Pseudocyphellaria Vainio
(LOBARIACEAE)

After various authors

Rev. April 29, 1999

Thallus foliose, heteromerous, dorsiventral, lobed, often very large, spreading, orbicular and ± rosette-forming and radiate, or irregularly laciniate, or ± dichotomously or irregularly branched, or polyphyllous, rarely ± monophyllous; loosely to closely attached. Lobes narrow and strap-shaped or broad, ± dichotomously branching with distinctly bifurcate apices which may be rounded, pointed or truncate; complex, imbricate; margins entire or variously incised or folded, often free and ascending, often with conspicuous, elongate or verruciform pseudocyphellae. Upper surface smooth or wrinkled, sometimes ± scabrid or harry, sometimes shallowly foveolate, with faint or marked reticulum of interconnecting ridges, shiny or matt, often conspicuously maculate, with or without pseudocyphellae, isidia, phyllidia or soredia. Lower surface glabrous or usually ± tomentose, the tomentum pale to dark, thick and felted to indistinctly pubescent; pseudocyphellae always present, white or yellow, sparse to frequent, ± immersed in tomentum to raised-conical, round to irregular, the margins disitnct or indistinct. Both cortices paraplectenchymatous, of anticlinally arranged, ± isodiametric, thick-walled cells; medulla loose, white or yellow; attached to substrate by rhizoids which often form a mat.

Apothecia often absent, but abundant in a few species, hemiangiocarpic, emergent, becoming sessile to substipitate, marginal or laminal; disc brown or red-brown, matt or shining, sometimes white-pruinose, round, usually concave; thalline exciple well developed, entire or crenate-striate, phyllidiate, isidiate or sorediate in some species, smooth to verrucose or areolate-scabrid, hairy or maculate; hypothecium pale or dark; paraphyses unbranched; asci clavate, Peltigera-type, unitunicate, I+ blue; spores 8 at maturity, oblong-fusiform to fusiform or fusiform-ellipsoid, simple then polaribilocular to transversely 1-3-septate, hyaline becoming brown, thin walled.

Pycnidia usually rare, immersed, Lobaria-type, globose or ovoid, 0.2-0.6 mm diam., walls dark brown at ostiole, paler below; fulcrum endobasidial; pycnospores short (3-5 x 0.7-1 um), straight, cylindrical or bacilliform. Chemistry diverse; orcinol and ß-orcinol derivatives, triterpenoids, terphenylquinones and pulvinic acid derivatives. Photobiont bluegreen (Nostoc), or green (Dictyochloropsis or Chlorella-like; Palmella or Trebouxia-like according to Rogers). On rock or bark, in humid, sheltered, oceanic woodlands, temperate to topical.

Characterized by presence of pseudocyphellae on lower (and sometimes upper) surface, emergent apothecia with colorless or brown, 1-3-septate or polaribilocular spores, and a diverse chemistry.

1. Pores bright yellow. 2
1. Pores (and soredia and medulla) white. 4

2. Algae green. Medulla bright yellow. Soredia marginal. Upperside smooth, not ridged. Thallus 2-6(-10) cm diam., forming rosettes or irregularly spreading; lobes 3-12

mm wide, to 30 mm long, irregularly branched, rounded or indented at apices, often discrete at margins and overlapping centrally; margins slightly thickened below; upper surface pale yellow-green (bright lettuce green) when wet, pale gray to pale olive-brown or buff when dry (becoming reddish on storage), smooth, undulate to shallowly pitted or wrinkled, occasionally with small granular regenerating lobules along cracks, often scabrid-areolate in parts, ± pubescent at margins, bearing conspicuous, coarsely granular, bright yellow, ± linear, lip-like marginal soralia which occasinally also spread on to upper surface; lower surface pale pink-brown, darker towards center, thickly tomentose to the margins, ± wrinkled-uneven with numerous yellow pseudocyphellae 0.1-0.6 mm diam., ± elevated; decorticate area plane, level with or slightly sunken in tomentum. Apothecia rare. Medulla and soralia P-, K-, KC-, C-, UV+ dull to bright orange or salmon-pink (Pulvinic acid, pulvinic diaactone and calycin). On trees and rocks. SE. U.S. to Maine, west to Texas and Minnesota. Also reported from California to Washington by Fink, but these are probably misidentifications. ..... P. aurata

2. Algae bluegreen. Medulla white. Soredia at least partly laminal. 3

3a. With distinct erect hairs on the upper surface. Lacking depsides, depsidones and triterpenoids. Thallus to 4 cm diam. Soralia coarsely erumpent, laminal and marginal, with coarse, brown, coralloid-isidioid consoredia and/or dorsiventral phyllidia; upper surface gray to brown, with scattered, coarse, tapering hairs; some soredia eroded-yellow; tips of consoredia/phyllidia sometimes with coarse hairs. In seasonal rainforest zone, low elevation, close to the coast, Washington State. See Galloway, 1986, 1992 for fuller description and illustrations. ..... P. mallota (Tuck.) H. Magn.

3a. Without distinct erect hairs on the upper surface. With lichen substances. 3b

3b. Lobes rounded, crenulate, reticulately ridged and faveolate, with soredia mainly on the ridges; soralia punctiform; upperside often greenish. Medulla K+ faint pink, C-, KC-, P-. Thallus 2-3(-10) cm diam., at first rosette-forming, soon irregularly spreading; lobes 5-15 mm wide, rounded or ± elongate, indented at apices, often discrete at margins and overlapping centrally; upper surface pale gray-brown or pale brownish yellow with greenish tint, (in shade) to dark red-brown or chocolate brown, ± smooth or with a ± coarse, ridged network from which yellow soralia are derived, at first punctiform, later becoming confluent. Lower surface pale brown, darker towards center, tomentose to margins, with frequent, conspicuous yellow pseudocyphellae. Apothecia very rare. Medulla and soralia P+ orange, K+ yellow, KC-, C-, UV± dull orange (pulvinic acid, pulvinic lactone, calycin, tenuiorin, methylgyrophorate (methyl virensate and 5-chloromethyl-virensate according to Galloway) and stictic and constictic acids and hopane 6α,7ß,22-triol. On mossy trunks and branches and mossy bolders in moist or boggy, sheltered, well wooded or coastal sites, lowland to montane. Pacific NW, Appalachians, N. Great Lakes region. Also reported from southeast U.S. by Fink (probably misidentifications). ..... P. crocata

3b. Lobes ± lengthened but not linear; tips rounded; soralia partly marginal; upper side smooth, not ridged, often reddish. Medulla K-. British Columbia. Considered by Galloway to be only a form of P. crocata. ..... "P. mougeotiana"

4. Without soredia and isidia. Upperside often strongly ridged, brown to light

brown or light green-brown, shiny. Apothecia common. Thallus leathery. Algae bluegreen. Thallus to 5-10 cm or more across, loosely attached; lobes somewhat imbricated; margins crenate; lower surface brownish, darker toward center, with short spongy tomentum interspersed with minute, whitish pseudocyphellae. Apothecia 1.5-4 mm across, scattered, sessile, the disk flat to convex, red-brown to blackish, the margin, thin, usually disappearing; spores fusiform, 3-septate, 23-31 x 7-10 um. On trees and over moss, in moist coniferous forests, California to Pacific NW; also reported from Maine by Fink (probably a misidentification!). ..... P. anthraspis

4. With soredia and/or isidia. Lobes broadly rounded.
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5. With verruciform, white to blue-gray soredia on ridges on upper surface. Lobules absent. Upperside gray-brown. Algae bluegreen. Thallus 6-10 cm wide. Lower surface wrinkled to smooth, with short tometnum and numerous Pseudocyphellae. Sometimes with conspicuous roundish black areas on upper surface, caused by parasite. Loosely attached on branches and trunks of trees (ususally conifers) and logs in mature, moist, coniferous forests. California to Pacific NW. ..... P. anomala

5. Without soredia; with lobules and coralloid isidia. Upperside pale green-gray or blue-gray, unevenly impressed to foveolate. Algae green. Thallus 10-20 cm wide. Superficially somewhat resembling Lobaria oregana, but upper surface more greenish or grayish. Pacific NW. ..... P. rainierensis

Literature

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