

**Paulia**  
(LICHINACEAE)

After Fink (1935) and Henssen

Rev. 5/94

Thallus small, blackish or greenish brown, umbilicate, orbicular to deeply divided into lobes, attached to the substratum by scattered or aggregated rhizoidal strands. Hyphae thin, forming a reticulum of roundish or angular meshes around the photobiont cells, haustoria produced at the tip of side branches arising from the hyphal meshes, a rudimentary lower cortex developed or not; hyphal cells cylindrical, fusiform or angular, with or without vacuoles. Photobiont a member of the Chroococcales; cells surrounded by a thick, brown, distinctly zonate, gelatinous sheath in which particles of unknown nature are eventually deposited.

Apothecia laminal, immersed or rarely adnate; discs urceolate or flat, brown or pale. Generative tissue a cone-shaped bundle of hyphae including a group of coiled ascogonia. Mature apothecia in sections cup-shaped or stipitate; hymenium eventually with a sterile central column, hymenial gelatin amyloid or not; proper exciple lacking; paraphyses branched and anastomosing. Spores 8 or fewer, simple, colorless, thick-walled. Pycnidia immersed, small, frequently degenerated; conidiogenous cell terminally producing thin, rod-like conidia. On limestone. Often on islands.

**1. Thallus fruticulose.** ..... P. caespitosa

**1. Thallus orbicular, effigurate or lobate.** ..... P. pyrenuloides

**P. caespitosa Tretiach & Henssen**

Thallus black, greenish when wet, fruticulose, densely aggregated, forming small spherical cushions when young, to 10-15 mm diam., richly branched, attached by a thick rhizoid strand; lobules terete, ovoid or irregularly cylindrical, erect, to 0.25-0.35 mm diam., ramified, with surface covered by thick, hyaline layer penetrated by thin hyphae; hyphae 1-2 µm wide, forming thin mesh around cells of cyanobiont, that are penetrated by haustoria. Cyanobiont probably a member of Chroococcales, cells single or more rarely in pairs, 10-20 x 7-12 µm, with thick gelatinous sheath that is evidently zonate and often filled by particles.

Apothecia rare, immersed, to 0.15 mm wide, surrounded by thick thalline margin, with reddish brown disc, flat and circular; hymenium not amyloid, with well developed subhymenium, formed by a hyphal network staining strongly blue in LPCB, limited by thin layer of branched hyphae at its margin; paraphyses richly branched and anastomosing, 1-1.5(-2) µm wide; asci cylindrical, 80-120 x 10-14(-17) µm, regularly 8-spored, the walls appressed to the ascospores, and a I- uniform gelatinous outer layer; ascospores usually uniseriate, simple, colorless, spherical or broadly ellipsoid, 11-16 x 9-14 µm, with a thick, two-layered wall, better visible in water mounts, 2-3(-4.5) µm thick; sometimes some bigger, aberrant ascospores, up to 23 x 15 µm, are present.

Pycnidia immersed, simple; conidia cylindrical, c. 3-5 x 1 µm.

On limestone, Chihuahua.

**P. pyrenoides (Nyl.) Henssen** (Syn.: Thyrea pyrenoides)

Thallus small, deeply lobed, marginally round and wavy, black; lobes closely packed, ascending to erect. Apothecia 0.08-0.15 mm across, immersed; disk urceolate to finally dilated, black; alveoli exciple swollen, concolorous with thallus; spores 8, spherical to ellipsoid, 8-12 x 6-9  $\mu$ m. On rocks, Minnesota, Texas and New Mexico.

### **Literature**

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

Henssen, A. 1986. The genus Paulia (Lichinaceae). Lichenologist 18(3): 201-229.

Tretiach, M. and A. Henssen. 1996. Paulia caespitosa sp. nov. and P. wrightii comb. nov. (Lichinaceae, Ascomycotina). Mycotaxon 67: 359-369.