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A new species of *Skeletocutis* (*Polyporaceae*) on bamboo in tropical China

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Abstract — *Skeletocutis bambusicola* sp. nov. is described and illustrated from the tropical region of Yunnan, southern China. The species is characterized by the annual, resupinate cream-colored basidiocarps, small pores, a dimitic hyphal system, small ellipsoid basidiospores, and habit on dead bamboo. The combination of characters distinguishes *S. bambusicola* from other known species of *Skeletocutis*.

Key words — *Polyporales*, polypore, taxonomy

Introduction

Encrustation of hyphae at the dissepiment edges of polypores is a special and steady morphological character in taxonomy. Species with encrusted hyphae have been referred to three genera: *Tyromyces* P. Karst., *Piloporia* Niemelä, and *Skeletocutis* Kotl. & Pouzar (Niemelä 1998). Niemelä (1998) differentiated *Skeletocutis* from the other two genera by its strong tendency to form effused basidiocarps with a homogeneous to duplex context and hyaline hyphae.

Niemelä (1998) reviewed the collections of resupinate *Skeletocutis* species from East Finland and North Sweden, while Dai (1998) provided a key to all accepted *Skeletocutis* species from China. More recently, Núñez & Ryvarden (2001) delimit *Skeletocutis* based on its dimitic system and encrustation of the hyphae at dissepiment edges.

Phylogenetically, *Skeletocutis* is closely related to *Tyromyces* (Kim et al. 2001) and clusters within the *Polyporales* (Miettinen & Larsson 2011).

Two species, *Skeletocutis lenis* (P. Karst.) Niemelä and *S. vulgaris* (Fr.) Niemelä & Y.C. Dai, were transferred to a new genus, *Sidera* Miettinen & K.H. Larss. (*Hymenochaetales*) based on ITS (internal transcribed spacer) and LSU (large subunit) nuclear ribosomal DNA (nrDNA) sequence analyses (Miettinen & Larsson 2011). Although representing different orders, *Skeletocutis* and

Sidera share many morphological characters, including whitish resupinate basidiocarps (in many species) with small pores, allantoid basidiospores, and narrow skeletal hyphae (Miettinen & Larsson 2011). The main difference between the two genera is that *Skeletocutis* usually has hyphae encrusted by fine crystals on the tube mouths, whereas in *Sidera* the dissepiment edge hyphae are smooth or covered with a few faceted crystal clusters (Niemelä 1998, Miettinen & Larsson 2011). Therefore species with faceted, rather than fine, crystals at the dissepiment edges should be excluded from *Skeletocutis*. Moreover, molecular data do not support the concept of *Skeletocutis* as restricted to dimitic hyphal structure but one that includes species with a monomitic hyphal system (Miettinen & Larsson 2011).

Extensive studies on Chinese wood-decaying fungi have recorded 704 polypores and 505 corticioid or hydnoid fungi for China (Dai 2011, 2012a), among which many new taxa have been described from tropical China (Cui & Dai 2008, Cui et al. 2009, 2010, Yuan & Dai 2009, Dai & Cui 2011, Dai & Li 2010, Dai 2012b, Dai et al. 2009, 2010, 2011, Zhou & Jia 2010). Nonetheless, the diversity and richness of tropical wood-decaying fungi are still not well known. During a study on polypores from tropical Yunnan, an unknown species with finely encrusted hyphae growing on dead bamboo was identified. It is described and illustrated here as *Skeletocutis bambusicola* following the generic concepts of Niemelä (1998) and Núñez & Ryvarden (2001) according to its latest delimitation (Miettinen & Larsson 2011). This represents the 22nd *Skeletocutis* species recorded in China (Dai 2012a).

Materials & methods

The studied specimens were deposited at the herbarium of the Institute of Applied Ecology, Chinese Academy of Sciences (IFP, Shenyang, China). The microscopic procedure follows Dai (2010). Sections were studied at magnifications up to ×1000 using a Nikon Eclipse 80i microscope with phase contrast illumination. The spore size variation excludes 5% of measurements (given in parentheses) from each end of the range. Abbreviations used are: IKI = Melzer's reagent, IKI– = negative in Melzer's, KOH = 5% potassium hydroxide, CB = Cotton Blue, CB– = acyanophilous, L = mean spore length (average of all spores), W = mean spore width (average of all spores), Q = variation in L/W ratios among all specimens studied, and n = number of spores measured from given number of specimens. Drawings were made with the aid of a drawing tube. Special color terms follow Petersen (1996).

Taxonomy

Skeletocutis bambusicola L.W. Zhou & W.M. Qin, **sp. nov.** Fig. 1

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Differs from *Skeletocutis alutacea, S. borealis, S. krawtzewii,* and *S. percandida* by its habit on dead bamboo.

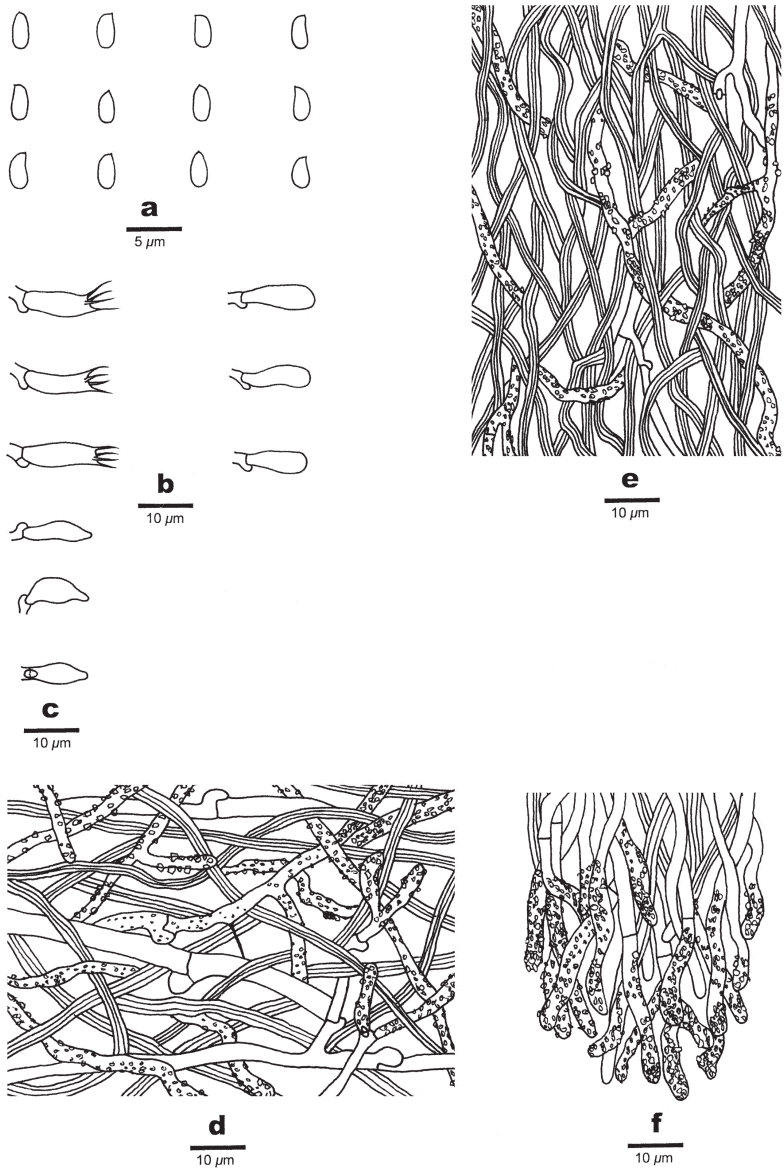

Figure 1. *Skeletocutis bambusicola* (holotype).
a: Spores. b: Basidia and basidioles. c: Cystidioles. d: Hyphae from subiculum.
e: Hyphae from trama. f: Hyphae at dissepiment edges.

Type: China, Yunnan Province, Xishuangbanna, Menglun County, on dead bamboo, 12.IX.2007, Yuan 3493 (**Holotype** IFP 015814).

Etymology: *bambusicola* (Lat.): refers to growth on bamboo.

Fruitbody Basidiocarps annual, resupinate, soft when fresh, becoming corky upon drying, ≤ 13 cm long, 3.5 cm wide, 1 mm thick at center. Pore surface cream when fresh, buff when dry, more or less glancing; pores round to angular, 8–11 per mm; dissepiments thin, entire to slightly lacerate. Subiculum cream and soft corky when dry, ≤ 0.2 mm thick; tubes buff-yellow, paler than pore surface, ≤ 0.8 mm long.

Hyphal structure Hyphal system dimitic; generative hyphae mostly bearing clamp connections, some at dissepiment edges with simple septa; all hyphae IKI–, CB–, unchanged in KOH.

Subiculum Hyphal structure interwoven. Generative hyphae infrequent, hyaline, thin-walled, encrusted by fine crystals, occasionally branched, winding, 1–4 μm diam; skeletal hyphae dominant, hyaline, thick-walled to distinct thick-walled with a narrow lumen, unbranched, strongly winding, occasionally bearing clamp connections, 1.5–3 μm diam.

Tubes Hyphal structure interwoven. Generative hyphae infrequent, hyaline, thin-walled, encrusted by fine crystals, occasionally branched, 1.5–3 μm in diam; skeletal hyphae dominant, hyaline, slightly thick-walled, occasionally branched, strongly winding, occasionally bearing clamp connections, 2–3 μm diam. Dissepiment edge with both generative and skeletal hyphae; generative hyphae mostly covered by fine, sharp-pointed encrustations. Hyphal pegs occasionally present. Cystidia absent, fusoid cystidioles present in the hymenium, hyaline, thin-walled, 10–17 × 3–5 μm. Basidia clavate, with four sterigmata and a basal with clamp connections, 12–20 × 4–5 μm; basidioles in shape similar to basidia, but slightly smaller.

Basidiospores Ellipsoid, hyaline, thin-walled, smooth, IKI–, CB–, (2.6–) 2.7–3.1(–3.2) × 1.5–1.9(–2.0) μm, L = 2.92 μm, W = 1.74 μm, Q = 1.66–1.70 (n = 60/2).

Type of rot White rot.

Additional specimen examined: **China**, **Yunnan Province**, Xishuangbanna, Menglun County, on dead bamboo, 12.IX.2007, Yuan 3500 (IFP 015815).

Remarks — *Skeletocutis bambusicola*, collected in tropical China, produces annual resupinate cream basidiocarps, finely encrusted hyphae not restricted to the dissepiment edges, and small pores and basidiospores. This combination of characters is typical for *Skeletocutis*.

The new species belongs to the thick-spored *Skeletocutis* group, which includes five other species — *S. alutacea* (J. Lowe) Jean Keller, *S. borealis* Niemelä, *S. krawtzewii* (Pilát) Kotl. & Pouzar, *S. percandida* (Malençon & Bertault) Jean Keller, and *S. perennis* Ryvarden (Niemelä 1998). *Skeletocutis*

Table 1. Comparison of six thick-spored *Skeletocutis* species based on Niemelä (1998) and specimens examined in the present study.

Species	Basidiocarp	Pores/mm	Dissepiment edge	Basidiospores [L × W]
S. alutacea	Annual, rhizomorphic	9–10	Dimitic	3.3 ×1.7 µm Q = 1.7–2.0
S. bambusicola	Annual, non-rhizomorphic	8–11	Dimitic	2.5 × 1.6 µm Q = 1.7
S. borealis	Perennial, non-rhizomorphic	(5–)6–7(–8)	Monomitic	4.0 × 1.5 µm Q = 2.5–2.8
S. krawtzewii	Annual, non-rhizomorphic	5–6	Monomitic	3.8 × 1.9 µm Q = 2.0
S. percandida	Annual, rhizomorphic	5–6	Dimitic	6.7 × 2.7 µm Q = 2.5–2.6
S. perennis	Perennial, non-rhizomorphic	(4–)5–6	Dimitic	3.1 × 1.8 µm Q = 1.7

borealis and *S. percandida* are distinguished from the new species by their cylindrical basidiospores (Niemelä 1998). The other three similar species also have ellipsoid basidiospores, *S. alutacea* is distinguished by its longer basidiospores (L = 2.9–3.8 µm, Niemelä 1998) and rhizomorphic basidiocarps while *S. krawtzewii* and *S. perennis* differ in larger basidiospores (3.4–4.1 × 1.7–2 in *S. krawtzewii;* 2.9–3.6 × 1.8–2.1 in *S. perennis*) and larger pores (5–6 per mm; Niemelä 1998). In addition, *S. krawtzewii* has monomitic hyphae at dissepiment edge and thin-walled skeletal hyphae (Niemelä 1998) and *S. perennis* has perennial basidiocarps with subparallel hyphae in the subiculum (Niemelä 1998). The main morphological differences among the six species are compared in Table 1.

Niemelä (1998) proposed that, "Ecological characteristics are important when identifying the species of *Skeletocutis*." *Skeletocutis bambusicola* was found on dead bamboo, which might be the most important evidence that separates it from other species of *Skeletocutis*.

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