

Type studies on polypores described by G. Y. Zheng and Z. S. Bi. from southern China

Yu-Cheng Dai* and Hai-Sheng Yuan

Institute of Applied Ecology, Chinese Academy of Sciences,
Shenyang 110016, China

Dai Y. C. & H. S. Yuan (2007). Type studies on polypores described by G. Y. Zheng and Z. S. Bi. from southern China. – *Sydowia* 59 (1): 25–31.

Type specimens of 13 polypores described by G. Y. Zheng and Z. S. Bi from southern China were examined, and 9 of them are taxonomic synonyms of previously described taxa. One species, *Polyporus minor* Z. S. Bi & G. Y. Zheng, is accepted, and its illustrated description is supplied. A new combination, *Perenniporia subadusta* (Z.S. Bi & G. Y. Zheng) Y. C. Dai, is proposed. Three species were treated under other genera according to the modern taxonomy, and two names were illegitimate.

Keywords: Aphyllophorales, China, taxonomy.

During 80's and 90's of the last century Prof. Guo-Yang Zheng and Zhi-Shu Bi made an extensive study on macrofungi in Guangdong Province, southern China (Bi *et al.* 1993), and described a number of species. Most of these taxa described by them were agarics, but some of them were polypores, Aphyllophorales (Bi *et al.* 1982, 1993, Zheng & Bi 1987a, 1987b, 1989, Zheng *et al.* 1986, 1992). All their collections are deposited in the Institute of Microbiology of Guangdong Province (HMIGD). Types of polypores described by Zheng and Bi were studied by present authors, and we would like to note, however, that Zheng and Bi overlooked previously described species, most of their new taxa of polypores appear to be identical with existing taxa and so become taxonomic synonyms.

Because almost all of the taxa described by Zheng and Bi were published in Chinese, and they are still poorly known, we felt necessary to supply a revision on these taxa. In the following the taxa are treated within the genus in which they were originally placed by Zheng and Bi. Within each genus the species are placed alphabetically according to their specific epithets. After the name there is a reference to where it was published, which is then followed by the information on the type, and the valid name according to the

* e-mail: yuchengd@yahoo.com

modern taxonomy. A reference to a recent description of the species is indicated, or if no modern description available the species described in detail. The microscopic routine used in the study is as given by Dai & Niemelä (1997); special colour terms are from Petersen (1996) and Anonymous (1969).

Taxonomy

Albatrellus jiangenglingensis G. Y. Zheng, Acta Mycol. Sinica 11: 108, 1992. Hainan Prov., Ledong County, Jianfengling Nat. Res., on rotten wood of *Dacrydium pierrei*, 15 May 1988 Zheng (HMIGD 14403, type).

= *Polyporus jiangenglingensis* (G. Y. Zheng) H. D. Zheng & P. G. Liu.

It is a juvenile specimen of *Polyporus* P. Micheli ex Adans.: Fr., and its tramal hyphae are almost monomitic, only a few skeleto-binding hyphae are present in the context. However, its hyphae are cyanophilous, and the basidiospores are cylindric. These characters are typical for *Polyporus*. Zheng & Liu (2005) transferred it into *Polyporus*, and published an illustrated description. We measured 30 spores from the holotype, and they are typically cylindric, (7.8–) 8 – 10 (–10.5) × 3 – 3.7 (–3.9) μm, L = 9.04 μm, W = 3.26 μm, Q = 2.77. Thus the spores are not ellipsoid as in the original report (8 – 10 × 4 – 5 μm; Zheng *et al.* 1992).

Amyloporus daedaliformis G. Y. Zheng & Z. S. Bi, Bull. Bot. Res., 7(4): 76, 1987. Guangdong Prov., Shixing County, Zhangdongshui Nat. Res., 19. Aug 1985 Bi & Li (HMIGD 9606 type).

= *Abortiporus biennis* (Bull.) Singer.

The holotype is a typical specimen of *Abortiporus biennis*, and a detailed description of the species was made by Ryvarden & Gilbertson (1993).

Amylonotus tenuis G. Y. Zheng & Z. S. Bi, Bull. Bot. Res., 7(4): 73, 1987. Guangdong Prov., Lechang County, Jiufeng Mts., alt. 750 – 800 m, 26 Jul 1985 Zheng (HMIGD 9068, type).

= *Pycnoporus sanguineus* (L.: Fr.) Murrill.

The holotype is a dead and sterile specimen, but its hyphal structure is in full accordance with *Pycnoporus sanguineus*. For a good description of the species, see Ryvarden & Gilbertson (1994).

Pachykytospora major G. Y. Zheng & Z. S. Bi, Acta Mycol. Sinica 8: 198, 1989. Guangdong Prov., Huidong County, Gutian Nat. Res., fallen angiosperm branch, 26 Sep 1986 *Zheng* (HMIGD 11124, type).

= *Megasporoporia major* (G. Y. Zheng & Z. S. Bi) Y. C. Dai & T. H. Li.

The senior author studied the species, and an illustrated description was published by Dai & Li (2002).

Polyporus minor Z. S. Bi & G. Y. Zheng, Acta Mycol. Sinica 1: 72, 1982. Guangdong Prov., Dinghu Mts., rotten angiosperm wood, 24 May 1980 *Bi 204* (HMIGD 2404, type)

It is accepted as a valid species of *Polyporus*.

Basidiomata annual, pileate with a short stipe-like base, hard upon drying. Pilei semicircular to fan-shaped, projecting up to 1.5 cm, 2 cm wide, and 2.5 mm at base; margin obtuse, strongly wavy when dry. Upper surface pale orange brown when dry, glabrous, azonate. Pore surface straw-coloured to pale brownish buff when dry; pores round, 3 – 4 per mm; dissepiments thin to fairly thick, entire. Section: context buff, hard corky, up to 1.5 mm thick; tube layer concolorous with poroid surface, tubes hard corky, up to 1 mm long. Hyphal system dimitic, generative hyphae with clamp connections, hyaline, thin-walled; skeleto-binding hyphae thick-walled, with dendritic branching and branches tapering, tissue unchanged in KOH. Context. – Contextual hyphae strongly gelatinized and interwoven; generative hyphae infrequent, (2–) 2.5 – 3 µm in diam; skeleto-binding hyphae thick-walled to almost solid, dominant, IKI-, CB+, skeletal part 3 – 5 (–7) µm in diam, binding part 1.5 – 2.5 µm in diam. Hyphae in upper surface similar to contextual hyphae, but weakly CB+, no palisade. Tubes. – Tramal hyphae gelatinized, strongly interwoven without orientation; generative hyphae scanty, mostly present near to hymenium, 2 – 3 µm in diam; skeleto-binding hyphae dominant, thick-walled with a narrow lumen to subsolid, moderately branched, skeletal part 2.8 – 5 µm in diam. Hyphal pegs rarely present. Rhomboid or irregular crystals present in trama and hymenium. Cystidia absent, cystidioles frequent, subulate, 14 – 21 × 4 – 5 µm. Basidia clavate, with a basal clamp and four sterigmata, 16 – 21 × 5.5 – 7 µm. Basidioles slightly smaller, otherwise in shape similar to basidia. Basidiospores cylindrical, hyaline, thin-walled, smooth, bearing one or two small guttules, IKI-, CB-, (7.2–) 7.5 – 9 (–10) × (3–) 3 – 4 µm, L = 8.18 µm, W = 3.56 µm, Q = 2.30 (n = 30/1).

Unlike other species in *Polyporus*, *Polyporus minor* almost lacks a stipe, and its dry basidiocarps are very hard. Microscopically it

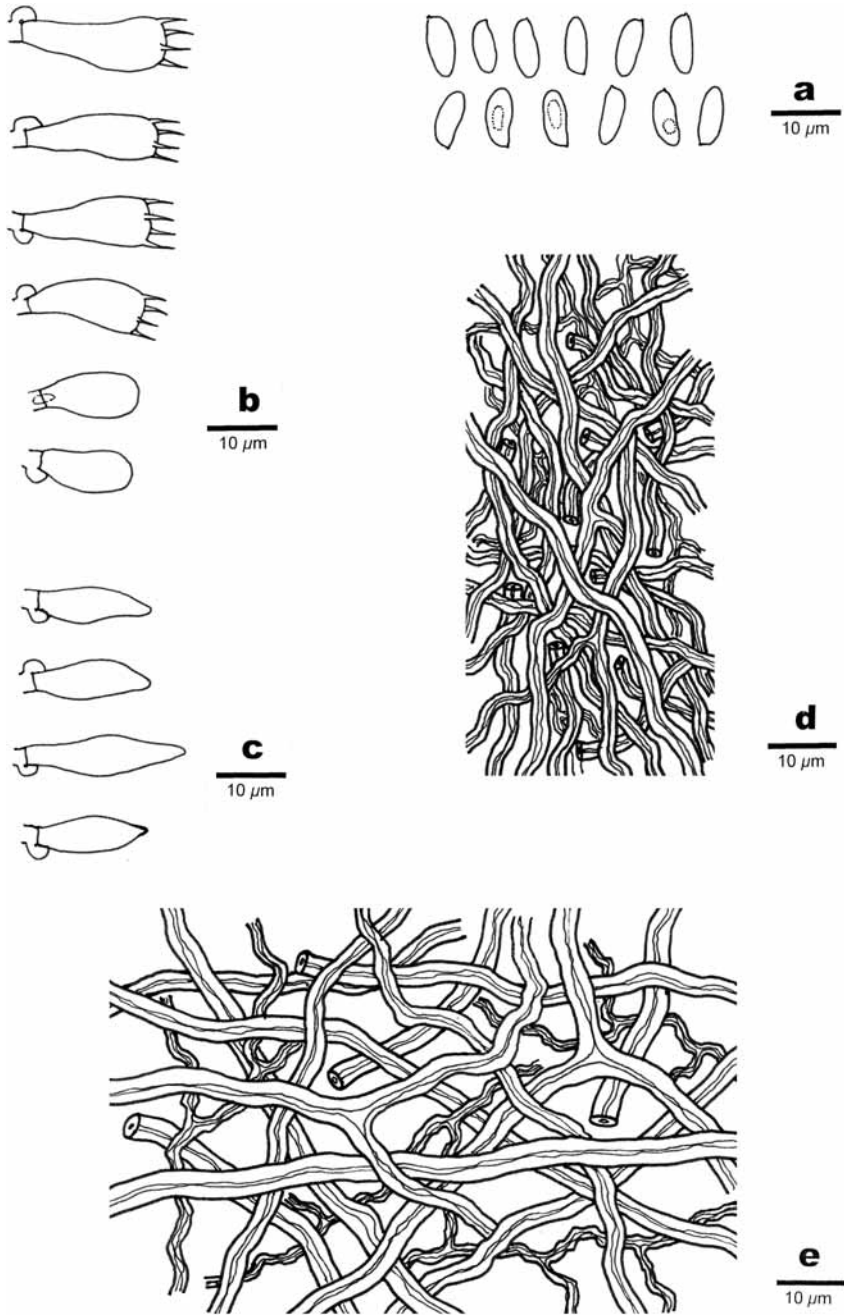


Fig. 1. Microscopic structures of *Polyporus minor* Z. S. Bi & G. Y. Zheng (drawn from the holotype). **a:** Basidiospores. **b:** Basidia and basidioles. **c:** Cystidioles. **d:** Hyphae from tube trama. **e:** Hyphae from context.

differs from other members of the genus by having cystidioles. *Polyporus minor* is similar to *P. pumilus* Y. C. Dai & Niemelä by being lack of stipe, but the latter has both smaller pores (8–10 per mm) and smaller basidiospores ($5.2\text{--}7.2 \times 2.3\text{--}3 \mu\text{m}$, $L = 6.17 \mu\text{m}$, $W = 2.57 \mu\text{m}$, Dai *et al.* 2003).

Polyporus submollis Z. S. Bi & G. Y. Zheng, Acta Mycol. Sinica 1: 74, 1982. Guangdong Prov., Dinghu Mts., rotten angiosperm wood, 9 Sep 1981 Zheng 939 (HMIGD 4939, type).

= *Earliella scabrosa* (Pers.) Gilb. & Ryvarden.

It is a typical specimen of *Earliella scabrosa*. For a detailed description of the species, see Gilbertson & Ryvarden (1986).

Polyporus subfloriformis Z. S. Bi & G. Y. Zheng, Acta Mycol. Sinica 1: 73, 1982. Guangdong Prov., Dinghu Mts., rotten wood of *Pinus*, 11 Apr 1981 Bi 756 (HMIGD 4756, type).

= *Trametes ljubarskyii* Pilát.

The type is totally sterile, but its macro-morphology and hyphal structure are in full accordance with *Trametes ljubarskyii*. For a detailed description of the species, see Ryvarden & Gilbertson (1994).

Polyporus subperennis G. Y. Zheng & Z. S. Bi, Acta Mycol. Sinica 1: 76, 1982. Guangdong Prov., Dinghu Mts., rotten wood of *Schefflera*, 27. Jun 1981 Bi 954 (HMIGD 4954, type).

= *Coltriciella dependens* (Berk. & M.A. Curtis) Murrill.

The type is a typical specimen of *Coltriciella dependens*. For a detailed description of the species, see Gilbertson & Ryvarden (1986).

Pseudofistulina sinensis G. Y. Zheng & Z. S. Bi, Acta Mycol Sinica 5: 215, 1986. Guangdong Prov., Lianshan County, Jigong Mts., rotten angiosperm wood, 6 Sep 1984 (HMIGD 7498, type).

= *Pyrrhoderma sendaiense* (Yasuda) Imazeki.

The type is a typical specimen of *Pyrrhoderma sendaiense*. A detailed description of the species was made by Dai (1999).

Rigidoporiopsis macrospora G. Y. Zheng & Z. S. Bi, Acta Mycol. Sinica 6: 147, 1987. Guangdong Prov., Yangshan, Taipeng Duong, alt. 900 – 1000 m, 18 Sep 1985 Zheng (HMIGD 9263, type).

= *Haploporus alabamiae* (Berk. & M. A. Curtis) Y. C. Dai & Niemelä.

The type is a specimen of *Haploporus alabamiae*. For a detailed description of the species, see Gilbertson & Ryvarden (1987).

Rigidoporiopsis griseo-nigra G. Y. Zheng & Z. S. Bi, in the macrofungus flora of China's Guangdong Province, p. 191, 1993. Guangdong Prov., Dapu County, Fengxi, alt. 450–500 m, 26 May 1986 Zheng (HMIGD 10536).

= *Porogramme albocincta* (Cooke & Masee) J. Lowe.

Rigidoporiopsis griseo-nigra was invalidly published since neither Latin description was made, nor was a holotype indicated. In addition, we studied the specimen mentioned in the original publication, and it in fact represents *Porogramme albocincta*. The detailed description of the species was published by Ryvarden & Johansen (1980).

Wrightoporia subadusta Z. S. Bi & G. Y. Zheng, Bull. Bot. Res., 7(4): 76, 1987. Guangdong Prov., Shixing County, Zhangdongshui Nat. Res., 19 Aug 1985 Li (HMIGD 8298, type).

= ***Perenniporia subadusta*** (Z. S. Bi & G. Y. Zheng) Y. C. Dai, **comb. nov.**

Basionym – *Wrightoporia subadusta* Z. S. Bi & G. Y. Zheng, Bull. Bot. Res. 7(4): 76, 1987.

It is a good species of *Perenniporia* Murrill, and this species was recently described as *Perenniporia cystidiata* Y. C. Dai, W. N. Zhou & Sheng H. Wu (Dai *et al.* 2002). Thus, the latter name becomes a taxonomic synonym of *Perenniporia subadusta*. The detailed description of the species was published by Dai *et al.* (2002).

Wrightoporia radiata G. Y. Zheng & Z. S. Bi, in the macrofungus flora of China's Guangdong Province, p. 192, 1993. Guangdong Prov., Dapu County, Fengxi, on rotten angiosperm twig, 29 Jun 1987 Zheng (HMIGD 11271).

= *Perenniporia subadusta* (Z. S. Bi & G. Y. Zheng) Y. C. Dai.

Wrightoporia radiata was invalidly published since neither a Latin description was made, nor was a holotype indicated. Anyhow, we studied the specimen mentioned in the original publication, and in fact it represents *Perenniporia subadusta*.

Acknowledgments

We express our gratitude to Prof. Tai-Hui Li (HMIGD, China) for loans of the specimens. The research is supported by the National Natural Science Foundation of China (Project No. 30425042).

References

- Anonymous. (1969) *Flora of British fungi. Colour identification chart*. Her Majesty's Stationery Office, London.
- Bi Z. S., Zheng G. Y., Li T. H. (1993) *The macrofungus flora of China's Guangdong Province*. Chinese Univ. Press, Hong Kong.
- Bi Z. S., Zheng G. Y., Lu D. J., Lian M. Z., Zheng W. L., Li C., Liang J. Q., Li T. H. (1982) Basidiomycetes from Dinghu Mountain of China 1. Some species of Polyporaceae. *Acta Mycologica Sinica* **1**: 72–78.
- Dai Y. C. (1999) *Phellinus sensu lato* (Aphylllophorales, Hymenochaetaceae) in East Asia. *Acta Botanici Fennici* **166**: 1–115.
- Dai Y. C., Li T. H. (2002) *Megasporoporia major* (Basidiomycota), a new combination. *Mycosystema* **21**: 519–521.
- Dai Y. C., Härkönen M., Niemelä T. (2003) Wood-inhabiting fungi in southern China 1. Polypores from Hunan Province. *Annales Botanici Fennici* **40**: 381–393.
- Dai Y. C., Niemelä T. (1997) Changbai wood-rotting fungi 6. Study on *Antrodiella*, two new species and notices on some other species. *Mycotaxon* **64**: 67–81.
- Dai Y. C., Wu S. H., Chou W. N. (2002) Two new polypores (Basidiomycota) from Taiwan. *Mycotaxon* **83**: 209–216.
- Gilbertson R. L., Ryvarden L. (1986) *North American polypores 1*. Fungiflora, Oslo.
- Gilbertson R. L., Ryvarden L. (1987) *North American polypores 2*. Fungiflora, Oslo.
- Petersen J. H. (1996) *Farvekort. The Danish Mycological Society's colour-chart*. Foreningen til Svampekundskabens Fremme, Greve.
- Ryvarden L., Gilbertson R. L. (1993) European polypores 1. *Synopsis Fungorum* **6**: 1–387.
- Ryvarden L., Gilbertson R. L. (1994) European polypores 2. *Synopsis Fungorum* **7**: 394–743.
- Ryvarden L., Johansen I. (1980) *A preliminary polypore flora of East Africa*. Fungiflora, Oslo.
- Zheng G. Y., Bi Z. S. (1987a) One new species of the genus *Rigidoporopsis* from the north Guangdong Province. *Acta Mycologica Sinica* **6**: 147–149.
- Zheng G. Y., Bi Z. S. (1987b) Three new species of Polyporaceae from the north Guangdong of China. *Bulletin Botanical Research* **7**: 73–79.
- Zheng G. Y., Bi Z. S. (1989) A new species of *Pachykytospora*. *Acta Mycologica Sinica*. **8**: 198–201.
- Zheng G. Y., Bi Z. S., Wang Y. Z., Li T. H., Li C. (1986) One new species of Fistulinaceae and one new variety of Hydnaceae. *Acta Mycologica Sinica* **5**: 215–218.
- Zheng G. Y., Zhang W. M., Li T. H., Lai J. P. (1992) The genus *Albatrellus* of Guangdong and Hainan provinces. *Acta Mycologica Sinica* **11**: 107–110.
- Zheng H. D., Liu P. G. (2005) Type studies on *Albatrellus henanensis* and *A. jianfenglingensis*. *Mycotaxon* **93**: 257–263.

(Manuscript accepted 23 Oct 2006; Corresponding Editor: M. Kirchmair)