

Mycomicrothelia Keissler
(ARTHOPYRENIACEAE)

After Hawksworth, 1985

Rev. 4/96

Thallus immersed, rarely superficial, silvery or cream, sometimes \pm lacking, sometimes with a \pm black limiting fringe; photobiont usually absent, when present Trentepohlia.

Perithecia \pm immersed, with exciple all black at least above, but very thin and often interrupted; involucrellum large, distinct, red-brown, K+ green-brown, extending laterally and sometimes forming a distinct fringe around the perithecia, formed of hyphae and bark cells (clypeate in structure). Exciple \pm globose to flattened, often poorly developed to absent below, of interwoven brown to colorless hyphae. Hamathecium of pseudoparaphyses, branched and anastomosed, septate; gel I+ violet (not blue) or I-. Asci 8-spored, elongate-clavate or broadly clavate to subcylindrical, with two functional wall layers, fissitunicate, with ocular chamber, I-. Spores ellipsoid to slipper-shaped, brown, usually distinctly warted, often with a thin gelatinous sheath swollen in K, 1-(-3)-septate, the upper cell usually larger.

Pycnidia similar to the ascomata in structure; conidiogenous cells enteroblastic, elongate-ampulliform, unbranched, acrogenous; conidia bacilliform, simple, colorless or ellipsoid, 1-septate and brown, or ellipsoid, simple, with centrally thickened walls and brown. No substances. On bark, mostly tropical, but some temperate.

Poelt treated this under DOTHIDEALES. According to Galloway (1985) "The tropical species, in which there is no distinct exciple and where the ascomata are always dimidiate, may be most appropriately regarded as a separate genus"; these have probably already been segregated out by now, but I'm not sure as what.

Note: This genus, which is often at most weakly lichenized, is easily overlooked, and is probably much more widespread and common than the few records indicate, and there are probably many more species in N. America. I am fairly sure I've seen at least one in the Pacific NW.

- 1. Ascospores mainly exceeding 20 μ m in length. 2**
1. Ascospores mainly less than 20 μ m in length. 3

2. Ascospores (21-)24-28(-30) x 7.5-9(-11) μ m; ascomata 200-350(-400) μ m. Arizona (reported by Aptroot, 1991). M. hemispherica (Müll. Arg.) D. Hawksw.

2. Ascospores 18-22 x (7.5-)8.5-10(-10.5) μ m, On wood (branches

or twigs, especially of Olea). California. M. inaequalis

3. Ascospores 13.5-16 x 6-7 um, On bark of trees or shrubs. Non-lichenized. M. subfallens

3. Ascospores mainly exceeding 16 um in length. 4

4. Ascomata (200-)300-500(-550) um diam. Ascospores 16-19.5 x 7.5-10(-10.5) um, the lower cell ca. 1/3 the length of the upper. On dead stems of Mimulus glutinosus. San Francisco, California, known only from the type collection. M. dothideaspora

4. Ascomata rarely exceeding 350 um diam. 4

5. Basal fringe of the ascomata poorly developed, mainly 25-40 um wide, not or scarcely extended. Apparently lichenized, presumably with Trentepohlia. On bark. M. captiosa

5. Basal fringe of the ascomata extending at least to 50 um.

..... 6

6. Basal fringe around the perithecia conspicuous, 125-300 um wide. Ascomata rare. On bark of Betula (or rarely Populus). Iowa, Black Hills, northern Minnesota. M. wallrothii

6. Basal fringe 50-100 um wide. Ascospores 17-20(-21) x 7-8(-9) um. On trees (Fraxinus), Florida, Massachusetts and Illinois. M. willeyana

M. captiosa

Basal fringe of the ascomata poorly developed, mainly 25-40 µm wide, not or scarcely extended. Colonies whitish rose, delimited by a black line, immersed, subepidermal, the epidermis raised to form low hemispherical projections; ascomata arising singly, scattered, dimidiate, applanate, (200-)250-350(-400) µm diam., 150-225 µm tall; ostiole black; involucrellum very dark reddish brown to almost black, K+ slightly olivaceous. Spores ellipsoid to somewhat soleiform, slightly constricted at septum, the upper cell slightly larger, apices rounded to slightly attenuated, olive brown, verruculose, with a thin gelatinous sheath to 1.5 µm in KOH, (13.5-)17-19(-21) x (5.5-)6.5-7.5(-8.5) µm. Asci (55-)65-73 x (12-)13-14 µm. Apparently lichenized, presumably with Trentepohlia. On bark.

M. dothideaspora

Ascomata (200-)300-500(-550) µm diam. Ascospores 16-19.5 x 7.5-10(-10.5) µm, the lower cell ca. 1/3 the length of the upper. On dead stems of Mimulus glutinosus. Colonies delimited by a black line, immersed, subepidermal, the epidermis raised to form hemispherical projections; ascomata arising singly, occasionally confluent at the margins, scattered, dimidiate, 120-250 µm tall; black; basal fringe becoming well developed in older ascomata but rarely exceeding 100 µm wide, K+ distinctly olive green; ostiole slightly depressed; involucrellum dark brown to almost black, K+ somewhat olive green, mainly 20-30 µm thick. Spores broadly ellipsoid to obovoid, strongly constricted at the septum, the lower cell 1/3-1/2 the length of the upper and consistently narrower, rounded at the apices, not attenuated, dark olive brown, appearing almost smooth but with a sparse punctate-verruculose ornamentation only seen with difficulty, with a gelatinous sheath ca. 1 µm thick. San Francisco, California, known only from the type collection.

M. hemisphaerica

Ascomata arising singly, rather evenly distributed over the whitish thallus, colonies not delimited by a black line, immersed, subepidermal, the outer layers of bark raised to form conspicuous hemispherical projections; individual ascomata dimidiate, applanate at the base, 200-350(-400) µm diam., mainly 150-180 µm tall, basal fringe poorly developed but sometimes extending to about 70 µm, ostiole depressed and visible as a whitish spot 25-40 µm diam., black; involucrellum dark reddish brown, K+ somewhat olivaceous, 35-60 µm thick, consisting of host tissue intermixed with fungal hyphae, hyphae 2-3 µm thick, uneven, smooth-walled, mainly between the host cells at the margins but the host cells eventually becoming almost completely occluded above the centrum; basal tissue of the ascomata scarcely differentiated from the generative tissues or comprising an irregular layer of subhyaline pale brown to subhyaline hyphae, individually 2-3 µm thick; exciple composed of a few layers of interwoven reddish brown hyphae forming a layer reaching about 10 µm thick near the ostiole, forming a

textura intricata; centrum not turning blue in iodine. Pseudoparaphyses cellular, persistent, numerous, sparsely septate, filiform, branched and anastomosing, 1.5-2 μ m thick. Asci arising from the base of the ascomatal cavity, \pm vertically oriented to inclined towards the ostiole, elongate-clavate, short-stalked, bitudnicate, with a distinct rather clavate internal apical beak when young becoming more cylindrical at maturity, 75-90 x 12-18 μ m, 8-spored. Ascospores distichously arranged, elongate-ellipsoid to oblong-ellipsoid, 1-septate, but with 1-2 additional pseudosepta occasionally developing in some spores, only slightly constricted.... [I'm missing part of description on page 88] ... , (21-)24-28(-30) x 7.5-9(-11) μ m.

M. inaequalis

Ascospores 18-22 x (7.5-)8.5-10(-10.5) μ m, broadly ellipsoid, 1-septate, moderately constricted at septum, the lower cell consistently somewhat smaller, rounded at the apices, olive-brown to red-brown, apparently smooth-walled, with a thin gelatinous sheath ca. 1 μ m thick. Ascomata arising singly, scattered, without a delimiting line around the colonies, 200-300 μ m diam., 150-200 μ m tall, dimidiate; basal fringe well developed, lenticular with the grain of the wood, olivaceous black, extending to 350 μ m in the direction of the grain; ostiole depressed; involucrellum dark reddish brown to almost black, mainly 60-100 μ m thick; basal fringe and involucrellum K+ olive green. On wood (branches or twigs, especially of Olea). California.

M. subfallens

Ascospores 13.5-16 x 6-7 μ m, ellipsoid, 1-septate, constricted at septum, the lower cell consistently smaller, rounded at apices, golden brown, verruculose, gelatinous sheath distinct and to 2 μ m thick in potassium hydroxide. Colonies whitish to pale rose, forming mosaics delimited by black lines 50-150 μ m thick, subepidermal layers, the epidermal layers raised very slightly to form low hemispherical projections. Ascomata arising singly, scattered, 150-250(-300) μ m diam., 60-100 μ m tall, dimidiate, black, with a basal fringe to 50 μ m thick; ostiole depressed, involucrellum reddish brown (K+ deep olive brown then with purplish tinge), mainly 25-50 μ m thick. On bark of trees or shrubs. Non-lichenized.

M. wallrothii

Basal fringe around the perithecia conspicuous, 125-300 μ m wide. Ascomata rare, 0.15-0.25(-0.3) mm diam. Spores (12-)14-18(-20) x 6-8(-8.5) μ m. Basal fringe ellipsoid to broadly fusiform, dark gray. Thallus inconspicuous, not delimited, with algal cells occasionally scattered on surface, but not lichenized. Hymenium l-. Asci 35-60 x 14-16(-20) μ m, elongate-clavate. Spores ellipsoid, 1-septate, not to slightly constricted at septum, apices rounded. Pydnicia 50-100(-120) μ m diam., intermixed with ascomata or present alone; pycnospores (9-)11-12.5(-14) x 4-6.5 μ m, ellipsoid to doliiform, brown, thickened centrally internally and sometimes \pm distoseptate. Superficially recalling Leptoraphis epidermidis. On bark of

Betula (or rarely Populus). Iowa, Black Hills, northern Minnesota.

M. willeyana

Basal fringe 50-100 um wide, black, distinct. Thallus thin, ashy to brownish, intersected and bordered by black lines, sometimes disappearing. Perithecia mainly arising singly but sometimes 2-3 confluent at the margins, (150-)200-300(-400) um across, 100-150 um tall, dimidiate, the superficial portion black, hemispherical, dilated below; ostiole scarcely depressed but not protruding, with the whitish centrum visible through it; involucrellum dark reddish brown, K+ olivaceous, 40-60 um thick.. Spores 17-20(-24) x 7-8(-9) um, soleiform, strongly constricted at septum, the lower cell consistently smaller, rounded to somewhat attenuated at apices, olivaceous brown, verruculose, with a thin gelatinous sheath to about 1.5 um thick, in K. Pycnidia 50-75 um diam.; pycnospores 3-4 x 1-1.5 um. On trees (Fraxinus), Massachusetts and Illinois.

Literature

Awasthi. 19 . Microlichens of India, etc.

Hawksworth, D. L. 1985. A redistribution of the species referred to the ascomycete genus Microthelia. Bull. Brit. Mus. nat. Hist. (Bot.) 14(2): 43-181.

Hawksworth, D. L. 1992. Mycomicrothelia. In: Purvis, et al., Lichen Flora of Great Britain and Ireland.