

Hymenelia Krphlh.
(HYMENELIACEAE)

After various authors, especially Lutzoni & Brodo, 1995

Rev. 4/96

Descriptions need to be modified somewhat to follow Lutzoni & Brodo

Thallus extremely thin, epi- or endolithic when on calcareous rocks, rimose and/or rimose-areolate when epilithic; very variable in color, from light gray to pale yellow, or grayish yellowish brown to orange-yellow. Without phenolic acids. Asci without amyloid tholus. Photobiont trebouxoid or if Trentepohlia [then hymenium mostly over 80 um (averaging 120 um) high].

Apothecia circular to irregular, cryptolecanorine, immersed, mostly rather small, (0.07-)10.10-0.25-0.46(-0.72) mm diam. Discs usually \pm pale (pinkish) when fresh, black or yellowish in old herbarium specimens, when dark then distinctly bluish, the coloration given by pigment of the epihymenium and hymenium. Margins (0-)30-80-150(-290)um thick, not prominent to slightly prominent when young, becoming slightly prominent to prominent, rarely becoming prominent and constricted at the base (epilithic individuals only). Lateral excipulum prorprium (0.0-)32-65-97(-225) um thick, hyaline to reddish black, dark olive brown, dark grayish olive, blackish green, bery dark bluish green, or bluish black, N+ violaceous pink or N-, K-, texutra extremely variable. [**Etc.--continue adding to/modifying description from Lutzoni & Brodo starting here**] At least upper part of parathecium (exciple) of rather short, thick-walled cells. Hymenium tall to very tall, (80-)120(-150) um high, mostly with much gelatin. Epihymenium pale reddish or yellowish, or deep bluish, N+ violaceous pink. Paraphyses very loose, non-monilliform. Asci without tholus or tholus not amyloid. Ascospores not halonate.

Pycnospores under 10 um long.

On calcareous or siliceous rocks. Arctic-alpine, with one population in the Great Lakes region. Type species: H. prevostii

I. Photobiont Trentepohlia.
epulotica and melanocarpa groups
(species previously placed in Ionaspis)

1. Apothecia pinkish; hymenium pale, not bluegreen; epihymenium N-. H. epulotica group.
[If epipsamma present, or epihymenium N+ orange-yellow, K+ dark violet, see
Ionaspis]2

1. Apothecia black; hymenium ± bluegreen; epihymenium N+ violaceous pink. H. melanocarpa and H. haematina groups. [If epihymenium olive and N- or N+ green, see Aspicilia if the algae are trebouxoid, Ionaspis if the algae are trentepohlioid or the entire hymenium is dark green].5

2. Calcicolous.3

2. Non-calcicolous (but sometimes subject to basic flushing). Excipulum pale or indistinct. ..4

3. Hymenium ca. 65 um. Spores 7-9 um, subglobose. Apothecia 0.1-0.2 mm. Thallus ochraceous. H. rhodopsis (Syn.: Ionaspis ochromica)

3. Hymenium 85-125(-140) um, K-. **Spores 10-20(-25) x 6-12(-18) um. Apothecia 0.3-0.5(-0.7) mm diam., often absent;** discs pink (especially when wet) to pale brown, concave to flat; when dry often separated from thallus by a circular fissure, immersed to occasionally emergent. Thallus immersed to usually well developed and cracked-areolate, pale yellowish to white or pinkish gray, K-. Hymenium hyaline, K-, N-. Pycnidia 60-100 um diam., indistinct, pallid, the wall colorless. In dry habitats (moist according to Coppins & Dobson). New England; Minnesota. H. epulotica

4. Apothecial thalline margin thick, prominent. Hymenium 85-100(-135) um, hyaline; spores 7-16 x 5-8 um, uniseriate, ellipsoid. Thallus ashy, yellowish or brownish, thin, disappearing, indistinctly chunky-areolate. Reactions negative. Apothecia 0.3-0.5 mm; disc concave, pale flesh colored, surrounded by a pale proper margin which is separated from the thallus by a crack; epithecium hyaline; hypothecium hyaline; hymenium 75-135 um, pale; paraphyses more or less separating in water, 2.5-4 um thick, septate, not clavate. Arctic-alpine. Alaska and NW Territories. H. arctica (syn.: Ionaspis epulotica v. arctica)

4. Apothecial margin not prominent; hymenium 60-70 um, mostly K+ violet like the thallus, N+ orange; spores 9-12 x 5-6 um. Ionaspis lavata and I. odora

5. Spores (10-)15-17(-20) x 8-11 um. Hymenium 120-150 um. Thallus immersed or thinly farinose, never areolate. Apothecial margin moderately thick. Epihymenium part blue-green, N+ reddish. Thallus whitish to yellow-gray. Apothecia 0.2-0.5 mm diam., immersed; disc blackish. Pycnidia ca. 100 um diam., the wall green. On calcareous rocks, Canada. H. melanocarpa group. H. melanocarpa

5. Spores to 12(-15) um long, to 8(-10) um wide. Hymenium under 100 um. Thallus epilithic, thickish, areolate, or thin and continuous, sometimes reduced to a thin film around the apothecia. Apothecial margin thin. H. haematina group H.

heteromorpha

ADD:

Thallus pale ochraceous or ashy gray, cracky-areolate, sometimes appearing radiate, to 0.5 mm thick. Apothecia raised on thallus, with prominent lecanorine margin, the margin smooth, regular; proper exciple distinct, paraplectenchymatous, widening to the surface; hypothecium 35 um, grayish; hymenium 100-110 um, upper part bluish green; paraphyses indistinct in water, more visible in K, cylindrical, 1.7-2.0 um, branched, septate; spores 10-14 x 7-8 um. Pycnidia rare; conidia 6-7 x 1 um, cylindrical. Upper part of exciple and hymenium N+ violet, I+ blue or brownish yellow. On river banks and irrigated rocks. Arctic. "Ionaspis" annularis H. Magn. (Need to check Brodo & Lutzoni's article to see if they made a new combination in Hymenelia)

Greenland. See Thomson 1997 for description. "Ionaspsis" cyanocarpa

H. heteromorpha s. lato

[Needs to be condensed into a single description of the species]

1. **Paraphyses tips thickened.** Apothecia 0.2-0.3 mm. 2
1. **Paraphyses tips not thickened.** Thallus thickish, areolate.3

2. Thallus poorly developed, thin, pale dirty yellow, smooth or slightly chinky around the apothecia, sometimes reduced to a thin film around the apothecia.

Margin of apothecia blackish, prominent; spores 8, biseriate, ellipsoid, 6-8 μ m or 10 x 6-7 μ m (8-13 x 6-8 μ m according to Thomson); hymenium 50-55 μ m (85 μ m according to Thomson), the upper half dark bluish green, fading below. Paraphyses in much gelatin, little branched, 3-3.5 μ m at apices, thicker toward tops, septate. Apothecia 0.1-0.125 mm diam., immersed in thallus or substrate; disc concave, black. Upper part of proper exciple dark brown-green, K+ violet, lower part hyaline; epithecium dark blue-green; hypothecium granular, partly bluish. On calcareous rock.

Alaska. H. heteromorpha (syn.: Ionaspsis reducta)

2. Thallus \pm well developed, thickish or thin, whitish or yellowish gray, minutely rimose-areolate, mainly smooth, , rarely powdery or \pm immersed; areoles 0.1-0.5 mm wide; thin dark hypothallus visible. Margin of apothecia hardly prominent; proper exciple thin, often separated from thallus by thin crack. Spores 8, globose to broadly ellipsoid, 7-8 or 8-12 x 6-9 μ m; hymenium 65-100 μ m, the upper half bright bluish green, N+ red-violet, K+ paler green. Apothecia immersed, 0.2-0.35 mm diam.; disc concave or flat, black; exciple bluish green above, fading below into a thin brownish line, brownish green in K; hypothecium grayish. Paraphyses coherent, indistinct, to 2-3.5 μ m thick above. Pycnidia 80-100 μ m diam., the wall green. On calcareous rocks. Alaska.

..... H. heteromorpha [Syn. Ionaspsis heteromorpha]

3. Thallus even, ochraceous yellow or pale orange yellow, small, thick for the genus, minutely rimose-areolate, the areoles flat or slightly concave. Apothecia immersed, 0.3-0.4 mm, level with thallus; margin not prominent; proper margins surrounded by a distinct fissure; disc concave, black; paraphyses constrictedly septate but not moniliform, coherent, in gelatin, 2-2.5 μ m thick; hymenium 85-100 μ m, the upper part dark emerald green; spores 8, ellipsoid, 10-11 x 7 μ m. Exciple pale yellowish brown, the upper part dark bluish green, N+ red-violet; hypothecium gray. On calcareous rock. Alaska. H. heteromorpha] (Syn.: Ionaspsis ochraceella)

3. Thallus uneven, white or pale ochraceous, effuse, continuous, smooth to becoming rimose-areolate, the edges smooth, white or roseate white, lacking hypothallus. Apothecia immersed, (0.3)0.5-0.7 mm, sometimes 2-3 confluent; thalloid margin slightly prominent, with a fissure between it and the proper margin; hymenium 85-120 μ m, the upper part dark emerald to bluish green, N+ violet, hyaline below; spores 8, subglobose to broadly ellipsoid, 10-15 x 6-10 μ m. Exciple dark bluish green above, tapering off and fading below. Disc concave, black; hypothecium pale yellow. On calcareous rock. Alaska and arctic islands of Canada. H. heteromorpha (Syn.: Ionaspsis schismatopsis)

II. Photobiont trebouxoid.
(Hymenelia sensu Poelt & Vezda).

[The relationships of these taxa to Lutzoni & Brodo's treatment is not very clear to me at present].

1. Thallus with soredia, mostly orange, rarely with minor gray patches, 0.2-0.8 mm thick; soralia regular, roundish and mostly remaining discrete, 0.3-1.0 mm diameter; soredia white or flecked with gray; lacking confluent acid; thallus more or less continuous, often finely cracked but rarely subrimose to rimose. Mainly western alpine; rare in arctic and eastern temperate mountainous regions. See Gowan's Porpidia treatment for fuller description. Porpidia ochrolemma (Vainio) Brodo & R. Sant.

1. Thallus without soredia, not orange (if orange, see Ionaspis lacustris).
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2. Exciple blue-grey or dark brown. Epihymenium and often hymenium intensive blue. Apothecia blue-gray to blue-black. Thallus endolithic. On \pm pure limestone. Not known from N. America. [coerulea group]

2. Exciple colorless. Epihymenium not or at most weakly yellowish colored. Apothecia rose, yellow-brown, red-brown or dirty whitish. Thallus epi- or endo-lithic. On siliceous or calcareous rocks. "ceracea group" ("status uncertain"). Thallus thin, cracked to nearly squamulose, pale gray-brownish to brown. Apothecia often numerous, \pm immersed in thallus, 0.2-0.5 mm wide; disks only a little darker than the thallus. Hymenium to over 130 μ m high. Spores very variable in size, ca. 12-15 x 6-8 μ m. On dry, lime-poor, often iron-rich rocks, above all on small rocks near the soil. Pioneer lichen, usually interspersed with other species, inconspicuous, somewhat resembling small Acarospora spp. H. ceracea (Arnold in Krempelh.) Poelt & Vezda.

Descriptions

H. heteromorpha (description after Froberg 1989)

Thallus epilithic, rimose-areolate; areoles 0.15-0.6 mm wide, green gray or dark red-brown.

Apothecia immerse, 0.1-0.3 mm wide, dark blue to black; hymenium 120-160 μm , 0.3% I+ blue-green directly changing to red-brown; epihymenium dark blue, N+ red; spores 10-15 x 6-10 μm .

On weathered and somewhat shaded, \pm dry calcareous rocks.

H. melanocarpa

Thallus epilithic to semiendolithic, rimose-areolate to somewhat continuous; areoles 0.15-0.7 mm wide, light brownish gray to greenish gray.

Apothecia immersed, slightly irregular in shape, 0.1-0.25 mm wide, light to dark blue; hymenium 180-240 μm ; 0.3% I+ blue-green directly changing to red-brown; epihymenium dark blue, N+ red; spores 12-20 x 8-13 μm .

At the edge of weathered calcareous rocks, in shaded, \pm humid habitats. Arctic-alpine

The description of this species by Thomson 1997 differs from the above in several ways, especially regarding the hymenium height

H. rhodopis

Thallus epilithic, cracked-areolate, areoles 0.2-1.2 mm wide; greenish gray to brownish gray, often with Trentepohlia cells growing epilichenically as minute orange granules

Apothecia immersed, distinctly concave, beige or pale rose, 0.1-0.4 mm wide; hymenium 100-140 μm high, N-, 0.3% I+ blue-green directly changing to red-brown; paraphyses branched and anastomosing; spores 10-21 x 5-11(-14), bi- or uni-seriate.

On weathered and somewhat shaded rocks, on \pm flat, often moist calcareous rock. Arctic-alpine.

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