

**Biatorella** de Not.  
(LECANORALES: ACAROSPORACEAE)

After Magnusson, and others

Rev. 5/94

Thallus crustose, usually thin and poorly developed, unstratified, effuse and ill-defined, uniform (or sometimes with marginal lobes according to Rogers), ecorticate or with a poorly developed upper cortex; attached by medullary; prothallus absent.

Apothecia sessile, biatorine; disk round, yellowish or pale pink-yellow to pale reddish brown, or occasionally blackish, usually convex to hemispherical, sometimes flat; thalline margin absent or thin, soon disappearing; proper exciple thick to usually very thin to almost absent, of parallel, colorless to pale yellow hyphae, I+ blue; hypothecium pale, yellowish, I+ pale- to green-blue; hymenium colorless or pale straw-yellow, I+ deep blue; epihymenium yellowish to reddish brown, K-; paraphyses simple and free, becoming richly branched and entangled at the epithecium; asci thick walled, cylindrical to clavate, unitunicate, I- or I+ pale blue; outer gelatinous layer I+ blue; apical dome (tholus) definite, I- or I+ faint blue; spores many, bacilliform, ellipsoid or globose, simple, hyaline, minute, thin walled.

Pycnidia unknown (according to Duke & James; according to Rogers the pycnidia are immersed in thallus or in small warts; fulcrum exobasidial; pycnospores short-cylindrical). Sometimes containing parietin (according to Rogers). Photobiont chlorococcoid (?*Myrmecia* or ?*Trebouxia*, according to Rogers).

Differs from *Strangospora* in that the asci have an I+ blue gelatinous outer layer and an apical dome which is at most I+ faintly blue. The epithecium consists of the solidly matted, richly branched tips of otherwise simple paraphyses, not set in a gelatinous matrix.

Differs from *Sarea*, the species of which grown on resin, in being lichenized and, more importantly, in lacking abundant orange or black pycnidia, which produce globose conidia.

**1. On rock. Apothecial disc elongate or difform.** Apothecia solitary or often grouped, reposing on an indistinct or  $\pm$  distinct, whitish thallus cushion, to 1 mm long, rarely surpassing 0.5 mm in breadth, always irregular in shape, not constricted at base; disc often furrow-like or irregularly widened, blackish brown; with thick, very prominent, concolorous, often inflexed, plicate margin. Exciple 50-60(-100)  $\mu$ m thick at margin, growing out above the disc up to 100  $\mu$ m inwards, not visible on lower side, at least exterior 20  $\mu$ m blackish brown, limit  $\pm$  distinct. Base of apothecia quite pale with at least 100  $\mu$ m thick thallus stratum, without algae; hyphae obscured by granules, in HCl loosely intricate, short-celled, 2.5-3.5  $\mu$ m thick, thick-walled. Hypothecium, when visible, hyaline, 15-20  $\mu$ m thick. Subhymenium indistinctly limited, 30-50(-100)  $\mu$ m thick, pale yellow brown to almost colorless. Hymenium 90-110  $\mu$ m, hyaline; epihymenium 25-35  $\mu$ m, dark brown-yellow; surface uneven. Paraphyses confluent, 1.5-1.7  $\mu$ m thick; tips clavate. Asci to 85 x 17  $\mu$ m, not easily bursting. Spores 200 or more per ascus, cylindric, 2.5-3.5 x 1  $\mu$ m. Thallus immersed except below apothecia. On granite, southern California. [Including f. *pulvinata* Magn., with apothecia often aggregated, 5-10 in 2.5-4 mm large groups or irregular lines with at least 200  $\mu$ m thick whitish thallus below. .... **B.**

plicata (H. Magn.) Zahlbr.

**1. On bark, soil, etc. Apothecia mostly round (?). .... 2**

**2. Spores globose or subglobose.** Apothecia ochraceous yellow or red-brown, 0.5-0.8 mm diameter Hypothecium dark brown. On bark. (if apothecia scarlet red or brown-black, with anastomosing paraphyses, see Strangospora). ....3

**2. Spores oblong. ....4**

**3. Apothecia ochraceous yellow to darkening, ± densely pruinose, K+ red-violet. Spores globose, 1.5-2(-2.5) µm diameter. Hymenium 70-105 µm. Thallus verrucose, granulose-sorediate, yellow-gray to orange-yellow, K+ violet. Apothecia 0.5-0.8 mm diam.**

Hypothecium dark brown. Thallus rather thin or of moderate thickness, contiguous to dispersed, very small. Apothecia sessile, ca. 0.3 mm thick, plane or finally convex; margin thick or thin, concolorous with disc, persistent or finally excluded. Exciple 40-70 µm thick at upper margin, dark brown yellow, below without limit, passing into the concolorous, ca. 150 µm thick hypothecium, in thick sections dark brown but not carbonaceous, in thinner ones rather pale internally; structure difficult to observe; hyphae intricate, 25-3 µm thick. Hymenium I+ dark blue; epihymenium 12-15 µm, dark yellow, granular, not dissolving in K or N. Paraphyses in much gelatin, hardly 1 µm thick, simple, not thickened at tips., firmly coherent. Asci 60-65 x 15-17 µm, cylindrical-clavate with thick wall especially in upper part. Spores 100-200, globulose. On bark. Mexico and West Indies. ....B. conspersa (Fée) Vainio

**3. Apothecia pale to dark red-brown or rusty brown. Spores 3-4 x 2-3 µm. Hymenium 65-70 µm, sordid yellow at the surface. Thallus granular or finally wrinkled-verrucose, grayish to gray-white.** Apothecia 0.5-0.8 mm across, sessile and often clustered; disk flat to convex; exciple paler than disk or darkening, soon disappearing; hypothecium yellowish or brownish; asci ventricose; spores short-ellipsoid. (if non-lichenized, growing on resin, see Sarea resinae). On elm bark, Illinois. ....B. cyphalea (Tuck.) Zahlbr.

**4. Hypothecium ± dark brown.** Spores 5-8 x 3-3.5 µm, 25-50 per ascus, ellipsoid. Hymenium 60-80 µm. Thallus squamulose-subareolate, pale yellow-brown with reddish tinge, small, indeterminate; squamules very irregular in shape and size, to 0.5 mm diam., partly contiguous, partly scattered, convex, smooth, K-, C-, 100 µm thick or more. Apothecia not numerous, biatorine, sessile, reddish-alutaceous, circular, 0.4-0.5 mm broad, 0.25-0.3 mm thick, hardly narrowed at base, exterior side smooth; disc ± convex, smooth; margin at first somewhat prominent, soon excluded, concolorous with disc. Exciple ca. 100 µm thick at upper surface, sordid brown orange, K-, lower down confluent with the concolorous or somewhat darker brown, 30-60 µm thick hypothecium. Hyphae of exciple densely conglutinate, indistinct; cells 1-2 µm broad, ± rounded or oblong. Hymenium I+ greenish blue; epihymenium almost colorless. Paraphyses indistinct, simple, firmly conglutinate, in K 1-1.7 µm; tips not thickened. Asci few, 50-60 x 11-14 µm, clavate, the wall 2-2.5 µm thick. On mossy bark. Flroida. ....B. floridensis Magnusson

**4. Hypothecium hyaline or pale. .... 5**

**5. Apothecia bright or dull orange-red, 1-2 mm diam., very convex to hemispherical and immarginate from the start, immersed to adpressed, usually ± discrete; true exciple not visible;**

epithecium pale to orange-yellow, sometimes with dark yellow-brown pruina; hymenium 150-200 um tall, colorless; hypothecium (100-)150-300(-500) um tall, pale gray-yellow, of densely packed hyphae 1 um thick; paraphyses ca. 1 um thick, not thickend at tips, or clavate to 2.5-3.5 um, clearly visible in water, conglutinate in K. Asci 135-150 x 15-18 um, oblong-cylindrical, not symmetrical, 200- to 400-spored. Spores 5-8 x 2-3.5 um, elongate-ellipsoid. Thallus pale gray, thin, fine-grained to mealy-arachnoid, K-, C-, I-. On calcareous or base-richs soil, and on associated mosses, usually in shady rock crevices and ledges at high altitudes. ....B. hemispherica Anzi (synonym: B. fossarum auct. non (Duf.) Th. Fr.)

**5. Apothecia pale, 0.1-0.5 mm.** Thallus very thin. ....6

**6. On soil. Hymenium 120-170 um.** Apothecia flesh-colored, plane to concave. Spores 5-8 x 2.5-3.5 um. Northeastern. ....(see Sarcosagium campestre)

**6. On bark. Hymenium under 100 um.** ....7

**7. Hymenium 85 um. Apothecia rose-colored or reddish brown, urceolate. Spores ellipsoid, 4-5 x 2 um (according to Magnusson; globose, 2-3 um across according to Fink).** Thallus very thin, smooth, widespread, continuous, dirty brown. Apothecia 0.3-0.5 mm across, adnate to sessile, slightly constricted at the base, ± scattered; disc deeply concave to concave or rarely flat; exciple thick, colored like the disk. Hypothecium hyaline to yellowish or tinged reddish brown; asci fusiform to clavate. On bark. Florida. ....B. rappii Zahlbr.

**7. Hymenium 45 um. Apothecia pale yellowish. Spores 5-8 x 1.7-2 um.**

..... (Myrionora albidula)

ADD?:

Thallus crustose, of small, flat, contiguous and imbricate squamules, the largest lobulated, to 1 mm wide, mostly smaller, round and entire, sombre olive-green; hypothallus indistinct. Apothecia sessile, 0.5-1 mm diam.; disc flat, brown-black; thalline margin entire, slightly elevated. Epithecium continuous, red-brown, gradually paling downward. Hymenium 76-96 um, colorless or here and there with tinges of brown extending downward from upper part, I+ strong blue; paraphyses slender, compact, coherent, not septate, a few forked below the tips. Hypothecium sordid pale brownish, subtended by a thin algal layer. Asci saccate or subbventricose, the membrane thickened above. Spores numerous, minute, oblong, 3-3.5 x 1 um. On soil between stones, and at base or rocks. S. California. Identity uncertain. .... B. terrena Hasse

ADD:

Florida. Hypothecium and excipulum carbonaceous. Florida. .... "Biatorella" camptocarpa Tuck. (Lecanoraceae)

## Literature

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