

Dictyosporium stellatum



Fungal Planet 91 – 31 May 2011

***Dictyosporium stellatum* G.P. White & Seifert, sp. nov.**

Coloniae stellatae, sporidochia 200–500 µm lata. Cellulae conidiogenae 6.5–11 × 4.5–10 µm, globosae, ellipsoideae vel clavatae. Conidia brunnea, complanata, (50–)95–140(–175) µm longa, (27.5–)30–40(–52.5) µm lata, 7.5–15 µm crassa, cellulae 3.5–6.5 µm longae, 4.5–6 µm latae, 6–12 µm crassae, diposita in 5–7 serietibus.

Etymology. From *stellata* (L.), referring to the star-like appearance of the colonies on the natural substrate.

Colonies on the natural substratum conspicuous, black, scattered, up to c. 7 mm diam, irregular in outline, composed of stellate sporodochia c. 200–500 µm wide, comprised of conidia radiating from a central point, often coalescing into irregular masses; often associated with or growing on stromata of a *Hypoxylon*-like fungus. *Mycelium* immersed in the substrate, not seen. *Conidiophores* c. 2–5 µm wide, micronematous, inconspicuous, composed of hyaline, thin-walled, irregularly branched, frequently septate hyphae. *Conidiogenous cells* 6.5–11 × 4.5–10 µm, globose, ellipsoidal or clavate, often remaining attached to the base of the conidium, hyaline and thin-walled, often collapsing, hyaline and thin-walled, sometimes becoming brown and thicker walled and then not collapsing; clavate cells with cylindrical connections to the basal cells of conidia rarely observed, perhaps suggestive of sympodial proliferation of conidiogenous cells that do not detach with the conidia. *Conidia* (50–)95–140(–175) µm long, (27.5–)30–40(–52.5) µm wide, 7.5–15 µm thick, dark brown, paler in apical cells, planar, cheiroid in ventral view, cylindrical to acicular in lateral view, consisting of (59–)110–165(–180) cells; individual cells discoid or doliform, more oblong in side view than in face view, 3.5–6.5 µm tall, 4.5–6 µm wide in face view, 6–12 µm deep; typically arranged in (5–)6(–7) columns, 14–33 cells per column, the inner columns nested within the outer columns, the outer columns derived from the basal cell of the conidium; the intermediate columns are derived from the first or second cell of the outer columns; the inner columns derived from the first or second cell of the intermediate columns; usually with 2–3 central columns longest and of equal length, 2–3 peripheral columns shorter and of equal length, and one of the outer columns shortest but with several variations observed, including additional branching of one or more of the columns resulting in

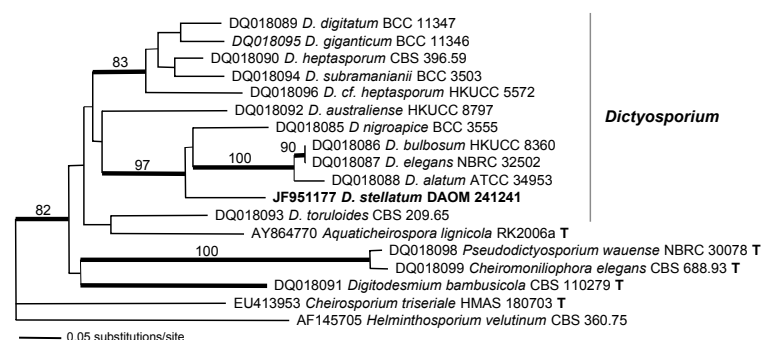
conidia with up to 9 columns, or straight or curved extension of 1–2 adjacent columns far beyond than the rest of the columns. Conidial appendages absent. Conidia germinating by hyaline hyphae 2–3 µm wide from the terminal cells of each column.

Culture characteristics — Colonies on cornmeal agar at RT 8–15 mm radius after 15 d, planar, obverse and reverse hyaline, margin uneven, sporulating after about 10 d, and then colonies with a uneven, spotty ring of conidial clusters around the inoculum, surface otherwise smooth and overlaid with sparse, hyaline aerial hyphae.

Typus. CANADA, Ontario, Renfrew Co., Blithfield Twp., Barry Lake, developed in moist chamber on previously submerged wood, collected 3 Sept. 2008, observed 26 Dec. 2008, *Nancy Hiscock*, holotype DAOM 241241; culture ex-type CCFC 241241, ITS sequence GenBank JF951154 and LSU sequence GenBank JF951177, MycoBank MB561250.

Notes — *Dictyosporium stellatum* produces the longest conidia of the approximately 34 species described (Goh et al. 1999, Cai et al. 2003, Crous et al. 2009a). Stellate sporodochia, which give the species its epithet, have not been reported in other species. Despite the many collections attributable to this genus deposited in DAOM by the senior author and his mentor Dr S.J. Hughes over several decades, no other specimens were found and thus *D. stellatum* may be a rare fungus. On the holotype, sporulation was often most prolific on stromata of a *Hypoxylon*-like fungus, and some parasitism may be involved.

The phylogenetic analysis below is based on recent internal transcribed spacer (ITS) analyses of *Dictyosporium* and related cheiroid genera (Tsui et al. 2006, Cai et al. 2008) with our own species added. Our species has distinct ITS sequences from those sequenced to date and sits in a well-supported clade that includes the type species, *D. elegans*. Although *Dictyosporium* appears monophyletic in this NJ tree, it is paraphyletic with the *Pseudodictyosporium*/*Cheiromoniliophora*/*Cheirosorium* clade in nine of ten MPTs in a heuristic parsimony analyses (not shown). No analyses have well-supported overall structure, perhaps reflecting the scant sampling of species in this group.



Colour illustrations. The shoreline of Barry Lake where the holotype was collected; stellate sporodochial on surface of wood through the dissecting microscope (taken with CombineZ) and through the compound microscope; a single conidium in lateral view showing three planes of focus and the different lengths of the arms; a single conidium in face view. Scale bar = 10 µm.

Neighbour-joining tree (TL = 448; CI = 0.538; RI = 0.596) of an ITS sequence alignment generated by MAFFT (Katoh et al. 2005) using PAUP v4.0b10 (Swofford 2003). Bootstrap support values above 70 % from 1 000 replicates are shown at the nodes and branches occurring in the strict consensus of 10 MPTs from a heuristic parsimony search of the same alignment are in **bold**; type strains are indicated with **T**. The species described here is printed in **bold face**. The tree was rooted with *Helminthosporium vellutinum*.

George P. White, Madawaska Highlands Biodiversity Project and RIFDS Inc., 65 Peggs Ln, White Lake, Ontario, Canada, K0A 3L0; e-mail: moldmanager@moldmanager.ca

Keith A. Seifert & Gerry Louis-Seize, Biodiversity (Mycology & Botany), Agriculture & Agri-Food Canada, 960 Carling Ave., Ottawa, Ontario, Canada K1A 0C6;

e-mail: keith.seifert@agr.gc.ca, gerry.louis-seize@agr.gc.ca
Nancy Hiscock, Biologist, 571 Russham Rd, Pembroke, Ontario, Canada K8A 6W6; e-mail: tnhiscock@gmail.com