

Pyrenopsis Nyl.

After Fink, and others

Rev. 4/96

Thallus crustose, effuse, to mealy to granular-areolate, minutely squamulose or apparently dwarf-fruticose, with numerous hyphae; black, tinged red-brown, at least when moist. Cortex not differentiated, \pm paraplectenchymous throughout. Photobiont Gloeocapsa or Chroococcidiopsis (Xanthocapsa); cells or cell-clusters near the upper surface with reddish brown, K \pm purplish, gelatinous sheaths.

Apothecia narrowly opened, \pm perithecia-like; disc pore-like to urceolate, orange-brown to blackish; thalline exciple well-developed, prominent; true exciple indistinct, very thin (mostly less than 15 μ m wide), often inconspicuous. Hymenium colorless, or pale brownish above, I+ blue-green or reddish brown. Hypothecium colorless or pale brownish. Paraphyses non-septate (?), simple to branched above, often \pm swollen and moniliform above. Asci clavate, with distinctly thickened apices, wall I- but apical dome I+ blue. Spores 8 to many, simple, ellipsoid to globose, colorless, without a distinct perispore.

Pycnidia immersed, wall colorless; conidiogenous cells in chains. Conidia shortly ellipsoid to bacilliform, simple, colorless. No substances. On horizontal or sloping non-calcareous rocks which are alternatively very wet and very dry, rarely on soil, in moist situations, cool temperate to arctic.

1. Spores rarely less than 14 μ m in length. 2

1. Spores not more than 14 μ m in length. 6

2. On soil. Spores 22-30 x 10-14 μ m, biseriately to irregularly arranged, ellipsoid. Thallus thin, minutely granulose, the granules brownish black, flat to convex, forming an irregular, continuous, or more or less broken crust. Apothecia minute to small, 0.25-0.4 mm across, partly immersed, the disk finally convex, black, the exciple thin, black, soon disappearing; asci cylindrico-clavate. Massachusetts and Illinois. P. compacta

2. On rock. Spores not more than 20 μ m in length. 3

3. Apothecia 1 per areole. 4

3. Apothecia 1-3 per areole. 5

4. Thallus pale bluish to sage-green, granulose, the granules small, round, becoming grouped into areole-like clusters and finally crowded into a thin, chinky crust. Apothecia 0.3-0.4 mm across, more or less immersed, the disk flat to slightly convex, reddish brown to brown, the thalloid exciple lighter; spores ellipsoid, 16-18 x 8-10 μ m.

Hymenium I+ blue. Paraphyses conglutinate. On calcareous rocks, Kansas and Texas. P. viridirufa

4. Thallus brownish black, granulose, the granules minute, flat or convex, usually scattered or forming a thin, irregularly broken crust. Apothecia 0.2-0.3 mm across, partly immersed to closely adnate, finally more or less open, the disc concave to almost flat, brownish black, the thalloid exciple thin, black; spores oblong-ellipsoid, 13-20 x 7-10 μ m, irregularly arranged. On limestone, Indiana. P. fuscoatra

5. Spores 12-20 x 7-10 μ m. Thallus of coralloid granules, reddish brown to blackish, the granules finally crowded into a thin or moderately thick, areolate crust. Apothecia 0.2-0.5 mm across, immersed to adnate, 1-3 per areole; disc concave, brownish black to black; thalloid exciple thin, black; spores ovoid-ellipsoid, rarely becoming 1-septate. irregularly arranged. Photobiont Gloeocapsa? On rocks, from Vermont to South Carolina, west to Illinois and Minnesota, with disjunct in California. (Psorotichia phaeococca)

5. Spores 9-18 x 5-8 μ m. Thallus of minute granules, brownish black, the granules finally crowded into an irregular crust. Apothecia 0.2-0.3 mm across, partly immersed to adnate, 1-3 per areole, the disc black, almost covered by a brownish black, thalloid exciple; paraphyses few and short; asci clavate-fusiform; spores ovoid-ellipsoid, rarely becoming 1-septate. On granite rocks, Massachusetts. Cryptothele permiscens (Synonym: Pyrenopsis phylliscina)

6. Spores to 7(-8) μ m long. 7

6. Spores more than 8 μ m in length. 8

7. Spores 4.5-7 x 2-3 μ m, oblong-ellipsoid; asci mostly multispored (64 or more), a few 8-spored asci sometimes present. Thallus cracked-areolate, brown-black. Apothecia 0.1-0.2 mm diam., immersed, perithecioid with pore-like disk; hymenium 70-80 μ m; asci 40-55 x 15-20 μ m, broadly clavate. On moist, mica-schist rocks. See Thomson 1997 under Pyrenopsis myriospora, for fuller description. P. grumulifera

7. Spores 7-8 x 4-4.5 μ m, oblong-ellipsoid and flat on one side, irregularly arranged; asci mostly 8-spored (?). Thallus minutely granulose, forming a thin, uneven, grayish to black, more or less continuous crust. Apothecia 0.1-0.2 mm across, many per areoles, partly immersed to adnate, round, the disk slightly concave to flat and convex, black, the thalloid exciple thin, entire, black, soon disappearing. On limestone, Ohio. P. lecideella

8. Thallus cracked-areolate to squamulose. 9

8. Thallus minutely granulose. 10

9a. Thallus minutely squamulose, reddish brown to blackish, finally

crowded into a thin, rough, subareolate crust. Apothecia 0.2-0.5 mm across, closely adnate, many per areole and often crowded, the disc concave, reddish brown to black, the thalloid exciple thin, black; spores blunt-ellipsoid, rarely becoming 1-septate, 9-11 x 6-7 μm . On rock, Massachusetts. P. haemalella

9a. Thallus deeply cracked-areolate to subsquamulose, 9b

9b. Spores 10-12(?-18) x 7-10 μm . Thallus brown-black. Apothecia to 0.3 mm diam., perithecioid to urceolate; disc punctiform or slightly expanded; hymenium 75-100 μm ; paraphyses submoniliform, 2-2.5 μm wide; spores broadly ellipsoid to subglobose. On moist, mica-schist. Specimens with a well-developed thallus and expanded, urceolate apothecia resemble a small Leptogium. P. furfurea

9b. Spores 8.0-10.0 x 4.0-5.3 μm . Thallus red-brown (especially when wet), indefinite, granulose-areolate, the areoles (0.3-)0.7-1.0 mm across, almost peltate, and becoming almost lobate at the thallus edge, \pm paraplectenchymatous throughout, containing Gloecapsa in red-orange sheaths, cells 12.5-18 μm diam. Apothecia sessile to sunken, 0.1-0.2 mm diam.; disk opening very narrow, red-brown, margin thick, smooth, even; hymenium hyaline to yellowish, 50-85 μm high; epihymenium reddish brown where developed, not granular or interspersed, paraphyses \pm simple, coherent in water; tips of asci with outer layer dark blue in Lugol's iodine (1.5%) following KOH treatment (K/I), sometimes with an even darker-reacting lining, lower layer light blue; spores hyaline, sometimes appearing partially septate, 8/ascus. On rocks, subalpine, Queen Charlotte Islands, British Columbia. P. tasmanica Nyl.

10. Apothecia very many per areole. 11

10. Apothecia 1 per areole. 12

11. Thallus granulose, blackish, the granules minute, round, soon passing into a thin, broken, blackish to black crust. Apothecia 0.2-0.4 mm diam., globose, closely adnate, very numerous and sometimes nearly covering the thallus, the disc deeply concave and nearly closed, matt, the thalloid exciple blackish or black; asci cylindrico-clavate; spores ellipsoid, 10-14 x 6-8 μm , uniseriately to irregularly arranged. Apical dome of ascus I+ blue. On rocks, Vermont, Massachusetts and Vermont. P. polycocca

11. Thallus coarsely granular-areolate to squamulose, forming pulvinate patches to 2 cm diam., uniformly reddish brown.

Photobiont Gloecapsa. Apothecia to 1 mm diam.; disc flat to convex; thalline exciple crenulate due to granular or subsquamulose outgrowths, concolorous with thallus, sometimes becoming excluded, to 150 μm wide, without green algae; true exciple 10-25 μm wide; hymenium 100-125 μm ; hypothecium to 70-80 μm ; asci 80-100 x 10-15 μm . Spores 10-15(-17) x 5-8 μm . Apical dome of the ascus I-. Discs exposed, glossy. On moist, acid rocks (especially mica-schist), often over dead or dying mosses or small accumulations of soil.

..... (Euopsis pulvinata)

12. Spores oblong, 9-13 x 4-5.5 um. Thallus minute, granular, becoming chunky, round to somewhat irregular, scarcely lobed, reddish brown, attached at a single point, blackening below. Apothecia 0.15-0.3 mm across, adnate, the disk flat to convex, reddish brown, the thalloid exciple thin, subcrenulate, sometimes disappearing. Apical dome of the ascus I-. Discs exposed, glossy. (Euopsis granatina)

12. Spores ellipsoid or ovoid-ellipsoid, mostly over 6 um wide. Apical dome of ascus I+ blue (?). Discs exposed, glossy. 13

13. Granules crowded into a subareolate crust, minute, convex.

Apothecia 0.15-0.3 mm across, partly immersed, 1 or more per areole, the disc concave to almost flat, the thalloid exciple thin, black; spores ovoid-ellipsoid, 9-14 x 6-9 um, irregularly arranged. Photobiont Gloeocapsa, partly red, K+ violet, 10.5-15 um diam excluding gelatin. Hypothecium hyaline, I+ blue. Hymenium in upper part yellowish, I+ strongly blue then ± wine-red; paraphyses not articulate; spores 8, ovoid to oblong, 9-10.5 x 5-6.5 um or nearly globose, 6.5 x 5.5 um or globose, 8.5 um, simple or indistinctly 1-septate. On soil or rocks. Massachusetts and N. Carolina..... P. subfuliginea

13. Granules compacted into substipitate areoles forming a close crust, minute, greenish black. Apothecia 0.15-0.4 mm across, immersed 1-6 per areole, the disc concave, black, the thalloid exciple thin, black; spores ellipsoid, 8-12 x 5-8 um, irregularly arranged. Hymenium I+ blue. Paraphyses conglutinate. On rocks, Alabama, Missouri, Minnesota and California. (Metamalanea melambola)

ADD:

Differs from European descriptions in that areoles are not furfuraceous but glabrous. Thallus delicately areolate with plane and thin areoles; photobiont Gloeocapsa, partly red and K+ violet, ca. 8.5 um diam. Apothecia innate with ± pore-formed opening; hypothecium colorless to yellowish; hymenium ca. 64 um thick, pale yellowish brown, I-; paraphyses very distinct, articulate, to 4 um broad; asci clavate; spores 8, broadly oval-subglobose, simple, 10-12 x 6.5-7 um. On moist rocks. Tennessee. P. cf. sanguinea

P. sanguinea Anzi (= S. rhodosticta according to Clauzade & Roux)

"P. multispora Dahl" = lapsus for P. myriospora, which = P. grumulifera

Greenland. See Thomson 1997 for description. P. macrocarpa E. Dahl

Greenland. See Thomson 1997 for description. P. rhodosticta (Taylor) Mull. Arg.

X-refs. to other species, that have now been put in other genera.

Literature

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