

A new *Peziza* from the snowbank flora of Western America

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Zusammenfassung. Es wird die an schmelzenden Schneebänken im Teton Gebirge von Wyoming und Idaho und im Uintas Gebirge von Utah (Weststaaten der USA) gefundene, neue Art *Peziza phaeotheca* beschrieben. Sie ist durch blass-bräunliche Askuswände und deutlich rauhe Sporen gekennzeichnet. Die neue Kombination *Peziza soucheana* wird für *Galactinia soucheana* aufgestellt.

Certain macromycetes fruiting under early spring conditions in the mountains of western North America are commonly known as "snowbank fungi" MILLER (1965, 1967) used this term in a restricted sense to include only those with fruiting stages actually originating under snow. In our studies of these fungi in the western Rocky Mountains, we have frequently observed the following large *Peziza* for which we can find no previous description:

Peziza phaeotheca sp. nov.

Apothecia sessilia, 2—7 cm diam., repanda, saepe margine recurvata, interdum irregulariter fissa; hymenium laeve vel convolutum et frequenter verrucosum, intense flavo-vel medio-vel griseobrunneum, in maturitate arescens et rufobrunnescens; excipulum concolorum, glabrum vel pustulatum; caro tenuis fragilis translucida, fracto succum coloratum non exsudans; hymenium 240—360 μ m latum; subhymenium e strato texturae angularis 50—70 μ m latum; excipulum medullosum 350—500 μ m latum, e cellulis inflatis usque ad 50 μ m diam. et filis 4—10 μ m latis consistens; excipulum ectale bistratosum: stratum interius 100—150 μ m latum, e textura angulari brunneotunicata 14—45 μ m diam.; stratum superficiale e texture globosa hyalina usque ad 50 μ m diam., cum caespitibus hypharum minorum breve cylindricarum consistens; ascosporae late ellipsoideae hyalinae crassitunicatae glabrae vel minute exasperatae, guttulam unam indistinctum continentes, 18—20 (—21) $\times$ 12.0—13.5 μ m; asci cylindrici, ad basim angustam saepe curvatum gradatim attenuati, 250—350 $\times$ 12.5—20.5 μ m; paraphyses eramosae 4—6-septatae, cellulis subterminalibus inflatis, cellula terminali cylindrica apicaliter rotundata. Hab. gregaria vel caespitosa in solo et quisquiliis silvaticis sub et circa ripas nivales, interdum in silvis caesis abundans. Collectiones examinatae: KHM 10334, 12112, 12197 (holotypus), Dublin 2686, BPI.

Peziza phaeotheca sp. nov.

Apothecium sessile, 2—7 cm across, repand, often with recurved margin, tending to split irregularly; hymenium smooth to convoluted

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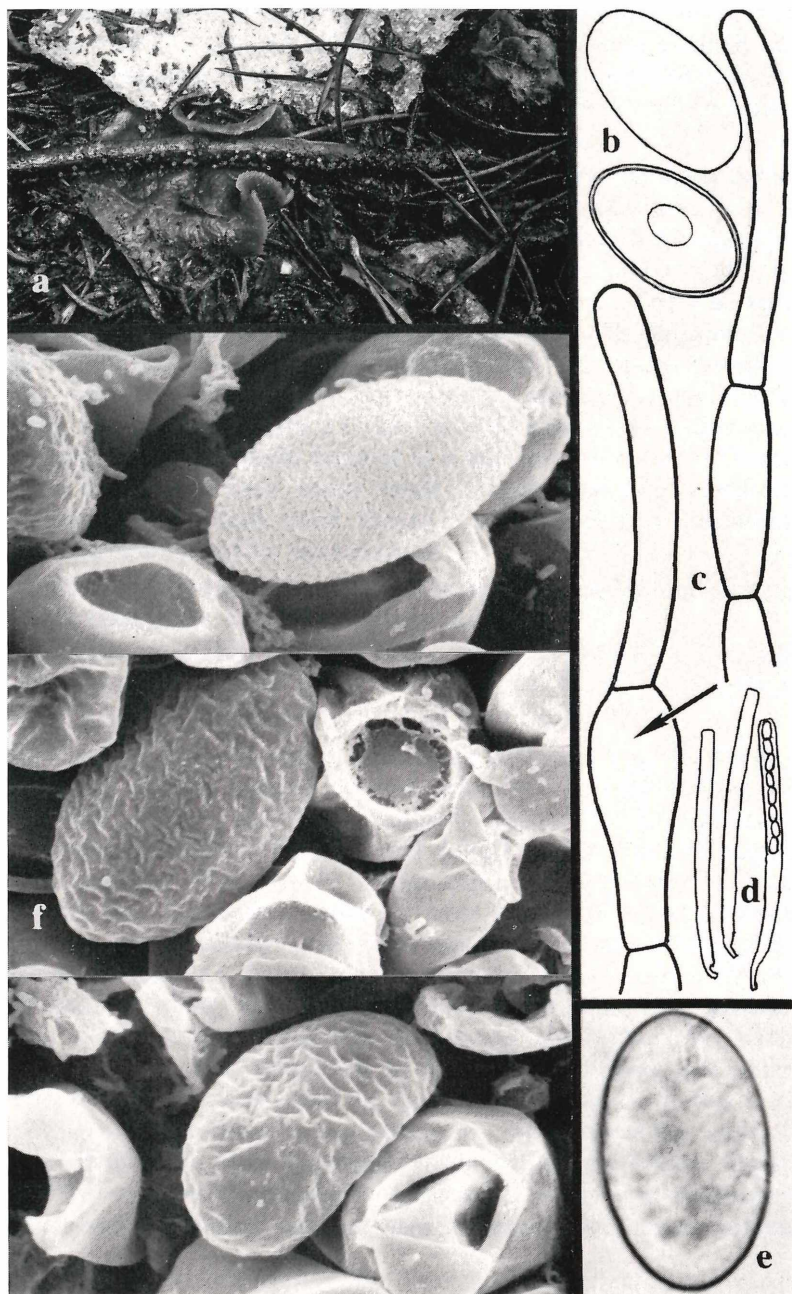


Fig. 1. *Peziza phaeotheca*: (a) habitat photograph, three-fourths natural size; (b–d) details of hymenial elements; (b) ascospores ca. $\times 1230$; (c) tips of paraphyses ca. $\times 1230$; (d) asci ca. $\times 70$; (e) light photomicrograph of ascospore ca. $\times 1540$; (f) scanning electron photomicrographs of discharged ascospores lying on hymenium ca. $\times 2150$

and frequently warty, strong yellowish brown (Centr. 74: 10YR 5/6)¹) to moderate brown (Centr. 58: 7.5YR 3.5/4) or dark grayish brown (Centr. 62: 5YR 2/2), becoming more reddish at maturity as it begins to dry: dark reddish brown (Centr. 46: 2.5YR 2/4); excipulum concolorous, smooth to pustulate; flesh thin, fragile, translucent, not exuding a colored juice when broken.

In section, hymenium 240—360 μ m thick; subhymenium a layer of textura angularis, 50—70 μ m thick; medullary excipulum 350—500 μ m thick, of inflated cells up to 50 μ m across and filaments 4—10 μ m across; ectal excipulum two-layered; inner layer 100—150 μ m across, of brown-walled textura angularis 14—15 μ m in diameter and a surface layer of hyaline textura globosa up to 50 μ m in diameter with clusters of smaller, short-cylindrical hyphae. Ascospores broadly ellipsoid, hyaline, thick-walled, smooth to minutely roughened, containing a single, indistinct guttule, 18—20 (21) $\times$ 12.0—13.5 μ m. Asci J+, cylindric, gradually tapered to a narrow, often curved base, 250—350 $\times$ 12.5—20.5 μ m; ascus walls tinged pale dull brown. Paraphyses unbranched, 4—6 septate, with swollen subterminal cells, terminal cell cylindric, apex rounded.

Gregarious to caespitose on soil and forest litter under and around snowbanks, sometimes very abundant in clearings.

Collections studied: KHM 10334, 12197 (Holotype). Dublin 2686, BPI. Holotype collected 14. VI. 1971 by K. H. McKNIGHT, Mill Creek, Wasatch National Forest, Summit County, Utah.

Discussion: This species is readily recognized among the brown, smooth-spored Pezizas lacking colored juice by the combination of pale brownish ascus walls, medium-sized, indistinctly uniguttulate spores, snowbank habitat (Fig. 1a), and details of spore structure and receptacle anatomy (Fig. 1b—f). Under highest magnification of the light microscope, the spores are very faintly roughened with what appear to be concentrically oriented ridges around the shorter spore circumference (Fig. 1e). Spores swollen in weak KOH and in cotton blue-lactophenol show this pattern more distinctly. The greater resolution of the scanning electron microscope shows the low, wide ridges on the spore wall connected to form an incomplete reticulum (Fig. 1b). This is more evident in the median portion of the cell frequently grading to more or less concentric ribs toward the ends of the spore. The faint, dull brownish ascus walls and brown upper excipular tissue show up clearly in sections of herbarium specimens revived in a moist chamber and mounted in water. Both tissues darken in KOH.

¹) Names of colors in boldface type follow KELLY & JUDD (1955). Color references in parentheses following these names consist of the centroid designation (KELLY, 1965) and MUNSELL (1966) values.

LEGAL (1953) mentions brown asci in *Peziza soucheana* (BOUD. ex LEGAL) comb. nov. ²⁾ This rare species has conspicuous lateciferous hyphae, clavate paraphyses, brownish, eguttulate spores, and a well-developed filamentous ectal excipular layer, all of which are lacking in *Peziza phaeotheca*. Our species does not fit any species reported by SEAVER (1942); in the keys of LEGAL (1941) and MOSER (1963) it comes out best to *Peziza varia* (HEDW.) FR., a species not known from North America. Compared with a specimen of *P. varia* at BPI from the Bresadola Herbarium, there are numerous anatomical differences, the most conspicuous being the lack of brown color in asci and excipulum of *P. varia* and the lack of an ental hyphal layer in the excipulum of *P. phaeotheca*. Comparatively darker colors and smaller spores also characterize *P. varia*. CLEMENTS (1903) described *Heteroplegma crenatum* (= *Peziza crenata* (CLEM.) SACC. & SACC.) from Colorado. With its crenate margin, furfuraceous outer surface, and brownish asci and excipular layers, this species bears at least superficial resemblance to *P. phaeotheca*. Examination of a portion of the type (# 125 in Crypt. Form. Coloradensium) at BPI shows a four-layered excipulum typical of most species of *Peziza*, whereas *P. phaeotheca* has a three-layered excipulum, less common in the genus but not unique. Under high magnification of the light microscope, spores of *P. crenata* appear to be smooth as described by CLEMENTS, contrasted with the faintly reticulate-roughened mature spores of *P. phaeotheca*.

Color references in parentheses consist of the Centroid designation (KELLY, 1965) and MUNSELL (1966) values. Color names immediately preceding these citations follow KELLY & JUDD (1955).

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