

A new species of *Clohiesia* from Hong Kong

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Clohiesia lignicola sp. nov. (freshwater ascomycetes) is introduced based on a specimen collected on submerged wood in the Tung Chung River, Hong Kong. Ascumata are clypeate, asci are cylindric-clavate with a relatively massive apical apparatus and ascospores are fusoid-ellipsoidal. *Clohiesia lignicola* differs from *C. corticola* in having wider asci and wider fusoid-ellipsoidal ascospores, and larger ascumata. *Clohiesia lignicola* is described and illustrated with light micrographs and is also compared with species in the genus *Annulatascus*.

Key Words—*Annulatascus*; aquatic fungi; freshwater; lignicolous fungi; systematics.

During ecological studies of the lignicolous fungi in freshwater in Hong Kong, an unusual ascomycete belonging to the genus *Clohiesia* K. D. Hyde (Hyde, 1995) was found. The taxon had unitunicate asci with a relatively massive refractive apical apparatus, a characteristic of species in the Family Annulatascaceae. Its ascumata, were however, immersed under a clypeus and lacked a long neck. These features distinguish this fungus from all *Annulatascus* species and species in related genera. The taxon can be included in the genus *Clohiesia* (Annulatascaceae sensu Wong et al., 1998), but it differs from *C. corticola* K. D. Hyde in having fusoid-ellipsoidal ascospores, and also having wider asci and larger ascumata.

Taxonomy

Clohiesia lignicola K. M. Tsui, K. D. Hyde & I. J. Hodgkiss, sp. nov. Figs. 1–13

Ascumata 440–500 μm diam, 400–440 μm alta, globosa vel subglobosa, superficialia vel immersa, unilocularia vel bilocularia, carbonacea, solitaria vel gregaria, nigra, ostiolata, periphysata. Ostiolum 20–50 μm crassum, periphysatum. Peridium 20–30 μm crassum, intra stratis cellularum hyalinarum compositum; extrinsecus stratis cellularum *textura angularis* fuscarum compositum. Paraphyses septatae, numerosae et angustatae, 200 μm longae, ca. 5 μm crassae. Asci 120–140 \times 8–12 μm , unitunicati, octospori, cylindrici, pedicellati, tenuitunicati, apparato apicali praediti. Ascospores 14–28 \times 4.5–6 μm , uniseriatae, fusoidae-ellipsoideae, 1-cellulares, hyalinae, laeves, vagina mucilaginosa circumdantes.

Etymology: Referring to the lignicolous habitat.

Holotype: Hong Kong. Lantau Island, Tung Chung River, on submerged wood, 28 July 1997, K. M. Tsui, KM202 (HKU(M) 5539).

Colonies on potato dextrose agar slow growing,

2 cm in diam after 2 mo at room temperature, with white sparse mycelium, no fructifications produced. Ascumata 440–500 μm in diam, 400–440 μm high, globose or subglobose, superficial to partly immersed, uniloculate to bilocular, carbonaceous, black, ostiolate, clypeate, solitary to mostly gregarious. Ostiole 20–50 μm wide, periphysate. Clypeus ca. 20–30 μm in diam, composed of host cells filled with dark brown hyphae. Peridium 20–30 μm thick, brown-black, coriaceous, composed of an inner layer of hyaline, thin-walled, elongate cells and outer layer of dark brown *textura angularis*; cells flattened at the base. Paraphyses more than 200 μm long and 5–8 μm wide, longer than asci, numerous, septate, tapering distally. Asci 120–140 \times 8–12 μm (\bar{x} = 134.4 \times 10.9 μm , n = 25), 8-spored, cylindrical, cylindric-clavate, pedicellate, unitunicate, thin-walled, with a relatively massive refractive apical apparatus (ca. 2 μm long, 3–4 μm in diam). Ascospores 14–28 \times 4.5–6 μm (\bar{x} = 22 \times 5.4 μm , n = 55), overlapping uniseriate, fusoid-ellipsoidal, 1-celled, hyaline, smooth-walled, surrounded by a thin mucilaginous sheath.

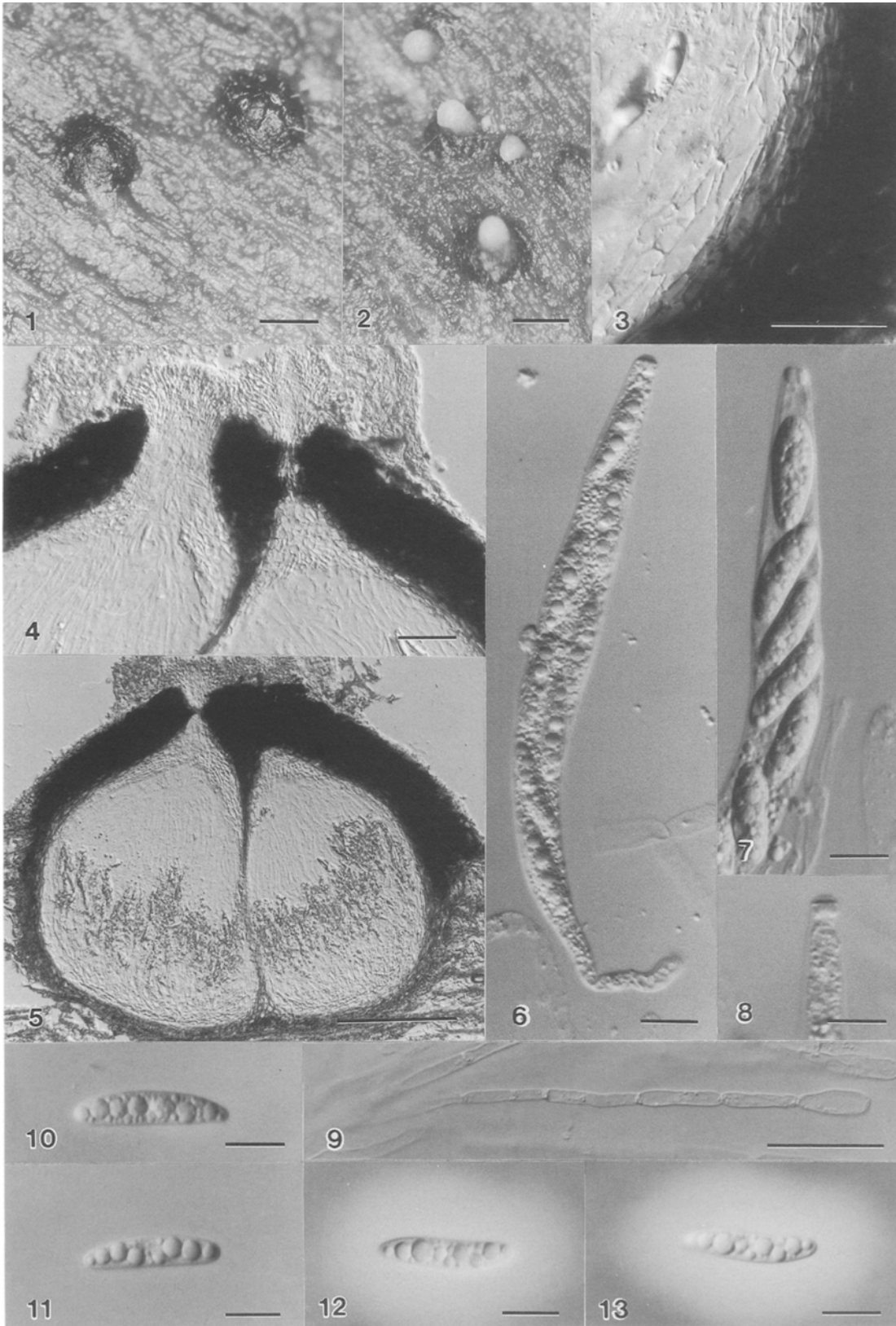
Mode of life: Saprobic on submerged wood in a river.

Known distribution: Hong Kong.

Other material examined: Hong Kong. Lantau Island, Tung Chung River, on submerged wood, 28 July 1997, K. M. Tsui, KM202 (HKU(M) 5533); *ibid.*, KM202 (HKU(M) 5543); New Territories, Tsuen Wan, Shing Mun Reservoir, on submerged wood, 14 Jan. 1998, K. M. Tsui, KM202 (HKU(M) 8173).

Discussion

The genus *Clohiesia* was introduced by Hyde (1995) to include a single species *C. corticola* from wood submerged in a stream in North Queensland. The genus is characterised by having ascumata immersed beneath a clypeus, unitunicate asci which are cylindric-clavate with a relatively massive apical apparatus, and ascospores



Figs. 1–13. Interference light micrographs of *Clohiesia lignicola* (from holotype).

1, 2. Appearance of ascomata on wood surface. 3. Section through peridium illustrating wall layers. 4. Sections through necks illustrating periphyses. 5. Section through ascoma showing the clypeus. 6–8. Asci. Note the relatively massive refractive apical apparatus. 9. Paraphyses showing the swollen apical cell. 10–13. Ascospores with mucilaginous sheath (stained in Indian ink in 12, 13). Scale bars: 1=400 μm ; 2=350 μm ; 3=20 μm ; 4=40 μm ; 5=120 μm ; 6–8=8 μm ; 9=30 μm ; 10–13=10 μm .

Table 1. A comparison of characters in *Clohiesia corticola* and *C. lignicola*.

	<i>C. corticola</i> (from Hyde, 1995)	<i>C. lignicola</i>
Ascomata	ca. 200 μm in diam, immersed, light brown, clypeate	440–500 μm in diam, 400–440 μm high, superficial to partly immersed, uniloculate to biloculate, black, clypeate
Peridium	12–20 μm wide, thin, made up of 3–4 layers of light brown oblong cells	20–30 μm wide, two layers: cells of inner layer hyaline, elongate; cells of outer layer dark-brown <i>textura angularis</i>
Asci	125 \times 7.5 μm , cylindric-clavate, tapering towards the apex, with a refractive apical apparatus	120–140 \times 8–12 μm , cylindric-clavate, with a refractive apical apparatus
Ascospores	18.5–26.5 \times 3.7–5 μm , hyaline, 2–3-seriate, curved fusiform, 1-celled, surrounded by a mucilaginous sheath	14–28 \times 4.5–6 μm , hyaline, overlapping uniseriate, fusoid-ellipsoidal, 1-celled, surrounded by a mucilaginous sheath

which are hyaline, 1-celled and surrounded by a mucilaginous sheath.

Clohiesia lignicola is similar to *C. corticola*. It has ascomata immersed under a clypeus, cylindric-clavate asci, and hyaline, aseptate ascospores. It differs from *C. corticola* in having wider asci and ascospores, which also differ in the fusoid-ellipsoidal shape of the ascospores. The overlapping uniseriate arrangement of the ascospores in the *C. lignicola*, as compared to curved fusiform and biseriate ones in the *C. corticola* also differs. The black ascomata in *C. lignicola* are also distinctly larger than the light brown ascomata in *C. corticola*. The peridium in *C. lignicola* is also wider and has a different wall structure. A comparison of the synoptic characters in these species are given in Table 1.

The ascospores of *C. lignicola* are also similar to those found in *Annulatascus velatisporus* K. D. Hyde (Hyde, 1992), in which they are also hyaline, unicellular and surrounded by a thin mucilaginous sheath. The main differences between *C. lignicola* and *A. velatisporus* are that the ascospores in *A. velatisporus* are consistently larger (26–42 \times 9–12 μm) and more ellipsoid in shape comparatively. The asci of *A. velatisporus* are long cylindrical, while in *C. lignicola* they are cylindric-clavate. In *Clohiesia* the ascomata are immersed under a clypeus and lack a long neck, while in species of *Annulatascus*, a clypeus is lacking and the ascomata always have a neck.

A new family, the Annulatascaceae, has been proposed for the placement of *Annulatascus* and related genera (Wong et al., 1998), which was previously placed in the Lasiosphaeriaceae. The possession of a massive, bipartite apical apparatus is one of the important characters in defining this family. Although the differentiation of the apical ring in *C. lignicola* needs to be resolved at electron microscopic level, the placement of *Clohiesia* in the Annulatascaceae seems appropriate.

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