

Placidium

After Breuss, 1996, and others

Rev. November 3, 1997

Thallus mostly large-squamulose, brown; upper cortex large-celled and distinctly delimited. Photobiont cells to 15 µm diam. Medulla and lower cortex well developed. Asci cylindrical with uniseriate spores. Spores simple, hyaline. Pycnidia laminal or marginal, of Xanthoria-type; pycnospores oblong-ellipsoid or cylindrical.

1. On bark. Squamules irregularly oriented; lower side with paler marginal zone; margin mostly slightly downturned, not dark bordered. Rhizohyphae brown, often bundled into rhizine-like strands. Pycnospores cylindrical, c. 4 x 1 µm. Ascospores 9-13 x 4-6 µm. P. tuckermannii

1. On other substrates. 2

2. With rhizohyphae only. Spores thin-walled. 3

2. With rhizines in addition. On soil (when over rock, then on earth or moss covering). Spores thin-walled. 10

3. Lower cortex of anticlinal hyphae, the cells in ± distinctly vertical rows, often with pigment deposits in the small interhyphal spaces and therefore brown-spotted. Lower side of squamules ± black throughout. Rhizohyphae 6-8 µm thick. Squamules dark brown, not black-bordered, often with ± swollen upturned margins. Pycnidia marginal, capitate, black; pycnospores cylindrical, 5-7 µm long. Arctic-alpine. P. lachneum

3. Lower cortex of irregularly arranged cells or absent. 4

4. Excipulum dark brown, 20 µm thick. Periphyses thin (-2.5 µm). Spores 11-15 x 5-6 µm. Squamules < 250 µm thick. Temperate. P. michelii

4. Excipulum hyaline to yellowish (only in diseased, parasitized or overmature perithecia dark), over 20 µm thick. Periphyses thicker. Squamules mostly thicker. 5

5. Spores large, broadly ellipsoid (to c. 20 x 10 µm) or subglobose (15-17 x 12-14 µm). 6

5. Spores smaller or narrowly ellipsoid. 7

6. Medulla of mixed type. Squamules appressed. Pycnidia laminal. Pycnospores cylindrical. Squamules brown, crenate-lobed to deeply incised and lobate. Thallus ± distinctly rosetted. Globose cells of medulla and lower cortex 10-15 µm diam. Rhizohyphae 6-8 µm thick. Spores 17-22 x 8-11 µm. Pycnospores 5-8 µm long. Arctic-alpine. P. norvegicum

6. Medulla prosoplectenchymatous. Squamules with free and lifted up margins. Pycnidia marginal. Spores 15-20 x 7.5-9.5 µm. Pycnospores oblong-ellipsoid, 3-5 x 1.5-2 µm. Squamules to 10 mm across, to over 600 µm thick, mostly undulate; lower side in a ± wide zone pale and free of rhizohyphae. Rhizohyphae c. 6-7.5 µm thick. Temperate. P. rufescens

7. Medulla prosoplectenchymatous. Pycnidia laminal. Squamules coarse, 4-10(-20) mm across, to 600 µm thick, almost foliose, undulate, with free margins, somewhat overlapping, underside with paler marginal zone free of rhizohyphae. Rhizohyphae c. 5 µm thick. Spores 10-

15 x 5-6 um. Southwestern U.S. P. chilense

7. Medulla of mixed type. Pycnospores oblong-ellipsoid. 8

8. Pycnidia marginal. 9

8. Pycnidia laminal. On soil. Squamules not distinctly black-bordered. Underside pale to blackening. Epinecral layer delimited. Periphyses > 3 um thick. Squamules 2-7 mm across, to over 400 um thick. medullary and lower cortical cells c. 9-15 um diam. Rhizohyphae 4.5-6.5 um thick. Spores 12-16 x 5.5-7.5 um (12-16 x 7.5-8.5 um in var. argentinum). Temperate. P. squamulosum

9. Spores 11-13 x 5-6 um. Squamules appressed, dark-bordered. Arizona.

..... P. andicola

9. Spores 12-17 x 5.5-7 um. Squamules appressed to somewhat ascending, when young the margin often with fine pale hairs (single hyphae). P. pilosellum

10. Rhizohyphae brown, partly united into bundles. Spores 9-13 x 4-6 um. Mostly on bark, rarely on moss over rock. (P. tuckermannii)

10. Rhizohyphae and rhizines colorless. Pycnidia laminal. Pycnospores oblong-ellipsoid to subcylindrical, 3-5 x 1.3-2 um. Squamules appressed. Medulla of mixed type. Spores 12-16 x 6-7 um (15-18 x 7.5-9 um in v. latisporum). Temperate. P. lacinulatum

Placidium andicola (Breuss) Breuss

Squamules adnate, only the very edges somewhat ascending, dispersed or adjacent, 2-4 mm broad, rounded or lobed; upper surface brown, matt, epruinose, dark-rimmed; undersides dark brown to blackish throughout; rhizines absent; thallus sections 300-400 um thick; upper cortex c. 40 um, paraplectenchymatous, the cells 6-11 um diam., roundish-angular, epinecral layer lacking or very thin; alga layer c. 100-120 um thick, algal cells 10-14 um; medulla ± cellular, of "mixed type" with hyphae ± divided into globular cells 10-16 um diam.; lower cortex composed of more densely packed globular cells; rhizohyphae hyaline, c. 5 um thick.

Perithecia immersed, to 500 um broad, walls pale except for the ostiole or darkening with age; periphyses 35-45 x 3 um; asci cylindrical, 65-80 x 10-13 um; spores uniseriate, ellipsoid, 11-13 x 5-6 um.

Pycnidia marginal, black; spermatia ellipsoid-oblong, 2.5-4 x 1.3-2 um. On soil. Arizona, Colorado, New Mexico, Texas, Baja California.

Placidium chilense (Räsänen) Breuss

Squamules 4-10(-20) mm wide, loosely adnate, wavy, ± imbricate; upper side light to medium brown, dull to slightly glossy, epruinose; lower surface pale along margins, blackening towards the center, sometimes dark throughout; hypothallus confined to the central area, marginal zone bare, nearly smooth or more commonly somewhat scabrous; thallus sections to 600 um thick; upper cortex 30-60 um, paraplectenchymatous, the cells ± angular, 7-15 um; epinecral layer 5-25 um; algal layer c. 80-150 um thick, continuous, algal cells 8-17 um diam.; medulla well-developed, distinctly prosoplectenchymatous (i.e., of densely intricately interwoven hyphae with narrowly cylindrical lumina), to 300 um thick; sharply delimited from the

paraplectenchymatous lower cortex; lower cortex with cells 12-20 μm diam., 40-90 μm thick; rhizohyphae hyaline, ca. 5 μm diam., forming a dense hypothallus in central parts of the squamules, marginal zone bare or with short hyphal outgrowths; rhizines absent. Perithecia immersed, to 500 μm broad, walls pale; periphyses 25-35 x 3 μm ; asci cylindrical, 60-70 x 7-10 μm . Spores uniseriate, ellipsoid, 10-14(-16) x 5-6 μm .

Pycnidia laminal, immersed, to 450 μm wide, spermatia oblong to short-cylindrical, 3-4 x 1-1.3 μm .

Mostly on soil, plant debris, or mosses over siliceous rocks. Arizona, Baja California.

Placidium fingens Breuss ined.

Placidium lachneum (Ach.) Breuss (Syn. Dermatocarpon lachneum)

This description needs to be checked against Breuss's treatments

Squamules to 8 mm across, scattered or more often crowded to imbricate, \pm rounded or lobed, partly ascending; upper surface brown to dark red-brown, matt; lower surface black; margins with conspicuous, globular pycnidia up to 0.4 mm diam.; lower cortex paraplectenchymatous; rhizoidal hyphae colorless; medullary layer thick, of interwoven hyphae. Lower cortex sharply delimited, with cells in distinct vertical columns.

Perithecia laminal, entirely immersed; true exciple, except for ostiole, colorless. Conidia 5-7 μm long, bacilliform.

Asci cylindrical. Spores 14-18 x 6-8 μm , ellipsoid, uniseriate. On soil and humus.

Pycnidia knob-like, marginal; spermatia bacilliform, 5-7 μm long. Spores 14-18 x 6-8 μm . On soil. Arctic-alpine, northern, rare in N. America (Thomson's concept included P. rufescens, P. squamulosum and P. lacinulatum, and "Catapyrenium hepaticum", and most of his reports were based on P. lacinulatum or P. squamulosum)

Placidium lacinulatum (Ach.) Breuss

Squamules appressed, closely adnate or with slightly raised margins, c. 3-8 mm wide, discrete or contiguous but rarely somewhat overlapping, roundish to deeply lobed; upper surface pale to dark brown, matt, epruinose; underside \pm rhizinate, rhizines composed of longitudinally arranged compacted hyphae, pale, few or numerous, simple or more often branched and \pm anastomosing, main strands up to 0.3 mm thick, and up to 15 mm long (but often much smaller). Thallus sections c. 300-500 μm thick; upper cortex c. 40-80 μm , paraplectenchymatous, the cells 7-13 μm diam.; epinecral layer to 20 μm or lacking; algal layer c. 60-100 μm thick, continuous, algal cells 7-14 μm diam.; medulla of mixed type; lower cortex hardly distinguishable from the medulla, composed of roundish cells 8-14 μm diam.; rhizohyphae hyaline, 4-5 μm thick.

Perithecia immersed, broadly pear-shaped to subglobose, to 650 μm

broad, bulging the underside of the squamules, exciple hyaline; periphyses 25-35 x 2.5-4.5 μ m; asci cylindrical, 65-80 x 12-17 μ m. Spores uniseriate, ellipsoid, 12-16 x 6-7 μ m (1-18 x 7.5-9 μ m in var. latisporum), thin-walled.

Pycnidia laminal; pycnosporos variable, oblong-ellipsoid to subcylindrical, 3-5 x 1.3-2 μ m.

On soil, especially on fine-grained soils, in arid and semi-arid regions, temperate.

Close to P. squamulosum, differing primarily in being rhizinate. The rhizines are always present though few and inconspicuous in some specimens and easily breaking in dry condition.

Placidium michelii (Massal.) Breuss

(Syn. Dermatocarpon michelii)

Thallus squamulose, the squamules to 3-5 mm broad, separate or in groups, rarely contiguous, firmly attached, rounded and entire to slightly incised, crenate or lobed, becoming free at the margins; upper surface brownish green to pale or medium brown or chestnut brown, an obvious green when moistened, matt or sometimes shining; underside dark, blackish, sometimes paler at margins, with a thin, paraplectenchymatous cortex; rhizoidal hyphae colorless. Perithecia immersed, the darker ostiole not very obvious; exciple pale, brown in mature ascomata; hymneial gel I-; asci cylindrical; spores uniseriate, ellipsoid, (8-)11-15(-18) x (4-)5-6(-10) μ m. On sandy soil and on moss. Connecticut, N. Carolina, Michigan.

Placidium norvegicum (Breuss) Breuss

Squamules fully adnate, deeply incised, the peripheral lobes \pm elongate, thus forming an almost rosette-like thallus; surface epruinose. Medulla appearing \pm cellular. Rhizines absent.

Spores large, 16-22 x 8-11 μ m, broadly ellipsoid.

Pycnidia laminally immersed; spermatia bacilliform, 5-8 μ m.

On soil. Arctic-alpine. Montana, Northwest Territories, Alaska.

Placidium pilosellum (Breuss) Breuss

Squamules to 6 mm across, loosely attached or partly ascending, scattered to \pm imbricate, rounded or lobed, pale brownish to reddish brown above, matt; younger squamules often with colorless, hair-like hyphal extensions on the margins.

Perithecia immersed in the squamules; true exciple pale except for ostiole. Ascospores 12-17 x 5.5-7.5 μ m, ellipsoid.

Pycnidia marginal, usually few; conidia 3-4 μ m long, oblong.

On soil or humus, often among mosses.

Placidium rufescens (Ach.) Breuss

Squamules to 10 mm diam., crowded to imbricate, \pm lobate, thick, leathery, usually undulate; upper surface pale to dark brown, often with a reddish tinge, matt or somewhat glossy; lower cortex paraplectenchymatous,

of rounded to angular cells; rhizoidal hyphae colorless; medullary tissue well developed, of densely interwoven hyphae.

Perithecia completely immersed; true exciple, except for ostiole, colorless. Asci cylindrical. Spores 15-20 x 7.5-9.5 μm , broadly ellipsoid, uniseriate.

Pycnidia marginal, sparse to abundant; pycnospores 3-5 μm long, oblong.

On dry, calcareous rocks or soil.

Distinguished from P. lachneum by its larger ascospores and the different size and shape of the conidia.

Spermatia ellipsoid-oblong, 3-5 μm long; lower cortex composed of irregularly arranged cells; spores 15-20 x 7.5-9.5 μm . Montana, Texas, Utah.

Placidium squamulosum (Ach.) Breuss (syn. Dermatocarpon hepaticum auct., non (Ach.) Th. Fr.) **v. squamulosum**

Squamules 2-7 mm across, scattered to contiguous, discrete to densely aggregated, mostly attached by the entire underside or with slightly upturned margins and overlapping, roundish or shallowly to deeply lobed; upper surface epruinose, pale to dark brown, matt or subnitid; lower side pale or blackening; rhizoidal hyphae colorless. Rhizines absent. Thallus sections c. 200-400 μm thick; upper cortex c. 30-70 μm , paraplectenchymatous with cells c. 6-15 μm diam., epinecral layer variable, 5-50 μm ; algal layer c. 70-150 μm thick, subcontinuous, algal cells c. 8-13 μm diam. Medulla \pm cellular, of mixed type, with varying amounts of globular cells 9-14 μm diam., rarely more than 100 μm thick. Lower cortex not sharply delimited from the medulla, composed of densely packed of rounded to angular cells c. 10-16 μm diam., occasionally not discernible at all; rhizohyphae colorless, 4.5-6.5 μm diam.

Perithecia fully immersed, broadly pear-shaped to subglobose, to 650 μm broad, \pm bulging the underside of the squamules; true exciple pale, dark only around ostiole; periphyses 30-40 x 3-4 μm . Asci cylindrical. 70-90 x 10-15 μm . Spores uniseriate, ellipsoid, 12-16 x 5.5-7.5 μm .

Pycnidia laminally immersed in the squamules, to 700 μm wide; conidia oblong-ellipsoid, 2.5-4 x 1.3-2 μm .

On soil (and humus?), sea level to alpine, in both xerothermic and humid sites. Widespread.

Differs from C. lachneum in having laminal pycnidia with shorter conidia, and squamules \pm firmly adpressed, not ascending, nor crowded to overlapping. In older literature the species was commonly called Dermatocarpon hepaticum.

Placidium tuckermanii (Rav. ex Mont.) Breuss (Syn. Dermatocarpon tuckermanii, D. arboreum)

Thallus squamulose; squamules closely attached or becoming larger and with one edge raised, or becoming imbricate and with a few lobes when very large, 2-10 mm broad; pale olive or tan to brownish green, greener

when fresh; lower surface pale, centrally with dark rhizoidal hyphae. Perithecia, when present, immersed; ostioles showing as reddish or dark spots; exciple pale or with the outer layers slightly darker, the area near the mouth darkening; hymenial gel I-; spores ellipsoid, 10-15 x 4-6 um. On bark, especially a wide variety of oak species, and often in open oak-hickory woods; occasionally on mosses over limestone. Throughout eastern U.S., with disjuncts in California, SE Arizona, SW Texas, and NW Mexico.

Literature

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