

CHAPTER 42

CALYPTRALEGNIA Coker

J. Elisha Mitchell Sci. Soc. 42:219. 1927

Monoecious. Sporangia cylindrical to clavate, or irregular; renewed sympodially or in basipetalous succession. Spores monomorphic; angular when encysted; escaping in successively released groups of variable numbers on the dehiscence of an apical operculum, or dissolution of a cylindrical portion of the distal end of the sporangium; emerging from the cysts as laterally biflagellate planonts as the cysts leave the apical opening, or soon after the cysts are freed from the sporangium. Gemmae absent. Oogonia lateral or terminal; spherical or obpyriform. Oogonial wall pitted or unpitted; smooth. Oogonial stalks long, often once-coiled. Oospores subcentric or subeccentric; one to several. Antheridial branches, when present, diclinous, monoclinal, or androgynous. Antheridial cells simple, laterally appressed.

Type species: *Thraustotheca achlyoides* Coker and Couch, J. Elisha Mitchell Sci. Soc. 39:112, pl. 8. 1923.

The spore release pattern in species of *Calyptralegnia* is unique among the Saprolegniaceae. The sporangium discharges spores apically either through an operculum, or through an opening formed as the uppermost portion (of various lengths) of the wall deliquesces. In some cases, at least, the encysted, angular spores then flow out of the sporangium in groups of various numbers. The successive release of masses of spores in time empties the sporangium (a few spores may be left in the basal portion). As the cysts of the primary spores emerge from the terminal orifice, they cluster very loosely at that point, and then begin to germinate by the production of the reniform planonts.

Coker and Couch (1923: p. 113) thought that the spore discharge pattern in their fungus -- the first collection of what was to be named *Calyptralegnia achlyoides* -- was essentially that of *Thraustotheca* species. The later decision by Coker (*loc. cit.*) to remove *T. achlyoides* to a new genus left both genera more precisely defined.

Key to the species of *Calyptralegnia*

1. Oospores subcentric; antheridial branches
monoclinal and diclinous *C. achlyoides* (p. 731)
1. Oospores subeccentric, antheridial branches
androgynous and diclinous *C. ripariensis* (p. 732)

Calyptralegnia achlyoides (Coker and Couch) Coker
J. Elisha Mitchell Sci. Soc. 42:219. 1927
(Figure 59 A-C)

Thraustotheca achlyoides Coker and Couch, J. Elisha Mitchell Sci. Soc. 39:112, pl. 8. 1923.

Monoecious. Mycelium diffuse; hyphae stout, sparingly branched. Sporangia cylindrical, slightly irregular, or clavate, apex often slightly curved; generally renewed in a basipetalous fashion, infrequently sympodially; 100-260 x 20-38 μm . Spores monomorphic, discharged through upper end of sporangium at the breaking away or deliquescence of the apical portion of the sporangium wall; spores released successively as encysted cells in groups of various numbers; clustering loosely at the open end of the sporangium, gradually separating; laterally biflagellate planonts emerging from the cysts at any time after cysts released from confines of the sporangium; primary spore cysts faintly polygonal, 8-14 μm in diameter. Gemmae absent. Oogonia lateral, infrequently to rarely terminal; obpyriform and sometimes slightly bent near base, but occasionally spherical or obovate; (55-) 65-85 (-100) μm in diameter. Oogonial wall unpitted or pitted under region of attachment of antheridial cells; smooth. Oogonial stalks ($1/2$ -) 1-2 ($-3^{1/2}$) times the diameter of the oogonium, in length; slender, generally once-coiled, occasionally strongly curved or twisted; unbranched. Oospores subcentric; spherical to broadly oval; 1-3 (-8) per oogonium, and nearly filling it; (35-) 46-60 (-68) μm in diameter; germination not observed. Antheridial branches, when present, androgynous, occasionally or infrequently diclinous; slender, usually regular in outline; unbranched; persisting. Antheridial cells simple; small, short, broadly tubular or clavate, or slightly irregular; persisting; laterally appressed; fertilization tubes present or absent.

Calyptralegnia achlyoides is very near *C. ripariensis* in most of its characteristics, and in oogonium shape and size, oogonial stalk configuration, and oospore measurements hardly could be said to differ from the latter species. The oospores of *C. achlyoides* are subcentric (Fig. 59 B, C); they are illustrated as subeccentric for *C. ripariensis* (Höhnk, 1953b: fig. 7) although they are identified as eccentric in the description. Both *C. achlyoides* and *C. ripariensis* have diclinous antheridial branches, but in addition, androgynous ones are produced by the former, monoclinous ones by the latter.

CONFIRMED RECORDS: -- BRITISH ISLES: Forbes (1935a:232, pl. 9, fig. 6). GERMANY: Höhnk (1952a:59, pl. 7). RUMANIA: Toma (1968:113, pl. 2, figs. 10-18; pl. 3, figs. 19-22; pl. 6, figs. 49-54). UNITED STATES: Beneke (1948b:104); R. L. Butler (1975: figs. 165-168); Coker and Couch (*loc. cit.*; 1924: pl. 38, figs. 4-8).

RECORDED COLLECTIONS: -- BRITISH ISLES: Cook and Forbes (1933); Dick (1963); Dick and Newby (1961); Forbes (1935b). JAPAN: Suzuki (1961f). RUMANIA: Toma (9169). UNITED STATES: Coker and Braxton (1926); J. V. Harvey (1930); V. D. Matthews (1927).

SPECIMENS EXAMINED: -- AFRICA (1), UNITED STATES (3), RLS.

Calyptralegnia ripariensis Höhnk

Monoecious. Hyphae relatively stout; moderately branched, the lateral filaments wide-spreading. Sporangia fusiform, cylindrical, or clavate; renewed sympodially, or in a basipetalous or cymose fashion; (116-) 190-480 (-784) × (21.6-) 36-62 (-98) μm. Spores monomorphic, discharged through the upper end of the sporangium at the rupture of the apical portion of the sporangium wall or at the release of a calyptra-like portion of the wall; behavior following sporangium dehiscence calyptralegnoid; primary spore cysts angular, 12-17 μm long (diameter). Gemmae absent. Oogonia lateral; obpyriform and with a straight or slightly bent neck, or globose, seldom oval; (49-) 68.6-80.4 (-102.9) μm in diameter. Oogonial wall unpitted; smooth. Oogonial stalks long, thin; sometimes or often twisted, or contorted, or coiled; unbranched. Oospores subeccentric, spherical or oval; 1-4 per oogonium, but not always filling it; (34.3-) 49-68.4 (-73.5) μm in diameter; germination not observed. Antheridial branches, when present, monoclinal or declinal; slender. Antheridial cells clavate; laterally appressed. (Adapted from Höhnk, *loc. cit.*)

We have not seen specimens of *Calyptralegnia ripariensis*, but from the existing descriptive and illustrative matter (Höhnk, *loc. cit.*) do not find it much different from *C. achlyoides* (see discussion this species). If the subeccentric oospore structure of Höhnk's species proves to be constant, the taxon shall have to be retained as a valid one.

CONFIRMED RECORDS: -- GERMANY: Höhnk (*loc. cit.*). IRAQ: Muhsin (1977:13, figs. A-F); Rattan *et al.* (1978:119, figs. 1-3).

RECORDED COLLECTION: - GERMANY: Höhnk (1956a).

Calyptralegnia sp.

BRITISH ISLES: O'Sullivan (1965). GERMANY: Höhnk (1935a, 1958). IRAQ: Muhsin (1977:14); Rattan *et al.* (1978).

EXCLUDED TAXON

Calyptralegnia (Thraustotheca) unisperma var. *litoralis* C. & B.

This name appears in J. V. Harvey's publication of 1942 (p. 37) in which he reports recovery of the species on two occasions. Harvey wrote that the specimens agreed with the species "...described by Coker and Braxton (1926) and reclassified by Coker (1927)." This being true, the water molds Harvey referred to were members of *Brevilegnia* and not of *Calyptralegnia*. In any event, this name hardly can represent a valid new combination since Harvey made no mention of why the variety was placed in *Calyptralegnia* (which he seems to have equated with *Thraustotheca*).