Santa Catarina Island mangroves 4 – xylophilous basidiomycetes

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Abstract — Itacorubi, Ratones, Rio Tavares and Saco Grande are natural mangrove forests in the western part of Santa Catarina Island, in southern Brazil. Thirty-three basidiomycetes were identified during a survey of xylophilous basidiomycetes in these mangrove forests from May 2005 to August 2006. The species are distributed among 9 families and 24 genera. Fifteen species are new records from mangrove forests of the world and eight species are recorded for the first time from the State of Santa Catarina.

Key words — Neotropics, fungal taxonomy, white-rot fungi

Introduction

Close to 35% of mangrove forests, one of the world’s threatened major tropical ecosystems, have been lost in the last twenty years (Valiela et al. 2001). These ecosystems occur worldwide on sheltered shores, mainly in the tropics, and their distribution is closely related to basic features of the marine environment, mainly salinity (Chapman 1977).

Plant diversity is low in mangrove forests (Alongi 2002, Lana 2004), with about 70 species of trees and shrubs known from all over the world (Duke 1992). New World mangrove forests are composed of nine tree species representing Avicennia (4 spp.), Rhizophora (3 spp.), Laguncularia (1 sp.) and Conocarpus (1 sp.) (Cintrón & Schaeffer-Novelli 1980).

Along the South American Atlantic coast, the austral limit of mangroves is at the city of Laguna, Brazil, located at latitude of 28°55’ S, in the State of Santa Catarina (Cintrón & Schaeffer-Novelli 1980). These ecosystems are well represented in Brazil, which includes one of the six largest mangrove forests in the world (Lacerda 1984).

Mangrove species diversity is well known for animals and plants but poorly known for other organisms such as fungi (Macintosh & Ashton 2002). Most mangrove fungi refer mainly to ‘marine fungi’, which grow and sporulate exclusively in marine or estuarine habitats (Kohlmeyer & Kohlmeyer 1979). Little is known about terrestrial fungi in mangrove forests (Hyde & Lee 1995).
Previous studies on Santa Catarina Island mangroves have revealed interesting data on myxomycetes and fungi taxonomy (Trierveiler-Pereira et al. 2008a, b; Baltazar et al. 2009b).

Of the 112 xylophilous basidiomycetes recorded from mangrove forests around the world (Baltazar et al. 2009a), Brazilian mangroves are the best known primarily due to the research of Campos et al. (2003) and Sotão et al. (1991, 2002, 2003). The present study is the first basidiomycete survey carried out in southern Brazil mangrove forests.

Materials and methods
Santa Catarina Island is located in the central-east of the State of Santa Catarina (27°35’ S and 48°32’ W) in the Florianópolis municipality. Mangroves are found only on the western shores of the island, where there are low-energy (i.e. little wave action) sites. The four largest mangroves on the island are: Ratones (29°30’00” S, 48°27’00” W), Saco Grande (28°37’30” S, 48°27’30” W), Itacorubi (27°34’14” S, 48°30’07” W) and Rio Tavares (27°38’40” S, 48°30’17” W). The mangrove tree species from these areas are Avicennia schaueriana Stapf & Leechm. ex Moldenke, Laguncularia racemosa C.F. Gaertn. and Rhizophora mangle L. The most common species is A. schaueriana, also known as black-mangrove or “siriúba” (Souza-Sobrinho et al. 1969).

During 26 field trips to the Santa Catarina Island mangroves, from May 2005 to August 2006, 265 xylophilous basidiomycete specimens were collected. Whenever possible, the host species was identified. Microscopic characters were examined and measured using light microscopy, in mounts of 1% aqueous phloxine solution (plus 1% or 5% KOH) and Melzer’s reagent (Ryvarden 1991). Drawings were made with the aid of a camera lucida. Vouchers are preserved in Herbarium FLOR (Holmgren & Holmgren 1998). Novelties in distribution are indicated by: * = new record from Santa Catarina; ♦ = new record from Brazilian mangroves; € = new record from mangroves of the world.

Results
Thirty-three xylophilous basidiomycete species representing nine families were identified in the surveyed areas. Most species were recorded from dead wood; however, four species (Fuscoporia gilva, Cerocorticium molle, Cymatoderma dendriticum, Schizophyllum commune) were also collected from living trees. Avicennia schaueriana, with twenty-three recorded species, was the most common host. However, Phellinus allardii and Perenniporia ohiensis were only collected on Laguncularia racemosa, whereas Hexagonia hydnoides was collected on Rhizophora mangle. Fuscoporia gilva,
Cerocorticium molle, Pycnoporus sanguineus and Schizopora paradoxa were gathered on all three host trees.

In this survey, the Itacorubi mangrove forest had the highest species diversity with twenty-five species. Seven species (Auricularia fuscusuccinea, Cerocorticium molle, Pycnoporus sanguineus, Trametes elegans, Trametes villosa, Schizophyllum commune, Schizopora paradoxa) were found in all four mangrove forests. Most of the identified species have a cosmopolitan or pantropical (both with 14 spp.; 42.4%) distribution, and five species (15.15%) are neotropical.

**Auriculariaceae Fr.**

*Auricularia fuscusuccinea* (Mont.) Henn., Bot. Jb. 17: 19 (1893)


**DESCRIPTION** — Lowy (1952: 677).

**COMMENTS** — *Auricularia fuscusuccinea* is the most frequently collected tremelloid species in the Neotropics (Lowy 1971). The examined specimens have a characteristic well defined medulla. In addition to *A. fuscusuccinea*, *A. auricula-judae* (Bull.) Quél. and *A. polytricha* (Mont.) Sacc. (Sotão et al. 2003) are recorded from Brazilian mangrove forests. However, *A. auricula-judae* may be misidentified, for it is restricted to temperate zones, collected exceptionally in Mexico (Lowy 1971).

**DISTRIBUTION** — cosmopolitan (Lowy 1952).

**SUBSTRATE** — dead trunks of *A. schaueriana* and unidentified wood.


**Dacrymycetaceae J. Schröt.**

*Callocera cornea* (Batsch) Fr., Stirp. Agri. Fems.: 67 (1827)  
≡*Clavaria cornea* Batsch, Elench. Fung.: 139 (1783)

**DESCRIPTION** — McNabb (1965: 41).

**COMMENTS** — *Callocera cornea* is characterized by the lack of clamp connections and simple-septate basidiospores, 8–10 µm long. The species shows great macroscopic variation, however microscopic features, such as

Basidiospores size and septation, are constant (McNabb 1965). Calocera cornea is a common species but with few reports from Brazil. It was first recorded from Brazilian mangroves by Sotão et al. (2003).

Distribution — cosmopolitan (MacNabb 1965).

Substrate — unidentified wood.

Fomitopsidaceae Jül<mi>ch

†Antrodia albida (Fr.) Donk, Persoonia 4: 339 (1966)
≡Daedalea albida Fr., Observ. Mycol. 1: 107 (1815)


Comments — This species may show a great variation in the configuration of the hymenial surface, but it is easily separated from other Antrodia species occurring on hardwoods by its large spores (Gilbertson & Ryvarden 1986). Antrodia species are brown-rot fungi usually associated with gymnosperms. However, A. serialis (Fr.) Donk and A. sinuosa (Fr.) P. Karst. were also reported from Brazilian mangroves (Almeida-Filho et al. 1993, Sotão et al. 2003).


Substrate — dead trunks of A. schaueriana.


≡Boletus supinus Sw., Fl. Ind. Occid. 3: 1926 (1806)


Comments — This species may be recognized by its solitary, hard, woody basidiomata, reddish brown, zonate, laccate abhymenial surface and light-coloured pore surface when fresh. After drying, the pore surface turns light brown. It was recorded from Santa Catarina as Fomitella supina (Sw.) Murrill by Neves & Loguercio-Leite (1999), based on type of rot, but the genus is now considered synonym of Fomitopsis (Kirk et al. 2008).


Substrate — dead trunks of A. schaueriana.


**Hymenochaetaceae Imazeki & Toki**

*Fuscoporia callimorpha* (Lév.) Groposo, C.L. Leite & Góes-Neto, Mycotaxon 101: 57 (2007)


COMMENTS — Loguercio-Leite & Wright (1995) separated *F. callimorpha* from *F. gilva* based on the setal morphology, however, setae of different morphologies may occur in the same specimen of *F. callimorpha*. According to Ryvarden & Johansen (1980), the species is separated from *F. senex* (Nees & Mont.) Ghob.-Nejh. and from *F. gilva* by its narrow spores. *Fuscoporia callimorpha* was recorded from Panamanian mangroves by Gilbert & Sousa (2002).

**DISTRIBUTION** — pantropical (Loguercio-Leite & Wright 1991).

**SUBSTRATE** — dead trunks of *A. schaueriana*.


**COMMENTS** — The species may be recognized by its resupinate, widely effused basidiomata, large pores, and hymenial setae 30–36 µm long (Ryvarden & Johansen 1980). *Fuscoporia ferruginosa* (Schrad.) Murrill is macroscopically similar to *F. ferrea* but with setal hyphae, larger hymenial setae up to 65 µm, and wider basidiospores (3–3.5 µm) (Gilbertson 1979).

**DISTRIBUTION** — cosmopolitan (Ryvarden 2004).

**SUBSTRATE** — unidentified wood.


**COMMENTS** — *Fuscoporia gilva* is a polymorphic species, but may be recognized in the field by its imbricate basidiomata and purplish brown pore surface (Gilbertson 1979). Microscopically, it may be distinguished by its hyaline and ellipsoid basidiospores, 4–5 µm long, and abundant hymenial
setae, 20–45 µm long. The species was previously recorded from Brazilian mangroves by Sotão et al. (2003).


**Distribution** — pantropical (Ryvarden 2004).
SUBSTRATE — dead trunks of *A. schaueriana* and *R. mangle*, living tree of *L. racemosa*, and unidentified wood.


**Phellinus allardii** (Bres.) S. Ahmad, Monogr. Biol. Soc. Pakistan 6: 57 (1972)


DESCRIPTION — Larsen & Cobb-Pouille (1990: 34).

COMMENTS — This species is recognized by brown, thick-walled basidiospores, lack of setae, and presence of a black line in the context (Ryvarden & Johansen 1980). The basidiomata are usually pileate and sessile, but Larsen & Cobb-Pouille (1990) also described subresupinate forms with thickened central parts similar to the specimen examined in this study.


SUBSTRATE — dead trunks of *L. racemosa*.


**Merulaceae** P. Karst.

**Bjerkandera adusta** (Willd.) P. Karst., Meddn Soc. Fauna Flora fenn. 5: 38 (1879)

≡ *Boletus adustus* Willd., Fl. Berol. Prodr.: 392 (1787)


COMMENTS — Fresh basidiomata have a purplish brown and zonate abhymenial surface and white margin. After drying, the abhymenial surface turned beige and azonate, and the margins became black, as described by Ryvarden & Johansen (1980).

DISTRIBUTION — cosmopolitan (Ryvarden & Johansen 1980).

SUBSTRATE — dead trunks of *A. schaueriana*.

Coriolopsis aspera. a: hymenium. b: basidiospores. 


11. Lentinus strigellus. a: hymenium. b: basidiospores. c: cystidia (scale bars = 10 µm).


*Corticium molle* Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10: 336 (1868)

DESCRIPTION — Maekawa et al. (2003: 404).
Comments — The species is recognized by its resupinate, orange to red, smooth basidiomata with white margins and smooth, large basidiospores (16–21 µm long). It was recorded from Japanese mangroves (Maekawa et al. 2003) and probably occurs in Florida mangroves also (Nieves-Rivera et al. 2005).

Distribution — cosmopolitan (Hjortstam & Ryvarden 2007a, Maekawa et al. 2003).

Substrate — dead and living trunks of *A. schaueriana* and *R. mangle*; dead trunks of *L. racemosa* and unidentified wood.


Description — Reid (1965: 109).

Comments — *Cymatoderma dendriticum* may be separated from *C. elegans* Jungh. by the lack of thick-walled cystidia in the hymenium (Douanla-Melé & Langer 2004). Reid (1965) reports the abundance of gloeocystidia in *C. dendriticum*, but in the examined material these structures were difficult to observe. The species was reported from Brazilian mangroves by Sotão et al. (2003).

Distribution — pantropical (Reid 1965).

Substrate — living trunks of *A. schaueriana* and unidentified wood.

Voucher Material — BRAZIL, SANTA CATARINA: Ilha de Santa Catarina, Manguzal de Ratones. Baltazar & Trierveiler-Pereira 020. 31.X.2005 (FLOR 32154); Manguzal do Itacorubi, Trierveiler-Pereira & Baltazar 182. 24.II.2006 (FLOR 32027); ibid, Trierveiler-Pereira & Baltazar 189. 24.II.2006 (FLOR 32022); Manguzal do Saco Grande, Baltazar & Regolin 199. 27.IV.2006 (FLOR 32155).

Steccherinum reniforme (Berk. & M.A. Curtis) Banker, Mem. Torrey bot. Club 12: 127 (1906)

≡ Hydnum reniforme Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10(46): 325 (1868)


Comments — *Steccherinum reniforme* has slightly shorter basidiospores and different cystidia compared to *S. ochraceum* (Pers.) Gray (Maas-Geesteranus...
According to Bononi (1979), it is the most common hydnoid fungi in Brazil and has been recorded from the states of Rio Grande do Sul, Santa Catarina, São Paulo, Goiás, Mato Grosso and Rio de Janeiro.

**Pleurotaceae Kühner**


**COMMENTS** — Variety *roseus* is frequently collected in Brazil and is recognized in the field by its large, gregarious and pink basidiomata. According to Lechner et al. (2004), *P. djamor* (Rumph. ex Fr.) Boedijn var. *djamor* has a white pileus. This species was reported from Brazilian mangroves by Gugliotta & Bononi (1999) and Sotão et al. (2003), as *P. ostreatoroseus* Singer.

**DISTRIBUTION** — pantropical (Lechner et al. 2004).

**SUBSTRATE** — dead trunks of *A. schaueriana*.


**Polyporaceae Fr. ex Corda**

*Coriolopsis aspera* (Jungh.) Teng, Chung-kuo Ti Chen-chun: 759 (1963)  FIG. 9


**COMMENTS** — The presence of forked hairs, as described by Ryvarden & Johansen (1980), were only observed in the pileus of young basidiomata. Mature basidiomata have a velutinate to glabrous pileus. The examined materials have dark brown pilei although a few specimens show a distinct red tint at the base. This species has large pores (3–4 per mm) and cylindrical basidiospores (9–12 × 3–4.5 µm).

**DISTRIBUTION** — pantropical (Ryvarden & Johansen 1980).

**SUBSTRATE** — dead trunks of *A. schaueriana* and *R. mangle*; unidentified dead wood.

**VOUCHER MATERIAL** — BRAZIL. SANTA CATARINA: Ilha de Santa Catarina. Manguezal do Itacorubi, Trierveiler-Pereira & Baltazar 091.
27.XI.2005 (FLOR 32023); ibid, Trierveiler-Pereira & Maccarini 138. 29.1.2006 (FLOR 32025); ibid, Trierveiler-Pereira & Maccarini 142. 29.1.2006 (FLOR 32026).


**Coriolopsis rigida** (Berk. & Mont.) Murrill, N. Amer. Fl. 9(2): 75 (1908)

**DESCRIPTION** — Gilbertson & Ryvarden (1986: 218).

**COMMENTS** — The specimens examined are characterized by cream-coloured, subresupinate to effuse-reflexed basidiomata, zonate and tomentose pilei, light brown pore surface, 2–4 pores per mm, and basidiospores 8–11 × 2.5–4 µm. Another feature that was observed in all specimens were concentric lines around the attachment points to the substrate. This species
was recorded from Brazilian mangroves by Almeida-Filho et al. (1993) and Sotão et al. (2003).

**DISTRIBUTION** — pantropical (Loguercio-Leite & Wright 1991).

**SUBSTRATE** — dead trunks of *A. schaueriana*.

**Voucher Material** — **Brazil. Santa Catarina: Ilha de Santa Catarina.** Manguegal do Itacorubi, Trierveiler-Pereira & Name 098. 23.XII.2005 (*FLOR* 31997); Manguegal de Ratones, Baltazar & Trierveiler-Pereira 047. 29.XI.2005 (*FLOR* 32156); Manguegal do Saco Grande, Baltazar & Trierveiler-Pereira 063. 22.XII.2005 (*FLOR* 32157); Manguegal do Itacorubi, Trierveiler-Pereira & Maccarini 153. 29.I.2006 (*FLOR* 32002).

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**Description** — Gilbertson & Ryvarden (1986: 230).

**Comments** — The specimen examined has small basidiomata (0.8–0.9 cm wide, 0.9–1.2 cm long, 0.5–0.7 cm thick), dark brown pileus, beige pore surface, and large, cylindrical basidiospores (8–10 x 3–4 µm) as described for the species (Gilbertson & Ryvarden 1986).

**Distribution** — cosmopolitan (Gilbertson & Ryvarden 1986).

**Substrate** — unidentified dead wood.

**Voucher Material** — **Brazil. Santa Catarina: Ilha de Santa Catarina.** Manguegal do Itacorubi, Trierveiler-Pereira & Name 018. 01.IV.2005 (*FLOR* 32014).

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**Hexagonia hydnoides** (Sw.) M. Fidalgo, *Mem. N. Y. bot. Gdn* 17: 64 (1968)  
≡ **Boletus hydnoides** Sw., *Fl. Ind. Occid.* 3: 1942 (1806)

**Description** — Fidalgo (1968: 69).

**Comments** — *Hexagonia hydnoides* is easily recognized in the field because of its dark basidiomata with a dense mass of black, erect hairs on the pileus (Gilbertson & Ryvarden 1986). As noticed by Fidalgo (1968), basidiospores and basidia are rare. This species was recorded from Brazilian mangroves by Gugliotta & Bononi (1999) and Sotão et al. (2003).

**Distribution** — pantropical (Gilbertson & Ryvarden, 1986).

**Substrate** — dead trunks of *R. mangle*.

**Voucher Material** — **Brazil. Santa Catarina: Ilha de Santa Catarina.** Manguegal do Rio Tavares, Trierveiler-Pereira, Maccarini & Assis...

*Lentinus crinitus* (L.) Fr., *Syst. orb. Veg. (Lundae)*: 77 (1825)
≡ *Agaricus crinitus* L., *Sp. pl.*, Edn 2 2: 1644 (1763)

**DESCRIPTION** — Pegler (1983: 33).

**COMMENTS** — This species shows great variety in its macroscopic morphology. *Lentinus crinitus* resembles *L. swartzii* Berk., but the latter...
lacks squamules on the stipe and has a thicker context (Wright & Albertó 2002). This species was recorded from Brazilian mangroves by Sotão et al. (2003).

**DISTRIBUTION** — Neotropical (Pegler 1983).

**SUBSTRATE** — unidentified wood.

**VOUCHER MATERIAL** — BRAZIL. SANTA CATARINA: Ilha de Santa Catarina. Manguezal do Itacorubi, Trierveiler-Pereira & Name 001. 01.IV.2005 (FLOR 32013).

*Lentinus strigellus* Berk., J. Linn. Soc., Bot. 10(45): 302 (1868)


**COMMENTS** — *Lentinus strigellus* is distinguished from *L. strigosus* (Schwein.) Fr. by a glabrescent pileus with scattered squamules, gloeocystidia, a thinner context, and frequently a centrally attached stipe (Pegler 1983).

**DISTRIBUTION** — neotropical (Pegler 1983).

**SUBSTRATE** — dead trunks of *A. schaueriana*.

**VOUCHER MATERIAL** — BRAZIL. SANTA CATARINA: Ilha de Santa Catarina. Manguezal do Itacorubi, Trierveiler-Pereira & Baltazar 084. 27.XI.2005 (FLOR 32029).


**DESCRIPTION** — Cunningham (1956: 622).

**COMMENTS** — This species is microscopically characterized by the presence of incrusted, thick-walled cystidia with brown, pigmented bases. Basidiomata of the examined specimens are resupinate to effuse-reflexed but Cunningham (1956) also reported pileate specimens. As reported by Hjortstam & Ryvarden (2007b), clamp connections are difficult to observe. Recorded from Brazilian mangroves by Sotão et al. (2003).

**DISTRIBUTION** — cosmopolitan (Cunningham 1956).

**SUBSTRATE** — dead trunks of *A. schaueriana* and *R. mangle*; unidentified wood.

**VOUCHER MATERIAL** — BRAZIL. SANTA CATARINA: Ilha de Santa Catarina. Manguezal do Itacorubi, Trierveiler-Pereira & Baltazar 057. 26.X. 2005 (FLOR 31943); ibid, Trierveiler-Pereira & Baltazar 094. 27.XI.2005
(FLOR 31944); ibid, Trierveiler-Pereira, Baltazar & J. Michels 127. 23.XII.2005 (FLOR 31945); Manguezal do Rio Tavares, Trierveiler-Pereira & Baltazar 277. 22.VII.2006 (FLOR 31946); ibid, Trierveiler-Pereira, Maccarini & Assis 309. 05.VIII.2006 (FLOR 31947).

**Perenniporia ohiensis** (Berk.) Ryvarden, Norw. J. Bot. 19: 143 (1972)  
*Trametes ohiensis* Berk., Grevillea 1(5): 66 (1872)


**COMMENTS** — According to the descriptions of Ryvarden & Johansen (1980) and Gilbertson & Ryvarden (1987), there is no clear difference between *P. ohiensis* and *P. ochroleuca* (Berk.) Ryvarden, except for the pore size (5–7 and 2–4 per mm, respectively). Besides this, they differ in their upper pileus color, i.e. brown to blackish in the former and cream-ochraceous discoloring with age in the latter. Decock & Ryvarden (1999) accepted these two species and *P. detrita* (Berk.) Ryvarden as distinct species, however, they admit that the three taxa form a very homogenous group in the genus.

**DISTRIBUTION** — neotropical (Loguercio-Leite & Wright 1991).

**SUBSTRATE** — dead trunks of *L. racemosa*.


**Polyporus tricholoma** Mont., Annls Sci. Nat., Bot., sér. 2, 8: 365 (1837)  
*Fig. 14*

**DESCRIPTION** — Silveira & Wright (2005: 43).

**COMMENTS** — This species can be distinguished macroscopically by its white to beige pileus when young, presence of cilia along the margin, and small pores (5–10 per mm). *Polyporus arcularius* (Batsch) Fr. also develops cilia along the margin, but its pileus is brown and the hymenial surface has 1–2 pores per mm (Gilbertson & Ryvarden 1987).

**DISTRIBUTION** — pantropical (Loguercio-Leite 1992).

**SUBSTRATE** — unidentified wood.

**Voucher Material** — BRAZIL. SANTA CATARINA: Ilha de Santa Catarina. Mangueal de Ratones, Baltazar & Trierveiler-Pereira 037. 31.X.2005 (FLOR 32161).

≡ *Boletus sanguineus* L., Sp. pl., Edn 2 2: 1646 (1763)


**COMMENTS** — The bright basidiomata of *P. sanguineus* contrasts with the mangrove vegetation, thus this species was frequently collected. The reddish
to orange pileus and the small pores (5–8 per mm) are characteristic of this species. *Pycnoporus cinnabarinus* (Jacq.) P. Karst. is similarly colored, but it does not occur in the tropics (Gilbertson & Ryvarden 1987). *Pycnoporus sanguineus* was recorded from Brazilian mangroves by Almeida-Filho et al. (1993) and Sotão et al. (2003).

**DISTRIBUTION** — pantropical (Ryvarden & Johansen 1980).

**SUBSTRATE** — dead trunks of *A. schaueriana*, *R. mangle*, *L. racemosa* and unidentified wood.

**VOUCHER MATERIAL** — BRAZIL. SANTA CATARINA: Ilha de Santa Catarina. Manguel e do Itacorubi, Trievereiler-Pereira & Baltazar 050. 26.X.2005 (FLOR 32040); Manguel e de Ratones, Baltazar & Trievereiler-Pereira 032. 31.X.2005 (FLOR 32162); Manguel e do Rio Tavares, Manguel e-Pereira, Maccarini & Assis 287. 05.VIII.2006 (FLOR 32048); Manguel e do Saco Grande, Baltazar & Trievereiler-Pereira 301. 26.VIII.2006 (FLOR 32166).

*Trametes elegans* (Spreng.) Fr., Epicr. syst. mycol. (Upsaliae): 492 (1838)

≡ *Daedalea elegans* Spreng., K. svenska Vetensk.-Akad. Handl. 41: 51 (1820)


**COMMENTS** — The irregular pore surface is characteristic of this species; it may be lamellate, but sinuous to daedaleoid pores occur especially near the margin. *Trametes elegans* was common in the collecting areas and may be recognized in the field by its usually large (up to 20 cm diam.), whitish to beige basidiomata in clusters and distinct hymenial surface. *Lenzites betulina* (L.) Fr., is similar but develops more fragile, smaller and thinner basidiomata with hisute pilei. *Trametes elegans* was recorded from Brazilian mangroves by Loguercio-Leite (1993), Gugliotta & Bononi (1999) and Sotão et al. (2003).

**DISTRIBUTION** — pantropical (Gilbertson & Ryvarden 1987).

**SUBSTRATE** — dead trunks of *A. schaueriana* and unidentified wood.

**VOUCHER MATERIAL** — BRAZIL. SANTA CATARINA: Ilha de Santa Catarina. Manguel e do Itacorubi, Trievereiler-Pereira & Baltazar 005. 01.IV.2005 (FLOR 32104); Manguel e de Ratones, Baltazar & Trievereiler-Pereira 028. 31.X.2005 (FLOR 32167); Manguel e do Rio Tavares, Manguel e-Pereira, Maccarini & Mozerle 227. 27.V.2006 (FLOR 32127); Manguel e do Saco Grande, Baltazar & Trievereiler-Pereira 286. 27.VII.2006 (FLOR 32170).

*♦ Trametes nivosa* (Berk.) Murrill, N. Amer. Fl. 9(1): 42 (1907)  

≡ *Polyporus nivosus* Berk., Hooker's J. Bot. 8: 196 (1856)

**DESCRIPTION** — Gilbertson & Ryvarden (1986: 275).
COMMENTS — This species is characterized by large, white basidiomata with small pores (4–8 per mm). Cystidioles, as reported by Gilbertson & Ryvarden (1986), were not observed in the examined material. Basidiomata of *T. nivosa* resemble *Tyromyces* species, but its hyphal system is clearly trimitic. This species was recorded from mangroves of Micronesia (Gilbert et al. 2008).

**DISTRIBUTION** — pantropical (Gilbertson & Ryvarden 1986, Gilbert et al. 2008).

**SUBSTRATE** — dead trunks of *A. schaueriana*.

**VOUCHER MATERIAL** — BRAZIL. SANTA CATARINA: Ilha de Santa Catarina. Mangueal do Itacorubi, Trierveiler-Pereira & Baltazar 082. 27.XI.2005 (*FLOR 31996*).

**Trametes socotrana** Cooke, Grevillea 11(57): 39 (1882)  
Fig. 16


**COMMENTS** — *Trametes socotrana* has a robust, dark-coloured basidiomata and a velvety pileus that differentiates it from other *Trametes* species collected in Santa Catarina Island mangroves. It is similar to *T. hirsuta* (Wulf.) Pil. but differs by narrower basidiospores and double context with a black line.

**DISTRIBUTION** — pantropical (Loguercio-Leite & Wright 1991).

**SUBSTRATE** — dead trunks of *A. schaueriana*.

**VOUCHER MATERIAL** — BRAZIL. SANTA CATARINA: Ilha de Santa Catarina. Mangueal do Itacorubi, Trierveiler-Pereira & Baltazar 076. 27.XI.2005 (*FLOR 32032*); Trierveiler-Pereira & Baltazar 081. 27.XI.2005 (*FLOR 32033*); Trierveiler-Pereira & Maccarini 160. 29.I.2006 (*FLOR 32034*).

**Trametes versicolor** (L.) Lloyd, Mycol. Writ. 6: 1045 (1921)  
Fig. 17


**COMMENTS** — This species often shows great variation in basidiomata colour, zonation, and hairs on the abhyomenal surface (Cunningham 1965). *Trametes versicolor* is close to *T. villosa*, but it has deeper tubes, smaller pores, thicker basidiomata, and a black line separating the tomentum from the context (Loguercio-Leite 1993).

**DISTRIBUTION** — cosmopolitan (Loguercio-Leite & Wright 1991).

**SUBSTRATE** — dead trunks of *A. schaueriana*. 

**Boletus versicolor** L., Sp. pl. 2: 1176 (1753)
Trametes villosa (Sw.) Kreisel, Monografias, Ciencias, Univ. Habana, Ser. 4, 16: 83 (1971)
≡ Boletus villosus Sw., Fl. Ind. Occid. 3: 192 (1806)


COMMENTS — This species resembles T. hirsuta (Wulfen) Lloyd due the size of the basidiospores (6–9 × 2–3 µm); however, T. villosa has shorter hairs in the tomentum and a smaller, more fragile basidiomata (Ryvarden & Johansen 1980). This species was recorded from Brazilian mangroves by Sotão et al. (2003).

DISTRIBUTION — neotropical (Loguercio-Leite & Wright 1991).

SUBSTRATE — dead trunks of A. schaueriana.

Voucher Material — BRASIL. SANTA CATARINA: Ilha de Santa Catarina. Manguezal do Ratones, Baltazar & Trierveiler-Pereira 016. 08.IX.2005 (FLOR 32171); Manguezal do Itacorubi, Trierveiler-Pereira & Maccarini 149. 29.I.2006 (FLOR 32191); Manguezal do Rio Tavares, Trierveiler-Pereira 250. 31.V.2006 (FLOR 32035); ibid, Trierveiler-Pereira & Marcon-Baltazar 266. 29.VI.2006 (FLOR 32036).

Trichaptum biforme (Fr.) Ryvarden, Norw. J. Bot. 19(3–4): 237 (1972) FIG. 18
≡ Polyporus biformis Fr., in Klotzsch, Linnaea 8: 486 (1833)


COMMENTS — This species is characterized by a purplish hymenial surface when fresh and split pores (Ryvarden & Johansen 1980). Macroscopically, T. biforme is similar to T. byssogenum, but with smaller pores, clavate thick-walled cystidia, and cylindrical basidiospores. Trichaptum fuscoviolaceum (Ehrenb.) Ryvarden has similar cystidia, but it prefers conifers and does not occur in the tropics (Gilbertson & Ryvarden 1987).

DISTRIBUTION — cosmopolitan (Gilbertson & Ryvarden 1987).

SUBSTRATE — dead trunks of A. schaueriana and L. racemosa; unidentified wood.


**COMMENTS** — This species resembles *T. biforme*, but with larger pores, broadly ellipsoid basidiospores, and slightly thick-walled, fusoid cystidia. This species was recorded from Brazilian mangroves by Campos et al. (2003) and Sotão et al. (2003).

**DISTRIBUTION** — pantropical (Ryvarden & Johansen 1980).

**SUBSTRATE** — unidentified wood.

Schizophyllaceae Quél.

**Schizophyllum commune** Fr., Observ. mycol. (Havniae) 1: 103 (1815)


**COMMENTS** — This species is characterized by white to gray pilei, with split lamellae, and basidiospores 5–6 µm long. *Schizophyllum brasiliense* W.B. Cooke resembles *S. commune*, however it has brown pilei and basidiospores up to 9 µm long (Cooke 1961). *Schizophyllum commune* was recorded from Brazilian mangroves by Campos et al. (2003) and Sotão et al. (2003).

**DISTRIBUTION** — cosmopolitan (Cooke 1961).

**SUBSTRATE** — living or dead trunks of *A. schaueriana*; unidentified wood.

Voucher material — BRAZIL. SANTA CATARINA: Ilha de Santa Catarina. Mangueal do Itaconbi, Trierveiler-Pereira & Name 013. 01.IV.2005 (FLOR 32072); ibid, Trierveiler-Pereira & Baltazar 177. 24.II.2006 (FLOR 32082); Mangueal do Rio Tavares, Trierveiler-Pereira & Mozerle 209. 27.IV.2006 (FLOR 32087); ibid, Trierveiler-Pereira & Baltazar 254. 29.VI.2006 (FLOR 32097).
Schizoporaceae Jülich

**Corticium sambuci** Pers., Neues Mag. Bot. 1: 111 (1794)

**DESCRIPTION** — This species is characterized by resupinate, white basidiomata, capitate cystidia, and thin-walled hyphae. *Hyphodontia sambuci* resembles *H. griseliniae* (G. Cunn.) Langer and *H. fimbriata* Sheng H. Wu, but they can be differentiated by basidiospore size and basidiomata morphology (Langer et al. 2007).

**DISTRIBUTION** — cosmopolitan (Langer et al. 2007).

**SUBSTRATE** — dead trunks of *A. schaueriana*.

**VOUCHER MATERIAL** — BRAZIL. SANTA CATARINA: Ilha de Santa Catarina. Manguezal do Rio Tavares, Trierveiler-Pereira, Maccarini & Assis 301. 05.VIII.2006 (*FLOR 32017*).

*Schizopora paradoxa* (Schrad.) Donk, Persoonia 5(1): 76 (1967)


**COMMENTS** — This species is similar to *S. flavipora* (Berk. & M.A. Curtis ex Cooke) Ryvarden and *S. radula* (Pers.) Hallenb. (Gilbertson & Ryvarden 1987). *Schizopora flavipora* may be differentiated from *S. paradoxa* by its smaller pores (3–5 versus 1–3 per mm) and smaller basidiospores (3.5–4.5 versus 5.5–6.5 µm long); whereas *S. radula* has smaller basidiospores (4–5.5 µm long) and an orange pore surface.

**DISTRIBUTION** — cosmopolitan (Núñez & Ryvarden 2001).

**SUBSTRATE** — dead trunks of *A. schaueriana*, *R. mangle* and *L. racemosa*; unidentified wood.

Conclusions

In their comprehensive study, Baltazar et al. (2009a) reported 112 xylophilous basidiomycetes species from mangrove forests. This study adds 15 species (13.4%) to that list for a total of 127 species. In addition, four species are recorded for the first time from Brazilian mangrove forests. Furthermore, we add 8 new records to the basidiomycete mycota in the State of Santa Catarina, which has been studied for twenty years with 157 recorded species (Drechsler-Santos et al. 2008).

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Literature cited


