

Mycoblastus Norman
(LECANORALES: MYCOBLASTACEAE)

After Poelt & Vezda, 1977, Watson & James, 1992 and others

Rev. 5/94

Thallus crustose, continuous or granular, sometimes irregularly cracked-areolate, very variable, whitish gray to gray or pale greenish; prothallus sometimes present, gray or blackish. Photobiont chlorococcoid, possibly trebouxoid. Soralia often present.

Apothecia flat to convex or subglobose, sessile or adpressed, black; thalline exciple absent; true exciple well developed, often excluded (soon or at least at maturity). Hymenium colorless, blue-black or brownish, I+ blue. Epihymenium colorless or interspersed with violet granules, K+ blue-green. Paraphyses anastomosing, intergrading imperceptibly into the hyphal network of the hypothecium. Asci 1-2(-3)-spored, cylindrical-clavate, very thick-walled; apical dome I+ blue, with a distinct ocular chamber (especially when young); outer layer thickened above, forming an I+ dark blue cap over the ascus apex. Spores medium to very large, simple, oblong or ellipsoid, colorless, multinucleate; walls strongly thickened.

Pycnidia immersed, visible as minute black dots; wall green in upper part, K-, N+ reddish. Conidogenous cells short. Conidia bacilliform, simple, colorless. Atranorin, fatty acids, depsides, depsidones, usnic acid and pigments. On \pm acidic substrata, predominantly on bark and wood, more rarely on rocks and associated mosses.

An anatomically distinct group of closely related species, unified by their lecideine apothecia, ascospore morphology and anastomosing paraphyses.

1. Soralia absent; apothecia usually present. 2

1. Soralia present; apothecia often absent or rare. 6

2. Spores 1(-3) per ascus, ellipsoid-cylindrical with flattened apices, (46-)60-100 x (12-)23-46(-50) μ m, the mature walls about 5-7 μ m thick; apothecia about 1.5-3 mm wide. 3

2. Spores mostly 2 per ascus, \pm ellipsoid, often with \pm pointed apices, to 70 μ m long (less in M. furcatus). Hypothecium and medulla hyaline or pale straw brown to pale purple, at most reddish yellow, K-. 4

3. Hypothecium and partly the adjacent medulla carmine red to blood red, K+ bright red. Thallus P+ yellow (according to Watson & James; P- according to Thomson). Thallus of flat granules or a more or less continuous wrinkled, lumpy or chinky crust, shining, white to yellowish white, or gray. Apothecia to 3 mm diam., single or confluent, adnate or sessile; disk soon high convex, black, shining, rough; exciple not well differentiated, dark; epithecium blue-black; hypothecium brownish in upper part; hymenium I+ greenish, 90-100 μ m, hyaline, upper part greenish blue; asci clavate, I+ blue; paraphyses conglutinate, simple, 2 μ m thick, the tips capitate, 3-5 μ m, blue above. On trees (usually coniferous), occasionally on wood, hard siliceous rocks and over mosses. Arctic-boreal, Ellesmere Island to Alaska, south to North Carolina,

Michigan, Idaho and Oregon.M. sanguinarius (L.) Norman

3. Similar to above but hypothecium and medulla colorless to slightly brownish, K- or ± orange-brown (intensified). Thallus P-. (see M. alpinus--usually sterile and sorediate according to Watson & James)

4. Spore wall 4.5-6.5 um thick. Apothecia mostly 0.5-0.8 mm diam. Thallus thin, granulose, esorediate, greenish-ashy, dull; granules 0.2-0.3 mm; hypothallus indistinct. Apothecia dispersed, rarely aggregated, flat to slightly convex, black, bare, 0.5-0.8(-1.1) mm; margin white, entire, smooth, disappearing, no blood-red pigment present; exciple thin, pale, of suberect hyphae; hypothecium thick, brown or brownish red, of irregular hyphae; epihymenium blue; hymenium 110-140 um, hyaline or bluish; paraphyses simple or branching, coherent, 2-3 um, tips thickened, 6.5-13 um and blue; asci cylindrical; spores 2, uniseriate, simple, broadly oblong, tips rounded, 56-70 x 32-46 um, walls 4.5-6.5 um. Conidia acicular, straight or slightly curved, 6.5-8.5 x 2 um.. Epithecium blue-green; hypothecium yellowish to reddish yellow. Thallus K+ yellow, C-, KC- or slightly yellow, P-, I-; hymenium persistently I+ blue. On bark. Alaska. M. marginatus Degel.

4. Spore wall 2.5-5 um thick. Apothecia often to 1.5 mm or more wide (only 0.5-1.5 um wide according to Watson & James). 5

5. Epithecium and ± hymenium blue-black or in part olive-brown, non-granular, K-; hypothecium colorless, non-granular, pale straw or pale brown ± intensifying in K, or K+ red brown. Thallus P-. Apothecia common, matt, strongly convex even when young, ± sessile. Thallus rather thick, irregular, unevenly warty-granular, pale gray or green-gray; Epithecium ± opaque, blue-black, rarely in part pale brown or olive-brown; hymenium paler below, K-. Asci (1-)2-spored; spores (40-)47-70(-100) x (25-)30-42 um, ellipsoid. Pycnidia often present. soralia usually absent, scattered if present, white or very pale gray, granular. Epithecium blue-black. Cortex K+ yellow, P- (atranorin); medulla K-, P-, KC-, C-, UV- (unknowns). On tree twigs, acid bark of trunks, less often on old wood, and over mosses and soil, rarely on rock in well-wooded sites. Arctic-boreal, northern Canada and Alaska, south in the west to Washington state. Previously misidentified or lumped by N. American authors (e.g., Thomson 1979) as M. alpinus.M. affinis (Schaefer) Schauer

5. Epithecium and hymenium (and upper part of hypothecium) densely interspersed with violet granules, K+ dissolving blue-green. Thallus P+ red (fumarprotocetraric acid). Apothecia not common, often few and scattered (not yet known in N. America), shiny, thin and plate-like, closely adpressed, flat or slightly concave, 0.5-1.5 mm diam.; true exciple thin, often excluded at maturity; lower part of hypothecium pale violet or colorless, rarely sparsely spotted red-brown (intensified in K). Asci (1-)2-(-3)-spored. Spores (25-)30-48(-52) x 15-21 um, ellipsoid. Thallus effuse, immarginate, pale slate or dark gray, occasionally with a bluish tinge, rather thin, ± continuously to partly faintly rimose; surface smooth or partly uneven with low spreading warts, 0.1-0.3 mm diam., which often erode and become granular sorediate; K- or + brownish, C-, UV-. On damp, often rotting, wood and fenceposts, particularly in boggy, sheltered, well-wooded habitats. M. fucatus (Stirton) Zahlbr.

6. Soralia bright yellow or yellow-green, efflorescent, ± contiguous, P-. Apothecia rare; hypothecium not red. Thallus ± spreading, film-like, effuse, with scattered to

contiguous, gray, low warts; prothallus gray to blackish; soralia at first scattered, punctiform, then forming irregular, granular-sorediate patches, \pm covering the entire thallus; K \pm yellow, KC \pm yellow, UV-, containing atranorin and planic acid, and usnic acid in the soralia). On pines or vertical, acid rocks. N. American reports are based largely, if not entirely, on M. affinis. Thomson's 1997 concept of this species does not mention soralia, but since in that book he does recognize M. affinis as a separate species, it is not clear to me at present just what it is that he is calling M. alpinus. M. alpinus (Fr.) Kernst.

6. Soralia gray, or whitish to blue-gray. 7

7. Soralia (and cortex?) P+ red (fumarprotocetraric acid). Thallus K+ yellow, containing atranorin. Thallus areolate to continuous; soralia variable in size, \pm diffuse, sometimes well defined, round or oval, to 1.5 mm diam., or irregular, excavate, enclosing pale yellowish green to often deep blue-gray (due to a pigment in the external soralia), granular soredia. Specimens from Pacific NW often infected by a lichenicolous basidiomycete (Tremella sp.) with pulvinate to discoid, gelatinous, dark brown to black basidiocarps. Sterile form common on Acer, Alnus, and Betula, in the lowlands (sea level to 500 m) on the Pacific and Atlantic coasts. British Columbia and Washington; Newfoundland. (M. fucatus)

7. Soralia P-; cortex P+ yellow or P-. [Note: M. affinis var. melinodes (Vainio) Zahlbr. also keys out here. 8

8. Cortex P+ yellow, K+ yellow, C-, UV-, containing atranorin, chloratranorin, and caperatic acid; medulla K+ red (in part), containing rhodocladonic acid (= mysaquinone). Soralia gray, punctiform, scattered, often few, rounded. Apothecia often present. Hypothecium red. (If cortex P- and medulla K-, and hypothecium not red, see M. affinis). (see M. sanguinarius)

8. Thallus, medulla and soralia P-, K-, KC-, UV+ white (perlatolic acid). Soralia numerous, efflorescent, discrete, 0.2-1 mm diam., or often confluent, whitish to bluish gray; soredia 30-80(-100) μ m diam.; external hyphae often blue-gray, N+ red. Apothecia and pycnidia not known. Thallus at least in younger parts, with delimited soralia; margins usually esorediate. Prothallus smooth, blue-gray. Thallus pale gray and rather scabrid, with scattered areoles on a smooth blue-gray prothallus. On smooth and rough acid bark and occasionally wood, rarely on shaded acid rocks (vertical surfaces). M. caesium (Coppins & P. James) Tonsb.

Literature

Fink, B. 1935. Lichen Flora of the United States.

Poelt, J. and A. Vezda. 1977. Bestimmungsschlüssel europäischen Flechten. Erg. I. Cramer, Vaduz.

Thomson, J. W. 1979. Lichens of the Alaskan Arctic Slope.

Thomson, J. W. 1997. American Arctic Lichens. II. The Microlichens.

Tonsberg, T. 1992. The soresiate and isidiate, corticolous crustose lichens in Norway. *Sommerfeltia* 14.

Tonsberg, T. 1993. Additions to the lichen flora of North America. *The Bryologist* 96(10: 138-141.

Watson, and P. W. James. 1992. Mycoblastus. In; Purvis, et al. (eds.), *Lichen Flora of Great Britain and Ireland*.