

## Neotypification of *Amauroderma picipes* Torrend, 1920 (*Ganodermataceae*, *Agaricomycetes*)

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The holotype of *Amauroderma picipes*, described by Torrend in 1920 from material collected in the State of Bahia, Brazil, was recently located in herbarium URM, but it was in poor conditions. Due to the loss of the typical characteristics of the species, a neotype is designated here. The material chosen for *A. picipes* was collected in the State of Rio de Janeiro and deposited in herbarium SP (95472) as *A. schomburgkii* f. *schomburgkii*. A full modern description, pictures of the basidiomata and basidiospores in light microscopy and SEM are provided.

**Key words** – *Ganodermataceae* – taxonomy – typification – Brazil

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### Introduction

*Amauroderma* Murrill comprises about 30 species (Kirk et al. 2008) of tropical distribution, with the main centre of diversity in the neotropics (Ryvarden 2004). For the neotropical region 21 species were cited by Ryvarden (2004) while in Brazil this genus is represented by 20 species (Campacci & Gugliotta 2009, Gugliotta et al. 2010). *Amauroderma* is morphologically variable, but the basidiomata are usually centrally to laterally stipitate and the basidiospores are globose to subglobose, occasionally subelliptical, rarely oblong, hyaline to pale yellow and double-walled with an ornamented or very rarely smooth endosporium (Furtado 1981, Ryvarden 2004, Gomes-Silva et al. 2010).

After the description of the genus by Murrill in 1905, authors like Torrend (1920), Furtado (1981), Moncalvo & Ryvarden (1997) and Ryvarden (2004) provided valuable contributions to its systematics. Among these

works, Torrend (1920) described 27 Brazilian species, of which three (*A. gusmanianum* Torrend, *A. mosselmanii* Torrend, *A. picipes* Torrend) were new to science. *Amauroderma gusmanianum* and *A. mosselmanii* are synonyms of *A. schomburgkii* (Mont. & Berk.) Torrend, but *A. picipes* is a valid species according to CBS ([www.cbs.knaw.nl](http://www.cbs.knaw.nl)), Index Fungorum ([www.indexfungorum.org](http://www.indexfungorum.org)) and Mycobank ([www.mycobank.org](http://www.mycobank.org)). However, Furtado (1981) and Ryvarden (2004) do not mention *A. picipes* in their works. According to Moncalvo & Ryvarden (1997) the type specimen was lost and they suggested that the name should be abandoned. Campacci & Gugliotta (2009) reported 20 *Amauroderma* species in Brazil and mentioned that *A. picipes* is insufficiently known, because no modern description has been found in the literature.

C. Torrend was a well-known mycologist and part of his fungal collection, including important Brazilian specimens, was later

deposited in the Herbarium Padre Camille Torrend (URM). The type specimen of *A. picipes*, originally described from the State of Bahia (Torrend 1920), was recently located in URM (Fig 1), after nearly a century. Unfortunately, it was partially destroyed by insects and only the stipe remains in good condition. A duplicate of this type was not deposited in any other herbaria. This study aimed to designate a neotype and to provide a modern description and illustrations of the species.

## Methods

Specimens of *Amauroderma* deposited in Herbaria SP and URM were analysed. Basidiomata were examined macro- (shape, colour, hymenial surface) and micromorphologically (hyphal system, sterile structures and basidiospores). Microscopical observations were made from slide preparations with 5% KOH, stained with 1% of aqueous phloxine, and Melzer's reagent (Ryvarden 1991). Colour designation followed Watling (1969).

Scanning electron microscopy (SEM) was conducted at the Laboratório de Microscopia Eletrônica (DF/UFPE). Sections were removed from dried basidiomata and mounted directly on aluminum stubs using carbon adhesive tabs. The fragments were coated with 8–13 nm of gold using a Baltec SCD050 sputter coater and examined with a JEOL JSM-5900 scanning electron microscope.

## Taxonomy

*Amauroderma picipes* Torrend, Brotéria, sér. bot. 18: 132 (1920). Figs 2–6

*Basidiomata* annual, solitary, centrally to laterally stipitate, very light in weight when dry, rigid; *pileus* single, circular to semicircular, plane to slightly convex, slightly depressed in the center, up to 3.2–3.7 cm wide, 2.2–3.5 cm high, 0.6–0.7 mm in total thickness, firm; *upper surface* glabrous to hispid, dull to slightly shiny, azonate, radially sulcate, cigar brown (16) to fuscous black (36); *margin* obtuse, entire, inflected, concolorous with the upper basidiomata surface; *pore surface* snuff brown (17) to cigar brown (16), pores round, 5–6 per mm, dissepiments entire to slightly

lacerate, thin; *context* snuff brown (17) to fulvous 12, with two black lines originated from stipe, fibrous, compact to loose, soft, up to 0.2–0.3 mm thick; *tubes* concolorous with the context, fibrous, compact, up to 0.2–0.4 mm deep; *stipe* fuscous black (36) to violaceous black (38), cylindrical, centrally to laterally inserted in the pileus, slightly incurved from the base, shiny, laccate, up to 7.5–8.0 cm long, base and apex up to 0.4–0.5 cm in diam, context of the stipe cigar brown (16) and snuff brown (17) in center, with two black lines, soft but slightly firm.

*Hyphal system* dimitic; generative hyphae with clamp connections, hyaline to yellow, thin-walled, 1.5–2.5 µm in diam.; arboriform skeletal hyphae hyaline to yellow, thick-walled to solid, 4.0–5.0 µm in diam., slightly dextrinoid; *basidia* not seen; *hyphal pegs* absent; basidiospores globose to subglobose, hyaline to pale yellow in KOH, thick-walled, with endosporium finely ornamented, 9.0–11.0 × 7.0–8.0 µm, slightly dextrinoid.

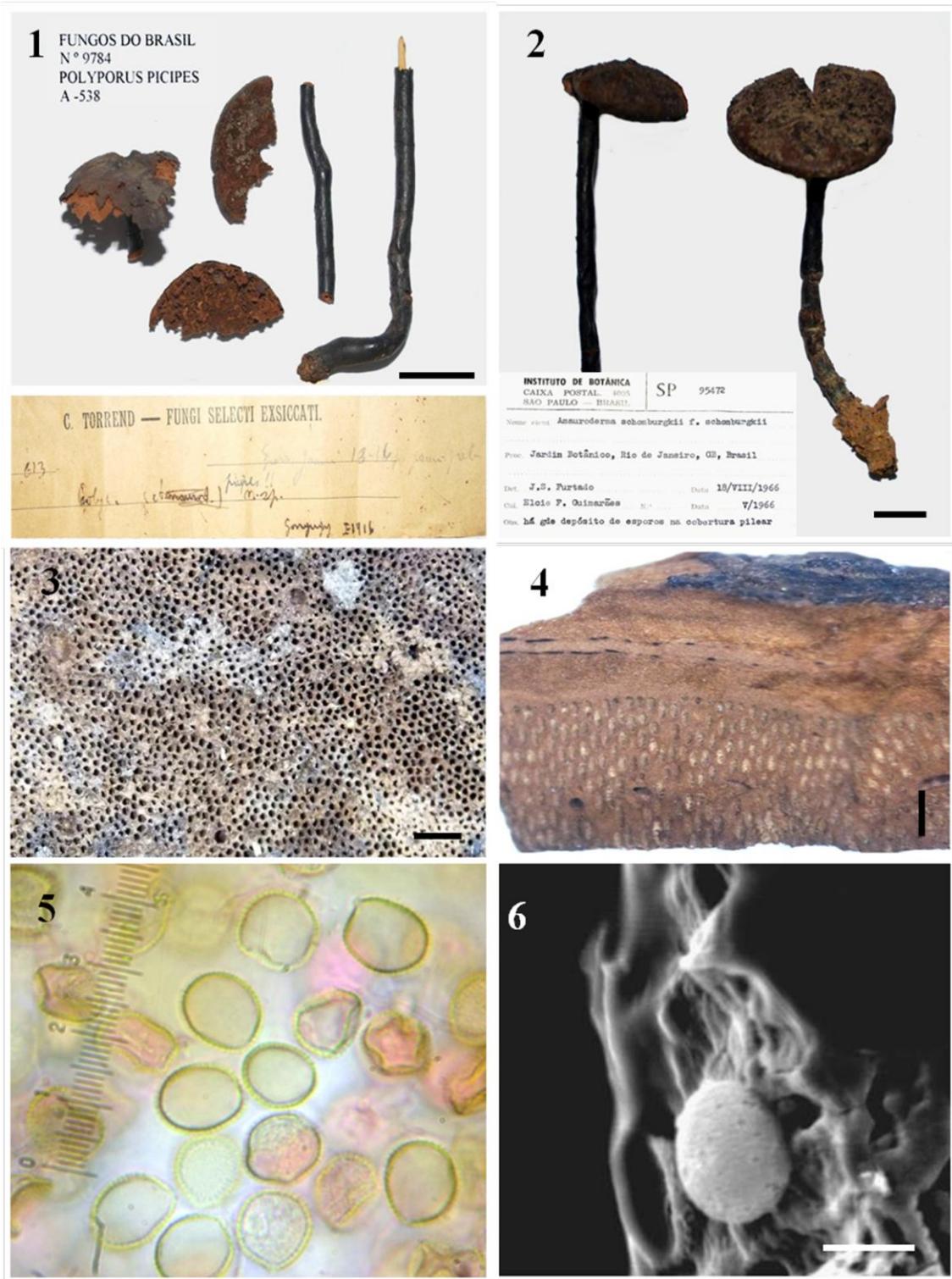
Known distribution – Brazil (Torrend 1920).

Material examined – **Type:** BRAZIL, State of Bahia, Gongugy, loc. n. det., Jan 1916, C Torrend, 613 [URM 9784 (A-538)]. **Neotype** (here designated): BRAZIL, State of Rio de Janeiro, Rio de Janeiro, Jardim Botânico, May 1966, leg E.F. Guimarães, s.n [SP 95472, as *A. schomburgkii* f. *schomburgkii* (Mont. & Berk.) Torrend].

Remark: The black to brownish, centrally stipitate basidiomata, the laccate stipe, azonate pileus surface, small pores (5–6 per mm), brownish context with two black lines and finely ornamented, large basidiospores (9.0–11.0 × 7.0–8.0 µm) are typical for this species.

## Discussion

*Amuroderma picipes* was one of many new species described by Torrend while in Brazil. This species was described in 1920 and not mentioned again in the literature until Moncalvo & Ryvarden (1997) reported the type specimen as lost and suggested this name be abandoned. During the revision of *Amauroderma* deposited in Herbaria SP and URM,



**Figs 1–6** *Amauroderma picipes* **1** Type specimen. **2** Basidiomata (neotype). **3** Pore surface (neotype). **4** Context with two black lines and tubes (neotype). **5** Basidiospores in light microscopy (neotype). **6** Basidiospores in SEM (type). – Scale (1 and 2 = 1 cm, 3 and 4 = 1 mm, 6 = 5 µm).

new and interesting species were discovered, among these the type specimen of *A. picipes* in URM (1234) and a specimen identified in 1981

by Furtado as *A. schomburgkii* f. *schomburgkii* SP 95472), which is designated as the neotype of *A. picipes* in this article. These new

discoveries, based in material deposited in Brazilian Herbaria, evidence the importance of herbarium revisions and accessibility of herbaria records to the knowledge of fungal diversity.

In the protologue, Torrend indicated the collection site (Forêt de Gonguy, Bahia) and briefly described the species in French: “*Chapeau orbicularie légèrement déprime au centre, de près de 3 cm de diam., très régulier, brun-noirâtre, à bords très élégamment infléchis et appliqués sur un pourtour de près de 3–4 mm de longueur; stipe de 6–7 cm de long sur 3 mm de large recouvert d'une fine croûte noire et luisante, sur un tissu brun cannelle; tissu du chapéu brun cannelle; pores concolores, de 2–3 mm de long, très petits, brun pâle à l'orifice; spores lisses, jaunes, grandes, globuleuses, de 10–12 µm, avec de nombreuses spores conidiales de 4–5 µm*”. After examining the type species, we conclude that the macro- and microscopic features of *A. schomburgkii* f. *schomburgkii*, collected in 1966 by E.F. Guimarães, in Jardim Botânico (= Botanical Gardens), in the former State of Guanabara, now State of Rio de Janeiro, in the city of Rio de Janeiro (SP 95472) agree with Torrend’s original description of this taxon. According to Torrend (1920), this species is remarkable because of its regular shape, the inflexed margins, black laccate stipe and black basidiomata. *Amauroderma schomburgkii* (Mont. & Berk.) Torrend is a distinct species, characterised by robust basidiomata, red brown upper surface, non laccate stipe, small and distinctly ornamented basidiospores (7–9 µm in diam.), features that distinguish this species from *A. picipes*.

In the original description, Torrend (1920) mentions “spores lisses”, but they are finely ornamented in light microscopy and slightly verrucose in SEM (Fig 6). The size of the basidiospores, 9.0–10.0 × 7.0–8.0 µm observed in type, differs from the original description (10–12 µm), but the analysis of the type revealed smaller basidiospores as well as in the neotype. The presence of “*nombreuses spores conidiales de 4–5 µm*” mentioned in the original description probably refers to spores of fungal contaminants and do not belong to

the species. According to Torrend, *A. picipes* should be compared with *A. leptopus* (Pers.) J.S. Furtado, *A. renidens* (Bres.) Torrend and *A. nigrum* Rick, but the presence of a laccate stipe distinguishes it from the others species described in *Amauroderma*.

*Amauroderma picipes* is a valid species and should be taken into account in research about neotropical diversity. New collections will be welcomed and will provide data about the variability of the species.

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### References

- Campacci TVS, Gugliotta AM. 2009 – A review of *Amauroderma* in Brazil, with *A. oblongisporum* newly recorded from the neotropics. Mycotaxon 110, 423-436.
- Furtado JS. 1981 – Taxonomy of *Amauroderma* (*Basidiomycetes, Polyporaceae*). Memoirs of the New York Botanical Garden 34, 1-109.
- Gomes-Silva AC, Baltazar MB, Ryvarden L, Gibertoni TB. 2010 – *Amauroderma calcigenum* (*Ganodermataceae, Basidiomycota*) and its presumed synonym *A. Partitum*. Nova Hedwigia 90(3-4), 449-455.
- Gugliotta AM, Silveira RMB, Loguerio Leite C, Campos-Santana M, Gibertoni TB, Drechsler-Santos ER, Gomes-Silva AC, Baltazar JM. 2010 – *Polyporales*. In Lista de Espécies da Flora do Brasil. Jardim Botânico do Rio de Janeiro.

- (<http://floradobrasil.jbrj.gov.br/2010/FB092405>).
- Kirk PM, Cannon PF, Minter DW, Stalpers JA. 2008 – Dictionary of the Fungi. 10<sup>th</sup> ed. CABI Publishing, Surrey, 771 pp.
- Moncalvo, JM, Ryvarden L. 1997 – A nomenclatural study of the *Ganodermataceae*. *Synopsis Fungorum* 11. Fungiflora. Oslo. 114 pp.
- Ryvarden L. 1991 – Genera of Polypores – Nomenclature and taxonomy. Fungiflora, Oslo.
- Ryvarden L. 2004 – Neotropical Polypores. Part 1. Fungiflora, Oslo.
- Torrend C. 1920 – Les Polyporacées du Brésil: Polyporacées stipitées. Brotéria, Série Botânica 18(1), 121–142.
- Watling R. 1969. – Colour Identification Chart. Her Majesty's Stationery Office, Edinburgh.