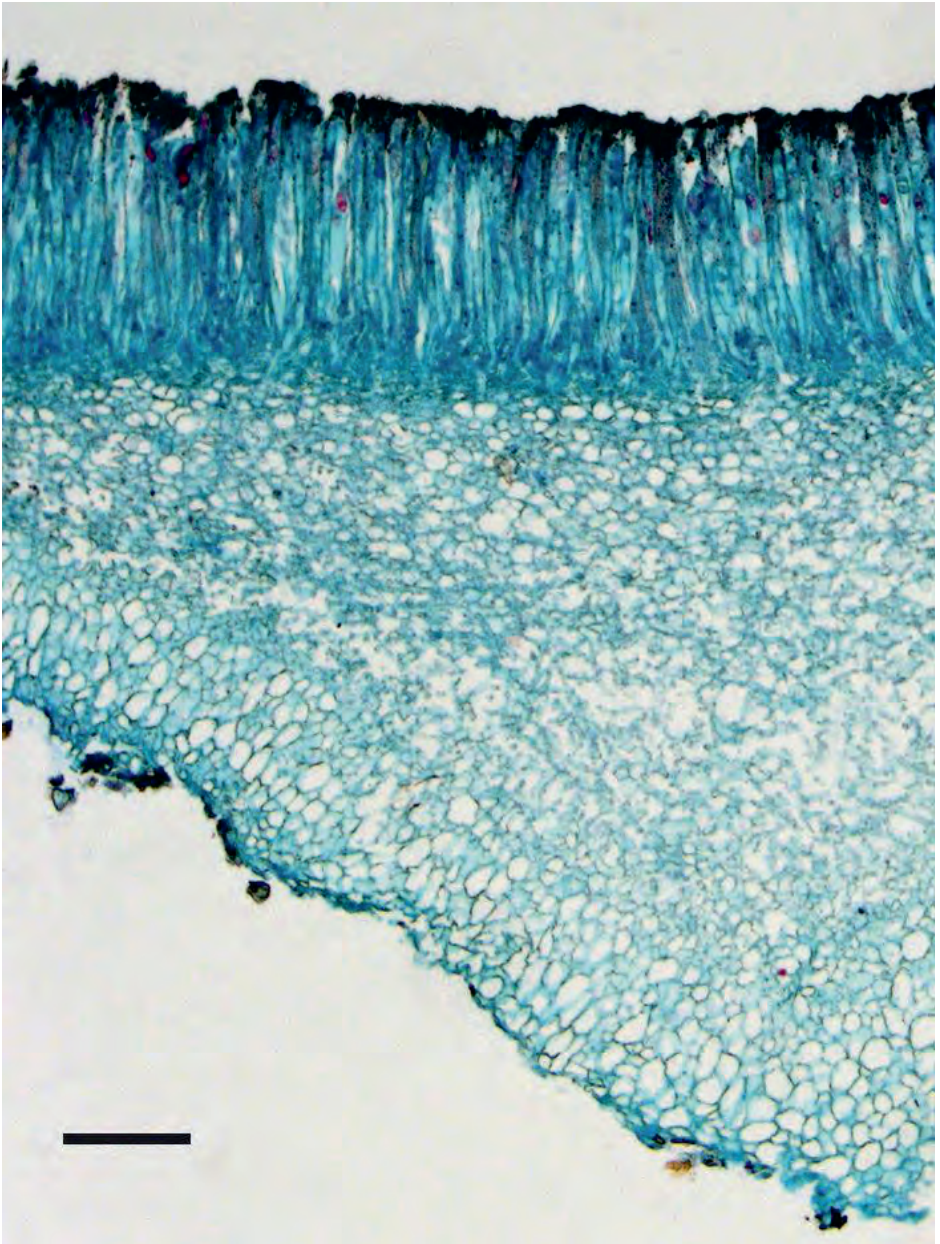


Plate VIII. Median section of hymenium and excipulum in *Peziza gerardii*, coll. G55/89. Bar = 50 μ m.

(19) *Peziza granularis* Donadini, Bull. Soc. Linn. Provence 30: 73. 1978. '1977'

Synonyms. *Peziza granulosa* Schumach., Enum. pl. 2: 415. 1803 - *nomen illegit.*, later *homonym* [ICN 2018: Art. 53.1], non *Peziza granulosa* Pers., Syn. meth. fung. 2: 667. 1801. *Aleuria granulosa* (Schumach.) Boud., Icon. Mycol. livr. 1: no. 34, pl. 272. 1904 - *nomen illegit.*, later *homonym* [ICN 2018: Art. 53.1], non *Aleuria granulosa* Gillet, Champignons de France, Discomycetes, 2: 44. 1879.

N: Grønnbrun begersopp

[LA]

- Buåi, along the river, underneath *Salix*, 29 July 1984, T. Schumacher & K. Østmoe D 102/84 (O).
- Buåi valley, on humid soil underneath *Aconitum* in birch forest, 9 Aug. 1984, T. Schumacher & K. Østmoe D 183/84 (O).

Confirmative description and illustrations:

Donadini (1978): 73-75, Plate 3 Fig. 16, Plate 8 Fig. 16). Boudier (1904): no. 34, pl. 272, as *Aleuria granulosa* (Schumach.) Boud.

Commentary. The species concept of *Aleuria granulosa* (Schumach.) Boud. sensu Boudier (1904) was acknowledged by Donadini (1978, 1979b), who provided a full description under the replacement name, i.e. *P. granularis*. The status of the species in Norway is inconclusive. Additional specimens from Norway have probably entered the files of the Norwegian Biodiversity Information Centre under the illegitimate name *Peziza granulosa* Schumach. sensu Boudier (N: seterbergersopp) (see no. 16 of this list).

(20) *Peziza luteoloflavida* Svr., Ceska Myk. 30: 137. 1976.

Basionym. *Plicaria luteola* Vel., Nov. mycol. novis. 150. 1947. – non *Peziza luteola* Fr., Syst. mycol. 2 (1): 110. 1822.

N: no vernacular

[LA] Plate VII C

- Buåi, on sandy soil in river bed, 17 Sept. 1983, T. Schumacher & K. Østmoe D 170/83 (O).

Confirmative descriptions and illustrations:

Svrcek (1976): 137, as *Plicaria luteola*; Kristiansen & Schumacher (1993): 138, Figs. 3G, 4E.

Commentary. The single collection above is the only record of the species from Norway. For a description of the species, see Kristiansen & Schumacher (1993).

(21) *P. megalochondra* (Le Gal) Donadini, Bull. Soc. Linn. Provence 30: 66. 1978. '1977' *Basionym.* *Aleuria megalochondra* Le Gal, Revue Mycol. 2: 158. 1937.

N: no vernacular

[LA]

- Buåi, on trunk of *Betula*, 12 Aug. 1981, T. Schumacher & K. Østmoe 86/81 (O).
- N Hornjøkollen, on moss and silt on inundated *Betula* trunk, 11 Sept. 1982, T. Schumacher & K. Østmoe 497/82 (O).
- Storberget, in dried up rivulet, 18 Sept. 1983, T. Schumacher & K. Østmoe D 220/83 (O).
- Verkenseter towards Jegerhøi, on charcoal in burnt site, 1. Sept. 1984, T. Schumacher & K. Østmoe (O).

Confirmative description and illustrations:

Le Gal (1937): 11-13, Figs. 5-6; Donadini (1978): 66-67.

Commentary. This medium-sized light to medium brown wood-inhabiting *Peziza* species, first described from France (Le Gal 1937), seems to be unrecorded from Norway earlier. In the invented area it typically grows on water-soaked *Betula* tree trunks lying ± submerged in rivulets. The ascospores are

perfectly smooth in SEM.

(22) *Peziza minor* (J. Moravec) stat. et comb. nov. – MycoBank MB 835120.

Basionym: *Galactinia praetervisa* (Bres.) Boud. var. *minor* J. Moravec, Ceska Mykol. 23: 32. 1969.

(Holotypus: Czech. Mladá Boleslav, Branžež, in carbonario in piceto 2. VII. 1966 leg. J. Moravec. Typus PR.)

N: no vernacular

[AA] Plate IX A

- Grimsa at Tverrliseter, burnt site, 19 Sept. 1983, T. Schumacher & K. Østmoe D 240/83 (O).

- Grimsa at Verkenseter, burnt site, 28 June 1984, T. Schumacher & K. Østmoe D 27/84 (O).

Confirmative description:

Moravec (1969): 32-33, as *Galactinia praetervisa* var. *minor*.

Commentary. The species is new to Norway. *Peziza minor* was originally described as an alpine variety of *Galactinia praetervisa* (= *Peziza subviolacea*; see no. 24 below) (Moravec 1969). It may resemble *Peziza subviolacea*, but in my opinion deserves specific rank. In Grimsdalen, *P. minor* grows in burnt sites, occasionally intermixed with *P. subviolacea*. However, it deviates from the latter by smaller apothecia rarely exceeding 10 mm in diam, a violet hymenium contrasting the white-coloured receptacle, and by the small uneven, angular verrucoid ellipsoid ascospores, 8.0–10.8 x 5.0–6.8 µm.

(23) *Peziza phyllogena* Cooke, Mycogr., Vol. 1. Discom. (London) (no. 4): 148, fig. 251. 1877.

Synonyms. *Peziza badioconfusa* Korf, Mycologia 46: 838. 1954.

Aleuria olivacea Boud., Bull. Soc. mycol. Fr.

13: 14. 1897.

Galactinia olivacea Boud., Icon. Mycol. livr. 5: no. 35, pl. 282. 1905.

N: no vernacular

[LA] Plate IX B-C

- Buåi, on sandy soil at the river, 12 Aug. 1981, T. Schumacher & K. Østmoe 271/81 (O).

- Grimsa 500 m SW of Verkenseter, 18 Sept. 1983, T. Schumacher & K. Østmoe D 186/83 (O).

- E Storberget, in dried up rivulet, 18 Sept. 1983, T. Schumacher & K. Østmoe D 224/83 (O).

Confirmative descriptions and illustrations:

Boudier (1897): 14, Plate 3 Fig. 1; (1905): no. 35, pl. 282, as *Galactinia olivacea*.

Commentary. The species was originally described and figured by Boudier (1897, as *Aleuria olivacea*) based on a collection from Montmorency in France. However, *A. olivacea* Boud. is nomenclaturally unavailable due to the older *Aleuria olivacea* Gillet, which represents another distinct *Peziza* species. *Aleuria olivacea* Boud. is the alleged type of *P. badioconfusa* Korf (1954), a species which according to Harmaja (1986) occurs in North America and has a southern distribution in Europe. Later, Pfister (1987) concluded that *P. phyllogena* represents the older, legitimate name for the fungus. According to Harmaja, (1986) previous records of *P. badioconfusa* from the Nordic countries applies to *Peziza kallioi* Harmaja.

(24) *Peziza subviolacea* Svr., Česká Mykol. 31 (2): 71. 1977.

Misapplied name: *Peziza praetervisa* Bres. sensu Dennis, British Ascomycetes: 21. 1978.

N: **Fiolettt brannbegersopp** [LA] Plate IX D

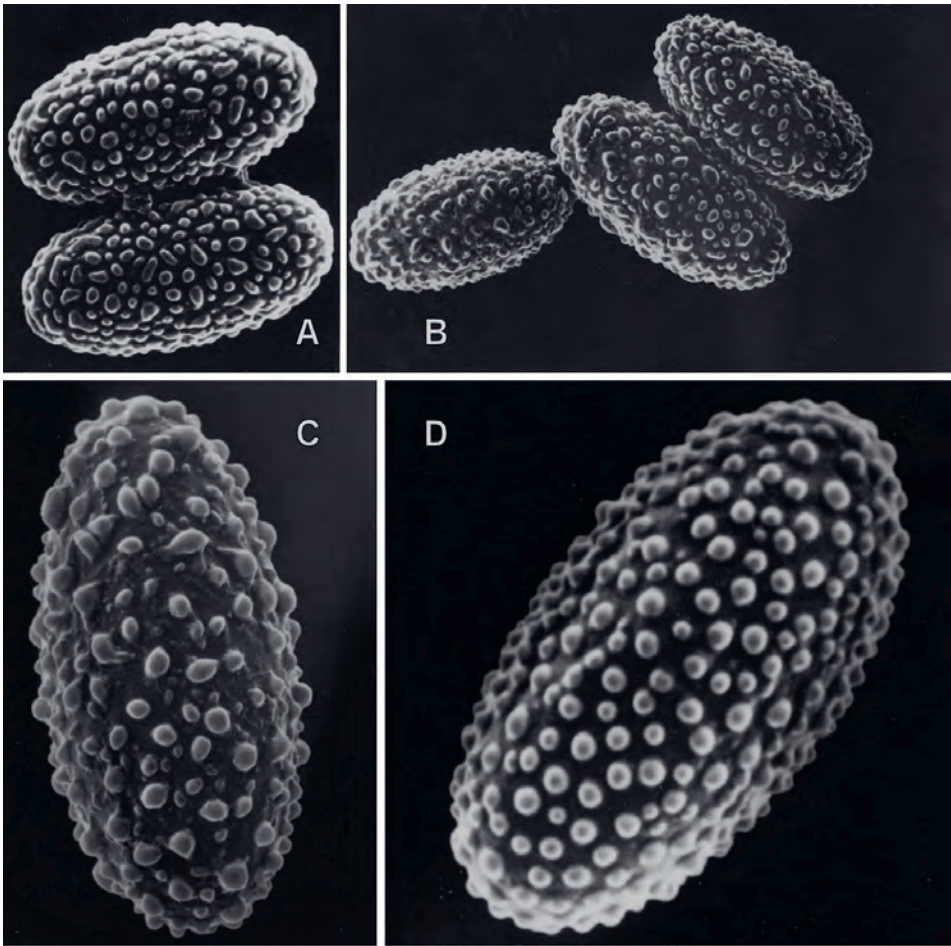


Plate IX. Ascospore ornamentation in *Peziza* spp. **A** – *P. minor* coll. D240/83; **B** – *P. phyllogena*, coll. D186/83; **C** – coll. 271/81; **D** – *P. subviolacea*, coll. D143/83.

- Buåi estuary, burnt site, 17. Sept. 1983 T. Schumacher & K. Østmoe D 143/83 (O).
- Grimsa 500 m N Tverrgjelet, 1000 m, on burnt site, 18 Sept. 1983, T. Schumacher & K. Østmoe D 206/83 (O).

Confirmative descriptions and illustrations:
Svrcek (1977): 71; Dennis (1978): 21, Plate

6 B; Huhtinen (1985): 479, Fig. 7.

Commentary. Svrcek (1976) discussed three violaceous *Peziza* species that occur on burnt ground, two of them smooth-spored, and the third with verrucose ascospores. Here we add a fourth species, i.e. *P. minor* to the list of violaceous *Peziza* spp. that occur on charcoal (see no. 22 of this list). The verruco-spored

species that accords with *P. praetervisa* Bres. sensu Dennis (1978), was renamed *P. subviolacea* by Svrcek (1976). The ascospores in *P. subviolacea* are covered by even-sized pustular warts in contrast to the uneven and angular warts in ascospores of *P. minor*. According to Svrcek (1976), *P. praetervisa* Bres. is a younger synonym of *P. petersii* Berk. & M. A. Curtis.

HELVELLACEAE Fr.

Species recognitions and delimitation of genera in the family Helvellaceae have been a priority area for taxonomic and phylogenetic studies undertaken by the author and collaborators over the last ten years. A large number of collections from Grimsdalen are included in the works by Skrede et al. (2017), Løken et al. (2020) and Hansen et al. (2019), to which the reader is referred.

Balsamia Vittad.

(25) *Balsamia aestivalis* (Heim & Remy) K. Hansen, Skrede & T. Schumach., in Hansen, Schumacher, Skrede, Huhtinen & Wang, *Persoonia* 42: 194. 2019

Basionym. *Helvella aestivalis* (Heim & Remy) Dissing & Raitviir, *Eesti NSV Teaduste Akad. Toim.* 23, *Biol.* 1974 (2): 105. 1974.

Synonym. *Helvella pocillum* Harmaja, *Karstenia* 15: 30. 1976.

N: Polarmorkel

[AA] Plate X

- Sjøberget, on polygone ground in Dryadion, 10 Aug. 1981, T. Schumacher & K. Østmoe TS 36/81 (O).
- Jegerhøi, 12 Aug 1981, T. Schumacher & K. Østmoe, 12 Aug. 1981, TS 273/81 (O).
- Tverrgjelet, on river slopes in Dryadion, 26 July 1984, T. Schumacher & K. Østmoe D

73/84 (O); *Ibid.*, 5 Aug. 1989, T. Schumacher G 36/89 (O); *Ibid.*, 20 Aug. 1996, H. Weidemann & T. Schumacher (O); *Ibid.*, 20 Aug. 1999, T. Schumacher (O); *Ibid.*, 15 Aug. 2001, T. Schumacher (O); *Ibid.*, 2 Aug. 2007, Master field course TS 55/07 (O); *Ibid.*, 8 Aug. 2009, T. Carlsen, T. Schumacher & I. Skrede TS 23/09 (O); *Ibid.*, 23 Aug 2017, S. Bua Løken & T. Schumacher (O).

Confirmative descriptions and illustrations:

Dissing & Raitviir (1974):105; Schumacher & Mohn Jenssen (1992): 11-12; Hansen et al. (2019): 10-11, Fig. 3a, c-i.

Commentary. Schumacher & Mohn Jenssen (1992) provided a description and photograph of a vital specimen from the area. The epigeous *Helvella aestivalis* was recently included in the ± hypogeous genus *Balsamia* (Hansen et al. 2019) based on molecular phylogenetic evidence. Previous records of *B. aestivalis* from Grimsdalen are found in Dissing (1983, as *H. aestivalis*) and Schumacher & Mohn Jenssen (1992, as *H. aestivalis*). *Balsamia aestivalis* is a true arctic-alpine species known from calcareous soils in Svalbard and the alpine zone in North and South Norway.

Dissingia K. Hansen, X. H. Wang & T. Schumach.

(26) *Dissingia confusa* (Harmaja) K. Hansen & X.H. Wang, in Hansen, Schumacher, Skrede, Huhtinen & Wang, *Persoonia* 42: 197. 2019. *Basionym.* *Helvella confusa* Harmaja, *Karstenia* 17: 43. 1977.

Misapplied name: *Helvella solitaria* P. Karst. sensu Dissing, *Dansk Botanisk Arkiv* 25 (1): 41.

N: no vernacular

[LA]

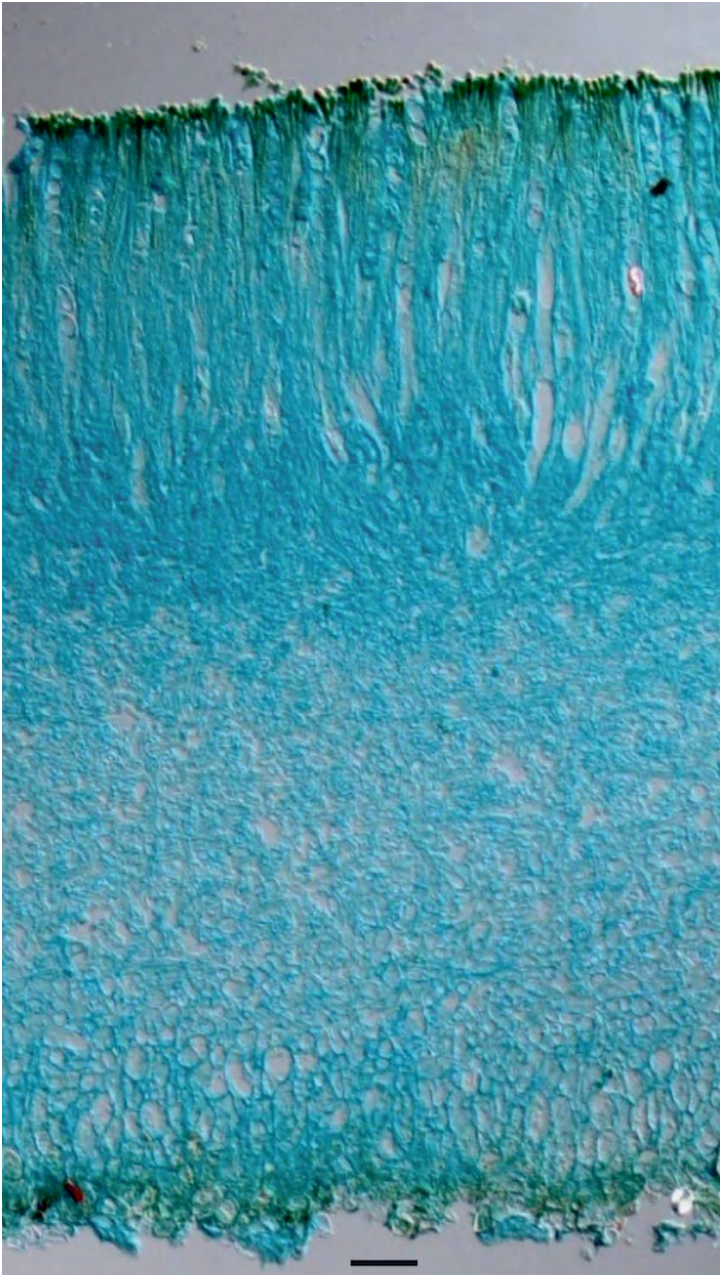


Plate X. Median section of hymenium and excipulum in *Balsamia aestivalis*, coll. D73/84.
Bar = 50 μ m.

- Tollevschaugen, in pine forest reserve, 4 Aug. 2007, T. Schumacher & T. Vrålstad TS 77/07 (O-253269).

Confirmative descriptions and illustrations:

Dissing (1966): 42, Fig. 10, as *H. solitaria*; Harmaja (1977a): 43; Harmaja (1979): 36, as *H. confusa*.

Commentary. The specimen from Grimsdalen was included in the work by Skrede et al. (2017). Based on phylogenetic evidence, four species previously included in *Helvella* (Skrede et al. 2017), inclusive of *H. confusa*, were recently transferred to the segregate genus *Dissingia* (Hansen et al. 2019).

***Helvella* L.**

(27) ***Helvella acetabulum* (L.) Quel.**

Hymenomycetes, Fasc. Suppl. (Alencon): 102. 1874.

Basionym. *Peziza acetabulum* L., Sp. pl. 2: 1181. 1753.

N: Pokalmorkel

[LA]

- Buåi, on the ground in subalpine birch forest, 12 Aug. 1981, T. Schumacher & K. Østmoe 166/81 (O); 7 July 1982, TS 142/82 (O-253215); *Ibid.*, 29 July 1984, T. Schumacher & K. Østmoe, TS 99/84 (O-253213), TS 100/84(O-253212);
- Kattuglehøi, southern slope, 19 July 1983, T. Schumacher & K. Østmoe, TS 33/83 (O-253214)
- Tverrgjelbekken, on slopes towards river, 26 July 1984, T. Schumacher & K. Østmoe D 64/84 (O).
- Storberget, subalpine birch forest, 5 Aug. 1983, T. Schumacher & K. Østmoe D 92/83 (O).

Confirmative description and illustrations:

Harmaja (1977b): 48, Figs. 1, 2.

Commentary. The typical specimens of *H. acetabulum* that inhabit the subalpine birch forest of the area in high summer are long-stalked and resembles *Helvella hyperborea* Harmaja (not recorded in the area) in stature and growth habit, but the two species are genetically distinct.

(28) ***Helvella alpestris* Boud.**, Bull. Soc. bot. Fr. 41: CCXL. 1894.

N: no vernacular

[AA] Plate XI A

- Tverrgjelbekken, on silt and moss underneath *Salix arbuscula*, 26 July 1984, T. Schumacher & K. Østmoe D70/84, D79/84 (O-2 coll.).
- Jegerhøi, 1 Aug. 2007, T. Schumacher TS 45/07 (O-253221).
- Tverrådalen, 6 Aug. 1982, T. Schumacher & K. Østmoe D 13/82 (O); *Ibid.*, 7 Oct. 1982, T. Schumacher D 522/82 (O); *Ibid.*, 6 Aug. 1984, T. Schumacher & K. Østmoe D 134/84 (O); 15 Aug. 1997, T. Schumacher (O-253219); *Ibid.*, 31 July 2007, T. Schumacher TS 33/07 (O-253223); 1. Aug. 2007, T. Schumacher TS 20/07 (O-253220); *Ibid.*, 7 Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher TS 06/09 (O-253222), TS 11/09 (O-253224); *Ibid.*, 23 Aug. 2015, T. Schumacher (O); *Ibid.*, 16 Aug. 2016, S. Bua Løken & T. Schumacher (O – 8 coll.); *Ibid.*, 23 Aug. 2017, S. Bua Løken & T. Schumacher (O).
- Grimsa at Gråside, on river terrace, 9 Aug. 1982, T. Schumacher & K. Østmoe D 156/82 (O); *Ibid.*, 22 Aug. 2015, T. Schumacher (O); *Ibid.*, 15 Aug. 2016, S. Bua Løken & T. Schumacher (O).
- Storberget, in Dryadion, 23 Aug. 2015, T. Schumacher (O).
- Buåi, 12 Aug. 1981, T. Schumacher & K. Østmoe 276/81 (O).
- Kvannbekken, 12 Sept. 1982, T. Schumacher & K. Østmoe D 505/82 (O).

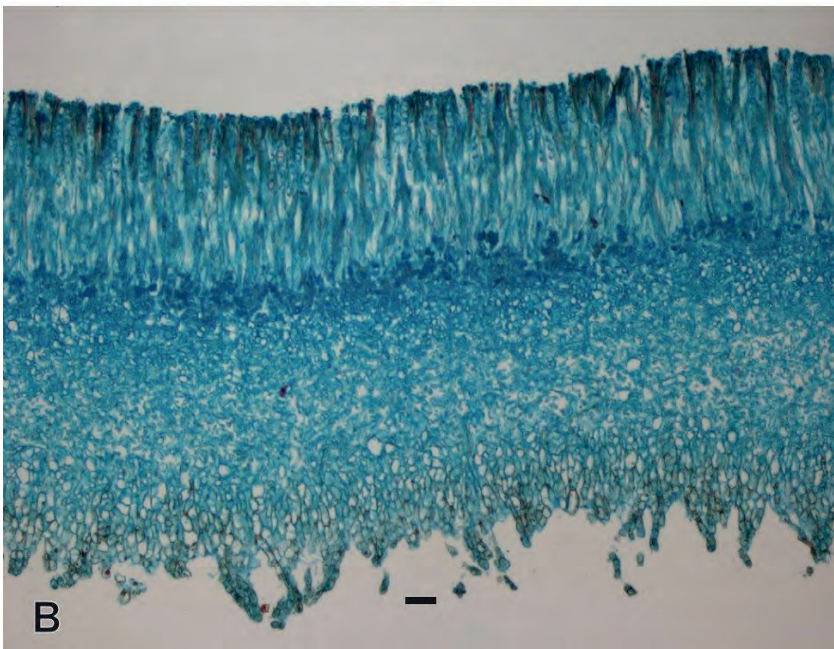
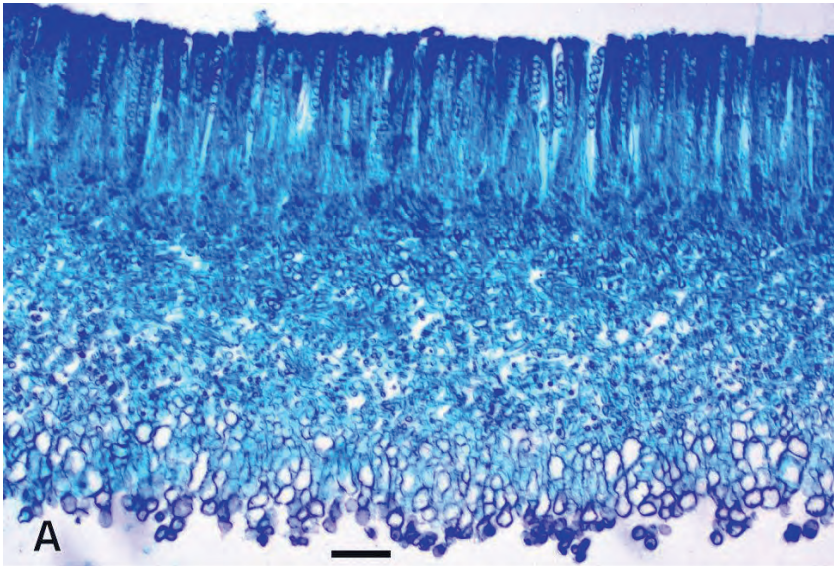


Plate XI. Median section of hymenium and excipulum in **A** – *Helvella alpestris*, coll. D70/84 and **B** – *Helvella nannfeldtii*, coll. D168/83. Bars = 50 μ m.

Confirmative descriptions and illustrations:
Skrede et al. (2017): 217-218, Løken et al. (2020): 180-182; Fig. 4 D-F.

Commentary. The occurrence of this arctic-alpine species in Norway is treated in detail in Skrede et al (2017) and Løken et al. (2020).

(29) *Helvella alpina* Skrede, T. Carlsen & T. Schumacher., *Persoonia* 39: 219. 2017.

N: no vernacular

[AA] - Tverrgjelet, in moist *Dryas* vegetation, 26 July 1984, T. Schumacher & K. Østmoe D 74/84, D 75/84 (O-2 coll.); Ibid., 6 Aug. 1989, T. Schumacher G 38/89, (O); 20 Aug. 1997, T. Schumacher 35/97 (O-253403); Ibid., 15 Aug. 2001, T. Schumacher (O-253243); Ibid., 8 Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher TS 24/09 (O-253235).

Confirmative description and illustrations:
Skrede et al. (2017): 219-220; Fig. 4 e, Løken et al. (2020): 179-180; Fig. 3 D.

Commentary. This arctic-alpine species, originally described from Canada and France (Skrede et al. (2017), was recently discovered in three localities in Norway and treated in detail in Løken et al. (2020).

(30) *Helvella arctoalpina* Harmaja, *Karstenia* 17: 58. 1977.

N: Fjellbegermorkel

[AA] Commentary. The species is common in the area and always associated with *Dryas*. Schumacher & Mohn Jenssen (1992) provided a description and photograph of a vital specimen from the area.

- Grimsdalshytta, 3 Aug. 1966, A. Danielsen & A.-E. Torkelsen (O-253241), (O-253242).
- Tverråi, along the slopes in *Dryas* vegetation, 25 July 1981, T. Schumacher (O); 24 July 1983, T. Schumacher & K. Østmoe D 52/83; 10 Aug. 1983, T. Schumacher & K. Østmoe D 137/83 (O); 18 Sept. 1983, T. Schumacher & K. Østmoe D 215/83 (O); 27 July 1984, T. Schumacher & K. Østmoe D 80/84, D 83/84 (O-2 coll.); 6. Aug. 1984, T. Schumacher & K. Østmoe D 127/84; Ibid., 13 Aug. 1985, T. Schumacher (O); 6 Aug. 1989, T. Schumacher G 69/89 (O); 16 Aug. 1996, S. Landvik & T. Schumacher TS 199/96

Confirmative descriptions and illustrations:
Harmaja (1977b): 48; Schumacher & Mohn Jenssen (1992): 13-14; Skrede et al. (2017): Fig. 3a, f.

Commentary. The species is common in the area and always associated with *Dryas*. Schumacher & Mohn Jenssen (1992) provided a description and photograph of a vital specimen from the area.

(31) *Helvella atra* König in Oeder, *Flora Danica* 3 (9): 7. 1770 – *nom. sanct.*

N: no vernacular

[LA]

- Buåi, on sandy soil along the road, 12 Aug. 1981, T. Schumacher & K. Østmoe 165/81 (O-253252);
- Grimsdalshytta, along rivulet, 11 Aug. 1981, T. Schumacher & K. Østmoe 99/81 (O).
- Jegerhoi towards Verkenseter, 1. Aug. 2007, T. Schumacher TS 43/07 (O-253251).

Confirmative descriptions and illustrations:

Oeder (1770): Plate 534, Fig. 1; Skrede et al. (2017): 220-221, Fig. 5f.

Commentary. Skrede et al. (2017) gave an account to solve the confusion that existed in literature related to the sanctioned and adopted the older name *H. atra* Oeder for this species of the *Helvella lacunosa* morphospecies complex, at the same time linking the genetically unrelated *H. atra* Holmskj. ss. Fr. to the species concept of *Helvella fallax* Quel. *Helvella atra* seems to be widespread in the lowlands as well as in alpine sites of Europe. In Grimsdalen the species shows up with grey to greyish black to heavily pigmented blackish ascocarps, the pure black ascocarps, as originally described from Iceland by Oeder (1770), which represent the typical colour of ascomata at low and mid-alpine altitudes. A photograph of the black, high-altitude form of *H. atra* from the Italian Alps is depicted in Filippa & Baiano (2011).

(32) *Helvella calycina* Skrede, Carlsen & T. Schumach., *Persoonia* 39: 221. 2017.

- Storberget, 8 Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher TS 16/09 (O-253255).

N: no vernacular [LA]

Confirmative description and illustrations:

Skrede et al. (2017): 221-222.

Commentary. The single specimen from Grimsdalen was included in Skrede et al. (2017). New records of specimens from Norway are in progress.

(33) *Helvella capucina* Quel., *Bull. Soc. Bot. France* 24: 327. 1878. '1877'

N: Fjellsadelmorkel [AA]

- Buåi, at the river, 17 Sept. 1983, T. Schumacher & K. Østmoe D164/83 (O-253262).
- Tverrgjelet, on silt along Tverrgjelbekken, 4 Aug. 1989, T. Schumacher G 39/89 (O-253264), G40/89 (O-253265); *Ibid.*, 16 Aug. 1996, S. Landvik & T. Schumacher SL 202/96 (O-253263); 22 Aug. 2015, T. Schumacher (O).
- Tverrådalen, on moist silt on river slope, 1 Aug. 2007, T. Schumacher TS 14/07 (O-253260).
- Grimsa at Storberget, on river terrace, 3 Aug. 2007, T. Schumacher TS 38/07 (O-353259); 23 Aug. 2015, T. Schumacher (O).
- Jegerhøi SE toward Verkenseter, on soil along path, 3 Aug. 2007, T. Schumacher TS 50/07 (O-253258).
- Veslegrimsa, on river bed, 8 Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher TS 20/09 (O-253261); 22 Aug. 2015, T. Schumacher (O).

Confirmative descriptions and illustrations:

Dissing (1964): 113, Fig. 3; Schumacher & Mohn Jønsen (1992): 15-16.

Commentary. Schumacher & Mohn Jønsen (1992) provided a description and a photograph of a vital specimen from the area. The species is common in the area. A number of specimens from Grimsdalen were included in the work by Skrede et al. (2017). New records of specimens from Norway are in progress.

(34) *Helvella corbierei* (Malençon) Van Vooren & Frund, *Bull. Mycol. bot. Dauphiné-Savoie* 50 (198): 9. 2010.

Basionym. *Leptopodia corbierei* Malençon, *Bull. Soc. mycol. Fr.* 43: 95. 1927.

N: no vernacular [LA]

- along the road at Storberget, 16 Aug. 2001, T. Schumacher (O-253273); *Ibid.*, 17 Aug.

2001, T. Schumacher (O-253274).

Confirmative description and illustrations:

Van Vooren & Frund (2010): 6-7.

Commentary. Specimens of *H. corbieri* from Grimsdalen were included in the work by Skrede et al. (2017).

(35) *Helvella corium* (O. Weberb.) Massée, Brit. Fung. Fl. 4: 463. 1895.

Basionym. *Peziza corium* O. Weberb., Pilze Nord-Deutshl. (Breslau): tab. 3, fig. 7. 1873.

N: Svart begermorkel [LA]

- Buåi estuary, 19 July 1986 T. Schumacher (O)
- Storberget, 26 June 1984, T. Schumacher & K. Østmoe D 7/84, D 34/84 (O-2 coll.).
- Bjørnsgardsetrin, 19 July 1983, T. Schumacher & K. Østmoe D 30/83 (O).
- Grimsdalshytta, 5 Aug. 1989, T. Schumacher (O), Ibid., 12 Aug. 1986 T. Schumacher (O).

Confirmative descriptions and illustrations:

Schumacher & Mohn Jenssen (1992): 17-18; Løken et al. 2020: 178; Fig. 3 A-C, E.

Commentary. Schumacher & Mohn Jenssen (1992) provided a description and photograph of a vital specimen from the area. Additional specimens from Norway and the Nordic countries are recorded in Skrede et al. (2017) and Løken et al. (2020).

(36) *Helvella costifera* Nannf., in Lundell & Nannfeldt, Fungi exsic. Suec. Praes. Upsal. Fasc. 41-42: 37, no. 2061. 1953.

N: Ribbemorkel [LA]

- Kvannbekken at Gravhøi, 12 Sept. 1982, T. Schumacher & K. Østmoe 507/82 (O-253284).

- Tverråi 940 m a.s.l., Aug. 1985, T. Schumacher (O-253282).

Confirmative description and illustration:

Skrede et al. (2017): 224-225; Fig. 3h.

Commentary. The specimens from Grimsdalen were included in Skrede et al. (2017). The species has been commonly intermixed with *H. calycina* (see no. 32 of this list).

(37) *Helvella dryadophila* Harmaja, Karstenia 17: 58. 1977.

N: Reinrosemorkel [AA]

- Tverrgjelet, in *Dryas* association on moist slopes, 26 July 1984, T. Schumacher & K. Østmoe D 74/84, D 75B/84 (O-2 coll.); 16 Aug. 1996, S. Landvik & T. Schumacher, SL 201/96 (O-253308); Ibid., 20 Aug. 1997, S. Landvik & T. Schumacher, TS 35/97 (O-253307); Ibid., 21 Aug. 2005, T. Schumacher (O-253309); Ibid., 2 Aug. 2007, T. Schumacher (O-253306); 22 Aug. 2015, T. Schumacher (O).

Confirmative description and illustrations:

Harmaja (1977b): 48, Fig. 5; Skrede et al. (2017): Fig. 3d.

Commentary. Specimens of *H. dryadophila* from Grimsdalen were included in Skrede et al. (2017). The species is associated with *Dryas* vegetation of the arctic and alpine biome. In the study area, *H. dryadophila* is a far less common *Dryas* associate – recorded from one locality only - than its close relative *Helvella arctoalpina*.

(38) *Helvella fallax* Quel., Bull. Soc. Bot. Fr. 23: 331. 1876.

Synonym. *Helvella nigricans* Pers., Obs. mycol. 1: 72. 1796 – *nomen illegit. (homonym)* - non

Helvella nigricans Schaeff., Fung. Bavar. Palat. Nasc. 4: 102. 1774 ('Elvelva') (= *H. lacunosa* Afzel.)

Misapplied name. Helvella atra Holmsk., Beata Ruris Otia Fung. Dan. 2: 47. 1799 sensu Dissing, Dansk Botanisk Arkiv 25: 121. 1966 - *nomen illegit. (homonym)*; - non *Helvella atra* König in Oeder, Fl. Dan. 3 (9): 7. 1770.

N: Sotmorkel

- Kattuglehøi, in spring vegetation, 12 Aug. 1981, T. Schumacher & K. Østmoe 173/81 (O).
- Svartknattin, in minerotrophic fen underneath *Salix myrsinites*, 11 Aug. 1982, T. Schumacher & K. Østmoe 287/82 (O).
- Buådalen, in minerotrophic fen, 8 Aug. 1982, T. Schumacher & K. Østmoe 146/82 (O).
- Buåi at Storberget, on moss, in spring vegetation, 11 Sept. 1982, T. Schumacher & K. Østmoe 474/82 (O).
- Grimsa E Storberget, 15 Aug. 2016 S. Bua Løken & T. Schumacher (O).
- Sjøberget, Skridubekken, underneath *Salix myrsinites*, 6 Aug. 1983, T. Schumacher & K. Østmoe D 94/83 (O).
- Mehøi, at 1300-1350 m a.s.l., minerotrophic heath vegetation, 28 July 1984, T. Schumacher & K. Østmoe D 94/84 (O).
- Buåi, at hunter's hut, on gravel in the road, 28 July 1985, T. Schumacher (O); Ibid., 203/86 S. Landvik & T. Schumacher (O).
- Tverrådalen, 13 Aug. 1985, T. Schumacher (O-253354); Ibid., 12. Aug. 1996, A. Holst Jensen (O-253353); Ibid., 7 Aug. 2009, T. Carlsen, T. Schumacher & I. Skrede, TS 10/09 (O-253351); Ibid., 16 Aug. 2016 S. Bua Løken & T. Schumacher (O).
- Veslegrimsa, on river terrace, 8 Aug. 2009, T. Carlsen, T. Schumacher & I. Skrede, TS 19/09 (O-253352).
- Grimsdalen, 16 Aug. 2001, T. Schumacher

(O-253350).

- Grimsa at Gråhøi, 15 Aug. 2016, S. Bua Løken & T. Schumacher (O-5 coll.).

Confirmative descriptions and illustrations:

Holmskjold (1799): 47 as *H. atra*; Dissing (1966): 121, as *H. atra*.

Commentary. The concept of *H. fallax* accords to that of *H. atra* Holmskj. sensu Dissing (1966), for which Quelet's name was adopted by Skrede et al. (2017).

(39) *Helvella fibrosa* (Wallr.) Korf, Mycotaxon 103: 311. 2008.

Basionym. Peziza fibrosa. Wallr., Fl. Crypt. Germ. 2: 498. 1833 (typus: *Octospora villosa* Hedw.

Synonyms. Helvella villosa (Hedw.) Dissing & Nannf., Svensk bot. Tidskr. 60: 330. 1966 - *nomen illegit. (homonym)*.

Helvella chinensis (Velen.) Nannf. & L. Holm, in Lundell, Nannfeldt & Holm, Publications from the Herbarium, University of Uppsala, Sweden 18: 5. 1985.

Helvella dissingii Korf, Mycotaxon 31: 381. 1988.

N: Kalkbegermorkel

[LA]

- Storberget, on forest floor 1020 m a.s.l., 15 Aug. 2016, S. Bua Løken & T. Schumacher (O).

Confirmative descriptions and illustrations:

Dissing (1966): 67, as *H. villosa*; Dissing & Nannfeldt (1966): Fig. 3, Plate 2, as *H. villosa*; Weber (1972): 171, as *H. villosa*.

Commentary. The species is common in the lowlands, but less frequent at higher altitudes. The single specimen cited above was collected in closed underground vegetation on calcareous soil in a subalpine *Betula* forest.

(40) *Helvella fistulosa* Alb. & Schwein.,
Consp. Fungorum Lusat.: 299. 1805 – *nom.*
sanct.

N: no vernacular

[LA]

- Tollevshaugen, on pastured land, 3 Aug. 1966 Eva Mæhre (O).
- Storberget, at road verge 23 Aug. 2017, S. Bua Løken & T. Schumacher (O).

Confirmative description and illustrations:

Skrede et al. (2017): 228; Fig. 7h.

Commentary. Morphological and molecular details of this rare species - now known from four localities in Norway - were provided by Skrede et al. (2017).

(41) *Helvella lacunosa* Afzel., Kongl. Vetensk. - Akad. Nya Handl. 4: 303. 1783 – *nom. sanct.*

N: Mørk høstmorkel

[LA]

- Storberget, along the road, 20 Aug. 2001, T. Schumacher (O-253322); Ibid., 8 Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher (O-253320), (O-253321).
- Tollevshaugen, 3 Aug. 2007, T. Schumacher (O-253319).

Confirmative description and illustrations:

Skrede et al. (2017): 230-231, Fig. 5a, b.

Commentary. Skrede et al. (2017) provided an emended description of the species. *Helvella lacunosa* is known from the lowlands as well as alpine sites of all districts of Norway.

(42) *Helvella macropus* (Pers.) P. Karst., Not. Sällsk. F. Fl. Fenn. Förh. 11: 224. 1870. *Basionym:* *Peziza macropus* Pers., Ann. Bot. (Usteri) 15: 26. 1795.

N: Lodden begermorkel

[LA]

- Buåi, in birch forest at the river, 23 July 1980, T. Schumacher (O-253324).
- Storberget, in birch forest, 8 Aug. 2009 T. Carlsen, I. Skrede & T. Schumacher TS 36/09 (O-253325).

Confirmative descriptions and illustrations:

Dissing & Nannfeldt (1966): 62, Figs. 4, 5a-e, Plate III; Weber (1972): 164, Figs. 23-24.

Commentary.

The cited specimens from Grimsdalen were included in Skrede et al. (2017).

(43) *Helvella macrosperma* (J. Favre) R. Fellner & Landa, Ceska Mykol. 45 (1-2): 35. 1991.

Basionym. *Helvella arctica* Nannf. var. *macrosperma* J. Favre, *Ergebn. Wiss. Untersuch. schweitz. Nationalparks* 5(33): 199. 1955.

N: no vernacular

[AA]

- Veslegrimsa, river bed, 2 Aug. 2007, T. Schumacher TS 54/07 (O-253328); Ibid., 8 Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher (O – 2 coll.).
- Tverrlibekken, 7 Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher TS 21/09 (O-253329); Ibid., 7 Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher TS 28/09 (O-253330); Ibid. 7. Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher TS 31/09 (O-253331).

Confirmative descriptions and illustrations:

Skrede et al. (2017): 232; Fig. 4d; Løken et al. (2020): 182; Fig. 4G-H.

Commentary.

Specimens of *H. macrosperma* from Grimsdalen were included in Skrede et al. (2017). The morphogenetic characteristics

and the distribution were treated in detail in Løken et al. (2020).

(44) *Helvella nannfeldtii* Skrede, T. Carlsen & T. Schumacher., *Persoonia* 39: 233. 2017.

N: no vernacular

[AA] Plate XI B

- Grimsa at the foot of Jegerhøi, on river bed, 9 Aug. 1981, T. Schumacher & K. Østmoe 10/81 (O).
- Sjøberget, on calcareous soil in Dryadion, 10 Aug. 1981, T. Schumacher & K. Østmoe 33/81 (O).
- Buåi, on slopes at the river, 17 Sept. 1983, T. Schumacher & K. Østmoe D 168/83 (O-253344).
- Tverråi, 13 Aug. 1985, T. Schumacher (O-253343).
- Tverrgjelet, on river bed, deeply immersed in sand, 6 Aug. 1996, A. H. Jensen & T. Schumacher (O-253341); *Ibid.*, 15 Aug. 2001 (O), T. Schumacher (O); *Ibid.*, 2 Aug. 2007, T. Schumacher S 60/07 (O-253337); *Ibid.*, 23 Aug. 2017, S. Bua Løken & T. Schumacher (O – 3 coll.).
- Grimsa at Storberget, on river terrace at the river, 7 Aug. 1976, T. Schumacher (O-F-174752); *Ibid.*, 25 Aug. 1996, S. Landvik & T. Schumacher (O-253342); *Ibid.*, 17 Aug. 2005, T. Schumacher (O-253340); *Ibid.*, 15 Aug. 2016, S. Bua Løken & T. Schumacher (O- 3 coll.).
- Veslegrimsa, 2 Aug. 2007, T. Schumacher TS 66/07 (O- 2 coll.); *Ibid.*, 8 Aug. 2009, T. Carlsen, T. Schumacher & I. Skrede TS York State Mus. Nat. Hist. 33: 31. 1880. 22/09 (O-253338).

Confirmative description and illustrations:

Skrede et al. (2017): 233, Fig. 4b; Løken et al. (2020): 180; Fig. 4 A-C.

Commentary. A number of specimens of *H. nannfeldtii* from Grimsdalen were included

in Skrede et al. (2017) and Løken et al. (2020).

(45) *Helvella palustris* Peck, *Ann. Rep. New York State Mus. Nat. Hist.* 33: 31. 1880.

N: Kildehøstmorkel

[AA]

- Kattuglehøi S, in spring, 12 Aug. 1981, T. Schumacher & K. Østmoe 173/81 (O); *Ibid.*, 11 Sept. 1982, T. Schumacher & K. Østmoe 487/82 (O).
- Svartknattin, in minerotrophic fen, 11 Aug. T. Schumacher & K. Østmoe 288/82.
- Buådalen, in spring horizon in subalpine birch forest, 11 Sept. 1982, T. Schumacher & K. Østmoe 479/82 (O-253362); *Ibid.*, 23 Aug. 2015, T. Schumacher (O).
- Tverrådalen, moist slope along river, 27 July 1984, T. Schumacher & K. Østmoe D 81/84 (O); *Ibid.*, 6 Aug. 1984, T. Schumacher & K. Østmoe D 130/84 (O); *Ibid.*, 25 Aug. 1996, T. Schumacher (O-253361); *Ibid.*, 7 Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher TS 12/09 (O-253358), TS 13/09 (O-253359).
- at margin of minerotrophic fen, 23 Aug. 1996, S. Landvik & T. Schumacher TS 204/96 (O-253360).
- Grimsdalslytta, 16 Aug. 2001, T. Schumacher (O-253357).

Confirmative descriptions and illustrations.

Weber (1972): 189, Fig. 40; Skrede et al. (2017): Fig. 5c.

Commentary. Several specimens of *H. palustris* from Grimsdalen were included in Skrede et al. (2017).

(46) *Helvella philonotis* Dissing, *Bot. Tidsskr.* 60: 117. 1964.

Synonym. *Helvella dovrensis* T. Schumacher., *Mycotaxon* 43: 34. 1992.

N: Dovremorkel

- Tverrliseter, on sandy soil, 16 Sept. 1983, T. Schumacher D 234/83 (O); 5 Aug. 1989, T. Schumacher G 54/89 (O-253305).
- Tverrådalen, on slopes towards the river Tverråi, 24 July 1983, T. Schumacher & K. Østmoe D 50/83 (O); Ibid., 7 Aug. 1989, T. Schumacher G 71/89 (O-253304), 31 July 2007, T. Schumacher TS 7/07 (O-253298).
- Tverråi estuary, on the river terraces, 24 July 1983, T. Schumacher D50/83 (O).
- Storberget, 26 July 1984, T. Schumacher D 71/84 (O); 8 Aug. 2009, T. Carlsen, I. Skrede, T. Schumacher TS 26/09 (O-253300).
- Tverrgjelet, 8 Aug. 1983, T. Schumacher D 113/83 (O), Ibid., 26 July 1984, T. Schumacher D 69/84 (O); Ibid., 2 Aug. 2007, T. Schumacher TS 64/07 (O-253296); 8 Aug. 2009, T. Carlsen, I. Skrede, T. Schumacher TS 29/09 (O-253301).
- at the Buåi estuary, on calcareous soil, 18 July 1986, T. Schumacher 3/86 (O); Ibid., 5 Aug. 1989, T. Schumacher G 49/89 (O); Ibid., 12 Aug. 1996, T. Schumacher (O).
- 500 m SW Verkenseter, 1000 m a.s.l., 18 September 1983, T. Schumacher D 191/83 (O).
- Grimsdalshytta, 5 Aug. 1989, T. Schumacher G 15/89 (O-253303), 16 Aug. 2001, T. Schumacher (O-253294); Ibid., 31 July 2007, T. Schumacher TS 06/07 (O-253295); Ibid., 16 Aug. 2016, S. Bua Løken & T. Schumacher (O).
- Veslegrimsa, on river terrace, 2 Aug. 2007, T. Schumacher TS 57.07 (O-253299), Ibid., 8 Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher TS 32.09 (O-253297).
- Storberget, In Dryadetum, 23 Aug. 2015, T. Schumacher (O).
- Grimsa E Gråsida, 15. Aug. 2016 S. Bua Løken & T. Schumacher (O-3 coll.).

Confirmative descriptions and illustrations:

[AA] Dissing (1964): 117, Fig. 8, (1966): 112; Schumacher (1992): 34, as *H. dovrensis*, Schumacher & Mohn Jenssen (1992): 19-20, as *H. dovrensis*; Skrede et al. (2017): Fig. 5d.

Commentary. Schumacher & Mohn Jenssen (1992, as *H. dovrensis*) provided a description and photograph of a vital specimen from the area. Based on morphological and molecular evidence, after re-examination of the type specimens of *H. philonotis* and *H. dovrensis*, Skrede et al. (2017) concluded that *Helvella dovrensis* is a recent synonym of *H. philonotis*. Records of the species from Grimsdalen are also included in Schumacher (1992, as *H. dovrensis*) and Skrede et al. (2017).

(47) *Helvella rivularis* Dissing & Sivertsen, Bot. Tidsskr. 75: 101. 1980.

N: Bekkemorkel**[AA] Fig. 4**

- Buådalen, on rich, moldy soil in subalpine birch forest under *Aconitum septentrionale*, 8 Aug. 1982, T. Schumacher & K. Østmoe 149/82 (O-253386).
- Buåi, in rivulet running into Buåi, 17 Sept. 1983, T. Schumacher & K. Østmoe D 167/83 (O-253383).
- Grimsa at Storberget, dry fen vegetation under *Salix* in subalpine birch forest, 18 Sept. 1983, T. Schumacher & K. Østmoe D 226/83 (O-253384).
- Tverråi, on calcareous soil on river terraces and slopes along the river, 6 Aug. 1984, T. Schumacher & K. Østmoe D 128/84 (O-253385); Ibid., 25 Aug. 1996, T. Schumacher (O-253381); Ibid., 16 Aug. 2016, S. Bua Løken & T. Schumacher (O).
- Veslegrimsa, on gravel on river bed, 15 Aug. 2001, T. Schumacher (O-253382).
- Tverrgjelbekken, on river terrace, 8 Aug. 2009 T. Carlsen, T. Schumacher & I. Skrede TS 25/09 (O-253380).

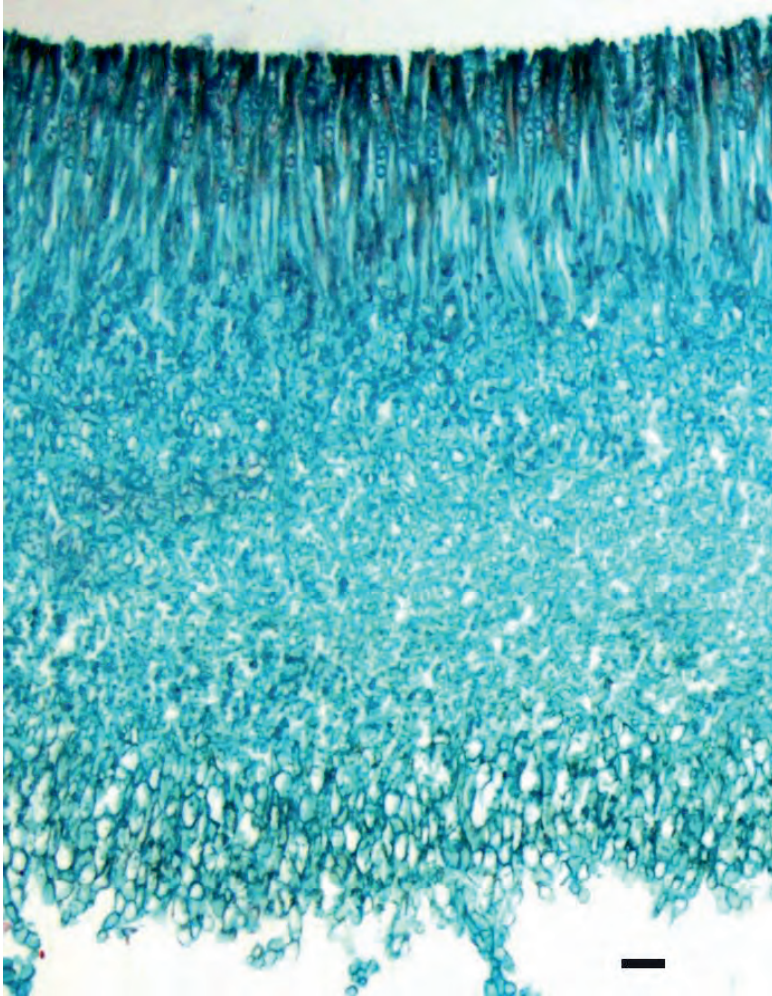


Figure 4. Median section of hymenium and excipulum in *Helvella rivularis*, coll. D167/83.
Bar = 50µm.

Confirmative descriptions and illustrations:
Dissing & Sivertsen (1980): 101, Fig. 2;
Skrede et al. (2017): Fig. 8d.

Commentary. This alpine species, which apparently prefers calciphilic soils, has a bisentric distribution in Norway. Records of the species from Grimsdalen are also included

in Skrede et al. (2017).

(48) *Helvella solitaria* P. Karst., Bidr. Känn. Finl. Nat. Folk 19: 37. 1871.
Synonym. *Helvella queletii* Bres., Rev. Mycol. 4: 211. 1882.

N: **Sadelmorkel**

[LA]

- Buåi, in dried up rivulet in subalpine birch forest, 8 Aug. 1982, T. Schumacher & K. Østmoe 140/82 (O).
- N Hornsjøkollen, river S of Grimsa, in subalpine birch forest, 2 Sept. 1984, T. Schumacher & K. Østmoe D 73/84 (O).
- Tverråi, on silt among mosses underneath *Salix* shrubs, 7 Aug. 1989, T. Schumacher G 66/89 (O-253376); *Ibid.*, 16 Aug. 2001, T. Schumacher (O-253374); *Ibid.*, 21 Aug. 2005, T. Schumacher (O-253377); *Ibid.*, 21 Aug. 2005, T. Schumacher (O-253378).
- Storberget, 8 Aug. 2009, T. Carlsen, I. Skrede & T. Schumacher TS 15/09 (O-253375).

Confirmative descriptions and illustrations:

Dissing (1966): 73, Fig. 18, as *H. queletii*; Weber (1972): 169, Figs. 27- 28, as *H. queletii*; Schumacher & Mohn Jenssen (1992): 21-22, as *H. queletii*.

Commentary. The species has frequently been recorded from Norway and Europe under its synonymous name *Helvella queletii*. According to Harmaja (1977), *H. solitaria* represents the older and correct name for the species, a disposition followed by me. A description and photograph of a vital specimen from the area was provided by Schumacher & Mohn Jenssen (1992, as *H. queletii*). Specimens from Grimsdalen are included in Skrede et al. (2017).

DISCINACEAE Benedix

Gyromitra Fr.

(49) *Gyromitra esculenta* (Pers.) Fr., Summa veg. Scand., Sectio Post.: 346. 1849.
Basionym. *Helvella esculenta* Pers., Comm. Schaeff. Icon. Pict.: 64. 1800.

N: Sandmorkel

[LA]

- Tollevshaugen, on soil in pine forest, 18 June 2019, E. Johannesen & T. Schumacher (O).

Confirmative description and illustrations:
Breitenbach & Kränzlin (1981): 50-51.

MORCHELLACEAE Rchb.

Morchella Dill. ex Pers.

(50) *Morchella deliciosa* Fr., Syst. Mycol. 2: 8. 1822.

Synonym. ?*Morchella conica* Pers., Traité champ. (Paris): 257. 1818.

N: Spissmorkel

[LA]

- Buåi estuary, 16 June 1983, T. Schumacher & K. Østmoe D 6/83 (O).
- Verkenseter towards Gråsida, 28 June 1984, T. Schumacher & K. Østmoe D 19/84 (O).
- Tollevshaugen, on the ground along the road, 18 June 2019, E. Johannesen & T. Schumacher (O).
- Pundarvangen, on the ground in subalpine birch forest, 16 June 2019, E. Johannesen & T. Schumacher (O).

Confirmative description and illustrations:

Breitenbach & Kränzlin (1981): 44- 45, No. 1, as *M. conica* var. *deliciosa*.

Commentary. Recent molecular studies of the genus *Morchella*, and specifically *Morchella* section *Distantes* has shown that the concept of *Morchella conica* Pers. as commonly adopted by European authors, represents a multispecies aggregate, of which a fair number of species also occur in Norway (O'Donnell et al. 2011; Richard et al. 2015; Weholt et al. 2020). The Grimsdalen collections match the specimens referred to as *M. norvegiensis* by Richard et.

al. (2015) and Weholt et al. (2020). However, since *M. deliciosa* has not been adequately typified, and Fries's description accord well to our specimens from Grimsdalen, I have for the time being adopted this latter, older name for our species.

Verpa Sw.

(51) *Verpa conica* (O. F. Müll.) Sw., Sv. Vet. - Akad. Handl., ser. 3, 36: 129. 1815.
Basionym. *Phallus conicus* O.F. Müll., Fl. Danic. 4: tab. 654. 1775.

N: Klokkemorkel

[LA]

- Storberget, on river terrace, 26 June 1984, T. Schumacher & K. Østmoe D 13/84 (O).
- Tverråi, on soil slice at the river, 17 June 2019, E. Johannesen & T. Schumacher (O).

Confirmative description and illustrations:
Breitenbach & Kränzlin (1981): 48-49, No. 8.

Commentary. In Norway, this spring and early summer species seems more common in alpine calciphilic vegetation than in the lowlands.

ASCODESMIDACEAE J. Schröt.

Lasiobolus Pers.

(52) *Lasiobolus diversisporus* (Fuckel) Sacc., Syll. Fung. 8: 538. 1889.
Basionym. *Ascobolus diversisporus* Fuckel, Jb. Nassau. Ver. Naturk. 23-24: 289. 1870. '1869-1870'

N: Bredd kransmøkkøye

[LA]

- Verkenseter, on cow dung, 28 June 1984, T. Schumacher & K. Østmoe D 23/84 (O)

Confirmative description and illustration:
Bezerra & Kimbrough (1975): 1218.

(53) *Lasiobolus intermedius* Bezerra & Kimbr., Canad. J. Bot. 53: 1218. 1975.

N: no vernacular

[LA]

- Storberget, on moose dung, 5 Aug. 1983, T. Schumacher & K. Østmoe D 80/83 (O).

Confirmative description and illustration:
Bezerra & Kimbrough (1975): 1218-1219.

(54) *Lasiobolus macrotrichus* Rea, Trans. Br. Mycol. Soc. 5 (3): 440. 1917.

N: no vernacular

[LA]

- N Sjøberget, on moose dung, 18 June 1983, T. Schumacher & K. Østmoe D 9/83 (O).
- Verkenseter, on cow dung, 28 June 1984, T. Schumacher & K. Østmoe D 22/84 (O).

Confirmative description and illustration:
Bezerra & Kimbrough (1975): 1220-1221.

(74) *Lasiobolus papillatus* (Pers.) Sacc., Bot. Zbl. 18: 8. 1884.

Basionym. *Peziza papillata* Pers., Syn. meth. fung. 2: 650. 1801.

Synonym. *Lasiobolus ciliatus* (J.C. Schmidt) Boud., Hist. Class. Discom. Eur.: 78. 1907.

N: Kransmøkkøye

[LA]

Confirmative description and illustration:
Bezerra & Kimbrough (1975): 1214-1216.

PYRONEMATACEAE Corda

Anthracobia Boud.

(55) *Anthracobia tristis* (E. Bommer, M. Rousseau & Sacc.) Boud., Hist. Class. Discom. Eur.: 65. 1907.

Basionym. Humaria tristis E. Bommer, M. Rousseau & Sacc., in Bommer & Rousseau, Bull. Soc. R. Bot. Belg. 29 (no. 1): 216. 1890.

N: no vernacular [LA]

- Grimsa, at Tverrliseter, 19 Sept. 1983 T. Schumacher & K. Østmoe D 239/83 (O).

Confirmative description and illustrations:

Van Vooren (2012): 35-36; Kristiansen (2018): Figs. 15-18.

Commentary. A recent record of the species from Norway is found in Kristiansen (2018). The sessile, small yellow to orange brown apothecia, covered with barrel-shaped hyphoid receptacle hairs, oblong-ellipsoidal, narrow bi-guttulate ascospores that frequently also contain De Bary bubbles in re-hydrated material, are diagnostic. The single specimen from Grimsdalen has ascospores 17.0–19.2 x 6.8–9.0 µm. The species grows on burned soil and charcoal.

***Byssonectria* P. Karst.**

(56) *Byssonectria fusispora* (Berk.) Rogerson & Korf, in Korf, Phytologia 21(4): 202. 1971.

Basionym. Peziza fusispora Berk., London J. Bot. 5: 5. 1846.

Synonym. Byssonectria aggregata (Berk. & Br.) Rogerson & Korf in Korf, Phytologia 21: 202. 1971 – *nom. illegit. (homonym)*

N: no vernacular [LA]

- Tverråi, on bare soil on the ground in *Salix* thicket, 1040 m a.s.l., 17 June 2019, E. Johannesen & T. Schumacher (O).

Confirmative description and illustration:

Olariaga & Hansen (2011): 2-3, Fig. 1.a-d.

Commentary. Olariaga & Hansen (2011) gave a detailed description of morphology and ecology of this early summer species and compared it with its close relative *B. terrestris*. There are altogether 6 collections from Norway registered in the files of the Norwegian Biodiversity Information Centre.

(57) *Byssonectria terrestris* (Alb. & Schw.) Pfister, Mycologia 85: 953. 1994.'1993'

Basionym. Thelebolus terrestris Alb. & Schwein., Conspl. fung.: 71. 1805.

N: **Oransje elgbeger** [LA]

- Grimsa at Storberget, on litter in subalpine birch forest, on elk urine, 29 May 1982, T. Schumacher 8b/82 (O).
- Sjøberget, micturation site of elk, 18 June 1983, T. Schumacher D7-8/83 (O).
- Verkenseter, 20 June 1983, T. Schumacher & K. Østmoe D 23/83 (O).

Confirmative description and illustrations:

Pfister (1993): 953-956; Brummelen (1995): Plate 8.

***Cheilymenia* Boud.**

(58) *Cheilymenia chionophila* T. Schumach., Mycotaxon 43: 36. 1992.

N: **Snøleiegulløye** [AA]

- NE Kattuglehøi, 1340 m a.s.l., in moist spring horizon, 7 Aug. 1982, T. Schumacher & K. Østmoe 33/82 (O).
- NE Kattuglehøi at Tverråi, 1150 m a.s.l., 7 Aug. 1982, T. Schumacher & K. Østmoe 33/82, 57/82 (O- 2 coll.).
- Gautåa at Veshjerkinntjønnin, 1200 m a.s.l., on sandy soil at the river, 10 Aug. 1982, T. Schumacher & K. Østmoe 246/82, 251/82 (O- 2 coll.).
- Svartknattin at Hornsjøhøi, 1380 m a.s.l., 11

- Aug. 1982, T. Schumacher & K. Østmoe 286/82 (O).
- Gråside W, 1400 m a.s.l., spring vegetation, 21 July 1983, T. Schumacher & K. Østmoe D 43/83 (O).
 - Tverrliseter, on silt, 19 Sept. 1983, T. Schumacher & K. Østmoe D 245/83 (O).
 - Grimsa at Storberget, on sandy soil on river bed, 980 m a.s.l., 27 June 1984, T. Schumacher & K. Østmoe D 16/84 (O).
 - Grimsa at Verkenseter, along rivulet, 28 June 1984, T. Schumacher & K. Østmoe D 18/84 (O).
 - Vegaskillet, 1240 m a.s.l., 24 July 1984, T. Schumacher & K. Østmoe D 38/84 (O).
 - Grimsdalshytta, road verges, 26 June 1984, T. Schumacher & K. Østmoe D 17/84 (O); Ibid., 29 June 1984, T. Schumacher & K. Østmoe D 33/84 (O).
 - Tverråi, 930 m a.s.l., 7 Aug. 1989 T. Schumacher G 65/89 (O).
 - Tverrådalen, 7 Aug. 2009, T. Carlsen, T. Schumacher & I. Skrede TS 5/09 (O).

Confirmative descriptions and illustrations:
Schumacher (1992): 36-38; Schumacher & Mohn Jenssen (1992): 31-32; Moravec (2005): 151-154, Figs. 50-52, Plate 48 c.

Commentary. The species was originally described from Grimsdalen. *Cheilymenia chionophila* is a relatively common soil-inhabiting early summer species in snow beds and heath vegetation of the low alpine zone in the area. Previous records of specimens from Grimsdalen are found in Schumacher (1992) and Schumacher & Mohn Jenssen (1992). Additional collections of *C. chionophila* registered in the files of the Norwegian Biodiversity Information Centre are from Balsfjord and Kautokeino in the north and from Svalbard.

(59) *Cheilymenia coprinaria* (Cooke) Boud., Icon. Mycol. livr. 16: no. 392, pl. 383. 1907.

Basionym. *Peziza coprinaria* Cooke, Mycogr., Vol. 1. Discom. (no. 2): 82, fig. 149. 1876.

Misapplied name: *Cheilymenia fimicola* (De Not. & Bagl.) Dennis sensu Dennis, Brit. Ascomyc., ed. 2: 45. 1978.

N: **Møkkgulloye** [LA]

- NW Kattuglehøi, 1400 m, stercoriated soil, 11 Aug. 1981, T. Schumacher 87/81 (O); Ibid., on dung of reindeer, 7 Aug. 1982, T. Schumacher & K. Østmoe 53/82 (O).
- Tverråi estuary, 18 June 1983, T. Schumacher & K. Østmoe D 1/83 (O).
- Storberget, SE, on cow dung, 5 Aug. 1983, T. Schumacher & K. Østmoe D 88/83 (O).
- S Kattuglehøi, on cow dung, 17 Sept. 1983, T. Schumacher & K. Østmoe D 161/83 (O).
- Hornsjøhøi, on dung, 24 July 1984, T. Schumacher & K. Østmoe D 46/84 (O).
- Pundarvangen, on cow dung, 16 June 2019, E. Johannesen & T. Schumacher (O).

Confirmative description and illustrations:
Moravec (2005): 207-211, Fig. 81, Plates 31-32, 57a-b.

Commentary. I have followed Moravec (2005), who disregarded *C. fimicola* as a nomen dubium and adopted the name *C. coprinaria* (Cooke) Boud. for this common species in the investigation area.

(60) *Cheilymenia dennisii* J. Moravec, Libri Botanici 21: 188. 2005.

N: no vernacular [LA]

- Tolleivshaugen, on moose dung, 18 June 2019, E. Johannesen & T. Schumacher (O).

Confirmative description and illustrations:
Moravec (2005): 188-193, Figs. 71-72, pl. 26.

Commentary. I have tentatively followed Moravec (2005), who recognized *C. dennisii* as distinct from *C. coprinaria*. With regard to morphology and ecology, the Norwegian specimen on elk dung seems to fit the holotype specimen of *C. dennisii* from Hohenberg in Austria, also occurring in early spring, in all details. A single specimen from Balsfjord in Troms, published by Moravec (2005), and the present specimen from Grimsdalen constitute, so far, the distribution of the species in Norway.

(61) *Cheilymenia granulata* (Bull.) Moravec, Mycotaxon 38: 474. 1990.

Basionym. *Peziza granulata* Bull., Herb. Fr. 10: tab. 438, fig. 3. 1790.

Synonym. *Coprobria granulata* (Bull.) Boud., Hist. Class. Discom. Eur.: 69. 1907.

N: Kumøkkbeger

[LA]

- Bjørnsgardsetrin, on cow dung, 27 July 1984, T. Schumacher & K. Østmoe D 88/84 (O).

Confirmative description and illustrations:
Moravec (2005): 59-63, Fig. 13, Plate 38a-d.

Commentary. The species has commonly been recorded as *Coprobria granulata* in literature, but is now accommodated in *Cheilymenia* Boud. (Moravec (2005)).

(62) *Cheilymenia liskae* J. Moravec, R. Fellner & Landa, Mycotaxon 36: 177. 1989.

N: Polargulløye

[AA]

- Kattuglehøi, dung of reindeer, 1400 m, 25 July 1984, T. Schumacher & K. Østmoe D 51/84 (O).
- Mehøi, 1350 m, dung of reindeer, 28 July 1984, T. Schumacher & K. Østmoe D 95/84 (O).

Confirmative description and illustration:

Moravec (2005): 200-203, Figs. 77-78, Plates 29, 55.

Commentary. The holotype specimen of this newly described species was collected on dung of reindeer from Svalbard (Moravec 2005). This coincides with the substrate for the two collections from Grimsdalen. Moravec (2005) listed a number of collections from arctic and alpine localities in Norway, however, these seem to have escaped recognition in the files of the Norwegian Biodiversity Information Centre. According to Moravec (2005), the species occurs on dung of other herbivores as well.

(63) *Cheilymenia magnipila* J. Moravec, Ces. Mykol. 22: 35. 1968.

N: no vernacular

[LA]

- S Kattuglehøi, at Buåi, on cow dung, 11 Sept. 1982, T. Schumacher & K. Østmoe 416/82 (O); Ibid., 19 July 1983, T. Schumacher & K. Østmoe D 34/83 (O); Ibid., dung of moose, 16 Sept. 1983, T. Schumacher & K. Østmoe D 218/83 (O).
- Storberget, dung of moose, 18 Sept. 1983, T. Schumacher & K. Østmoe D 232/83 (O).

Confirmative description and illustration:

Moravec (2005): 211-214, Figs. 82-83, Plates 33, 57c-e.

Commentary. I have followed Moravec (2005) who regarded *C. magnipila* as distinct from *C. coprinaria* based on even larger, more prominent multifurcate hairs and slightly smaller ascospores compared to the latter. The species seems unreported from Norway.

(64) *Cheilymenia sclerotiorum* T. Schumach., Mycotaxon 43: 38. 1992.

N: **Knollgulløye**

- Vegaskillet, in minerotrophic fen, 1100 m a.s.l., 19 July 1980, T. Schumacher D 1/80 (O).
- Kattuglehøi W, in minerotrophic fen, 1410 m a.s.l., 12 Aug. 1981, T. Schumacher & K. Østmoe, 103/81 (O), 104/81 (O- *holotype*); *Ibid.*, 25 July 1984, T. Schumacher & K. Østmoe D 56/84 (O).
- Svartknattjønnin, in rich, minerotrophic fen, 1410 m a.s.l., 24 July 1984, T. Schumacher & K. Østmoe D 41/84, D 42/84 (O – 2 coll.); *Ibid.*, 3 Aug. 1989, T. Schumacher G 13/89 (O).
- Veslhjerkinntjønnin, rich minerotrophic fen, 1210 m a.s.l., 28 July 1984, T. Schumacher & K. Østmoe D 93/84 (O).

Confirmative description and illustration:

Schumacher (1992): 38-40; Schumacher & Mohn Jenssen (1992): 33-34; Moravec (2005): 155-159, Figs. 53-55, Plates 21, 48 d.

Commentary. A conspicuous, high-altitude species originally described from the investigation area, but now known from 5 additional localities in Norway and Svalbard. The species has also been recorded from Italy (Cacialli et al. 1995, Moravec 2005).

(65) *Cheilymenia stercorea* (Pers.) Boud., *Icon. Mycol. Livr.* 4 (17): no. 397, pl. 384. 1908.

Basionym. *Peziza stercorea* Pers., *Obs. mycol.* 2: 89. 1800. '1799'

N: **Stjernegulløye**

- N Sjøberget, on moose dung, 18 June 1983, T. Schumacher & K. Østmoe D 3/83 (O);
- Storberget, on cow dung, 18 Sept. 1983, T. Schumacher & K. Østmoe D 233/83 (O); *Ibid.*, on cow dung, 18 June 1983, T. Schumacher & K. Østmoe D 12/83 (O); *Ibid.*,

[AA]

- on dung of moose (?), 26 June 1984, T. Schumacher & K. Østmoe D 11/84 (O).
- Pundarvangen, on cow dung, 16 June 2019, E. Johannesen & T. Schumacher (O).
- Tverråi, on cow dung at pathway along the river, 17 June 2019, E. Johannesen & T. Schumacher (O).

Confirmative description and illustration:

Moravec (2005): 118-123, Figs. 34-36, Plates 15-16, 47 a-c.

***Cupulina* Dougoud, Van Vooren & M. Vega**

(66) *Cupulina montana* Dougoud, Van Vooren & M. Vega, *Ascomycete.org* 7 (2): 40. 2015.

Synonym. '*Byssonectria*' *oroarctica* T. Schumach., in Schumacher & Mohn Jenssen, *Arctic and Alpine Fungi* – 4: 29. 1992 – *nom. illeg.* – (*nomen provisorium*)

N: no vernacular

[AA] Fig. 5 A-D

- Sjøberget, 1200 m a.s.l., on calcareous soil in Dryadetum, 10 Aug. 1981, T. Schumacher 30/81 (O).
- Tverråi, 6 Aug. 1982, T. Schumacher 15/82 (O), *Ibid.*, 6 Aug. 1984, T. Schumacher, S. Sivertsen & K. Østmoe D 137/84 (O), 84/23 (TRH), 84/33 (TRH); 18 Aug. 1997, S. Landvik 97/042 (O); 14 Aug. 2001, T. Schumacher (O).
- Svartknattin, on calcareous soil in Dryadetum, 11 Aug. 1982, T. Schumacher 293/82 (O).
- Gravhøi. Kvannbekken, 12 Sept. 1982, T. Schumacher 511/82 (O).
- Kattuglehøi S, 1200 m a.s.l., 17 Sept. 1983, T. Schumacher D 160/83 (O).
- Tverrlibekken, 910 m, 19 Sept. 1983, T. Schumacher & K. Østmoe D 248/83 (O); 6 Aug. 1989, T. Schumacher TS 53/89 (O).

Description: Apothecia sessile, gregarious, deeply cupulate to scutellate to flattened,

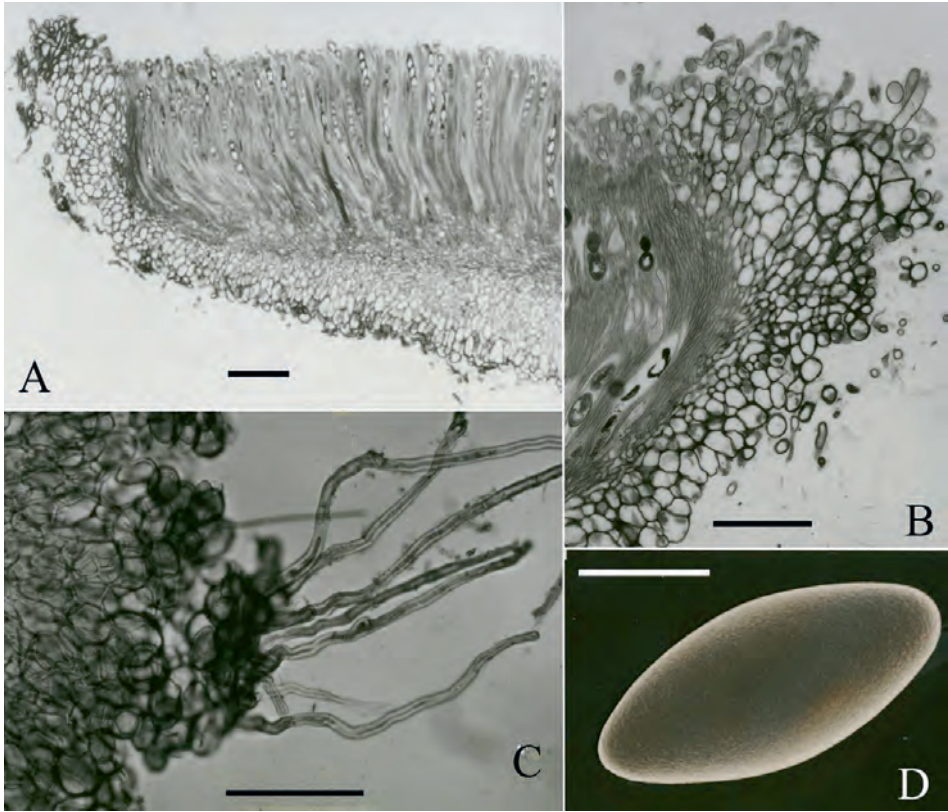


Figure 5. *Cupulina montana*. **A** – Median section of apothecium, bar = 100 µm; **B** – cellular structure of apothecial margin, bar = 100 µm; **C** – Detail of excipulum giving rise to thick-walled flexuous hairs, bar = 100 µm; **D** – Ascospore in SEM, bar 10 µm.

developing partly submerged in the soil, with a prominent, fringed light-coloured margin, 2.5–4.5 mm diam; hymenium ochraceous yellow, dull yellowish in dried specimens, outside densely felty, concolorous. Excipulum two-layered, without a sharp boundary between the medullary and ectal excipulum. Ectal excipulum 70–140 µm thick, 3–8 cells deep, individual cells globose to angular, 15–45 µm in diam., towards margin cells smaller, 8–20 µm in diam, making a conspicuous, fringed and raised margin, outermost cells

giving rise to 2–8-celled, unbranched, partly flexuous and partly rigid hairs, along margin hairs short and rigid, dense, hyaline, 30–70 µm long, 4.5–10 µm broad, along lower part of the receptacle hairs flexuous, thick-walled, walls 1.4–2.3 µm broad, few-septate, hyaline to yellowish brown, 50–450 µm long, 4.5–12 µm broad, blunt or rounded towards the ends. Medullary excipulum 100–180 µm broad, of densely packed, interwoven, short-celled hyphae, 5–12 µm broad, giving rise to inflated, angular cells, 10–45 µm broad. Subhymenium

100–150 µm thick, of densely packed textura intricata, hyphae short-celled, 3–7 µm broad. Asci cylindric, pleurorhynchous, 210–280 x 18–26 µm, generally 8-spored, occasionally with 4–7 ascospores in mature asci. Ascospores subfusoid, hyaline, smooth, uniseriate or partly biseriata in ascus, occasionally dimorphic in size, 21.8–24.6–28.5 (33.2) x 9.8–12.0–14.8 µm, when fresh with numerous internal guttules, in rehydrated specimens with two or one large and multiple small internal guttule(s). Paraphyses straight, septate, subhyaline, unbranched or branched from middle and upper third, 2.0–3.0 µm broad, unobscurely enlarged to 3–4.4 µm at the tips, not turning greenish in Melzer's solution, tips with external patches of hyaline, amorphous material.

Illustrations: Schumacher & Mohn Jønsen (1992): 29–30, as '*Byssonectria*' *oroarctica*, Dougoud et al. (2015): 39–43.

Commentary: Schumacher & Mohn Jønsen (1992) provided a description and photograph of a vital specimen of the species from Grimsdalen under the provisional name '*Byssonectria*' *oroarctica* ined. The ± submerged, small, ochraceous yellow fruitbodies, the fringed margin, the thick-walled, stiff, partly rigid and partly flexuose narrow hairs, and the large, multiguttulate (when fresh!), subfusoid ascospores characterize the species. An ITS sequence of a specimen from the area was later deposited in GenBank (Landvik et al. 1998, as *Leucoscypha oroarctica*). In recent years, new collections of this species from the Alps were discovered and referred to the new genus *Cupulina*, as *C. montana* Dougoud, Van Vooren & M. Vega (Dougoud et al. 2015). Since the original material of *Cupulina montana* was scarce, and the only description lacks several microanatomical details, a full morphological description of specimens from the investigation area is provided here. As also pointed out by Dougoud et al.

(2015), *C. montana* differs from the 'look-alike' species *Sepultariella patavina* (= *Leucoscypha patavina*) and *Sepultariella semiimmersa* in hair characteristics as well as in the large, multiguttulate (when studied in fresh collections) ascospores which contrast the biguttulate ascospores of *Sepultariella* species. *Cupulina montana* occurs on calcareous soils in the subalpine (montane) and alpine zones of Norway, Switzerland (Schumacher & Mohn Jønsen 1992, as '*B.*' *oroarctica*; Dougoud et al. 2015), Austria (Dougoud et al. 2015), France (Dougoud et al. 2015) and Italy (G. Medardi in Dougoud et al. 2015). Eroded solifluction lobes and perturbed sand and silt flats along roads and verges are preferable habitats.

***Geopora* Harkness**

(67) ***Geopora arenosa* (Fuckel) S. Ahmad**, Monogr. Biol. Soc. Pakistan 7: 176. 1978. *Basionym.* *Peziza arenosa* Fuckel, Fungi rhenani exsicc., fasc. 13: no. 1212. 1864.

N: **Sandbeger**

[LA]

- Grimsa at Gråsåda, 1000 m, upper inundation zone, 9 Aug. 1981, T. Schumacher & K. Østmoe 15/81 (O).
- S Kattuglehøi towards Buåi, 12 Aug. 1981, T. Schumacher & K. Østmoe 282/81 (O); 17 Sept. 1983, T. Schumacher & K. Østmoe D 172/83 (O).
- Buåi, sandy soil along river, 6 Aug. 1982, T. Schumacher & K. Østmoe 12/82 (O); Ibid. riverbed, upper inundation zone, 11 Sept. 1982, T. Schumacher & K. Østmoe 494/82 (O); Ibid., moldy soil in dried up rivulet, 11 Sept. 1982, T. Schumacher & K. Østmoe 490/82 (O); Ibid., 16 Sept. 1983, T. Schumacher & K. Østmoe D 217/83 (O); Ibid., 2 Aug. 1989 T. Schumacher G 7/89 (O).
- Grimsa at Tverråi estuary, river bed, 9 Aug. 1982, T. Schumacher & K. Østmoe 200/82

(O).

- Gautåa at Veslhjerkinntjønning, 10 Aug. 1982, T. Schumacher & K. Østmoe 247/82 (O).
- Tverråi, river slopes, 11 Aug. 1982, T. Schumacher & K. Østmoe 277/82 (O); in Dryadetum on river slopes, 10 Aug. 1983, T. Schumacher & K. Østmoe D 124/83, D 134/83, 135/83 (O-3 coll.); Ibid., 18 Sept. 1983, T. Schumacher & K. Østmoe D 201/83 (O); Ibid., 6 Aug. 1984, T. Schumacher & K. Østmoe D 132/84, D 151/84, D 152/84 (O-3 coll.).
- Svartknattin, in Dryadetum, 11 Aug. 1982, T. Schumacher & K. Østmoe 294/82 (O).
- Grimsa at Buåi estuary, 16 Sept. 1983, T. Schumacher & K. Østmoe D 227/83 (O).
- Tverrgjelet, in Dryadetum on river slopes, 8 Aug. 1983, T. Schumacher & K. Østmoe D 115/83 (O).
- Grønbakkinn, gravel pit, 4 Aug. 1989, T. Schumacher G 23/89 (O).
- Storberget, at road verge, 18 June 2019, E. Johannesen & T. Schumacher (O).

Confirmative description and illustration:

Yao & Spooner (2003): 248-249; Schumacher & Mohn Jenssen (1992): 35-36, as *G. nicaensis*.

Commentary. Schumacher & Mohn Jenssen (1992) provided a description and photograph of a vital specimen of this species from Grimsdalen under the name *Geopora nicaensis*. Species limits in *Geopora* are poorly understood, and the genus is in bad need of a morphogenetic revision. For a discussion on the many contradictory species concepts in *Geopora*, cfr. Tamm et al. (2010). *Geopora arenosa*, as interpreted here, has ellipsoid ascospores 24.0–28.2 x 12.3–14.5 µm, slightly narrowed towards the poles (cfr. Yao & Spooner 2003).

(68) *Geopora tenuis* (Fuckel) T. Schumach., Norw. J. Bot. 26: 56. 1979. Basionym. *Humaria tenuis* Fuckel, Jb. nassau. Ver.

Naturk. 25-26: 322. 1870.

N: **Viersandbeger**

[LA]

- Tverråi, on river slopes, 10 Aug. 1981, T. Schumacher & K. Østmoe 38/81 (O).
- SE Kattuglehøi, in Dryadetum, 11 Aug. 1981, T. Schumacher & K. Østmoe 89/81 (O).
- Buåi, moldy soil in birch forest, 11 Sept. 1982, T. Schumacher & K. Østmoe (O); Ibid., 19 July 1983, T. Schumacher & K. Østmoe D 35/83 (O); Ibid., 9 Aug. 1984, T. Schumacher & K. Østmoe D 166/84 (O).
- Tverråi, burnt site at riverbed, 18 Sept. 1983, T. Schumacher & K. Østmoe D 198/83 (O).
- Tverrgjelet, on river bed, 8 Aug. 1983 T. Schumacher & K. Østmoe D 114/83 (O); Ibid., 26 July 1984, T. Schumacher & K. Østmoe D 61/84, D 62/84 (O-2 coll.).
- Storberget, in moist brook, 18 Sept. 1983, T. Schumacher & K. Østmoe D 228/83 (O).
- Tverrliseter, on river bed, 19 Sept. 1983, T. Schumacher & K. Østmoe D 235/83 (O).
- Buåi estuary, on road verge, 18 July 1986, T. Schumacher (O).

Confirmative description and illustration:

Boudier (1906): no. 139, pl. 359, as *Sepultaria foliaceae* (Schaeff.) Boud.; Favre (1955): 31, Fig. 8, as *Sepultaria lanuginosa*.

Commentary. The concept of *G. tenuis*, such as interpreted here, coalesces with *Sepultaria foliaceae* (Schaeff.) Boud. sensu Boudier (1906) and *Sepultaria lanuginosa* sensu Favre (1955). The species has elongate-ellipsoidal ascospores and occurs in the hyperboreal zone of Europe. *Geopora cervina* Vel. may represent a younger synonym (cf. Svrcek 1978). Svrcek (1978) studied the holotype specimen of *G. cervina*, and gave measurements of asci 250–290 µm long and ascospores elongate ellipsoidal, 24–28 x 11–12.5 µm.

Humaria Fuckel

(69) *Humaria hemisphaerica* (F. H. Wigg.) Fuckel, Jb. Nassau. Ver. Naturk. 23-24: 322. 1871. '1869-70'

Basionym. *Peziza hemisphaerica* F. H. Wigg., Prim. fl. holsat.: 105. 1780.

N: **Blekt fløyelsbeger** [LA]

- Svartknattjønnin, on soil in snowbed, 11 Aug. 1982, T. Schumacher & K. Østmoe D 292/82 (O).
- Gravhøi, Kvannbekken, on moldy soil along rivulet, 12 Sept. 1982, T. Schumacher 510/82 (O).
- Sjøberget, in Dryadion, on naked soil, 18 Sept. 1983, T. Schumacher & K. Østmoe 31/81 (O).
- Buåi estuary, 29 July 1984, T. Schumacher & K. Østmoe D 101/84 (O).
- Verkenseter, 9 Aug. 1984, T. Schumacher & K. Østmoe D 163/84 (O).

Confirmative description and illustration:
Breitenbach & Kränzlin (1981): 90, Fig. 72.

Lamprospora de Not.

(70) *Lamprospora dictydiola* Boud., Hist. Class. Discom. Eur.: 68. 1907.

N: no vernacular [LA]

- Tverrliseter, among juvenile shoots of *Tortula* at road verge, 6 Aug. 1989, T. Schumacher G 60/89 (O).

Confirmative description and illustrations:
Schumacher (1993b): 314-316, Plate 2C-D.

Commentary. Schumacher (1993b) gave an account on the occurrence of the species in arctic-alpine environments, including the above cited specimen from Grimsdalen.

(71) *Lamprospora leptodictya* Dissing,

Mycologia 73: 263. 1981.

N: **Guloransje knottbeger** [LA] Plate XII A

- Buåi, amongst *Bryum*, 12 Aug. 1981, T. Schumacher & K. Østmoe 203/81 O; Ibid., amongst *Barbula* and *Dicranella* at river bank, 29 July 1983, T. Schumacher D70/83 (O).
- Grimsa at Tverrliseter, among *Barbula* and *Onchophorus wahlenbergii*, 19 Sept. 1983, T. Schumacher & K. Østmoe D238/83 (O).
- Tverråi, in association with *Barbula/Onchophorus* on river slope, 6 Aug. 1984, T. Schumacher & K. Østmoe D 142/84 (O); Ibid., among shoots of *Pohlia* sp. and *Ditrichum* sp., 7 Aug. 1989, T. Schumacher G 70/89 (O).
- Verkenseter, amongst *Pohlia* sp., 9 Aug. 1984, T. Schumacher & K. Østmoe D184/84 (O).

Confirmative descriptions and illustrations:
Dissing (1981): 263-265, Figs. 1, 2a; Schumacher (1993b): 318-320, Plate 4A-B.

Commentary. Schumacher (1993b) gave an account to the occurrence of the species in arctic-alpine environments, including the specimens from Grimsdalen.

(72) *Lamprospora minuta* (Vel.) Svr., Acta Mus. Nat. Pragae 32B (1976): 126. 1979.
Basionym. *Barlaea minuta* Vel., Monogr. Discom. Bohem.: 322. 1934.

N: no vernacular [LA] Plate XII B

- Tverråi, on silt along river, associated with *Distichium capillaceum*, *Pohlia* sp. and *Drepanocladus revolvens*, 18 Sept. 1983, T. Schumacher & K. Østmoe D 203/83 (O); Ibid., gregarious, associated with *Ditrichum flexicaule*, 6 Aug. 1984, T. Schumacher & K. Østmoe D 154/84 (O).

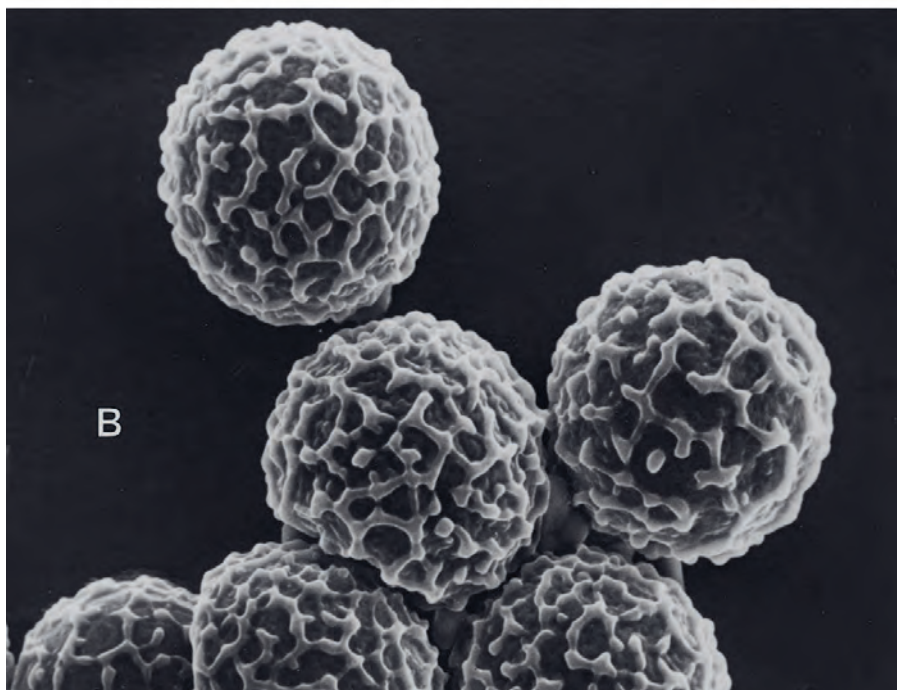
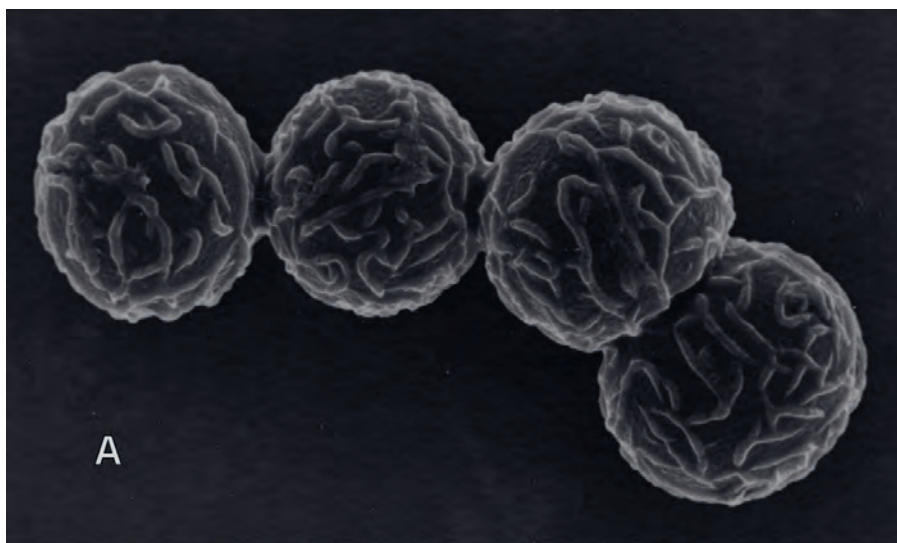


Plate XII. Ascospore ornamentation in *Lamprospora* spp. **A** – *L. leptodictya*, coll. G70/89;
B – *L. minuta*, coll. D203/83.

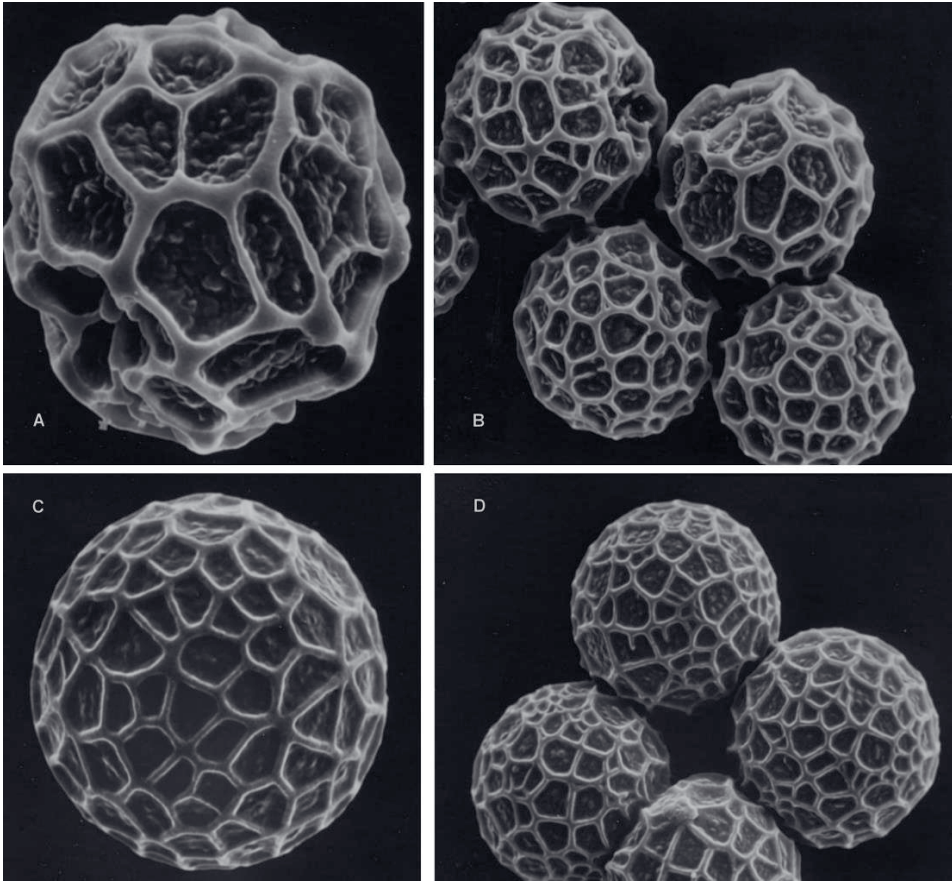


Plate XIII. Ascospore ornamentation in *Lamprospora* spp. **A, B** – *L. retinosa*, coll. D84/84; **C, D** – *L. rugensis*, coll. D158/83.

Confirmative descriptions and illustrations:
Benkert (1987): 234; Schumacher (1993b):
324-326, Plates 6B, 7.

Commentary. Specimens from Grimsdalen
were included in the work by Schumacher
(1993b).

(73) *Lamprospora retinosa* (Vel.) T. Schu-
mach., Sydowia 45 (2): 326. 1993.
Basionym. *Barlaea retinosa* Velen., Monogr.
Discom. Bohem.: 323. 1934.

N: no vernacular

[LA] Plate XIII A-B

- Tverråi, on river slopes 930-980 m a.s.l.,
among shoots of *Pohlia* sp., 27 July 1984,
T. Schumacher & K. Østmoe D 84/84,
D86/84 (O- 2 coll.).

Confirmative description and illustrations:
Schumacher (1993b): 326-329, Plates 9A-B,
10A, 11A-C.

Commentary. Specimens from Grimsdalen

were included in the work by Schumacher (1993b).

(74) *Lamprospora rugensis* Benkert, Z. Mykol. 53: 240. 1987.

N: no vernacular [LA] Plate XIII C-D

- Svartknattin, with *Pohlia drumondii*, 11 Aug. 1982, T. Schumacher & K. Østmoe 284/82 (O); Ibid., 1450 m a.s.l., among shoots of *Pohlia drumondii*, 5 Aug. 1989, T. Schumacher G 5/89 (O).

- Buåi, in association with *Bryum* sp., 17 Sept. 1983, T. Schumacher & K. Østmoe D 158/83 (O).

- Grimsa, in cushions of *Pohlia* sp. 9 Aug. 1984, T. Schumacher & K. Østmoe D 178/84, D 179/84 (O – 2 coll.).

- Grønbakkin, with *Pohlia* sp., 4 Aug. 1989, T. Schumacher G 26/89 (O).

Confirmative descriptions and illustrations: Benkert (1987): 240; Schumacher & Mohn Jenssen (1992): 39-40; Schumacher (1993b): 330- 332, Plates 3B, 11D-E.

Commentary. Specimens from Grimsdalen were included in the work by Schumacher & Mohn Jenssen (1992) and Schumacher (1993b).

Neottiella (Cooke) Sacc.

(75) *Neottiella aphanodictyon* (Kobayasi) Dissing, Korf & Sivertsen in Dissing & Sivertsen, Mycotaxon 16: 458. 1983.

Basionym. *Aleuria aphanodictyon* Kobayasi, Annual Report Institute Fermentation, 1965-66 3: 39. 1967. '1965-66'

Synonyms. *Leucoscypha borealis* Eckblad., Nytt Mag. Bot. 15 (1-2): 52. 1968.

Neottiella borealis (Eckblad) Caillet & Moynes, Bull. Soc. Hist. nat. Doubs 84: 15. 1991. '1988-91'

N: **Polarmosebeger** [LA] Plate XIV A

- Vegaskillet, rich minerotrophic fen with *Scorpidium*, 19 July 1980, T. Schumacher (O).

- Bottjønmyrene, 20 July 1980, T. Schumacher D 4/80 (O).

Confirmative description and illustration: Eckblad (1968): 52, as *Leucoscypha borealis*; Benkert (1998c): 156, Fig. 4.

Commentary. The species has a scattered mid to high altitude distribution in Norway (cf. maps at Norwegian Biodiversity Information Centre)

(76) *Neottiella vivida* (Nyl.) Dennis, British Cup Fungi: 28. 1960.

Basionym. *Peziza vivida* Nyl., Flora, Regensburg 48: 467. 1865.

N: **Fjellmosebeger** [LA]

- Veslhjerkinntjønnin, in peat bog among *Polytrichum*, 10 Aug. 1982, T. Schumacher & K. Østmoe 241/82 (O).

- Gautåa at Gråhøi, 10 Aug. 1982, T. Schumacher & K. Østmoe 245/82 (O).

Confirmative description and illustration: Dennis (1978): 46.

Octospora Hedw.

(77) *Octospora ciervensis* Gamundi & Spinedi, Mycotaxon 33: 472. 1988.

N: no vernacular [AA] Plate XV A-B

- Tverråi, on slopes of the river, among mosses, 18 Sept. 1983, T. Schumacher & K. Østmoe D199/83 (O); Ibid., 14 Aug. 2001, T. Schumacher & Ø. Stensrud (O).

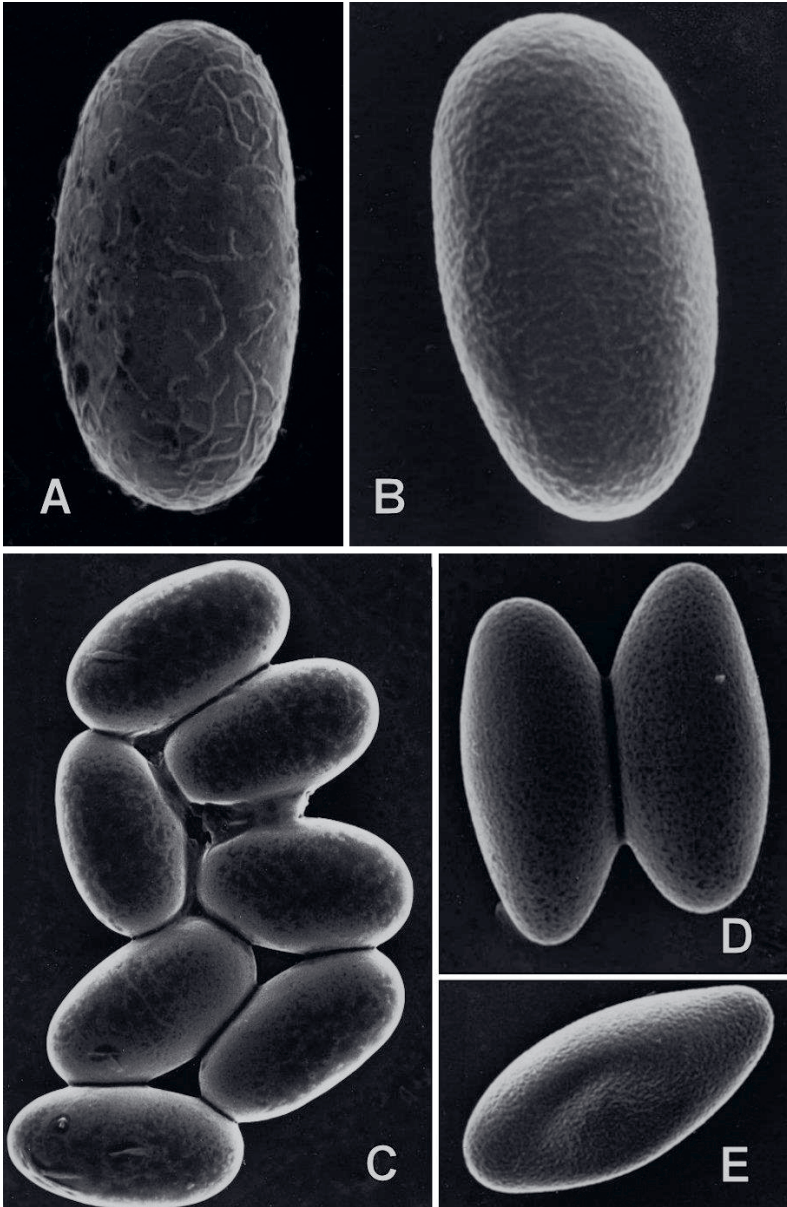


Plate XIV Ascospore ornamentation in *Neottiella* and *Octospora* spp. **A** – *Neottiella aphanodictyon* coll. 19 July 1980, T. Schumacher; **B** – *Octospora humosa*, coll. D44/84; **C** – coll. D71/83; **D, E** – *O. tetraspora*, coll. D97/84.

Confirmative description and illustrations:

Gamundi & Spinedia (1988): 472, Figs. 11-19; Benkert (1998a): 36-37, Fig. 8.

Commentary. This is the first record of the species from Norway. Benkert (1998a) put *O. ciervensis* in synonymy with *Octospora similis*, a disposition not accepted by me. The descriptions and SEM graphs of the ascospores of the holotype specimens of the two species differ markedly; in *O. ciervensis* the ascospores are broadly ellipsoidal, with discrete, elevated warts (pustules) of uneven size and distribution on the spore wall, while *O. similis* has more elongate- ellipsoidal ascospore shape and lower and more densely set warts. Both species are associated with *Bryum* hosts.

(78) *Octospora gyalectoides* Svr. & Kubicka, Česká Mykol. 17: 66. 1963.

N: no vernacular

[LA]

- Tverråi, parasitic on mosses along river slopes, 9 Aug. 1984, T. Schumacher & K. Østmoe D 209/83 (O).
- Grimsa at Tverrliseter, 19 Sept. 1983, T. Schumacher & K. Østmoe D 237/83 (O).
- Grimsa at Veslgrimsa estuary, 18 Sept. 1983, T. Schumacher & K. Østmoe D 207/83 (O).

Confirmative descriptions and illustration:

Svrcek & Kubicka (1963): 66-67; Caillet & Moyne (1987): 204-206, Figs. 10-11, as *O. crosslandii*.

Commentary. Schumacher (1979) recorded a single specimen from the Grimsa basin, and only one additional collection from Norway is registered in Norwegian Biodiversity Information Centre. Dennis & Itzerott (1973) referred *O. gyalectoides* to the genus *Inermisia*. I concur with Benkert (1987, 1998b), who after having studied the holotype specimen, concluded the species was bryo-

philic and morphological similar, if not identical to *Octospora crosslandii* Dennis & Itzerott. The microanatomical characters of *O. gyalectoides* accord well with *O. crosslandii*.

(79) *Octospora heterosculpturata* T. Schumach., Mycotaxon 43: 44. 1992.

N: no vernacular

[AA]

- Svartknattin, 1350 m a.s.l., 3 Aug. 1989, T. Schumacher G 11/89 (O - holotype)

Confirmative description and illustration:

Schumacher (1992): 44-46; Schumacher & Mohn Jenssen (1992): 43-44.

Commentary. The species was described based on a specimen from Grimsdalen (Schumacher 1992; Schumacher & Mohn Jenssen 1992), which is still the only record of the species from Norway. Benkert & Kristiansen (2008) compared their new species i. e. *Ocotospora splachnophila* with the present species, both growing on *Splachnum* hosts, but misinterpreted the latter for having a *Bryum* host.

(80) *Octospora humosa* (Fr.) Dennis, British Cup Fungi: 33. 1960. *Basionym.* *Peziza humosa* Fr., Observ. mycol. 2: 308. 1818.

N: Bjørnemosebeiger [LA] Plate XIV B-C

- Grimsa 500 m N Tverrgjelet, among *Polytrichum*, 18 Sept. 1983, T. Schumacher & K. Østmoe D 174/83 (O).
- Hornsjøhøi, 1400 m, among *Polytrichum* along road verge, 24 July 1984, T. Schumacher & K. Østmoe D 44/84, D 45/84 (O - 2 coll.).
- Kattuglehøi, 1410 - 1450 m a.s.l., among

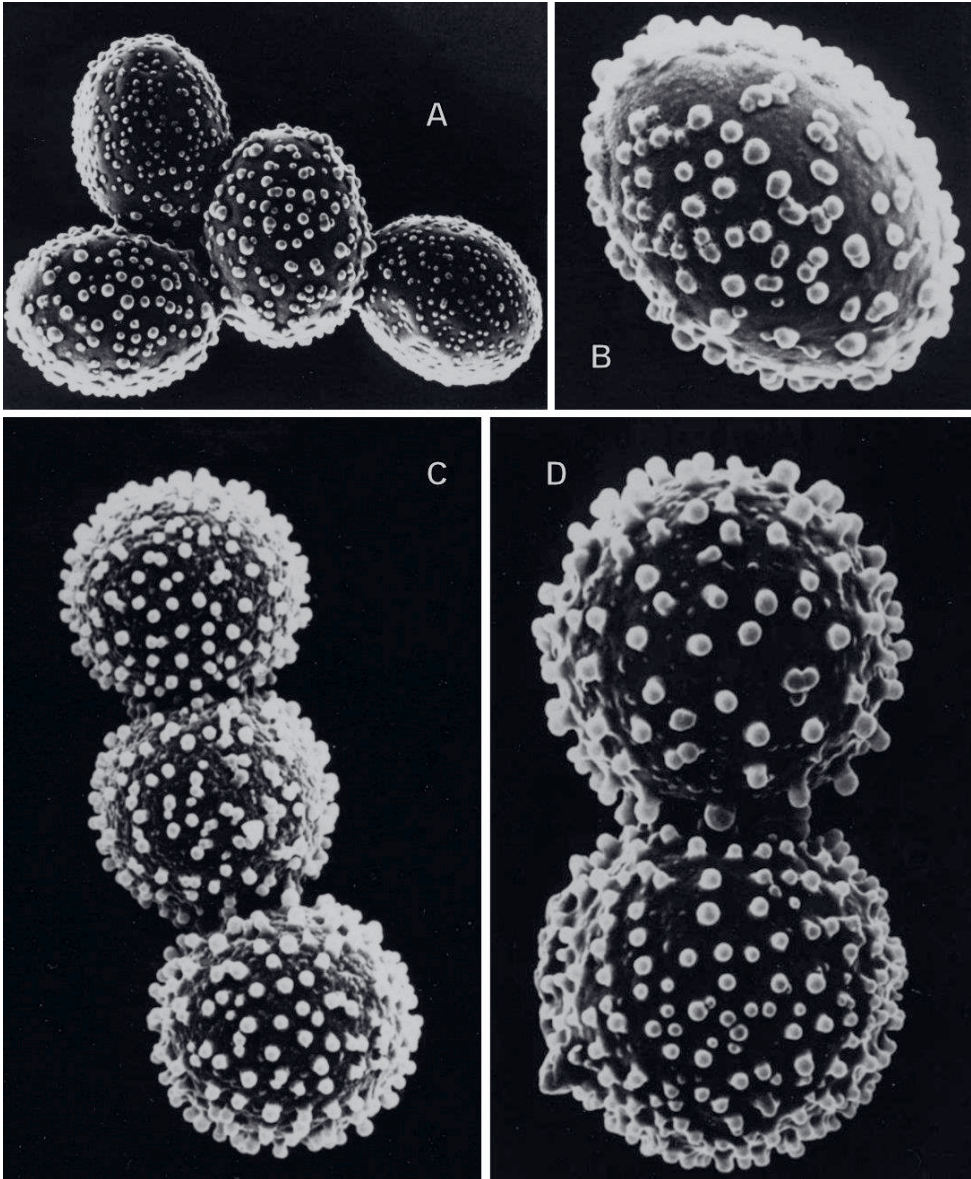


Plate XV. Ascospore ornamentation in *Octospora* spp. **A, B** – *O. ciervensis*, coll. D199/83; **C, D** – *O. lutziana*, coll. D153/83.

- Polytrichum*, 25 July 1984, T. Schumacher & K. Østmoe D 53/84, D 54/84, D 55/84 (O – 3 coll.).
- Grimsa 500m SW Verkenseter, amongst *Polytrichum*, 18 Sept. 1983, T. Schumacher & K. Østmoe D 178/83, D 179/83 (O – 2 coll.).
 - Buåi estuary, among *Polytrichum*, 9 Aug. 1984, T. Schumacher & K. Østmoe D 186/84, D 171/84 (O – 2 coll.).
 - Grimsa 1 km NØ Tverrgjelet, 1000 m, 4 Aug. 1983, T. Schumacher & K. Østmoe D 71/83, D 72/83 (O – 2 coll.).
 - Vegaskillet, ca. 1300 m, on soil amongst *Polytrichum*, 5 Aug. 1989, T. Schumacher G 34/89 (O).

Confirmative description and illustrations:

Dennis & Itzerott (1973): 14.

(81) *Octospora leucoloma* Hedw., Descr. micr.-anal. musc. frond. 2: 13. 1789.

N: **Vrangmosebeger**

[LA]

- Buåi, among mosses on river terrace, 9 Aug. 1984, T. Schumacher & K. Østmoe D 177/84 (O).

Confirmative descriptions and illustrations:

Dennis & Itzerott (1973): 15; Khare & Tewari (1975): 977-978, Figs. 8-11.

(82) *Octospora lutziana* (Boud.) Caillet & Moyne, Bull. Soc. mycol. Fr. 96: 180. 1980. *Basionym and synonym. Lamprospora lutziana* Boud., Bull. Soc. mycol. Fr. 33(1): 15. 1917.

N: **Kildemosebeger**

[AA]

Plate XV C-D; Fig. 6

- Buåi, on sandy soil among shoots of *Philonotis fontana*, 17 Sept. 1983, T. Schumacher & K. Østmoe D 153/83 (O);

- Ibid., 29 July 1984, T. Schumacher & K. Østmoe D 109/84 (O); Ibid., 9 Aug. 1984, T. Schumacher & K. Østmoe D 165/84 (O).
- Sjøberget, Skridubekken, among *Philonotis fontana*, 6 Aug. 1983, T. Schumacher & K. Østmoe D 101/83 (O).
- Gravhøi, Kvannbekken, in cushions of *Philonotis fontana*, 12 Sept. 1982, T. Schumacher & K. Østmoe 506/82 (O).

Confirmative descriptions and illustrations:

Schumacher (1993b): 320- 322, Plate 5A, as *Lamprospora lutziana*.

Commentary. Specimens from Grimsdalen, recorded as *Lamprospora lutziana* Boud., were included in the work by Schumacher (1993b).

(83) *Octospora rustica* (Vel.) J. Moravec, Česká Mykol. 23(4): 226. 1969.

Basionym. Humaria rustica Vel., Monogr. Discom. Bohem.: 327. 1934.

N: no vernacular

[LA]

- Tverråi, on slopes of river parasitic on shoots of *Ceratodon purpureus*, 18 Sept. 1983, T. Schumacher & K. Østmoe D 204/83 (O).

Confirmative descriptions and illustrations:

Dennis & Itzerott (1973): 18-19; Billekens (1992): 59-60.

Commentary. Five collections, including the above cited collection from Grimsdalen, represent the known occurrence of the species in Norway.

(84) *Octospora tetraspora* (Fuckel) Korf, Mycologia 46: 838. 1954.

Basionym. Ascobolus tetraspora Fuckel, Hedwigia 5: 4. 1866.

Synonyms. Byssonectria tetraspora (Fuckel) Korf, Phytologia 21(4): 202. 1971. *Octospora leucoloma* (Hedwig) Korf var. *tetraspora*

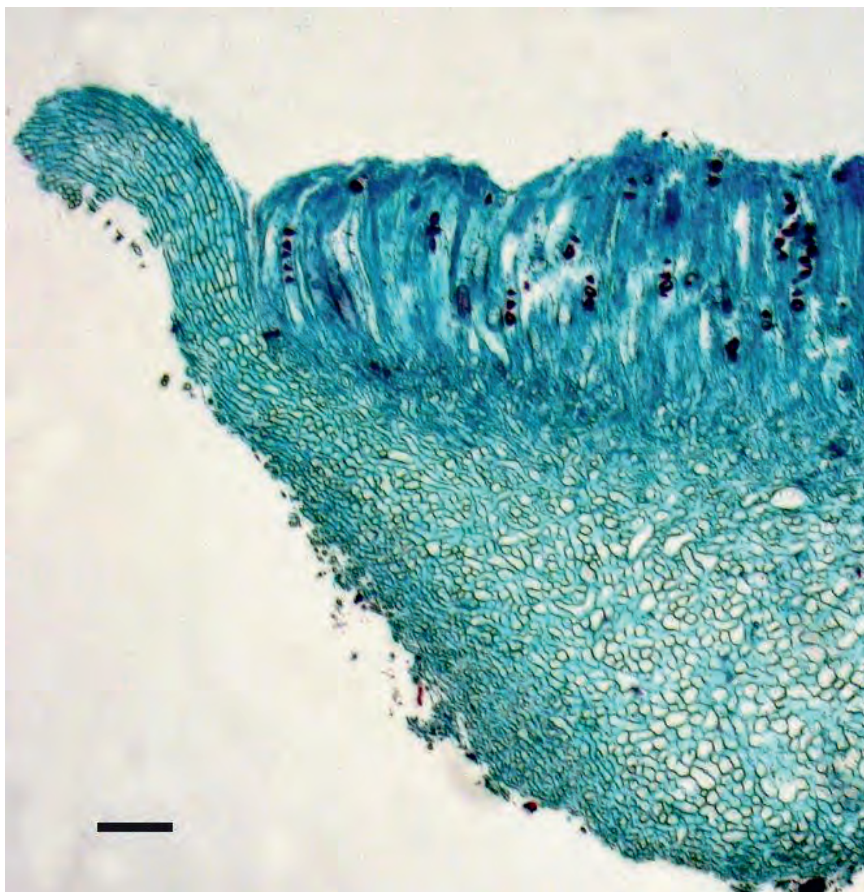


Figure 6. Median section of hymenium and excipulum in *Octospora lutziana*, coll. D153/83.
Bar = 50 μ m.

(Fuckel) Benkert, Öst. Z. Pilzk. 7: 57. 1998.

N: no vernacular [LA] **Plate XIV D-E**

- Svartknattin, in wet spring vegetation, 11 Aug. 1982, T. Schumacher & K. Østmoe 283/82 (O).
- Grimsdalshytta, 4 Aug. 1983, T. Schumacher & K. Østmoe D 69/83 (O).
- Mehøi, minerotrophic heath vegetation,

1300 m a.s.l., 28 July 1984, T. Schumacher & K. Østmoe D 96/84, D 97/84 (O - 2 coll.).

Confirmative descriptions and illustrations:

Boudier (1905-10): Plate 393 No.115; as *Humaria tetraspora* (Fuckel) Cooke, Benkert (1998b): 56-57, as *Octospora leucoloma* var. *tetraspora*.

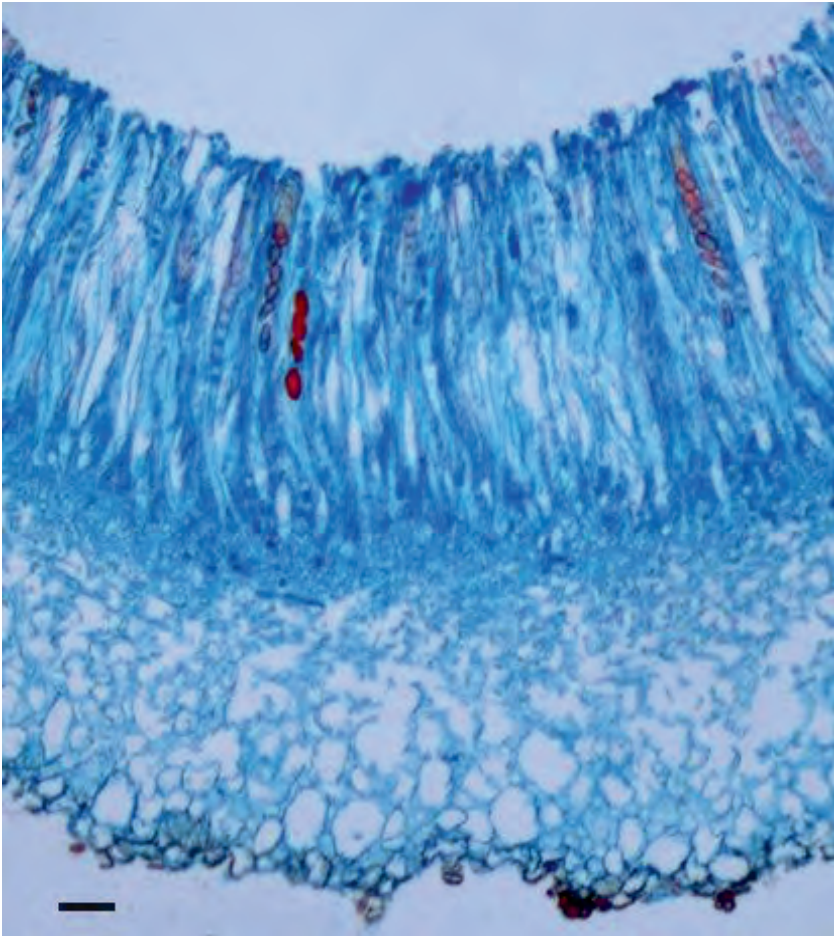


Figure 7. Median section of hymenium and excipulum in *Parascutellinia arctespora*, coll. D192/83. Bar = 50 μ m.

Nannfeldtiella aggregata Eckbl., Nytt Mag.
Bot. 15(1-2): 116. 1968.
Pseudombrophila tetraspora Harmaja, Annales
bot. Fenn. 16 (3): 161. 1979.

29 May 1982, T. Schumacher 8a/82 (O).
- Sjøberget N, on moose micturation place,
18 June 1983, T. Schumacher & K. Østmoe
D7-8/83 (O).

N: Mørkt elgdyngbegeg [LA] Plate XVI A Confirmative description and illustrations:
Brummelen (1995): 70-73, Fig. 27.
- Storberget, on subiculum of *Byssonectria*,

Commentary. The species was excellently described and pictured in Boudier (1905-10), and later correctly transferred to *Octospora* by Korf (1954). Benkert (1998b) gave an account to the 4-spored species and varieties of the genus *Octospora* and argued in favor of maintaining *O. tetraspora* as a variety of *O. leucoloma* only, a disposition not accepted here. A molecular study to clarify species limits in this group of species is long overdue.

***Otidea* (Pers.) Bonord.**

(85) *Otidea concinna* (Pers.) Sacc., Syll. Fung. 8: 96. 1889.

Basionym. *Peziza concinna* Pers., Mycol. eur. 1: 221. 1822.

N: **Fagerøre** [LA]

- Storberget, 8 Aug. 2009, T. Schumacher TS 33/09 (O).

Confirmative descriptions and illustrations:

Olariaga et al. (2015): 216-217, Fig. 32.

***Parascutellinia* Svr.**

(86) *Parascutellinia arctespora* (Cooke & Phill.) T. Schumach., Mycotaxon 33: 153. 1988.

Basionym. *Peziza arctespora* Cooke & W. Phillips, Grevillea 9 (51): 104. 1881.

Synonym. *Parascutellinia carneosanguinea* (Fuckel) T. Schumach., Norw. J. Bot. 26: 62. 1979.

N: no vernacular

[LA] Fig. 7

- Grimsa, on silt under *Salix*, 9 Aug. 1981, T. Schumacher & K. Østmoe 12/81 (O); Ibid., 8 Aug. 1996, T. Schumacher (O).

- Tverråi, on silt under *Salix* on river slopes, 10 Aug. 1981, T. Schumacher & K. Østmoe 40/81 (O); 9 Aug. 1982, T. Schumacher &

K. Østmoe 155/82 (O); Ibid., 6 Aug. 1984, T. Schumacher & K. Østmoe D 131/84; Ibid., 14 Aug. 2001, T. Schumacher (O); Ibid., on silt, 950 m a.s.l., 7 Aug. 2009, T. Carlsen, T. Schumacher & I. Skrede TS 1/09 (O).

- Grimsa 1 km N Tverrgjelet, 4 Aug. 1983, T. Schumacher & K. Østmoe D 67/83 (O).

- Grimsa 500 m N Tverrgjelet, on silt in upper inundation zone, 18 Sept. 1983 D 192/83 (O).

- Tverrliseter, on sandy soil, 19 Sept. 1983 T. Schumacher & K. Østmoe D 230/83 (O); Ibid., 6 Aug. 1989, T. Schumacher G 56/89 (O).

- Verkenseter, along the river, 9 Aug. 1984, T. Schumacher & K. Østmoe D 164/84 (O).

- Tverrgjelet, at Tverrgjebekken, expulsion slope along river, 1000 m a.s.l., 26 July 1984 T. Schumacher & K. Østmoe D 67/84 (O).

Confirmative descriptions and illustrations:

Schumacher & Mohn Jenssen (1992): 45-46.

Commentary. A first record of the species from Norway was under the synonymous name *P. carneosanguinea* (Schumacher 1979). Later, Schumacher (1987, 1988) concluded that *P. arctespora* was the older and correct name for the species. Schumacher & Mohn Jenssen (1992) provided a description and photograph of a vital specimen from the area. The ascospores are perfectly smooth (cf. Schumacher & Mohn Jenssen 1992, Pl. 2C), which is the main character that separates against the close *Parascutellinia violacea* (Vel.) Svrcek (Schumacher 1979).

***Pseudombrophila* Boud.**

(87) *Pseudombrophila guldeniae* Svr., Ceska Mykol. 20: 15, 17. 1966.

Synonyms. *Nannfeldtiella guldeniae* (Svrcek) Svrcek, Česká Mykol. 35(1): 23. 1981.

Commentary. The species, reported earlier under the synonym name *Nannfeldtiella aggregata* (Eckblad 1968), is common on moose dung all over Norway. I concur with Brummelen (1995), who regarded specimens with predominantly 4-spored and 8-spored asci as conspecific, for which the name *P. guldeniae* has priority.

(88) *Pseudombrophila theioleuca* Rolland., Bull. Soc. mycol. Fr. 4 (1): 57. 1888.

N: **Blekt dyngbegeter** [LA]

- Storberget, on dung of moose, 5 Aug. 1983, T. Schumacher & K. Østmoe D 86/83 (O).
- Buåi against S Kattuglehøi, on dung of man, 17 Sept. 1983, T. Schumacher & K. Østmoe D 147/83 (O).
- N Sjøberget, on dung of moose, 18 Sept. 1983, T. Schumacher & K. Østmoe D 13/83 (O).

Confirmative description and illustration:

Brummelen (1995): 59 – 62, Fig. 23, Plates 6-7, 18a-c.

***Pulvinula* Boud.**

(89) *Pulvinula carbonaria* Boud., Hist. Class. Discom. Eur.: 70. 1907.

N: **Bålmyggbegeter** [LA]

- S Kattuglehøi towards Buåi, on burnt site, 17 Sept. 1983, T. Schumacher & K. Østmoe D 144/83 (O).
- Buåi, burnt site, 29 July T. Schumacher & K. Østmoe D 105/84 (O).
- Verkenseter, on burnt site, 9 Aug. 1984, T. Schumacher & K. Østmoe D 173/84 (O).

Confirmative description and illustration:

Pfister (1976): 8.

Commentary. I follow Pfister (1976) in accepting *P. carbonaria* as a distinct species, exclusively occurring on charcoal, with irregularly 4- to 8-spored asci, and globose ascospores in the range of 14.5–17.5 µm in diam.

(90) *Pulvinula cinnabarina* Boud., Hist. Class. Discom. Eur.: 70. 1907.

N: no vernacular [LA]

- Tverråi, on river slopes, 18 Sept. 1983, T. Schumacher & K. Østmoe D 202/83 (O).

Confirmative descriptions and illustrations:

Pfister (1976): 8; Lantieri (2008): 249.

Commentary. I follow Pfister (1976) in recognizing *P. cinnabarina* as a distinct species from *Pulvinula convexella* and *Pulvinula constellation*. *Pulvinula cinnabarina* has flat vermilion-coloured apothecia, large asci up to 300 µm in length, and globose ascospores in the range of 16–19.5 µm in diam.

(91) *Pulvinula constellatio* (Berk. & Broome) Boud., Hist. Class. Discom. Eur.: 70. 1907.

Basionym. *Peziza constellatio* Berk. & Broome, Ann. Mag. nat. Hist., Ser. 4 17: 142. 1876.

N: no vernacular [LA]

- Tverrliseter, on road verges, sandy soil, 28 July 1979, T. Schumacher (O).
- S. Kattuglehøi, along rivulet towards Buåi, 12 Aug. 1981, T. Schumacher & K. Østmoe (O).
- Buåi, at the river on sandy soil, 12 Aug. 1981, T. Schumacher & K. Østmoe 176/81 (O); Ibid., on moldy soil in birch forest, 12 Aug. 1981, T. Schumacher & K. Østmoe 196/81 (O); 6 Aug. 1982, T. Schumacher & K. Østmoe 10/82 (O); 11 Sept. 1982, T. Schumacher & K. Østmoe 477/82 (O); 9 Aug. 1984, T. Schumacher & K. Østmoe D

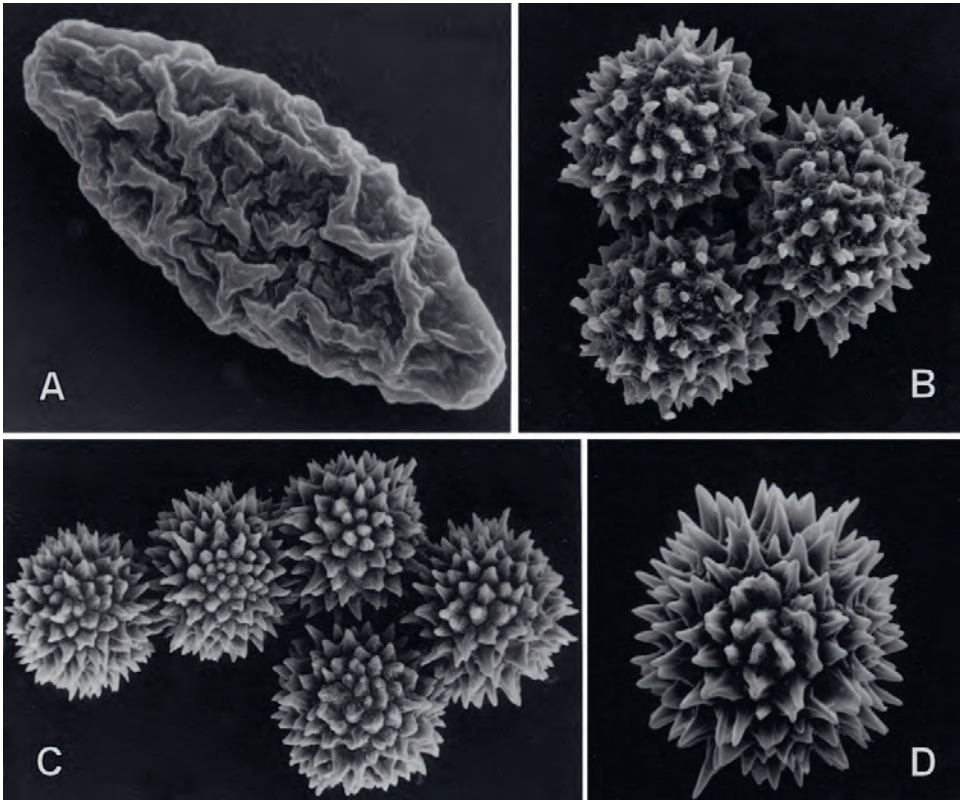


Plate XVI. Ascospore ornamentation in *Pseudombrophila* and *Ramsbottomia* spp. **A** – *P. guldenia* coll. 8a/82; **B** – *R. asperior*, coll. G42/89; **C, D** – *R. macracantha*, coll. D87/84.

- 181/84, D 188/84 (O – 2 coll.); 3 Aug. 1989, T. Schumacher G 9/89 (O).
 - Tverråi estuary, 9 Aug. 1982, T. Schumacher 160/82 (O).
 - Tverråi, river slopes together with *P. cinnabarina*, 10 Aug. 1983, T. Schumacher & K. Østmoe D 128/83 (O); 17 Sept. 1983, T. Schumacher & K. Østmoe D 154/83 (O); 24 July 1984, T. Schumacher & K. Østmoe D 47/84 (O); 6 Aug. 1984, T. Schumacher & K. Østmoe D 148/84 (O).
 - Grimsdalen, at main road verge, sandy soil, 5 Aug. 1989, T. Schumacher G 21/89 (O);

Ibid., 18 June 2019, E. Johannesen & T. Schumacher (O).

Confirmative description and illustration:
 Lantieri (2008): 250.

Commentary. This is the most commonly observed *Pulvinula* species in the area. Pfister (1976) placed *P. constellatio* in synonymy with *P. convexella*, a disposition previously accepted by me (Schumacher 1979), but has later been deserted. Here I follow Dissing (2000), Medardi (2001) and Lantieri (2008)

in recognizing two distinct species of this morphospecies complex, i.e. *P. convexella* and *P. constellatio*, corresponding to the two gross morphological and ecological subgroups of *P. convexella* as discussed in Schumacher (1979). The Grimsdalen specimens have yellow-orange apothecia, asci up to 280 µm long and ascospores 14–16.5 µm in diam., which accord well with *P. constellatio*.

Ramsbottomia W.D. Buckley

(92) *Ramsbottomia asperior* (Nyl.) Benkert & T. Schumacher, *Agarica* 6 (12): 35. 1985. *Basionym.* *Peziza asperior* Nyl., *Not. Sällsk. Fauna et Fl. Fenn. Förh.*, Ny Ser. 10: 21. 1868. '1869'

Synonym. *Lamprospora ovalispora* (Svr. & Kubicka) Eckbl., *Nytt Mag. Bot.* 15 (1-2): 42. 1968.

N: Stibeger

[LA] Plates XVI B

- Grimsa at Storberget, river bed, 17 July 1979, T. Schumacher (O).
- Gautåa at Veslhjerkinnjtjønnin, 10 Aug. 1982, T. Schumacher & K. Østmoe 249/82 (O).
- Grimsa 1 km NE Tverrgjelet, 4 Aug. 1983, T. Schumacher & K. Østmoe D 66/83 (O).
- Tverråi, on river slopes, 18 Sept. 1983, T. Schumacher D 200/83 (O); *Ibid.*, 27 July 1984, T. Schumacher & K. Østmoe D 87/84 (O); *Ibid.*, 14 Aug. 2001, T. Schumacher (O).
- Grimsa 500 m SW Verkenseter, river bed, 18 Sept. 1983, T. Schumacher & K. Østmoe D 176/83 (O).
- Buåi, along river, 9 Aug. 1984, T. Schumacher & K. Østmoe D 189/84 (O).
- Grønbakkin, in spring vegetation, 4 Aug. 1989, T. Schumacher G 10/89 (O).
- Grimsa at Verkenseter, river bed, 5 Aug. 1989, T. Schumacher G 42/89 (O); *Ibid.*, 23 Aug. 1996, T. Schumacher (O).

Confirmative description and illustrations:

Benkert & Schumacher (1985): 35, Figs. 1, 3, 4A.

Commentary.

Specimens from Norway were recorded under the name *L. ovalispora* earlier (Eckblad 1968, Schumacher 1979), a taxon later transferred to the non-bryophilous genus *Ramsbottomia* (Benkert & Schumacher 1985). Specimens from Grimsdalen were included in the synopsis of the genus, i.e. under its correct name *R. asperior* (Benkert & Schumacher 1985).

(93) *Ramsbottomia macracantha* (Boud.) Benkert & T. Schumacher, *Agarica* 6 (12): 37. 1985.

Basionym. *Lamprospora crechqueraultii* var. *macracantha* Boud., *Hist. Class. Discom. Eur.*: 69. 1907.

Synonym. *Lamprospora macracantha* (Boud.) Seaver, *North American Cup-fungi, (Operculates)*: 63. 1928 [*orth. macrantha*]

N: Småstibeger

[LA] Plate XVI C-D

- Tverråi, on river slopes, 27 July 1984, T. Schumacher & K. Østmoe D87/84 (O).

Confirmative description and illustrations:

Benkert & Schumacher (1985): 37, Fig. 4B.

Commentary.

The species was first recorded from Norway by Schumacher (1979, as *L. macracantha*). The cited specimen from Grimsdalen was included in the synopsis of the genus *Ramsbottomia* (Benkert & Schumacher 1985). Two additional collections are now registered from Norway Norwegian Biodiversity Information Centre. Compared to *R. asperior*, *R. macracantha* has smaller apothecia and larger, perfectly globose ascospores with more prominent and higher spines on the ascospore wall.

***Scutellinia* (Cooke) Lamb.**

Ca 85 *Scutellinia* specimens from Grimsdalen were included in the world monograph of the genus (Schumacher 1987, 1990). In a later account, the ecology and habitat characteristics of *Scutellinia* spp. from Grimsdalen were treated, and distribution maps of *Scutellinia* species in Norway provided (Schumacher 1993a).

The species list of *Scutellinia* from Grimsdalen follows the infrageneric classification proposed by Schumacher (1987, 1990).

***Scutellinia* subgenus *Scutellinia* (Cooke) Lambotte**

Scutellinia* sect. *Scutellinia

(94) *Scutellinia crinita* (Bull.) Lambotte, Fl. mycol. Belge, Suppl. 1: 301. 1887.

Basionym. *Peziza crinita* Bull., Hist. Champ. France: 249. 1791.

N: no vernacular [LA] Plate XVII A

- Bottjørnmyrene, 20 July 1980, T. Schumacher D 5/80 (O).
- Grimsdalshytta, 7 Aug. 1982, T. Schumacher & K. Østmoe 52/82 (O).
- Buåi, 8 Aug. 1982, T. Schumacher & K. Østmoe 148/82, 151/82 (O – 2 coll.); Ibid., 29 July 1984, T. Schumacher & K. Østmoe D 103/84, D 104/84, D 107/84 (O – 3 coll.).
- Kvannbekken, 12 Sept. 1982, T. Schumacher & K. Østmoe 509/82 (O).
- Tverråi, 10 Aug. 1983, T. Schumacher & K. Østmoe D 126/83 (O); Ibid., 6 Aug. 1984, T. Schumacher & K. Østmoe D 143/84 (O).
- Buåi towards S Kattuglehøi, 17 Sept. 1983, T. Schumacher & K. Østmoe D 159/83 (O).
- Vegaskillet, 24 July 1984, T. Schumacher & K. Østmoe D 49/84 (O).
- Grimsa at Gråsida, 19 July 1986, T. Schumacher (O).

Confirmative description and illustrations:

Schumacher (1990): 58-60.

(95) *Scutellinia nivea* T. Schumach., Opera Botanica 101: 63. 1990.

N: Hvitt kransøye [LA] Plate XVII B-C

- Buåi, 11 Sept. 1982, T. Schumacher 481/82; Ibid., 17 Sept. 1983, T. Schumacher & K. Østmoe D 141/83 (O – *holotype*).

Confirmative description and illustrations:

Schumacher (1990): 63-64.

(96) *Scutellinia olivascens* (Cooke) O. Kuntze, Rev. Gen. Pl. 2: 869. 1891.

Basionym. *Peziza olivascens* Cooke, Grevillea 3: 74. 1874.

N: Stort kransøye [LA]

- Buåi at S Kattuglehøi, 17 Sept. 1983, T. Schumacher & K. Østmoe D 155/83, D 166/83 (O – 2 coll.).
- Grimsa at Verkenseter, 18 Sept. 1983, T. Schumacher & K. Østmoe D 182/83 (O).
- Grimsa at Tverrliseter, 19 Sept. 1983, T. Schumacher & K. Østmoe D 246/83 (O).

Confirmative description and illustrations:

Schumacher (1990): 64-65.

(97) *Scutellinia patagonica* (Rehm) Gamundi, Lilloa 30: 318. 1960.

Basionym. *Sphaerospora patagonica* Rehm, Bih. K. svenska Vetensk. Akad. Handl., Afd. 3 25(no. 6): 18. 1899.

N: no vernacular [LA] Plate XVIII A-B

- Verkenseter, 9 Aug. 1981, T. Schumacher & K. Østmoe 11/81 (O); Ibid., 9 Aug. 1984, T. Schumacher D 187/84 (O).



Plate XVII. Ascospore ornamentation in *Scutellinia* sect. *Scutellinia* (A-D). **A** – *S. crinita*, coll. D126/83; **B, C** – *S. nivea*, coll. D141/83; **D** – *S. scutellata*, coll. D76/83.

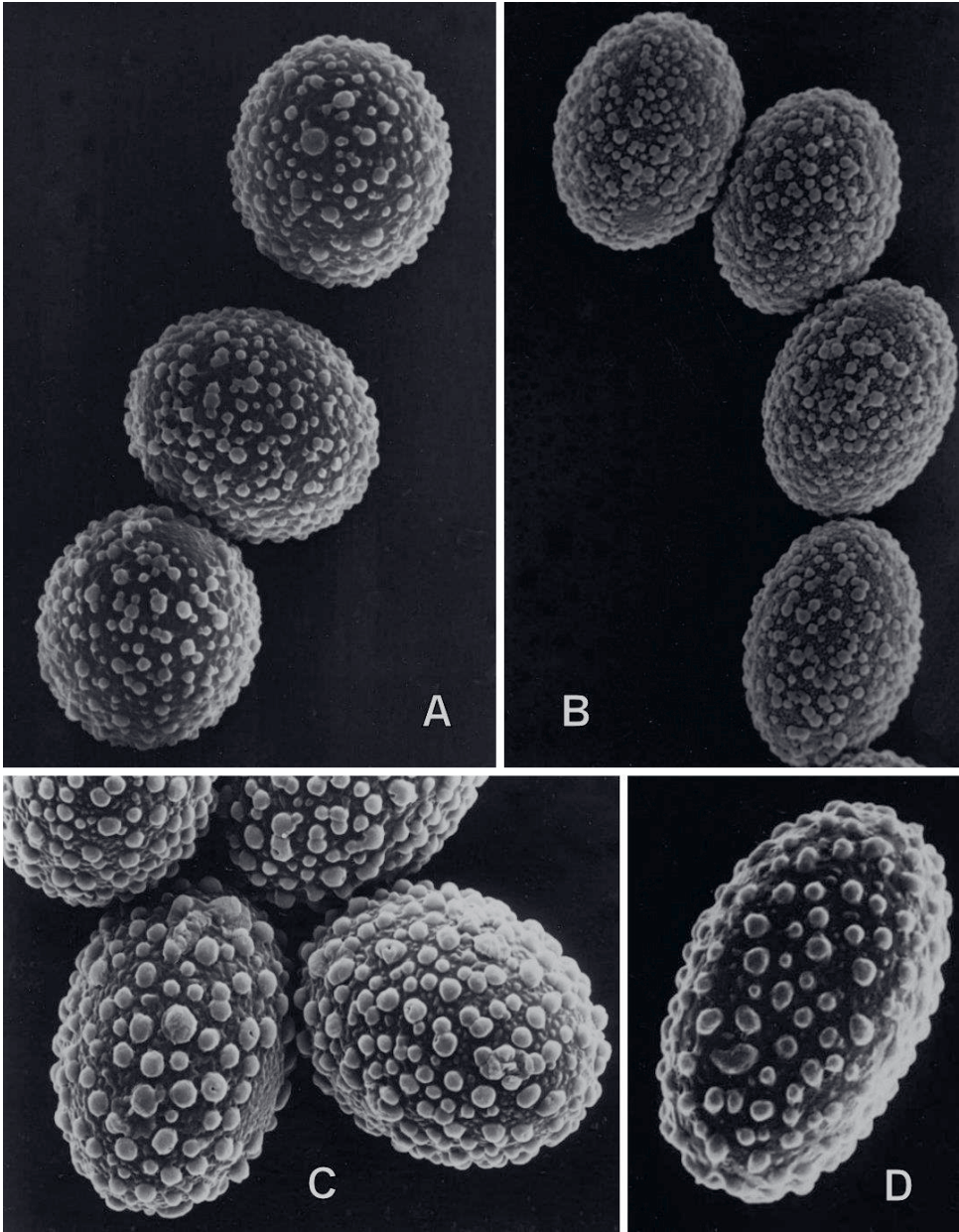


Plate XVIII. Ascospore ornamentation in *Scutellinia* sect. *Scutellinia* (A-D). **A** – *S. patagonica*, coll. G16/89; **B** – coll. D75/83; **C**, **D** – *S. umbrorum*, coll. D130/83.

- Sjøberget, 10 Aug. 1981, T. Schumacher & K. Østmoe 32/81, 34/81, 42/81 (O – 3 coll.); Ibid., 6 Aug. 1983, T. Schumacher & K. Østmoe D 103/83, D 104/83 (O - 2 coll.).
- Tverråi, 6 Aug. 1982, T. Schumacher & K. Østmoe 16/82 (O); Ibid., 10 Aug. 1983, T. Schumacher & K. Østmoe D 125/83 (O).
- Kattuglehøi, 7 Aug. 1982, T. Schumacher & K. Østmoe 31/82 (O).
- Grimsdalshytta, 7 Aug. 1982, T. Schumacher & K. Østmoe 50/82 (O); Ibid., 10 Aug. 1981, T. Schumacher & K. Østmoe 44/81 (O). - Grimsa 1 km NE Tverrgjelet, 4 Aug. 1983, T. Schumacher & K. Østmoe D 75/83 (O).

Confirmative description and illustrations:
Schumacher (1990): 65-67.

(98) *Scutellinia scutellata* (L.) Lamb., Fl. mycol. Belge, Suppl. 1: 299. 1887.
Basionym. *Peziza scutellata* L., Sp. pl. 2: 1181. 1753.

N: **Rødt kransøye** [LA] Plate XVII D

- Tverråi, 7 Aug. 1982, T. Schumacher & K. Østmoe 58/82 (O); Ibid., 6 Aug. 1984, T. Schumacher & K. Østmoe D 147/84 (O).
- Kattuglehø NE at Tverråi, 7 Aug. 1982, T. Schumacher & K. Østmoe 59/82 (O).
- Veslhjerkinnjønnin, 10 Aug. 1982, T. Schumacher & K. Østmoe 242/82, 243/82 (O- 2 coll.).
- Buåi, 11 Sept. 1982, T. Schumacher & K. Østmoe 496/82 (O).
- Storberget E, 5 Aug. 1983, T. Schumacher & K. Østmoe D 91/83 (O).
- Buåi towards S Kattuglehøi, 17 Sept. 1983, T. Schumacher & K. Østmoe D 156/83 (O).
- Verkenseter, 9 Aug. 1984, T. Schumacher & K. Østmoe D 182/84 (O).
- Grimsa I km NE Tverrgjelet, 4. Aug. 1983, T. Schumacher & K. Østmoe D 73/83, D 76/83 (O- 2 coll.); Ibid. 19 July 1986, T.

Schumacher (O – 2 coll.).

Confirmative description and illustrations:
Schumacher (1990): 68-70.

(99) *Scutellinia umbrorum* (Fr.) Lamb., Fl. mycol. Belge, Suppl. 1: 300. 1887.
Basionym. *Peziza umbrorum* Fr., Syst. mycol. (Lundae) 2(2): 621. 1823.

N: **Knølkransøye** [LA] Plate XV C-D

- Tverråi, 10 Aug. 1981, T. Schumacher & K. Østmoe D 130/83 (O).

Confirmative description and illustrations:
Schumacher (1990): 72-73.

Commentary. The single specimen from Grimsdalen was included in the works by Schumacher (1987, 1990, 1993a).

Scutellinia subgenus **Legalia** T. Schumach.

Scutellinia sect. **Legalia** ser. **Legalia**

(100) *Scutellinia hyperborea* T. Schumach., Opera Botanica 101: 83. 1990.

N: no vernacular [AA] Plate XIX A-B

- Tverråi, 24 July 1983, T. Schumacher & K. Østmoe D 49/83 (O); Ibid., 6 Aug. 1984, T. Schumacher, S. Sivertsen & K. Østmoe 84/30 (O).
- Tverrgjelet, 8 Aug. 1983, T. Schumacher & K. Østmoe D 117/83 (O); Ibid., 26 July 1984, T. Schumacher & K. Østmoe D 63/84 (O- *holotype*).
- Grimsa 1 km NE Tverrgjelet, 4 Aug. 1983, T. Schumacher & K. Østmoe D 74/83 (O).
- Buåi at S Kattuglehøi, 17 Sept. 1983, T. Schumacher & K. Østmoe D 163/83 (O).
- Grimsa at Tverrliseter, 19 Sept. 1983, T. Schumacher & K. Østmoe D 221/83,

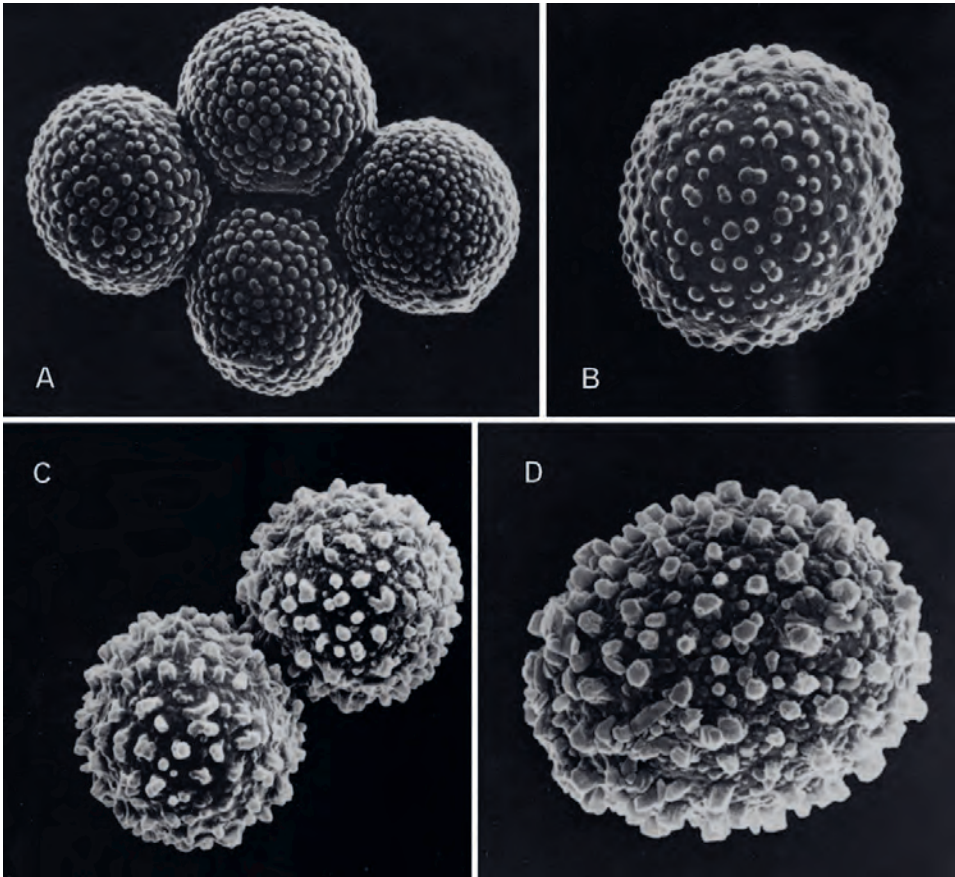


Plate XIX. Ascospore ornamentation in *Scutellinia* sect. *Legalia* (A-D) **A** – *S. hyperborea*, coll. D117/83; **B** – coll. D163/83; **C** – *S. minor*, coll. D173/83; **D** – coll. S52/89.

D222/83 (O- 2 coll.).

Confirmative description and illustrations:
Schumacher (1990): 83.

Commentary. Schumacher & Mohn Jensen (1992) made a description and photograph of a vital specimen from the area.

(101) *Scutellinia minor* (Vel.) Svr., Ceska

Mykol. 25: 85. 1971.

Basionym. Sphaerospora minor Velen., Monogr. Discom. Bohem.: 300. 1934.

N: no vernacular

[LA] Plate XIX C-D

- Veslhjerkinnþjonnin, 10 Aug. 1982, T. Schumacher 250/82 (O).

- Svartknattþjonnin, 11 Aug. 1982, T. Schumacher & K. Østmoen 291/82 (O).

- Grimsdalshytta, 9 Aug. 1983, T. Schumacher & K. Østmoe D 120/3, D 121/83 (O-2 coll.).
- Tverrlisetser, 18 Sept. 1983, T. Schumacher & K. Østmoe D 242/83, D 244/83 (O-2 coll.).
- Grimsa at Verkenseter, ca 1000 m, 18 Sept. 1983, T. Schumacher & K. Østmoe D 173/83, D 189/83 (O-2 coll.).
- Tverråi, 10 Aug. 1983, T. Schumacher & K. Østmoe D 131/83 (O); Ibid., 6 Aug. 1984, T. Schumacher, S. Sivertsen & K. Østmoe D 139/84, D 140/84 (O-2 coll.).
- Grimsa 1 km NE Tverrgjelet, 4 Aug. 1983, T. Schumacher & K. Østmoe D 78/83 (O).
- Tverrgjelet, 8 Aug. 1983, T. Schumacher & K. Østmoe D 116/83 (O); Ibid., 18 Sept. 1983, T. Schumacher & K. Østmoe D 213b/83 (O); Ibid., 26 July 1984, T. Schumacher & K. Østmoe D 57/84 (O).

Confirmative description and illustrations:

Schumacher (1990): 84-85.

Commentary. Schumacher & Mohn Jensen (1992) made a description and photograph of a vital specimen from the area.

Scutellinia* sect. *Legalia* ser. *Sublaevispora

(102) ***Scutellinia heterosculpturata* Kullm. & Raitv.**, Fol. Crypt. Est. 7: 4. 1977.

N: no vernacular [LA] Plate XX A

- Hornsjøhøi, 24 July 1984, T. Schumacher & K. Østmoe D 144/84 (O).
- Tverråi, 27 July 1984, T. Schumacher & K. Østmoe D 85/84 (O); Ibid., 6 Aug. 1984, T. Schumacher & K. Østmoe D 50/84 (O).

Confirmative description and illustrations:

Schumacher (1990): 87-88.

(103) ***Scutellinia kerguelensis* (Berk. in Hook. f.) O. Kuntze**, Rev. Gen. Pl. 2: 869. 1891.

Basionym. *Peziza kerguelensis* Berk. in Hook. f., Fl. Antarct. 2: 451. 1847.

N: **Nymfekransøye** [AA]

- Buåi, 11 Sept. 1982, T. Schumacher & K. Østmoe 476/82, 482/82, 488/82 (O-3 coll.).
- Grimsa 1 km NE Tverrgjeldet, 4 Aug. 1983, T. Schumacher & K. Østmoe D 77/83 (O); Ibid., 19 July 1986, T. Schumacher (O).
- Gautåa at Veslhjerkinntjønnin, 10 Aug. 1982, T. Schumacher & K. Østmoe 248/82, 253/82 (O-2 coll.).
- Tverråi estuary, 7 Oct. 1982, T. Schumacher, 515/82 (O).
- Grimsdalen, 7 Aug. 1982, T. Schumacher & K. Østmoe 30/82 (O).
- Kattuglehøi NE, 7 Aug. 1982, T. Schumacher & K. Østmoe (O).

Confirmative description and illustrations:

Schumacher (1990): 89.

Commentary. Schumacher & Mohn Jensen (1992) made a description and photograph of a vital specimen from the area.

(104) ***Scutellinia subhirtella* Svr.**, Ceska Myk. 25: 85. 1971.

N: no vernacular [LA] Plate XX B-C

- Tverråi estuary, 10 Aug. 1981, T. Schumacher & K. Østmoe 37/81, 43/81 (O-2 coll.).
- Grimsa at Storberget, 9 Aug. 1982, T. Schumacher & K. Østmoe 159/82, 201/82, 202/82 (O-3 coll.).
- Gautåa at Veslhjerkinntjønnin, 10 Aug. 1982, T. Schumacher & K. Østmoe 244/82 (O).
- Grimsdalshytta, 9 Aug. 1983, T. Schumacher & K. Østmoe D 122/83 (O).
- Tverråi, 6 Aug. 1984, T. Schumacher & K. Østmoe D 145/84 (O).
- Grimsa 1 km S Verkenseter, 19 July 1986, T. Schumacher (O).

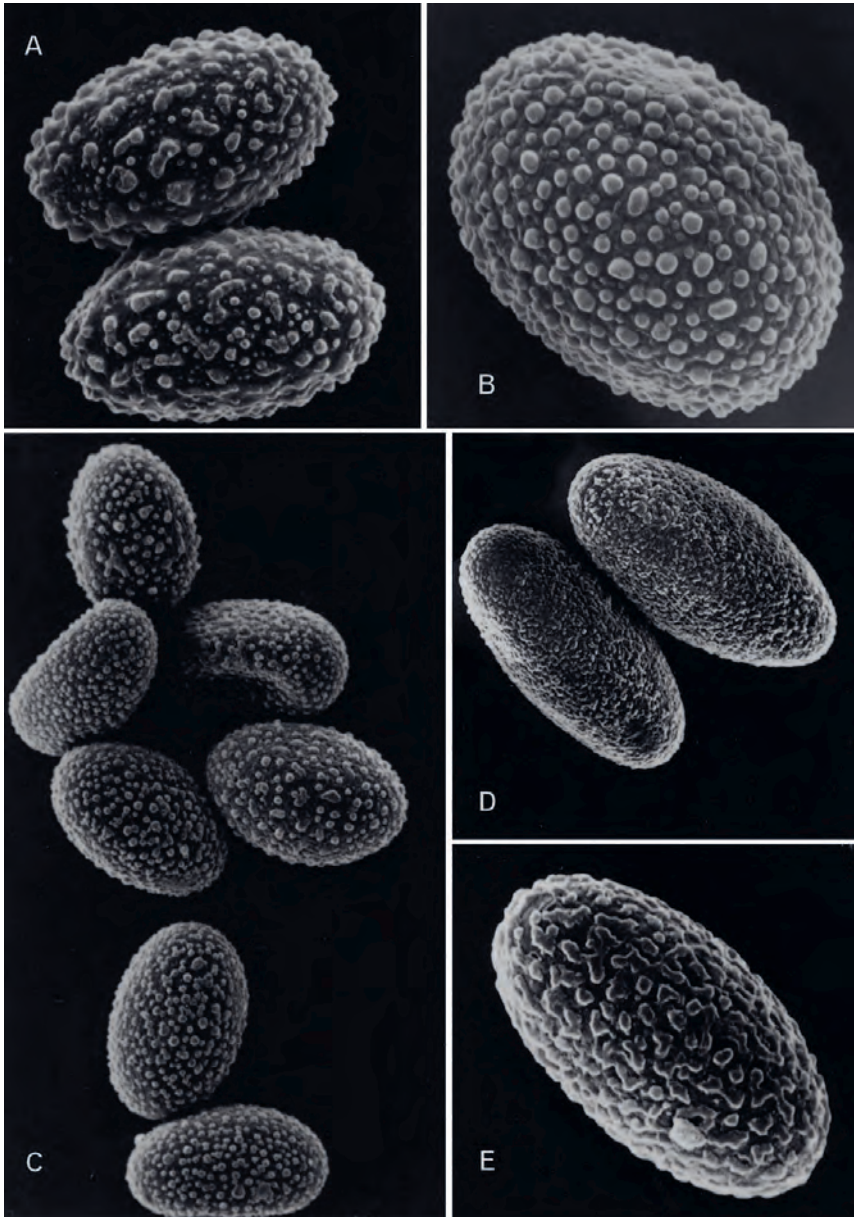


Plate XX. Ascospore ornamentation in *Scutellinia* sect. *Legalia* (A-C) and sect. *Minutae* (D-E).
A – *S. heterosculpturata*, coll. D85/84; **B** – *S. subhirtella*, coll. 37/81; **C** – coll. D122/83; **D** – *S. mirabilis*, coll. D213a/83; **E** – *S. torrentis*, coll. TS5/86.

Confirmative description and illustrations:

Schumacher (1990): 91.

Scutellinia sect. **Minutae**

(105) *Scutellinia macrospora* (Svr.) Le Gal, Bull. Soc. mycol. Fr. 80: 123. 1964.

Basionym. *Lachnea lusatiae* var. *macrospora* Svr., Sb. nár. Muz. Praze, B 4(6, Bot.): 58. 1949.

N: no vernacular

[AA]

- Hornsjøhøi, 5 Aug. 1988, K. Schumacher (O).

Confirmative description and illustrations:

Schumacher (1990): 94-95.

Commentary. A record of the specimen from Grimsdalen was included in Gaarder et al. (1996).

(106) *Scutellinia mirabilis* Dissing & Sivertsen, Nord. J. Bot. 3: 420. 1983.

N: Vidunderkransøye [AA] Plate XX D

- Grimsa, ½ km SW Verkenstet, 18 Sept. 1983, T. Schumacher & K. Østmoe D 184/83, D 187/83, D 188/83, D 190/83 (O - 4 coll.).

- Tverrgjelet, 18 Sept. 1983, T. Schumacher & K. Østmoe D 213a/83 (O).

Confirmative description and illustrations:

Schumacher (1990): 95-96.

(107) *Scutellinia superba* (Vel.) Le Gal, Bull. Soc. mycol. Fr. 80: 123. 1964.

Basionym. *Lachnea superba* Vel., Monogr. Discom. Bohem: 305. 1934.

N: no vernacular

[LA]

- Folldal, Grimsa at Fallet, by road 27, 27 July 1976, T. Schumacher 91a/76 (O).

Confirmative description and illustrations:

Schumacher (1990): 96-97.

Commentary. The single record from Grimsdalen was mapped in Schumacher (1979, 1993a).

(108) *Scutellinia torrentis* (Rehm) T. Schumach., Opera Botanica 101: 97. 1990.

Basionym. *Lachnea torrentis* Rehm, Ann. Mycol. 5: 212. 1907.

Synonym. *Scutellinia convexa* (Vel.) Svr., Ceska Myk. 25: 83. 1971.

N: Flokkransøye

[LA] Plate XX E

- Grimsa, 1 km S of Verkenstet, 19 July 1986, T. Schumacher 5/86 (O).

Confirmative description and illustrations:

Schumacher (1990): 97.

Commentary. The single specimen from Grimsdalen was recorded in the works by Schumacher (1987, 1990, 1993a).

Sphaerosporella Svr. & Kub.

(109) *Sphaerosporella brunnea* (Alb. & Schw.) Svr. & Kub., Ceska Mykol. 15: 65. 1961.

Basionym. *Peziza brunnea* Alb. & Schw., Consp. fung.: 317. 1805.

N: Tussebeger

[LA]

- Grimsa at Tverrliset, at fire place, 19 Sept. 1983, T. Schumacher & K. Østmoe D 210/83 (O).

Confirmative description and illustrations:

Rifai (1968): 97-98, Figs. 85- 86.

Tarzetta (Cooke) Lamb.

(110) *Tarzetta alpina* Van Vooren & Cheype, Ascomycete.org, 11 (6): 328. 2019.

N: no vernacular

[AA]

- Buài against Kattuglehøi, birch forest, on the ground, 12 Aug. 1981, T. Schumacher & K. Østmoe 172/81 (O).
- Tverråi, slopes along river, 7 Aug. 1989, T. Schumacher G 64/89.
- Tverrliseter, on river terrace, 7 Aug. 1989, T. Schumacher G 58/89 (O).

Confirmative description and illustrations:

Van Vooren et al. (1919): 328-329, plate 13.

Commentary. This species was recently described from France based on a specimen from an alpine locality in the French alps. A couple of specimens of the species from Norway was also included in that work (Van Vooren et al. 2019). Here we publish another 3 collections of the species from Grimsdalen. The species is probably overlooked in Scandinavia. Morphologically *T. alpina* resembles *T. pusilla* but is separable by longer asci and more pointed, subfusoid ascospores.

(111) *Tarzetta pusilla* Harmaja, Karstenia 14: 116. 1974.

N: no vernacular

[LA]

- Buài estuary, 25 July 1980, T. Schumacher (O).
- Buài against Kattuglehøi, birch forest, on the ground, 8 Aug. 1982, T. Schumacher & K. Østmoe 147/82 (O)
- Buài, middle inundation zone, 17 Sept. 1983, T. Schumacher & K. Østmoe D 146/83 (O).
- Buài against Jegerhøi, 12 Aug. 1981, T. Schumacher & K. Østmoe 274/81 (O).
- Tverråi, slopes along river, 6 Aug. 1982, T. Schumacher & K. Østmoe 14/82 (O); 6

Aug. 1984, T. Schumacher & K. Østmoe D 149/84 (O); 7 Aug. 1989, T. Schumacher G 64/89; Ibid., 14 Aug. 2009, T. Carlsen, T. Schumacher & I. Skrede TS 03/2009 (O).

- Storberget, on soil in birch forest, 18 Sept. 1983, T. Schumacher & K. Østmoe D 231/83 (O).

- Sjøberget at Skridubekken, 6 Aug. 1983, T. Schumacher & K. Østmoe D 96/83 (O).

- Tverrgjelet at Tverrgjebekken, in Dryadetum, 15 Aug. 2001, T. Schumacher (O)

Confirmative description and illustrations:

Harmaja (1974): 116-119, fig. 1 A.

Commentary. This species was originally described from Kuusamo in Finland (Harmaja 1974). The holotype was recently re-examined by Van Vooren et al (2019), but they were unsuccessful in extracting DNA from the specimen. Van Vooren et al. (2019) also lists a specimen from Norway in their work. The species is probably overlooked in Scandinavia, and has so far escaped recognition in the files of Norwegian Biodiversity Information Centre. *Tarzetta pusilla* and *T. alpina* are difficult to distinguish in the field, but under the lense *T. pusilla* has asci 210–260 µm in length vs. 250–300 µm in *T. alpina*. The ascospores in the two species are in the same range, 19–23 x 11–14 µm, however, in *T. pusilla* the spores are only slightly tapering towards the ends, compared to the more pointed to subfusoid ascospores in *T. alpina*.

***Tricharina* Eckbl.**

(112) *Tricharina gilva* (Boud.) Eckblad, Nytt Mag. Bot. 15(1-2): 60.1968.

Basionym. *Tricharia gilva* Boud., Icones Mycol. livr. 2, no. 37, pl. 347. 1905.

N: Lurvebeger

[LA]

- Buåi estuary, on burnt site, 5 Aug. 1989, T. Schumacher G 47/89 (O).

Confirmative descriptions and illustrations:

Eckblad (1968): 60. Van Vooren et al. (2017): 107, pl. 2.

Commentary. A recent, molecular-phylogenetic study of *Tricharina* based on LSU and ITS rDNA sequences, showed the genus to be paraphyletic, constituting at least three divergent clades, which were recognized as genera, i.e. *Tricharina*, *Ascorhizoctonia*, and *Cupulina*, for which *Tricharina* was retained for the type species *T. gilva* (Van Vooren et al. 2017). Interestingly, a number of GeneBank sequences of endophytes accorded with the inferred *Tricharina* sequences, suggesting that members of the genus may have an endophytic life style (Van Vooren et al. 2017).

***Trichophaea* Boud.**

(113) *Trichophaea hemisphaerioides* (Mout.) Graddon, Trans. Br. mycol. Soc. 43: 689. 1960.

Basionym. *Lachnea hemisphaerioides* Mouton, Bull. Soc. R. Bot. Belg. 36 (2): 21. 1897.

N: **Bålføyelsbeger**

[LA]

- Tverråi, burnt site on river terrace, 18 Sept. 1983, T. Schumacher & K. Øsmoe D 210/83 (O).

- Verkenseter, on burnt ground, 28 June 1984, T. Schumacher & K. Øsmoe D 26/84 (O).

- Buåi, on burnt site, 5 Aug. 1989, T. Schumacher G 46/89 (O).

Confirmative description and illustrations:

Breitenbach & Kränzlin (1981): 92, Fig. 75.

(114) *Trichophaea woolhopeia* (Cooke & Phill. in Cooke) Arnould, Bull. Soc. mycol.

Fr. 9: 112, 1893.

Basionym. *Peziza woolhopeia* Cooke & W. Phillips, Grevillea 6 (38): 75. 1877.

N: **Kalkføyelsbeger**

[LA]

- Buåi, on soil along small rivulet, 12 Aug. 1981, T. Schumacher & K. Øsmoe, 171/81 (O).

- Tverråi, slopes along river, 6 Aug. 1984, T. Schumacher & K. Øsmoe D 125/84 (O).

- Buåi, in birch forest along river slopes, 9 Aug. 1984, T. Schumacher & K. Øsmoe D 180/84 (O).

Confirmative descriptions and illustrations:

Breitenbach & Kränzlin (1981): 94, Fig. 76; Dissing (2000): 122.

Commentary. *Trichophaea woolhopeia*, as considered here, may comprise more than one species. Van Vooren (2016) described a new species from the French Alps, i.e. *Trichophaea dougoudii*, with similar macroscopic characteristics as *T. woolhopeia* but with larger and broader ascospores and a species specific ITS barcode.

***Wilcoxina* Chin S. Yang & Korf**

(115) *Wilcoxina rehmi* Chin S. Yang & Korf, Mycotaxon 24: 517. 1985.

N: **Mørkhåret lurvebeger**

[LA]

- Tolleivshaugen, in pine forest, 23 Aug. 1997, T. Schumacher (O).

Confirmative description and illustrations:

Yang & Korf (1985): 517-519.

Commentary. The species forms ectendomycorrhiza with *Pinus* (Egger 1996).

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