Botanica
ISSN 2538-8657
https://doi.org/10.35513/Botlit.2025.4.5
2025, 31(4): 190–195

Communication

Discovery of *Tremella spectabilis* (Tremellales, Basidiomycota) in a semiarid montane forest in Brazil

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Received: 10 May 2025. Accepted: 21 November 2025. Published online: 28 November 2025.

Abstract

Valões-Araújo J.C., Wartchow F., 2025: Discovery of *Tremella spectabilis* (Tremellales, Basidiomycota) in a semiarid montane forest in Brazil. – Botanica, 31(4): 190–195. https://doi.org/10.35513/Botlit.2025.4.5

Tremella spectabilis is recorded for the first time from the caatinga biome of Paraíba, the northeastern region of Brazil. It was collected in a montane forest surrounded by caatinga vegetation (locally called 'brejo de altitude'). The species is characterised by the yellow basidioma with a mat surface covered by a fine whitish prunina, basidiospores measuring 7.5–9.7(–10.2) × 5.1–8.2 µm, and the basidioma context possessing hyphae with frequent swelling between the septa and sometimes open, showing slightly conspicuous medallion clamps, similar to those found in its synonym, *Tremella australiensis*. The closest species to *Tremella spectabilis* is *Tremella aurantia* sensu stricto, which differs in having clavate, distinctly stalked basidia, and a context presenting exclusively thin-walled, narrow and uninflated hyphae.

Keywords: fungi, Neotropics, taxonomy, Tremellomycetes.

INTRODUCTION

Tremella sensu lato is a group of fungi comprised of predominantly mycoparasitic species of many basidiomycetes (Corticiales, Polyporales, Rhytismatales and Russulales, in the genera *Peniophora* Cooke and *Stereum* Hill ex Pers.), as well as non-lichenised ascomycetes, e.g. Diaporthales, Pleosporales and Xylariales (Zhao et al., 2019). Other species are lichenicolous and primarily host-specific, mostly confined to a single host genus, as *Tremella parmeliarum* Diederich growing on *Parmotrema* A. Massal. (Diederich et al., 2022). These fungi cause damage to their host due to the presence of antifungal metabolites produced by the parasite (Persson & Friman, 1993). Also, some members of this fungal group produce metabolic compounds with anti-insect activity, thereby preventing insect fungivory (Gloer, 1995).

The genus is considered the largest and most polyphyletic among Tremellaceae, with about 90 known species. It is characterised as a dimorphic fungus with an asexual stage as a unicellular monokaryotic yeast and a sexual dikaryotic filamentous stage (Zhao et al., 2019). Studies by Milanes et al. (2011) and Liu et al. (2015a) have already indicated the polyphyly of *Tremella* sensu lato, serving as a base for Liu et al. (2015b), who have considered Tremellaceae containing '*mesenterica* clade', corresponding to *Tremella* sensu stricto, and the '*aurantia* clade' treated as *Naematelia* Fr. with *Naematelia en-*

cephala (Pers.) Fr. as type species (Liu et al., 2015a, b; Hawksworth et al., 2016).

In Brazil, at least 10 taxa of *Tremella* sensu lato are known: *Naematelia aurantia* (Schwein.) Burt, *Phaeotremella foliacea* (Pers.) Wedin, J.C. Zamora & Millanes, *Tremella auricularia* Möller, *Tremella brasiliensis* (Möller) Lloyd, *Tremella compacta* Möller, *Tremella dysenterica* Möller, *Tremella fibulifera* Möller, *Tremella fuciformis* Berk., *Tremella mesenterica* Retz., *Tremella philippinensis* Lloyd, *Tremella rubromaculata* Lowy, *Tremella subfibulifera* Alvarenga, F. Wu, L.F. Fan & Y.C. Dai, and *Tremella wrightii* Berk. & M.A. Curtis (Möller, 1895; Burt, 1921; Lowy, 1971; Roberts & de Meijer, 1997; Alvarenga & Xavier-Santos, 2015; Wedin et al., 2016; Fan et al., 2021).

Here, we describe a record of *Tremella spectabilis*, a species originally described from Santa Catarina (Brazil) by Möller (1895). This species had previously been known only from the single type locality indicated on the holotype label, which is deposited at the Herbarium of the University of Hamburg (HBG), Germany (Friedrichsen, 1977). The species was rediscovered in a montane forest surrounded by caatinga vegetation in northeastern Brazil.

MATERIALS AND METHODS

Basidiomata of *Tremella* were collected in a montane forest surrounded by caatinga vegetation (locally known as 'brejo de altitude') in the State Park of 'Pau-Ferro Forest'. The characterisation of the area has already been summarised by Sá & Wartchow (2016).

The description of the macroscopic features was based on fresh material. Kelly (1965) was followed for colour codes and names. Description of the microscopic features was based on dried specimens that were rehydrated in 3% KOH for spore dimensions, mounted in Congo red to observe the hymenium and context, and also mounted in water for pigment localisation. Twenty-five spores were measured. Extreme measurements are indicated within parentheses. The material is deposited at the Federal University of Paraíba, Brazil (JPB).

Fig. 1. *Tremella spectabilis* (JPB 63973). Basidioma. Scale bar corresponds to 20 mm.

RESULTS

Tremella spectabilis Möller, Protobasidiomyceten: 122. 1895.

Basidioma (Fig. 1) 45 mm high and 70 mm wide; epigeous and suberect, arising from a single base, watery gelatinous when fresh, tough after drying; slightly sub-cerebriform to irregularly foliose with tree lobes; surface mat, covered with a fine whitish prunina overall; bright yellowish (paler than 83brill.Y and brighter than 89.p.Y) with tiny scattered or occasional dark blood-red granular spots; pale orange yellow (71.m.OY) after dried; context hollow at lobes, turning more solid toward base close region where it is attached to substrate.

Basidiospores (Fig. 2) are 7.5–9.7(–10.2) × 5.1–8.4 µm, with mean size 8.6 µm × 6.7 µm, length and width ratio is (1.25–)1.29–1.60(–1.65), mean length and width ratio is 1.37, hyaline, inamyloid, mostly ellipsoid but sometimes broadly ellipsoid to elongate, frequently adaxially flattened, smooth, thin walled, sometimes with two guttules. Basidia (Fig. 2, Fig. 4) tremelloid, 11.7–14.3 × 9.2–13.5 µm (entire width), 4- but sometimes 2-celled; whole basidium subglobose to broadly clavate in side view, occasionally very short-stalked, each cell broadly clavate to clavate; septae longitudinally oriented then frequently cruciate; sterigmata one for each cell 14–30 µm long and 2 µm wide. Immature basidia 11–13 × 8–10 µm. Hymenium showing abundant, sparingly ramified hyphae, knobbed and sometimes ramified. Cystidia absent. Context (Fig. 3, Fig. 4) monomitic, comprising about 5–14 µm wide hyphae, immersed in a gelatinous matrix, frequently swelling between septa and sometimes open, showing a slightly conspicuous medallion, and regularly more or less constricted, intrahyphal cells are frequent; walls are mostly thin or only slightly thin-walled. Clamp connections proliferated, but not particularly conspicuous.

Known distribution. Atlantic Forest from Santa Catarina (Möller, 1895), and now from a 'brejo de altitude' forest in the Caatinga domain at Paraíba.

Habitat. On rotten wood near unidentified *Stereum* specimens.

Material examined. Brazil, Paraíba, Areia, Parque Estadual da Mata do Pau-Ferro, 10º38'59" S and 40º22'25" W, 18 July 2013, F. Wartchow FW 53/2013 (JPB 63973).

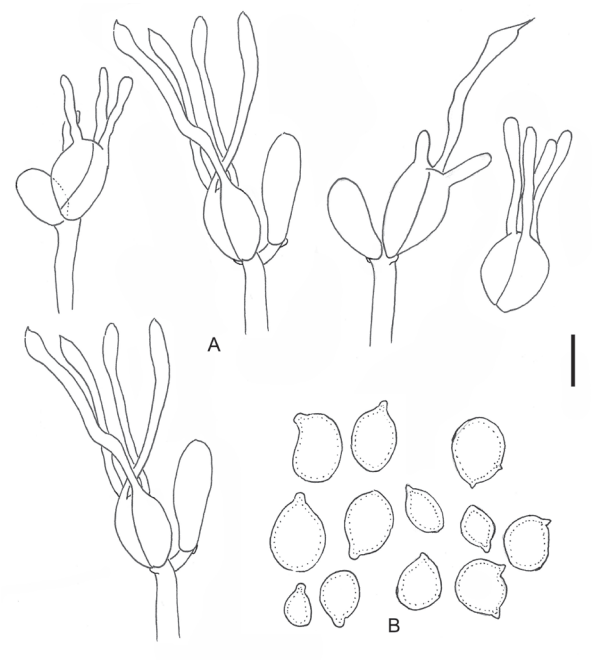

Fig. 2. *Tremella spectabilis* (JPB 63973). A – basidia; B – basidiospores. Scale bar corresponds to 10 µm.

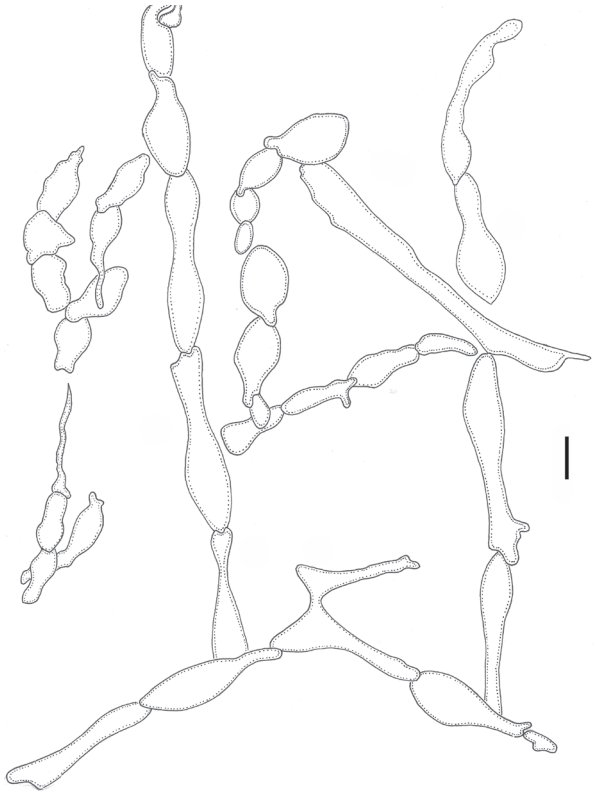

Fig. 3. *Tremella spectabilis* (JPB 63973). Hyphae of the context showing the swelling portions between the septa. Scale bar corresponds to 10 µm.

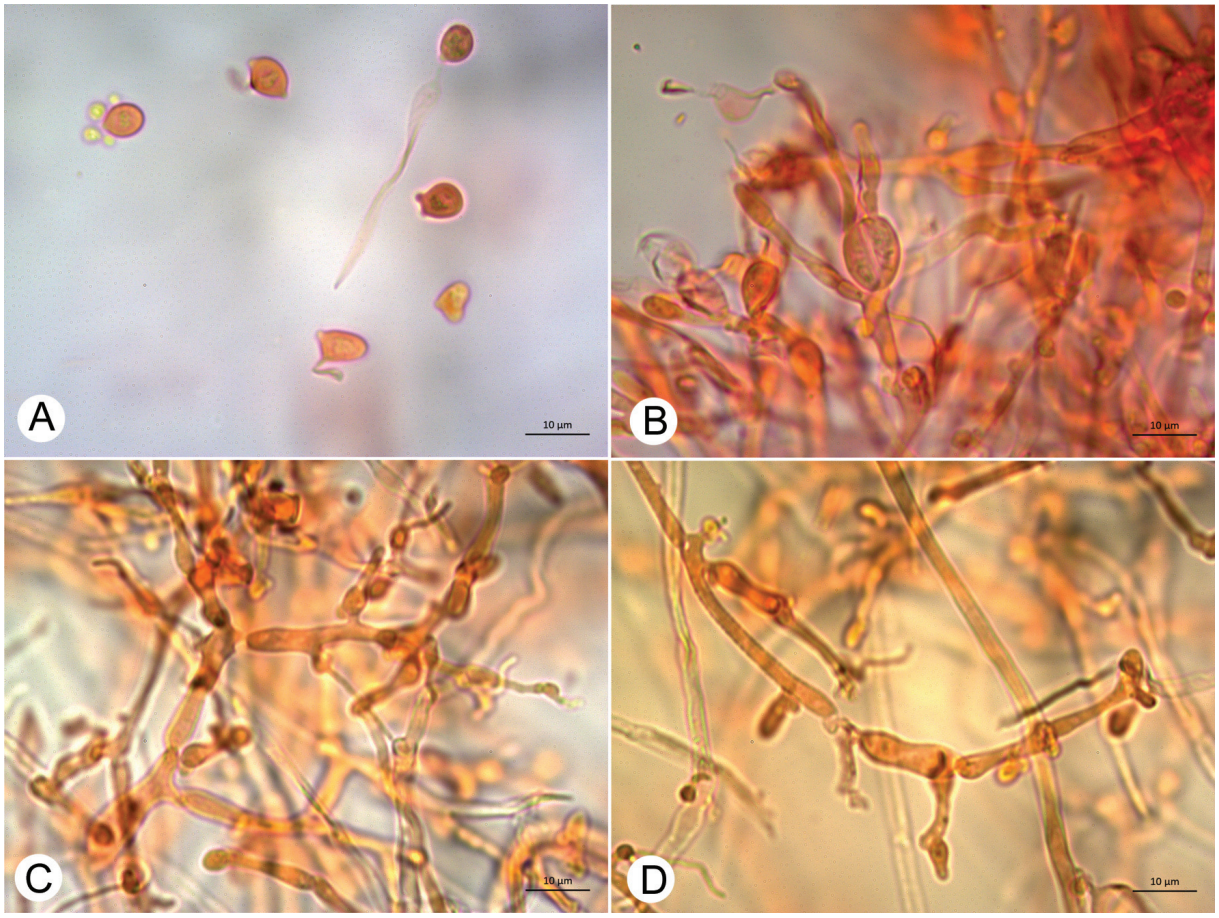

Fig. 4. *Tremella spectabilis* (JPB 63973). A – basidiospores; B – basidia; C–D – hyphae of the basidioma context showing the swelling portions between the septa. Scale bar corresponds to 10 µm.

During this research, we attempted to extract DNA for phylogenetic studies, but unfortunately, it was unsuccessful. Another question that must be raised here is that the jelly fungi belonging to the *aurantia* group have mat basidiomata with the surface covered by an apparent pruina. This characteristic was frequently reported for *Tremella aurantia* (Burt, 1921; Bandoni, 1961; Roberts, 1995, 1999), the type species of *Naematelia*. Unfortunately, this point has not been informed by the poor morphological characterisation of the genus by Liu et al. (2015b). In the future, the generic concept must be amended to better understand this group. In this report, we still prefer to retain the epithet '*spectabilis*' in *Tremella* until this issue has been elucidated.

DISCUSSION

The specimen of *Tremella spectabilis* analysed here is characterised by the yellow basidioma with a mat surface covered by a fine whitish prunina overall with very scattered blood-red spots (Fig. 1), and basidiospores measuring 7.5–9.7(–10.2) × 5.1–8.2 µm (Fig. 2, Fig. 4). However, the most evident feature is related to the very peculiar context (Fig. 3, Fig. 4): the hyphae are frequently swelling between the septa and sometimes open, showing slightly conspicuous medallion clamps, and regularly more or less constricted (see also Bandoni & Oberwinkler, 1983: 862–863), similar to what is found in *Tremella australiensis* Lloyd (Chen et al., 2001). On the other hand, Bandoni & Oberwinkler (1983), Roberts (1995), and Roberts & de Meijer (1997) consider *Tremella spectabilis* and *Tremella australiensis* as synonyms of *Tremella aurantia*; however, this conclusion has been rejected by Chen et al. (2001).

Thus, *Tremella aurantia* sensu stricto (Table 1) readily differs from *Tremella spectabilis* in the clavate and distinctly stalked basidia, context present-

Table 1. Comparison between *Tremella spectabilis* and related species (Bandoni & Oberwinkler, 1983; Roberts & de Meijer, 1997)

Species	Basidioma colour	Basidioma surface	Context hyphae	Basidia
Tremella spectabilis	yellow	mat, covered with a fine whitish prunina overall	5–14 µm wide, frequently swelling between septa and sometimes open, showing a slightly conspicuous medallion, and regularly more or less constricted	unstalked
Tremella aurantia	yellow	mat, covered with a fine whitish prunina overall	thin-walled, narrow and uninflated, up to 2.5 µm wide	stalked
Tremella dysenterica	yellow then reddish	lubricous-gelatinous,	thick-walled, 2.5–3.5 µm wide, with walls thickening to 3 µm	unstalked
Tremella fibulifera	whitish	not informed	septa having a complex with 2–3 clamps, on which two or more branches originated from the single spot, measuring 2–4 µm in diam. then swollen to 7 µm	unstalked

ing exclusively thin-walled, narrow and uninflated hyphae up to 2.5 µm in diameter, and presenting regular clamp connections (Roberts, 1995; Roberts & de Meijer, 1997).

Two additional Brazilian species (Table 1) share some characteristics with *Tremella spectabilis*: *Tremella dysenterica* also from south Brazil differs in the yellow then reddish basidiomata with lubricous surface, and the context bearing thick-walled hyphae 2.5–3.5 µm wide with walls thickening to 3 µm (Bandoni & Oberwinkler, 1983; Roberts & de Meijer, 1997); and *Tremella fibulifera* differs macroscopically in the whitish basidiomata, and although also presenting peculiar hyphae context, the septa bear a complex with 2–3 clamps, on which two or more branches originated from the single spot, the hyphae measuring 2–4 µm in diam., then swollen to 7 µm, and mostly the narrower basidiospores 8–9(–12.5) × 5–6.5(–8) µm (Bandoni & Oberwinkler, 1983; Roberts & de Meijer, 1997).

ACKNOWLEDGEMENTS

The authors kindly acknowledge Dr Rivete S. Lima (Laboratory of Plant Anatomy, Federal University of Paraíba) for assistance with the microphotographs. National Council for Scientific and Technological Development is acknowledged by funding the projects "Program in Biodiversity Research" (PPBio Proc. 60/2009), and "Agaricoid Fungi in Atlantic Forest and Caatinga in the State of Paraíba" (Universal Call Proposal Proc. 420.448/2016-0), and by the concession of "Research Productive" grant (Proc. 307922/2014-6, Proc. 307947/2017-3, Proc. 309652/2020-0 and Proc. 307423/2023-9) for FW, and Scientific Initiation scholarship (Proc. 307947/2017-3) for JCV-A.

Author contributions. JCV-A: writing, reviewing and editing, writing the original draft, investigation, methodology, data analysis; FW: writing, reviewing and editing, writing the original draft, supervision, investigation. Both authors have read and approved the final version of the article.

REFERENCES

Alvarenga R.L.M., Xavier-Santos S., 2015: A checklist of jelly fungi (Agaricomycotina: Basidiomycota) recorded in Brazil. – Mycotaxon, 130(3): 926. https://doi.org/10.5248/130.925

Bandoni R.J., 1961: The genus *Naematelia*. – The American Midland Naturalist, 66(2): 319–328. https://doi.org/10.2307/2423032

Bandoni R.J., Oberwinkler F., 1983: On some species of *Tremella* described by Alfred Möller. – Mycologia, 75(5): 854–863. https://doi.org/10.1080/00275514.1983.12023760

Burt E.A., 1921: Some North American Tremellaceae, Dacryomycetaceae and Auriculariaceae. – Annals of the Missouri Botanical Garden, 8(4): 361–396. https://doi.org/10.2307/2989988

Chen C.-J., Oberwinkler F., Chen Z.-C., 2001: Restudy of some type specimens of *Tremella* (I). – Mycotaxon, 77: 2015–224.

Diederich P., Millanes A.M., Wedin M., Lawrey J.D., 2022: Flora of Lichenicolous Fungi. Volume 1. Basidiomycota. Luxembourg.

Fan L.-F., Mendes-Alvarenga R.L., Gibertoni T.B., Wu F., Dai Y.-C., 2021: Four new species in

the *Tremella fibulifera* complex (Tremellales, Basidiomycota). – MycoKeys, 82: 33–56. https://doi.org/10.3897/mycokeys.82.63241

Friedrichsen I., 1977: Das Schicksal der von A. Moller in Brasilien (1890–1895) gesammelten Pilze sowie eine Liste der noch vorhanden en Sammlungsstiicke. – Mitteilungen aus dem Institut für allgemeine Botanik in Hamburg, 15: 99–104.

Gloer J.B., 1995: The chemistry of fungal antagonism and defense. – Canadian Journal of Botany, 73(S1): 1265–1274. https://doi.org/10.1139/b95-387

Hawksworth D.L., Millanes A.M., Wedin M., 2016: Fixing the application of the generic name *Naematelia* (Tremellales) by lectotypification. – Taxon, 65(5): 1093–1096. https://doi.org/10.12705/655.10

Kelly K.L., 1965: Color name charts illustrated with centroid colors. Standard Sample No. 2106. Supplement to National Bureau of Standards Circular No. 553. Washington.

Liu X.-Z., Wang Q.-M., Theelen B., Groenewald M., Bai F.-Y., Boekhout T., 2015a: Phylogeny of tremellomycetous yeasts and related dimorphic and filamentous basidiomycetes reconstructed from multiple gene sequences analyses. – Studies in Mycology, 81: 1–26. https://doi.org/10.1016/j.simyco.2015.08.001

Liu X.-Z., Wang Q.-M., Göker M., Groenewald M., Kachalkin A.V., Lumbsch H.T., Milanes A.M., Wedin M., Yurkov A.M., Boekhout T., Bai F.-Y., 2015b: Towards an integrated phylogenetic classification of the *Tremellomycetes*. – Studies in Mycology, 81: 85–147. https://doi.org/10.1016/j.simyco.2015.12.001

Lowy B., 1971: Tremellales. – Flora Neotropica, 6: 1–153.

Milanes A.M., Diederich P., Ekman S., Wedin M., 2011: Phylogeny and character evolution in the jelly fungi (Tremellomycetes, Basidiomycota, Fungi). – Molecular Phylogenetics and Evolution, 61: 12–28. https://doi.org/10.1016/j.ympev.2011.05.014

Möller A., 1895: Protobasidiomyceten. – Botanishe Mittheilungenaus den Tropen, 8: 1–179.

Persson Y., Friman E., 1993: Intracellular proteolytic activity in mycelia of *Arthrobotrys oligospora* bearing mycoparasitic or nematode trapping structures. – Experimental Mycology, 17(3): 182–190. https://doi.org/10.1006/emyc.1993.1017

Roberts P., 1995: British *Tremella* species I: *Tremella aurantia* & *T. mesenterica*. – Mycologist, 9(3): 110–114. https://doi.org/10.1016/S0269-915X(09)80270-X

Roberts P., 1999: British *Tremella* species II: *T. encephala*, *T. steidleri* & *T. foliacea*. – Mycologist, 13(3): 127–131. https://doi.org/10.1016/S0269-915X(99)80044-5

Roberts P., de Meijer A.A.R., 1997: Macromycetes from the State of Paraná, Brazil. 6. Sirobasidiaceae e Tremellaceae. – Mycotaxon, 64: 261–283.

Sá M.C.A., Wartchow F., 2016: *Volvariella leucocalix* (Pluteaceae), a new species from the Brazilian semiarid region. – Mycosphere, 7(1): 30–35. https://doi.org/10.5943/mycosphere/7/1/3

Wedin M., Zamora J.C., Millanes A.M., 2016: *Phaeotremella foliacea* comb. nov. (Tremellales, Tremellomycetes, Agaricomycotina). – Mycosphere, 7(3): 295–296. https://doi.org/10.5943/mycosphere/7/3/4

Zhao Y., Liu X.-Z., Bai F.-Y., 2019: Four new species of *Tremella* (Tremellales, Basidiomycota) based on morphology and DNA sequence data. – MycoKeys, 47: 75–95. https://doi.org/10.3897/mycokeys.47.29180

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