Wood-inhabiting fungi in southern China. 4. Polypores from Hainan Province

Yu-Cheng Dai¹*, Bao-Kai Cui², Hai-Sheng Yuan¹, Shuang-Hui He², Yu-Lian Wei¹, Wen-Min Qin¹, Li-Wei Zhou¹,³ & Hai-Jiao Li²

¹) Institute of Applied Ecology, Chinese Academy of Sciences, Shenyang 110016, China
*corresponding author’s e-mail: yuchengd@yahoo.com
²) Institute of Microbiology, P.O. Box 61, Beijing Forestry University, Beijing 100083, China
³) Graduate University of the Chinese Academy of Sciences, Beijing 100049, China

Received 12 Feb. 2010, revised version received 13 Apr. 2010, accepted 13 Apr. 2010


Extensive surveys on wood-rotting fungi were recently carried out in Hainan Province, southern China. Around 2500 specimens of poroid wood-inhabiting fungi were collected during ten field trips, and 235 polypores were identified. Four species, Grammothelopsis asiatica Y.C. Dai & B.K. Cui, Inonotus latemarginatus Y.C. Dai, Peren- niporia hattorii Y.C. Dai & B.K. Cui and Wrightoporia austrosinensis Y.C. Dai, are described and illustrated as new. Of the 235 species, 99 were found from the province for the first time.

Introduction

Hainan Province, located between 18°10′–20°10′N and 108°37′–111°05′E, is an island in southern China. It has both lowland area in the northeast and mountainous terrain in the central and southwestern regions, and the highest altitude is 1867 m a.s.l. in the central area. The annual mean temperature is 19.7 °C, and the annual precipitation is 2650 mm. Most parts of the island have a subtropical to tropical vegetation. The plant flora is well known, and 3324 seed plants, belonging to 1237 genera and 206 families, are reported (Wu 1994). However, the fungal flora is poorly known; 305 agarics were recorded previously from the province (Bi et al. 1997), and 136 polypores were found mostly during more or less recent inventories (Zhao 1989, Zhao & Zhang 1992, Dai et al. 2004, 2009a, 2009b, Yuan & Dai 2008, Xiong & Dai 2008, Yu & Dai 2009, Zhou et al. 2009, Cui et al. 2010, 2011a, 2011b, Dai 2010). Considering the abundance of woody species in the study area, the polypore flora is far from completely known.

Several mycological investigations dealing with many new species from Hainan were published recently (Zhang et al. 2008a, 2008b, 2009, Ma et al. 2008a, 2008b). The present paper belongs to a series of studies devoted to the fungal diversity of the Hainan Province. By support from the National Natural Science Foundation of China and the Ministry Science and Technology of China, ten field investigations on wood-decaying fungi were made in the Hainan Province during 2002–2009, and around 2500 specimens of poroid wood-inhabiting fungi
were collected from 25 localities (Fig. 1). 235 polypores were identified after laboratory analysis, including four new species, and the present paper is a summary of these inventories.

Material and methods

The present study is based mostly on materials collected by the authors, and the studied specimens are deposited in the herbaria of the Beijing Forestry University (BJFC) and the Institute of Applied Ecology of the Chinese Academy of Sciences (IFP). A few specimens previously collected from the province and deposited in the herbarium of the Institute of Microbiology, the Chinese Academy of Sciences (HMAS), were also studied. All the materials were examined under the microscope Nikon 80i. The drawings were made with the aid of a drawing tube. Microscopic features, measurements, and drawings were made from slide preparations stained with Cotton Blue and Melzer’s reagent. Spores were measured from sections cut from the tubes; in presenting spore size data 5% of the measurements were excluded from each end of the range, and these are shown in parentheses. The abbreviations include IKI (Melzer’s reagent, with IKI– = inamyloid), KOH (5% potassium hydroxide), and CB (Cotton Blue; CB+ = cyanophilous; CB(+) = weakly cyanophilous; CB– = acyanophilous). Additional abbreviations include \( L \) (mean spore length; arithmetic average of all spores), \( W \) (mean spore width; arithmetic average of all spores), \( Q \) (variation in the \( L/W \) ratios between the specimens studied), and \( n \) (number of spores measured from a given number of specimens). The special color terms follow Petersen (1996).

New taxa

**Grammothelopsis asiatica** Y.C. Dai & B.K. Cui, sp. nova (Fig. 2)

MycoBank no.: MB 518961.

*Carpophorum, resupinatum. Facies pororum cremea; pori angulati vel rotundi, 3–4 per mm. Systema hypharum dimiticum, hyphae generatioriae fibulatae, hyphae skeletales IKI–, hyphae skeletales subiculi 2–4.5 \( \mu m \) in diam. Sporae ellipsoideae, IKI–, CB– vel CB(+), 10.5–13 × 5.4–6 \( \mu m \).*

**Type**: China. Yunnan Province, Mengla County, Xishuangbanna Botanical Garden, on fallen bamboo, 31.X.2009 Cui 8336 (holotype BJFC; isotype IFP).

**Etymology**: *asiatica* (Lat.), referring to Asia.

**Fructbody.** Basidiocarps annual, resupinate, adnate, corky, without odour or taste when fresh, becoming corky upon drying, up to 9 cm long, 1 cm wide, and 0.6 mm thick at centre. Sterile margin narrow, cream, less than 1 mm wide. Pore surface cream; pores round to angular, 3–4 per mm; dissepiments thin, entire to slightly lacerate. Subiculum very thin, cream, corky, azonate, less than 0.1 mm thick. Tubes concolorous with the pore surface, corky, less than 0.5 mm long.

**Hyphal structure.** Hyphal system dimitic; generative hyphae with clamp connections; skeletal hyphae IKI–, CB– to CB(+), tissue unchanged in KOH.

**Subiculum.** Generative hyphae infrequent, hyaline, thin-walled, rarely branched, 1.6–3.2 \( \mu m \) in diam; skeletal hyphae dominant, hyaline, thick-walled with a narrow lumen, unbranched, interwoven, 2–4.5 \( \mu m \) in diam.

**Tubes.** Generative hyphae infrequent, hyaline, thin-walled, rarely branched, 1.4–3 \( \mu m \) in diam; skeletal hyphae dominant, hyaline, thick-
walled with a narrow lumen to subsolid, rarely branched, interwoven, 1.8–4.2 µm in diam. Cystidia absent, cystidioles present, fusoid to subulate, 18–25×6–9 µm; basidia clavate, with four sterigmata and a basal clamp connection at the base, 22–34×6–10 µm; basidioles in shape similar to basidia, but distinctly smaller.

**Spores.** Basidiospores ellipsoid to oblong ellipsoid, hyaline, thick-walled, smooth, IKI–, CB(+), (9–)10.5–13(–15)×(5–)5.4–6(–6.7) µm, L = 12.14 µm, W = 5.72 µm, Q = 2.1–2.2 (n = 60/2).

**Additional specimens examined (paratypes).** China.

A total of five species in *Grammothelopsis* have been reported, four of them, *G. bambusicola*, *G. incrustata*, *G. neotropica* and *G. puiggarii*, were found in Central and South America (David & Rajchenberg 1985, Rajchenberg & Wright 1987, Ryvarden & de Meijer 2002, Robledo & Ryvarden 2007), and *G. macrospora* was recorded in tropical Africa (Ryvarden & Johansen 1980). *Grammothelopsis asiatica* represents the first record of the genus in Asia.

*Grammothelopsis asiatica* is similar to *G. bambusicola*, which also was found on bamboo (Ryvarden & de Meijer 2002). The type material of *G. bambusicola* was studied, its skeletal hyphae and spores are strongly dextrinoid, and it has dendrohyphidia at dissepiment edge. In addition, its basidiospores are broadly ellipsoid, strongly cyanophilous, (11–)11–13.5(–15) × (7–)7.8–9(–10) µm, \(L = 12.56 \mu m\), \(W = 8.32 \mu m\), \(Q = 1.51\ (n = 30/1)\). In contrast, *G. asiatica* has indextrinoid skeletal and spores, dendrohyphidia are absent at dissepiment edges, and the spores are ellipsoid to oblong ellipsoid, weakly cyanophilous.

*Grammothelopsis incrustata* and *G. neotropica* have indextrinoid basidiospores, but both have distinctly larger basidiospores (16–22 × 6–8 µm and 18–20 × 7–8 µm, Robledo & Ryvarden 2007). *Grammothelopsis macrospora* differs from *G. asiatica* by having large pores (1–2 per mm), abundant dendrohyphidia, broadly ellipsoid and strongly dextrinoid basidiospores (15–20 × 7.5–11 µm; Robledo & Ryvarden 2007). *Grammothelopsis puiggarii* is distinguished from *G. asiatica* by larger pores (1–2 per mm), broadly ellipsoid and strongly dextrinoid basidiospores (17–20 × 10–12 µm; Robledo & Ryvarden 2007).

**Other specimen studied.** *Grammothelopsis bambusicola.*

**Brazil.** Parana State, Colombo, on rotten bamboo (O 70521).

**Inonotus latemarginatus** Y.C. Dai, sp. nova (Fig. 3)

MycoBank no.: MB 518962.

*Carpophorum annuum, applanatum, solitarius. Facies pororum electrinum vel luteolum; pori rotundi, 4–6 per mm. Systema hypharum monomiticum, hyphae septatae sine fibulis, hyphae contextae 4–8 µm in diam. Hyphae setideae crassuncticateae, acutae, 8–15 µm in diam. Sporae subglobosae, IKI–, CB(+), 7.1–8.7 × 6.2–7.8 µm.

**Type:** China. Hainan Province, Baoting County, Qixianling National Park, on rotten angiosperm wood, 28.V.2008 Dai 9758 (IFP).

**Etymology:** *latemarginatus* (Lat.), referring to the wide sterile margin.

**Frutibody.** Basidiocarps annual, pileate, single, soft corky and without odour or taste when fresh, becoming corky to brittle and very light when dry. Pileus applanate, semicircular, projecting up to 8 cm long, 10 cm wide, and 1 cm thick at base; margin obtuse. Pileal surface matted-tomentose to velutinate, indistinctly concentrically zonate, fuscous to brick from base toward to margin when fresh, becoming fuscous and shrunken when dry; margin curry-yellow when fresh, becoming date-brown when dry. Pore surface curry-yellow to buff-yellowish from base towards margin when fresh, becoming snuff-brown when bruised, cinnamon-buff when dry, sterile margin distinct, up to 5 mm wide; pores round, 4–6 per mm; dissepiments thin, matted, slightly lacerate. Context soft and spongy when fresh, becoming fibrous, shrunken and yellowish brown when dry, up to 5 mm thick, upper layer with a distinct fuscous crust; tube layer concolorous to context, tubes hard corky to brittle, up to 5 mm long.

**Hypal structure.** Hyphal system monomitic; all septa without clamp connections, IKI–, CB–; tissue darkening but otherwise unchanged in KOH.

**Context.** Generative hyphae hyaline to yellowish brown, thin- to slightly thick-walled with a wide lumen, more or less straight, occasionally branched, 4–8 µm in diam, hyphae at upper crust reddish brown, thick-walled, strongly agglutinated, 4–6 µm in diam. Hyphoid setae absent.

**Tubes.** Generative hyphae hyaline to yellowish, thin- to fairly thick-walled with a wide lumen, straight, rarely branched, more or less subparallel along the tubes, 3–5 µm in diam.
Hyphoid setae occasionally present, conspicuous, thick-walled with a wide to narrow lumen, nonseptate, tapering to a point, more or less parallel along the tubes, up to 200 um long, 8–15 µm in diam in widest part (n = 10/1). Hymenial setae very rarely present, ventricose to hooked, 16–18 × 6–9 µm. Cystidia and cystidioles absent; basidia barrel-shaped, 10–12 × 7–9 µm, and basidioles similar to basidia.

Spores. Basidiospores subglobose, pale yellowish, fairly thick-walled, smooth, IKI–, CB(+), (7–)7.1– 8.7(–9.3) × (5.9–)6.2–7.8(–8.8) µm, L = 7.85 µm, W = 7.05 µm, Q = 1.11 (n = 32/1).

*Inonotus latemarginatus* is similar to *I. quercustris*, which was originally described from Louisiana (Blackwell & Gilbertson 1985), and later found in Argentina (Urcelay & Rajchenberg 1999). However, *I. quercustris* differs from *I. latemarginatus* by ungulate basidiocarps (20 × 16 × 10 cm), larger pores (3–5 per mm in USA, 2 per mm in Argentina), abundant hyphoid setae in trama, distinctly longer basidia (18–23 ×
9–11 µm), and especially ellipsoid basidiospores (9–10 × 6–8 µm in USA, 8–10 × 6–7 µm in Argentina).

*Inonotus hemmesii, I. ochroporus* and *I. rodwayi* are pileate species with broadly ellipsoid to subglobose basidiospores and presence of hyphoid setae in tube trama, so they may be confused with *I. latemarginatus*. However, *I. hemmesii* has ungulate basidiocarps (30 × 20 × 15 cm), its hyphoid setae are narrower (7–10 µm wide), and its basidiospores are ellipsoid to ovoid (7–9 × 5.5–7 µm; Gilbertson & Ryvarden 2002). *Inonotus ochroporus* has ungulate basidiocarps (40 × 30 × 30 cm) with duplex context, and its basidiospores are smaller (5.8–7 × 4.9–6.2 µm; Cui et al. 2007). *Inonotus rodwayi* has larger pores (2–4 per mm), its basidiospores are ellipsoid and narrower (7–8.5 × 5.2–6.5 µm; Dai & Wu 2002), and its hyphoid setae project into tubes.

**Perenniporia hattorii** Y.C. Dai & B.K. Cui, *sp. nova* (Fig. 4)

MycoBank no.: MB 518963.

*Carpophorum annuum, resupinatum vel effuso-reflexum. Facies pororum cremea vel buffalina; pori rotundi vel angulati, 3–5 per mm. Systema hypharum dimiticum, hyphae generatoriae fibulatae, hyphae skeletales subiculi 2.5–4.8 µm in diam. Sporae hyalinae, ellipsoideae vel truncatae, amyloideae, CB+, 9.8–12.7 × 5.8–7.2 µm.**

**Type**: China. Hainan Province, Ledong County, Jianfengling Nature Reserve, on fallen angiosperm branch, 3.IX.2008 Dai 10285 (holotype BJFC; isotype IFP).

**Etymology**: *Hattorii* (Lat.), in honor of the Japanese mycologist Dr. Tsutomu Hattori.

**Fruiting Body**. Basidiocarps annual, resupinate to effused-reflexed, adnate, soft corky to corky, without odour or taste when fresh, becoming corky to fragile upon drying, up to 15 cm long, 4 cm wide, and 1.2 mm thick at centre. Sterile margin cream to cream buff, up to 1 mm wide. Pore surface cream to buff when fresh, becoming cinnamon-buff when bruised, pale yellowish brown upon drying; pores round to angular, 3–5 per mm; dissepiments thin, entire. Subiculum thin, cream to buff, corky, azonate, up to 0.2 mm thick. Tubes concolorous with the pore surface, corky to fragile, up to 1 mm long.

**Hyphal Structure**. Hyphal system dimitic; generative hyphae with clamp connections; skeletal hyphae weakly amyloid, CB+, tissue unchanged in KOH.

**Subiculum**. Generative hyphae infrequent, hyaline, thin-walled, rarely branched, 1.5–3.4 µm in diam; skeletal hyphae dominant, hyaline, thick-walled with a narrow lumen to subsolid, occasionally branched, interwoven, 2.5–4.8 µm in diam.

**Tubes**. Generative hyphae infrequent, hyaline, thin-walled, rarely branched, 1.4–3.2 µm in diam; skeletal hyphae dominant, hyaline, thick-walled with a narrow lumen to subsolid, occasionally branched, interwoven, 2.2–4.5 µm in diam. Cystidia absent; fusid cystidioles present, 18–25 × 6–9 µm; basidia barrel-shaped, with four stigmata and a basal clamp connection at the base, 20–32 × 10–15 µm; basidioles pyriform, distinctly smaller than basidia.

**Spores**. Basidiospores ellipsoid, truncate, hyaline, thick-walled, smooth, weakly amyloid, CB+, (9–)9.8–12.7(–14) × (4.5–)5.8–7.2(–8) µm, L = 11.3 µm, W = 6.48 µm, Q = 1.74–1.75 (n = 90/3).


*Perenniporia hattorii* is characterized by an annual growth habit, amyloid and cyanophilous skeletal hyphae, ellipsoid, truncate and amyloid basidiospores. *Perenniporia narymica* is a common species in the northern hemisphere (Gilbertson & Ryvarden 1987, Ryvarden & Gilbertson 1994, Núñez & Ryvarden 2001). It also has an annual growth habit, cream to pale yellowish pores, amyloid skeletal hyphae, so it may be confused with *P. hattorii*. However, *P. narymica* has acyanophilous skeletal hyphae, smaller and non truncate, inamyloid basidiospores (4.3–5.5 × 3–3.6 µm; Dai et al. 2002), and the hyphae dissolve in KOH.

*Perenniporia amyloextrinoidea* resembles *P. hattorii* by the resupinate basidiocarps, cream to buff pore surface with pores 3–5 per mm. amyloid skeletal hyphae. However, its basid-
Basidiospores are dextrinoid and distinctly smaller (4.5–5.5 × 3–3.5 µm; Gilbertson & Ryvarden 1987).

**Wrightoporia austrosinensis** Y.C. Dai, sp. nova (Fig. 5)

MycoBank no.: MB 518964.

*Carpophorum, resupinatum, contextum cremeum. Facies pororum alba vel cremea; pori angulati vel rotundi, 1–3 per mm. Systema hypharum dimiticum, hyphae generatoriae fibulatae, hyphae skeletailes non dextrinoideae, hyphae skeletailes subiculi 1.7–2 µm in diam. Cystidia hymenii abundantia. Sporae ellipsoideae, hyalinae, asperae, amyloideae, 3–3.2 × 2–2.4 µm.*


**Etymology**: *austrosinensis* (Lat.), referring to southern China.
FRUITBODY. Basidiocarps annual, resupinate, soft and cottony when fresh, very difficult to separate from substrate, without odour or taste, cottony when dry, up to 30 cm long, 10 cm wide, 2 mm thick at centre. Pore surface white to cream when fresh, becoming cream to pale brownish upon drying; sterile margin distinct, white, cottony, up to 4 mm wide; pores round to angular, 1–3 per mm, dissepiments thin, entire to slightly lacerate. Context white, very thin. Tubes cream, cottony, up to 2 mm long.

HYPHAL STRUCTURE. Hyphal system dimitic; generative hyphae with clamp connections; skeletal hyphae IKI–, CB–, tissue unchanged in KOH.

CONTEXT. Generative hyphae hyaline, thin-walled, frequently branched, 1.9–2 µm in diam; skeletal hyphae dominant, hyaline, thick-walled with a narrow lumen to subsolid, rarely branched, interwoven, 1.7–2 µm in diam.

TUBES. Generative hyphae frequent, hyaline, thin-walled, rarely branched, 1.8–2.6 µm in diam; skeletal hyphae dominant, hyaline, thick-walled with a narrow lumen to subsolid, rarely branched, flexuous, loosely interwoven, 1.8–2.1 µm in diam. Cystidia clavate to tubular, thin-to slightly thick-walled, originated from trama, embedded or projecting into hymenium, 35–90 × 4–11 µm; gloeocystidia clavate, thin-walled, 17–27 × 5–8 µm; basidia subclavate, with a

Fig. 5. Microscopic structures of *Wrightoporia austrosinensis* (drawn from the holotype). — a: Basidiospores. — b: Cystidia and gloeocystidia. — c: Basidia and basidioles. — d: Hyphae from trama. — e: Hyphae from context.
basal clamp connection and four sterigmata, 8.5–10 × 2.9–3.5 µm; basidioles in shape similar to basidia, but slightly smaller.

**Spores.** Basidiospores ellipsoid, hyaline, thin-walled, echinulate, amyloid, CB−, (2.9–)3–3.2×(–3.7) × 2–2.4(–2.5) µm, L = 3.11 µm, W = 2.2 µm, Q = 1.41 (n = 35/1).

Wrightoporia subrutilans and W. austrosinensis have similar basidiospores, but the former has smaller pores (4–5 per mm), strongly dextrinoid skeletals, and lack of cystidia (Gilbertson & Ryvarden 1987). In the macro-morphology, W. austrosinensis resembles W. lenta because of the white and tough basidiocarps. However, W. lenta has distinctly larger basidiospores (5.3–7 × 4.8–5.8 µm, measured from Dai 1506) and strongly dextrinoid skeletals.

Wrightoporia straminea and W. tropicalis both have thick-walled cystidia. The former species is distinguished from W. austrosinensis by resupinate to effused-reflexed basidiocarps with greyish orange pore surface, smaller pores (6–8 per mm), and lack of gloeocystidia (Hattori 2008). Wrightoporia tropicalis differs from W. austrosinensis by perennial and woody hard basidiocarps, smaller pores (6–8 per mm), and dextrinoid skeletals (Cui & Dai 2006).

**Checklist**

In the following an alphabetical list (according to genera) of the polypores is given, and the authors of the scientific names are according to the Authors of Fungal Names (http://www.indexfungorum.org/AuthorsOfFungalNames.htm). Substrates are omitted because most species were collected on unnamed angiosperm wood. The concept of polypores circumscribed here is in a wide sense, including poroid wood-decaying fungi in Basidiomycota.

Abortiporus biennis (Bull.) Singer, Dai 10026.
Abundisporus roseoalbus (Jungh.) Ryvarden, Dai 9334, 9534, 9624, 10834.
Amauroderma elmerianum Murrill, Dai 4345.
Amauroderma perplexum Corner, Dai 10811.
Amauroderma preussii (Henn.) Steyaert, Dai 9552, 9553, 9554, 9557, 9566, 9571.
Amauroderma rude (Berk.) Torrend, Dai 7896.
Amauroderma rugosum (Blume & T. Nees) Torrend, Cui 5275, 6185, Dai 7862, 7872, 7972.
Amauroderma subresinosum (Murrill) Corner, Cui 6189, Dai 7801, 9522, 10307.
Amylosporus campbellii (Berk.) Ryvarden, Dai 7802, 7803.
Antrodia sordida Ryvarden & Gilb., Dai 10827, 10830.
Antrodia duracina (Pat.) J. Lindblad & Ryvarden, Cui 5158, 6391, Dai 9693.
Antrodia liebmannii (Fr.) Ryvarden, Cui 5166, Dai 9270A, 9821.
Antrodia zonata (Berk.) Ryvarden, Dai 4360, 4481, 7821, 9939.
Auricularia indica (Massee) D.A. Reid, Cui 6473.
Bjerkandera adusta (Willd.) P. Karst., Cui 5198, 5376, Dai 10328.
Bondarzewia podocarpi Y.C. Dai & B.K. Cui, Dai 9261, 10660, 10662, 10669.
Cerioporia crassitunicata Y.C. Dai & Sheng H. Wu, Cui 5243.
Cerioporia mellita (Bourdot) Bondartsev & Singer, Dai 9667.
Cerioporia reticulata (Hoffm.) Dománski, Dai 9453.
Cerioporia spissa (Schwein. ex Fr.) Rajchenb., Dai 2913, 6984, 7000, 7878.
Cerioporia viridans (Berk. & Broome) Donk, Cui 5230, 5231, Dai 9995, 10833.
Cerioporia mucida (Pers.) Gilb. & Ryvarden, Cui 5183.
Cerioporia resinascent (Romell) Dománski, Dai 6589, 6594, Dai 9264.
Cinereomycetes vulgaris (Fr) Spiri, Dai 4497, 7830, 7831, 9376, 9650, 9658, 9677, 9797, 9807, 9888, 9985.
Coltricia sideroides (Lév.) Teng, Dai 9238, 9239, 9240.
Coltriciella dependens (Berk. & M.A. Curtis) Murrill, Cui 6526, Dai 4440, 7938.
Coltriciella subglobosa Y.C. Dai, Wei 5020.
Coltriciella tasmanica (Cleland & Rodway) D.A. Reid, Dai 11589.
Coriolopsis aspera (Jungh.) Teng, Cui 6256, Dai 9333, 9448, 4972, 4996, 9515, 9516, 9541, 9575, 9669, 10737, 10786, 10789, 10799.
Coriolopsis byrsina (Mont.) Ryvarden, Dai 10788.
Coriolopsis caperata (Berk.) Murrill, Dai 9575, 9500.
Coriolopsis glabro-rigens (Lloyd) Núñez & Ryvarden, Dai 7894.
Coriolopsis polyzona (Pers.) Ryvarden, Cui 6231, Dai 7798, 9468, 9486, 9495, 9514, 9573, 10816.
Coriolopsis retrospecta (Lloyd) Teng, Dai 9870.
Coriolopsis sanguinaria (Klotzsch) Teng, Dai 4590, 7954, 9314, 9350, 9362, 9943, 9980, 9990, 10303.
Coriolopsis stramosa (Fr) Ryvarden, Dai 4582.
Coriolopsis telfarii (Klotzsch) Ryvarden, HMAS 30136.
Cyclomyces fuscus Fr., Dai 9975, 10016.
Cyclomyces setiporus (Berk.) Pat., Cui 6243, 6249, Dai 9252, 9255, 9865.
Cyclomyces tabacinus (Mont.) Pat., Dai 4365, 4455, 4460, 4480, 4509, 9837, 9845, 9958, 9963, 10309, 10317.
Daedalea incana (P. Karst.) Sacc. & D. Sacc., Cui 6422, Dai 9343.
Daedaleopsis purpurea (Cooke) Imazeki & Aoshima, Cui 6481, 6514, Dai 9872.
Datronia mollis (Sommerf.) Donk, Dai 10772.
Flavodon flavus
Flabellophora superposita
Ganoderma calidophilum
Hapalopilus flavus
Ganoderma tropicum
Cui 5445
(Nees) Pat.,
Funalia gallica
(Dictyopanus pusillus (Jungh.) Kuntze, Cui 5417, 5423, 5427,
Favolaschia pulvinea (Bres.) Henn., Dai 4491.
Fistulinula hepatica (Schaeff.) With., Dai 7814, 9703,
Flabelliphora superposita (Berk. & G. Cunn., Dai 10284.
Flavodon flavus (Klotzsch) Ryvarden, Cui 6188, 6195, 6281,
Dai 4575, 9452, 9547, 9551, 9621.
Fomitiporia banaensis Y.C. Dai, Dai 5300, Dai 7978, 9911.
Fomitiporia ellipsoidea B.K. Cui & Y.C. Dai, Dai 4019,
9251, 9278, 9293, 9667, 10311.
Fomitiporia pusilla (Lloyd) Y.C. Dai, Dai 5211.
Fomitiporia robusta (P. Karst.) Fiasson & Niemelä, Dai 10881.
Fomitiporia texana (Murril) Nuss, HMS 30866.
Fomitopsis carneae (Blume & T. Nees) Imazeki, HMS 7518.
Fomitopsis Jeei (Fr.) Kreisel, Dai 5178, Dai 7822, 7838,
9747, 9268, 9838.
Fomitopsis pinicola (Sw.) P. Karst., Dai 11583.
Fomitopsis rhodophaeae (Lév.) Imazeki, Dai 9306.
Fomitopsis spraguei (Berk. & M.A. Curtis) Gilb. & Ryvarden,
Dai 9260.
Funalia gallica (Fr.) Bondartsev & Singer, Dai 9718, 9720,
10356, 10741, 10814.
Ganoderma australe (Fr.) Pat., Cui 6245, Dai 4347, 9465,
9519, 9715, 10041.
Ganoderma boninense Pat., Dai 9564.
Ganoderma calidophilum J.D. Zhao et al., Cui 6393.
Ganoderma gibbosum (Nees) Pat., Dai 10795.
Ganoderma multispireum Ding Hou, Cui 5445, 5445, 6186.
Ganoderma nigriglocidum (Lloyd) D.A. Reid, Dai 10774.
Ganoderma shangsiense J.D. Zhao, Cui 6434, Dai 10326.
Ganoderma sinense J.D. Zhao et al., Dai 4559, 9271.
Ganoderma tropicum (Jungh.) Bres., Dai 4346, 4581, 4585,
7805, 9447, 9521, 9522, 9584, 10042.
Gloeophyllum imponens (Ces.) Teng, Dai 4383, 9593, 9862,
9988.
Gloeophyllum striatum (Swartz) Murrill, Dai 1191a.
Gloeophyllum trabeum (Pers.) Murrill, Cui 6234, Dai 4466,
9694.
Gloeoporus dichrous (Fr.) Bres., Dai 9276, 9512, 9652,
9657, 9685, 9916.
Gloeoporus thelephoroides (Hook.) G. Cunn., Dai 9266,
9482, 9622.
Grammolahe falgio (Berk. & Broome) Ryvarden, Cui 6655,
Dai 4419, 4520, 4600.
Grammolahe lineata Berk. & M.A. Curtis, Cui 6668, Dai
9646, 9716, 9723, 9670, 9716, 9723.
Grammophlelops asiatica Y.C. Dai & B.K. Cui, Dai 9881,
11588.
Haddowia longipes (Lév.) Steyaert, HMS 29743.
Hapalopilus alabamae (Berk. & Cooke) Y.C. Dai & Niemelä,
Dai 4363, 9324, 9746, 10778.
Haploporus papyraceus (Schwein.) Y.C. Dai & Niemelä,
Dai 9962.
Heterobasidion erucostosum Tokuda, T. Hatt. & Y.C. Dai, Dai
9358, 9731, 9804, 9840.
Hexagonia apiaria (Pers.) Fr., Cui 6447, 6467; Dai 9714,
9732 , 10364, 10784.
Hexagonia glabra (P. Beauv.) Ryvarden, Dai 10991.
Hexagonia tenuis (Hook) Fr., Cui 6200, 6248, 6258, Dai
4567, 7843, 7879, 9513, 9540, 9618, 9952, 10350,
10801.
Humphyrea coffeata (Berk.) Steyaert, HMS 37912.
Hyphodontia flavidora ( Cooke) Sheng H. Wu, Dai 4448,
4522, 4523, 4545, 4611, 7880, 7885, 7891, 7911, 9637,
9651, 10002, 10762.
Hyphodontia laitians (Bourdot & Galzin) Gims & M.N.L.
Lefebvre, Dai, 9499, 9499, 9662, 9667, 9668, 9469,
9665, 9569, 9661, 9662, 9663, 10743, 10749.
Hyphodontia taiwaniana Sheng H. Wu, Wu 0809-172.
Hyphodontia tropica Sheng H. Wu, Dai 7942, 9279, 9449,
9704, 9705, 9712, 9844, 9849, 10802.
Inonotus acutus B.K. Cui & Y.C. Dai, Dai 5400.
Inonotus chrysomarginatus B.K. Cui & Y.C. Dai, Dai 6689.
Inonotus hainanensis H.X. Xiong & Y.C. Dai, Dai 9259.
Inonotus latemarginatus Y.C. Dai, Dai 9758.
Inonotus patouillardii (Rick) Imazeki, Dai 4608.
Inonotus perchoccolus Corner, Dai 7939.
Inonotus rickii (Pat.) D.A. Reid, Dai 10359.
Irpea lacteae (Fr.) s. lato, Cui 6436, Dai 4504, 9684.
Irpea vellereus Berk. & Broome, Dai 7832, 9833.
Junghuhnia nitida (Pers.) Ryvarden, Cui 5443.
Junghuhnia pseudominuta H.S. Yuan & Y.C. Dai, Dai 9360,
Yuan 4105.
Laccocephalum hartmannii ( Cooke) Núñez & Ryvarden,
HMS 54101.
Laetiporus sulphureus (Bull.) Murrill, Cui 5442, 5448, 5488.
Lenzites acuta Berk., Dai 10358, 10832.
Lenzites vespacea (Pers.) Pat., Cui 5447, Dai 7916, 9839,
9874, 10287.
Leucophellinus hobsonii ( Cooke) Ryvarden, Dai 10733,
10790.
Lignosus hainanensis B.K. Cui & Y.C. Dai, Dai 10670.
Lignosus rhinocerotis ( Cooke) Ryvarden, HMS 30036.
Lindneria flava Parmasto, Dai 10800.
Lindneria trachyspora (Bourdot & Galzin) Pilát, Dai 7819.
Megasporoporia cystidiophora B.K. Cui & Y.C. Dai, Dai
9906.
Megasporoporia hexagonoides ( Speng.) J.E. Wright &
Rajchenb., Cui 5179, Dai 7834, 9281.
Megasporoporia major (G.Y. Zheng & Z.S. Bi) Y.C. Dai,
Cui 6592, Dai 9915, 9933, 10779.
Megasporoporia minuta Y.C. Dai & X.S. Zhou, Cui 6425,
10863.
Megasporoporia setulosa (Henn.) Rajchenb., Dai 4373,
9783, 9785.
Microporus affinis (Blume & Nees) Kuntze, Dai 4350, 4371,
7826, 7858, 9603, 9751, 9829.
Microporus vernicipes (Berk.) Kuntze, Dai 4374, 4410.
Microporus xanthopus (Fr.) Pat., Cui 5488, Dai 7833, 7897,
9283.
Nigrospomes melanoporus (Mont.) Murrill, Dai 4396, 4403,
Phellinus senex
Phellinus rimosus
Phellinus rhabarbarinus
B.K. Cui & Y.C. Dai,

Perenniporia
Perenniporia subacida

Oxyporus subulatus
Dai 9707

Oxyporus corticola
Oligoporus sericeomollis
(Maire) Pouzar, Dai 9263, 9325.

Perenniporia corticola (Corner) Decock, Dai 4592.

Perenniporia hattori (Y.C. Dai & B.K. Cui, Dai 10285, 10315, 10318.

Perenniporia latissima (Bres.) Ryvarden, Cui 6595, Dai 9255, 9368, 9926.

Perenniporia medulla-panis (Jacq.) Donk, Dai 9326, 9328, 9363, 9379, 10780, 10781.

Perenniporia narmyca (Pilát) Pouzar, Cui 5425, Dai 9267.

Perenniporia ochroleuca (Berk.) Ryvarden, Dai 9588, 9597.

Perenniporia subacida (Peck) Donk, Dai 7816.


Perenniporia tephojra (Mont.) Ryvarden, Cui 6283, 6290, Dai 4613, 4618, 7796, 7827, 9462, 9483, 9506, 9518, 9675, 9728, 9986, 10751, 10760.

Phaeolus schwarzi (Fr.) Pat., Cui 6566.

Phellinum lamaeae (Murrill) Y.C. Dai, Cui 4448, 4456, 7872, 9250, 9353, 9368, 9374.

Phellinum noxium (Corner) Bondartseva & S. Herrera, Cui 6308, Dai 9299, 9528, 9530, 10099, 10292.

Phellinus baumii Pilát, Cui 6631, Dai 10841.

Phellinus cesatii (Bres.) Ryvarden, Cui 5405.

Phellinus chryseus (Lév.) Ryvarden, Dai 10842.

Phellinus collinus Y.C. Dai & Niemelä, Dai 7866.

Phellinus contiguus (Pers.) Pat., Dai 9747, 9861.

Phellinus discipes (Berk.) Ryvarden, Dai 5416, Dai 4381, 4429, 7867, 10286, 10313.

Phallinus durissimus (Lloyd) Roy, Cui 5235.

Phallinus fastuosus (Lév.) Ryvarden, Cui 5342, 5494, Dai 9241.

Phallinus ferreus (Pers.) Bourdot & Galzin, Dai 7870, 7922, 7924, 9332, 9349, 9856, 9860, 10769, 10874.

Phellinus ferruginosus (Schrad.) Pat., Cui 6648.

Phellinus gigas (Schwein) Pat., Cui 6253, Dai 4355, 4364, 4432, 7836, 7841, 7863, 7901, 7941, 9572, 9660, 9666, 10813.

Phellinus gilaeescens (Petch) Ryvarden, Dai 7860, 9371.

Phellinus inermis (Ellis & Everhart) G. Cunn., Cui 6474, Dai 9527, 9531, 9805, 10000.

Phellinus kanerhiae (Yasuda) Ryvarden, Cui 5155, 5336, Dai 9262, 9370.

Phellinus lloydii (Cleland) G. Cunn., Dai 9243, 9316, 9625, 9766, 10805, 10809, 10838.

Phellinus merrillii (Murrill) Ryvarden, Cui 5192, Dai 9642.


Phellinus pachyphloeus (Pat.) Pat., Dai 9248, 10341.

Phellinus pullus (Berk. & Mont.) Ryvarden, Dai 4436, 7955, 9313, 9627.

Phellinus rhabarbarinus (Berk.) G. Cunn., Dai 4389, 4423, 4606, 7873, 10876.

Phellinus rimosus (Berk.) Pilát, Dai 4384, 9247, 9310.

Phellinus senex (Nees & Mont.) Imazeki, Cui 5486, Dai 7979.
Acknowledgements

We wish to thank Dr. Tsutomu Hattori (TFM, Japan) for his valuable help in the identification of some difficult specimens, and Prof. Leif Ryvarden and Dr. Karl-Henrik Larsson (O, Norway) for loans of specimens. Y. C. Dai is deeply indebted to Dr. Tuomo Niemelä (H, Finland) for his friendly support of Dai’s work at the Botanical Museum of the University of Helsinki. The research was financed by the Ministry Science and Technology of China (Project no. 2006FY110500-5) and the National Natural Science Foundation of China (Project nos. 3091013907, 31070022, 30900006).

References

Cui, B. K., Tang, L. P. & Dai, Y. C. 2011b: Morphological and molecular evidences of a new species of Lignosus (Polyporales, Basidiomycota) from tropical China. — Mycological Progress. [In press].
Gilbertson, R. L. & Ryvarden, L. 2002: A new Inonotus (Basidiomycota, Hymenochaetaceae) from Hawaii. —
Mycotaxon 81: 91–94.


This article is also available in pdf format at http://www.annbot.net