

Ionaspis Th. Fr.
(HYMENELIACEAE)

After Lutzoni & Brodo (1995), Magnusson, and others

Rev. 4/96

Descriptions need to be revised somewhat to follow Lutzoni & Brodo

Thallus crustose, immersed or epilithic, smooth to rimose-areolate, effuse or \pm delimited by a whitish prothallus, yellow-white to dark gray or dark grayish brown, but with pinkish or yellowish tinges when fresh; ecorticate; algal layer and medulla not differentiated.

Apothecia aspicilioid, immersed, rarely becoming \pm sessile; disc pale to blackish, concave at first, later \pm flat; true exciple thin, \pm conspicuous except towards the surface where it broadens to form a distinct margin, colorless or pale brownish to green above. Hymenium to 80(-90) μ m, colorless, or pale brownish to green or bluegreen in upper part, I+ reddish, greenish or bluish; epihymenium not well differentiated. Paraphyses simple or \pm branched above, shorter-celled above and \pm constricted at the septa; apices without well-defined pigmented hoods or caps. Asci 8-spored, clavate to cylindrical, the outer coat I+ blue, the inner walls and apical dome I-. Spores globose to ellipsoid, simple, colorless, thin-walled, with or without a distinct perispore (halo). Apothecial pigment yellowish, N+ orange, K+ violet, or dark green, N- or intensified (blue-)green, K-.

Pycnidia immersed; conidogenous cells enteroblastic, elongate-ampulliform, acrogenous; conidia simple, bacilliform or filiform. No substances. Photobiont Trentepohlia or Trebouxoid. On \pm moist calcareous or siliceous rocks. Northern latitudes and montane regions.

1. Apothecial disk yellowish brown or grayish to almost black or whitish or rusty brown, the rusty brown color due to the presence of an epipsamma; when apothecial pigment present (not epipsamma), N+ orange yellow, K+ dark violet; thallus epilithic only. Hymenium hyaline to yellowish, brownish, or grayish olive. Non-callicolous (but sometimes subject to basic flushing). [If disks pinkish, or the epihymenium is N+ violaceous pink, see Hymenelia spp.] [Note: Ionaspis sp. 1 of Lutzoni, 1990, also belongs in this group].2

1. Apothecial disk black, no epipsamma present; apothecial pigment N- or intensified green, K-; thallus epilithic (in this species; can be endolithic, in other members of this group). Hymenium very dark green. Hymenium (50-)70(-92) um thick. Photobiont Trentepohlia. Pycnospores under 10 um long. No substances. I. suaveolens group. [Note: Aspicilia spp. would also key out here, according to the concept of Clauzade & Roux, that the "Aspicilia-green" epihymenial pigment is N+ green rather than N- as stated by Lutzoni & Brodo; aside from the frequent presence of lichen substances, and the usually longer pycnospores, the main things that would seem to distinguish Aspicilia are the trebouxoid photobiont and the hymenium being hyaline except for the epihymenial region. If epihymenium N+ violaceous pink, see Hymenelia spp. However, I seem to remember that some Eurasian species placed in Aspicilia by Clauzade & Roux have epihymenium N+ violet]. I. suaveolens

2. Lateral excipulum proprium N+ orange yellow, K+ dark violet. Hymenium hyaline to yellowish, brownish, or grayish olive. Photobiont Trentepohlia. Hymenium mostly K+ violet like the thallus, N+ orange. Excipulum pale or indistinct. Apothecial margin not prominent; hymenium 60-70 um, spores 9-12 x 5-6 um. I. odora group. 3

2. Lateral excipulum proprium N-, K-. Hymenium hyaline. Photobiont usually Trebouxoid. 4

3. Apothecia dense, often confluent, pale brown to light reddish or yellowish brown. Thallus whitish or rose-colored yellow. On submerged rocks, Washington.I. lavata Magn.

3. Apothecia not confluent, pale, rarely dark, 0.2-0.3(-0.4) mm diam.; disc pale pink to brownish. Thallus pale yellowish to yellowish gray, olive gray or blackish olive, forming small patches in depressions in rock, \pm indistinctly rimose. Hymenium 50-70 um, the upper part (and adjacent exciple and thallus surface) K+ violet, N-. Spores 9-12 x 5-6 um. Pycnidia 50-80 um diam., the wall greenish, K+ violet. On damp siliceous rocks, usually by streams or in seepage zones. New Hampshire; Canada.I. odora (Ach.) Th. Fr. ex B. Stein

4. Spores (11-)13-18(-20) x (5-)6-8(-11) um, \pm broadly ellipsoid to \pm globose. Disks pale orange to \pm pale reddish brown or

yellowish brown, turning pink to bright orange when wet. Thallus pale whitish cream, pale ochre yellow to rusty yellow, deep rusty red, or pale reddish to orangish or occasionally yellowish green. On wet rocks. Alaska to Pacific NW; New England to Alabama; Minnesota; New Brunswick. [The report of Hymenelia ceracea from N. America by Gowan & Brodo, 1988 is a misidentification of I. lacustris]. I. lacustris group. I. lacustris
4. Spores (9.5-)11.1-12.4-13.8(-16.5) x (3.0-)5.2-5.8-6.4(-8.0) um, Disks mostly light gray to yellowish white, or light grayish yellowish brown, rarely light to deep orange. Thallus pale greenish gray to dark grayish olive, or yellowish to brownish gray, never rusty brown. On dry rocks. Appalachian-Great Lakes region. I. alba group. I. alba

I. alba

Thallus pale greenish gray to dark grayish olive, or yellowish to brownish gray, never rusty brown, epilithic, continuous, rimose or rimose-areolate, sometimes with shiny upper surface, (1.3-)4.6(-8.5). cm diam.; photobiont trebouxoid. Apothecia round to subangular, rarely irregular; density (5.0-)6.9-13.3-19.7(-32.5) x 6.25 mm²; occasionally confluent; disks mostly light gray to yellowish white, or light grayish yellowish brown, rarely light to deep orange, often with a proper exciple forming a thin whitish ring around disk; concave, at most becoming almost flat at maturity, (48.2-)97.3-157.7-218(-337.4) um diam.; margins at most slightly prominent when young, remaining so or rarely prominent at maturity, (0.0-)23.3-48.4-73.4(-120.5) um thick; tissues K-, N-; epihymenium hyaline; hymenium hyaline, (57.5-)70.8-87.5-104.3(-127.5) um thick, I-; subhymenium hyaline, (12.5-)20.5-27.5(-42.5) um thick, I+ blue or -; hypothecium hyaline, (0.0-)8.4-26.4-44.4(-87.5) um thick, textura very variable; basal proper exciple hyaline, (0.0-)5.5(-12.5) um thick, textura prismatica or oblita; epipsamma very rarely present, very thin and almost entirely restricted to apothecial margin; paraphyses straight, ramifications almost entirely restricted to apex, poorly anastomosed, slightly constricted to moniliform, larger at apex. Ascus tholus I-; spores (9.5-)11.1-12.4-13.8(-16.5) x (3.0-)5.2-5.8-6.4(-8.0) um, mostly halonate with halo dense (as for H. lacustris) to very diffuse, 8, mostly aseriate, rarely uniseriate, most often agglomerated in a gelatinous sheet when forced out of the ascus. Pycnidia (25-)40(-70) um diam., hyaline to tan, imbedded to prominent; pycnosporos bacilliform, (2.5-)3.3(-3.9) um. No substances.

Sciophilous and saxicolous on dry siliceous boulders in deciduous forests. Appalachian-Great Lakes region.

I. lacustris

Thallus pale whitish cream, pale ochre yellow to rusty yellow, deep rusty red, or pale reddish to orangish or occasionally yellowish green, distinctly epilithic, thin (to 0.4 mm), mostly little prominent, smooth, \pm even, continuous to rimose (especially around apothecia) subareolate, crumbling, smooth, K-, I-, effuse or mosaic-forming and then delimited by red-brown hypothalline lines. Photobiont Trebouxia, rarely trentepohlioid.

Apothecia \pm immersed, 0.2-0.4(-0.6) mm wide, often in crowded groups; discs concave, pale orange to \pm pale reddish brown or yellowish brown, turning pink to bright orange when wet; sometimes with a slightly raised true exciple; rounded to \pm irregular; thalline margin thin to thicker, becoming flexuous, similar to thallus and often scarcely differentiated from it. Paraphyses coherent, filiform, not or only weakly submoniliform, the tips thickened and brownish or yellowish. Hymenium 90-125 um high, hyaline or at most weakly yellowish. Hypothecium hyaline to brownish. Exciple and hymenium \pm colorless; uppermost and outer parts of true exciple pale brown to red-brown, the outer edge granular. Epihymenium pale orange to dark red-brown, interspersed with minute granules insoluble in K. Spores 8 per

ascus, (11-)13-18(-20) x (5-)6-8(-11) um, \pm broadly ellipsoid to \pm globose.

Pycnidia 50-80 um diam., red-brown; conidia 4.5-6.5 x 1 um. On partly inundated, hard, non-calcareous, often iron-rich rock, along the edges of tarns and seepage areas on outcrops as well as the edges of lakes and rivers, arctic-alpine or montane. Alaska to Pacific NW; New England to Alabama; Minnesota; New Brunswick. [The report of Hymenelia ceracea from N. America by Gowan & Brodo, 1988 is a misidentification of I. lacustris].

I. lavata Magn.

Apothecia dense, often confluent, pale brown to light reddish or yellowish brown. Thallus whitish or rose-colored yellow. Thallus thin, smooth to somewhat irregular and minutely chinky, creamy yellow or tinged with rose. Apothecia 0.2-0.3(-0.6) mm across, very numerous, immersed; disc slightly concave; exciple concolorous with thallus. Spores 8, oval, 10 x 6 um. On submerged rocks, Washington.

I. odora (Ach.) Th. Fr. ex B. Stein

Apothecia not confluent, pale, rarely dark, 0.2-0.3(-0.4) mm diam.; disc pale pink to brownish. Thallus pale yellowish to yellowish gray, olive gray or blackish olive, forming small patches in depressions in rock, \pm indistinctly rimose. Hymenium 50-70 um, the upper part (and adjacent exciple and thallus surface) K+ violet, N-. Spores 9-12 x 5-6 um. Pycnidia 50-80 um diam., the wall greenish, K+ violet. On damp siliceous rocks, usually by streams or in seepage zones. New Hampshire; Canada.

I. suaveolens

Colored parts of apothecia N-; spores 6-8 biseriate, broadly ellipsoid, 8-10(-11) x (5-)6-7 um, or globose, 6-8 um; apothecia 0.2-0.5 mm; paraphyses tips thickened, 2.5-3.5 um, constrictedly septate. Thallus thin, effuse, yellow-brown to olive brown, indistinctly chinky and areolate. Photobiont Trentepohlia. Apothecia immersed; thalloid margin indistinct; disc 0.2-0.4 mm diam., concave to flat, black; proper exciple in upper part 17-25 um thick, blue green, darker than hymenium, becoming hyaline below; hypothecium hyaline, with vertical hyphae; hymenium 50-55 um, the upper half emerald green to blue-green, K- (olive yellow); paraphyses indistinct, 2-2.5 um thick, shortly and constrictedly septate. Pycnidia unknown. On rocks in stream beds or in the splash zone of streams, boreal-alpine. Alaska.

ADD?

Thallus orangish, thin, smooth to chinky but not areolate. Apothecia tiny, 0.1-0.2 mm broad, immersed, concave, pale; hymenium 65 um, pale; paraphyses slender, 1.7-2.5 um; asci cylindrico-clavate, 50 x 13 um; spores uniseriate, 8 per ascus, subglobose, 9-10 x 7-9 um. On calcareous mica-

schist, Alaska. Known only from the very fragmentary type specimen.

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