





## Contributions to the fungal diversity of the Cerrado: new records of lignocellulolytic Agaricomycetes

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**ABSTRACT** – The Cerrado biome is considered a biodiversity hotspot. Nevertheless, it has one of the least known fungal diversities in Brazil. In order to increase knowledge of its diversity and distribution, samples were collected, in September of 2018, from three national conservation parks and one private property covering Cerrado regions in the states of Minas Gerais, Goiás, Tocantins and Maranhão. 53 specimens were identified, comprehending 37 species from 12 families and five orders of Agaricomycetes. Nine species are new records for the Cerrado and, amongst them, *Perenniporiella tepeitensis* is also a new record for Brazil. Brief descriptions and taxonomic issues of each species are presented, and knowledge of fungal diversity in the four states increased considerably.

**Keywords:** Basidiomycota, biodiversity, Brazil, conservation, Fungi.

**RESUMO** – Contribuições para a diversidade da funga do Cerrado: novos registros de Agaricomycetes lignocelulolíticos. O Bioma Cerrado é considerado um “hotspot” de biodiversidade, mesmo assim sua funga é uma das menos conhecidas do Brasil. A fim de contribuir para o conhecimento da diversidade e distribuição destes organismos, amostras foram coletadas, em setembro de 2018, em três parques nacionais de conservação e em uma propriedade privada que abrangem regiões do Cerrado nos estados de Minas Gerais, Goiás, Tocantins e Maranhão. 53 espécimes foram identificados, compreendendo 37 espécies pertencentes à 12 famílias e cinco ordens de Agaricomycetes. Nove espécies são novos registros para o Cerrado e, dentre elas, *Perenniporiella tepeitensis* é também um novo registro para o Brasil. Breves descrições e questões taxonômicas de cada espécie são apresentadas e o conhecimento da diversidade fúngica dos quatro estados aumentou consideravelmente.

**Palavras-chave:** Basidiomycota, biodiversidade, Brasil, conservação, fungos.

### INTRODUCTION

Fungi are one of the most poorly known kingdoms in the biodiversity of planet earth (Blackwell 2011; Mora *et al.* 2011). Nowadays, it is estimated that there are between 2.2 and 3.8 million fungi species with roughly 120,000 to 140,000 accepted so far, which means that, at best, we actually know only 8% of their total diversity (Hawksworth & Lücking 2017). Agaricomycetes is one of the most studied groups, with 30,143 known species distributed in 22 orders (He *et al.* 2019). They include wood-decomposing, phytopathogenic, and ectomycorrhizal species (Hibbett 2006), which points to their close ecological relationship with plants. On the other hand, Brazil is home to the world's richest flora (Forzza *et al.* 2012) and includes two biodiversity hotspots: Atlantic Forest and Cerrado (Mittermeier *et al.* 2004; Myers *et al.* 2000). Recent

taxonomic studies for the Cerrado biome (Abrahão *et al.* 2012; Abrahão *et al.* 2019; Alvarenga *et al.* 2015; Costa-Rezende *et al.* 2015; Bononi *et al.* 2017; Gibertoni & Drechsler-Santos 2010) listed only 134 Agaricomycetes species from a total of 753 fungi on the site-checklist of the Brazilian Flora 2020 (<http://floradobrasil.jbrj.gov.br>) for the region.

The Cerrado is located mainly in the central Brazilian plateau and comprises several phytophysiognomies, from forests to savannahs and fields, in its vast territory (Zuin 2020). Nevertheless, the constant and high deforestation rates over the years have transformed more than 50% of the biome into pasture and agricultural land, leaving less than half of the original land preserved (WWF 2019). Despite being the second largest biome in the country, occupying 23% of its area, it is only the fourth most sampled one (Forzza *et al.* 2012; Maia *et al.*, 2015). Tocantins, one

of the states partially covered by the Cerrado biome, is the least known state of Brazil, with only 25 species of fungi described for its territory, especially due to a lack of sampling and active groups of mycologists in the area (Maia *et al.* 2015). In addition, the overgrowing deforestation in the biome increases the threat on fungal knowledge, as recent studies have shown that Agaricomycetes diversity within the Cerrado can be influenced by factors such as vegetation, physiognomies and preservation levels in each area (Abrahão *et al.* 2019). Thus, this study aimed to increase the list of lignocellulolytic Agaricomycetes recorded for the Cerrado biome by exploring preserved areas and shedding light on fungal diversity and distribution in them. Furthermore, it alerts to the presence of non-sampled species within this biodiversity hotspot.

## MATERIAL & METHODS

### Samples and studied area

The Cerrado province is located in the Chacoan domain of the Neotropical region, covering ten Brazilian States (Bahia, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraná, Piauí, São Paulo and Tocantins), as well as Northeastern Paraguay and Bolivia (Morrone 2014). The climate is, according to Köppen-Geiger, tropical (Aw) with wet summers, from October to March, and dry winters, from April to September. The temperatures range from 22°C to 27°C and the average annual rainfall is 1500 mm. It is the second largest Brazilian biome, comprehending an original area of approximately 2 million km<sup>2</sup>. In contrast, the area under legal preservation reaches roughly 33.000 km<sup>2</sup> (Klink & Machado 2005; Ribeiro & Walter 1998; WWF 2019).

The field excursions occurred in September 2018, in three national conservation parks located in four States within the Cerrado province: the Parque Nacional Chapada dos Veadeiros, in Goiás (14°03'08.8"S 47°37'16.6"W), the Parque Nacional Serra da Canastra, in Minas Gerais (20°19'18.0"S 46°37'35.4"W) and the Parque Nacional Chapada das Mesas, in Maranhão (7°10'55.4"S 47°09'28.0"W). A private property, the Fazenda Prof.<sup>a</sup> Neusa, located in Tocantins (5°44'48.9"S 47°33'47.3"W), was also sampled.

### Morphological analysis and Identification

The specimens collected were deposited at ICN herbarium. Identification was based on micro- and macromorphology of the basidiomes. Microscopic observations were made from freehand cross sections of dried materials, mounted on microscope slides with water, Melzer's reagent, and either 5% KOH, plus 1% phloxine or isolated in order to observe basidia, basidiospores, sterile structures (if present), hyphal system and possible reactions. These structures, when found, were measured at least forty times. Ecological notes were taken in the field as well. Nomenclature and classification followed those used by He

*et al.* (2019), *Index Fungorum* ([www.indexfungorum.org](http://www.indexfungorum.org)) and other relevant and more specific articles. Geographical distribution for Brazil was mainly based on the site-checklist of the Brazilian Flora 2020 (<http://floradobrasil.jbrj.gov.br>).

## RESULTS AND DISCUSSION

A total of 53 specimens were analyzed, comprising 37 species belonging to 12 families and five orders of Agaricomycetes (Agaricales, Auriculariales, Gloeophyllales, Hymenochaetales and Polyporales). *Perenniporiella tepeitensis* (Murrill) Decock & R. Valenz is a new record for Brazil. Other eight species are new records for the Cerrado province: *Corioloopsis aspera* (Jungh.) Teng, Chung-kuo Ti Chen-chun, *Daedalea quercina* (L.) Pers., *Donkia pulcherrima* (Berk. & M.A. Curtis) Pilát, *Inonotus portoricensis* (Overh.) Baltazar & Gibertoni, *Microporellus dealbatus* (Berk. & M.A. Curtis) Murrill, *Panus fulvus* (Berk.) Pegler & R.W. Rayner, *Pleurotus djamor* (Rumph. ex Fr.) Boedijn and *Trametes membranacea* (Sw.) Kreisel. Plus, *Flavodon cf. flavus* (Klotzsch) Ryvarden represents the first record of the genus for the Cerrado province. They are marked with an \* in the checklist. Fig. 1, Fig. 2 and Fig. 3 show some of the specimens collected. The most represented order is Polyporales, with 22 species. Furthermore, we provide several new records for the sampled states: 17 for Goiás, 12 for Tocantins, six for Maranhão and four for Minas Gerais, considerably increasing fungal diversity knowledge in some of these widely unexplored locations. We only considered morphology for identifications, so some species are originally described outside the Neotropics. In such cases, although they have already been registered for the Neotropical region, more specific studies, including molecular data, would be interesting to determine their distribution and the true phylogenetic relationships of these taxa. In this sense, it is important to emphasize that our specimens will be available for loan at the ICN herbarium, in the hope of assisting future taxonomic studies. Tab. 1 provides the type locality of all species identified, as well as other relevant information, to help elucidate which species registered herein are non-Neotropical taxa. Regardless, brief descriptions and taxonomic issues are presented below.

### Checklist of Agaricomycetes from Cerrado

Basidiomycota R. T. Moore (1980)

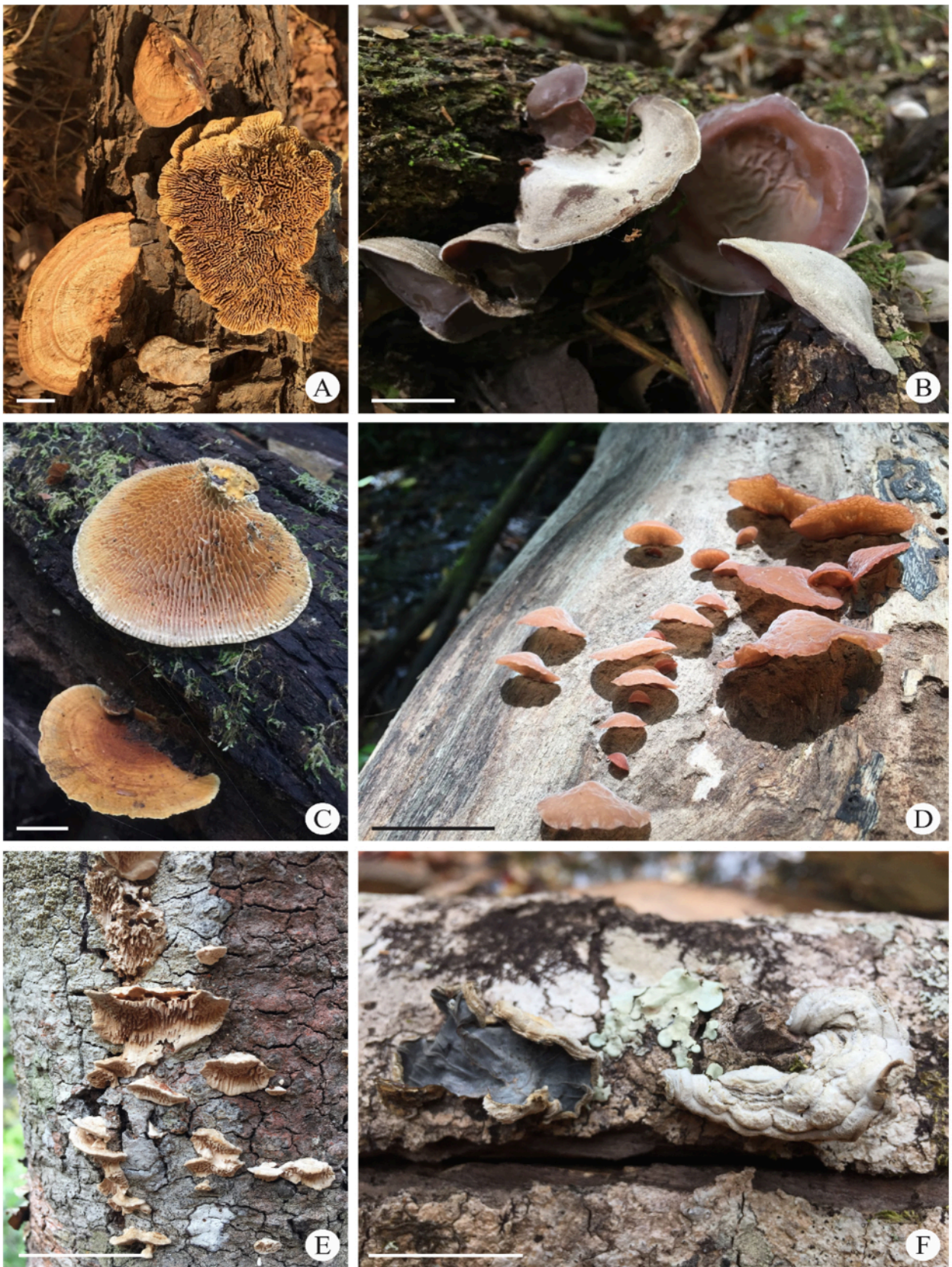
Agaricales Underw. (1899)

**Pleurotaceae** Kühner (1980)

*Pleurotus djamor*\* (Rumph. ex Fr.) Boedijn, Rumphius Memorial Volume:292 (1959)

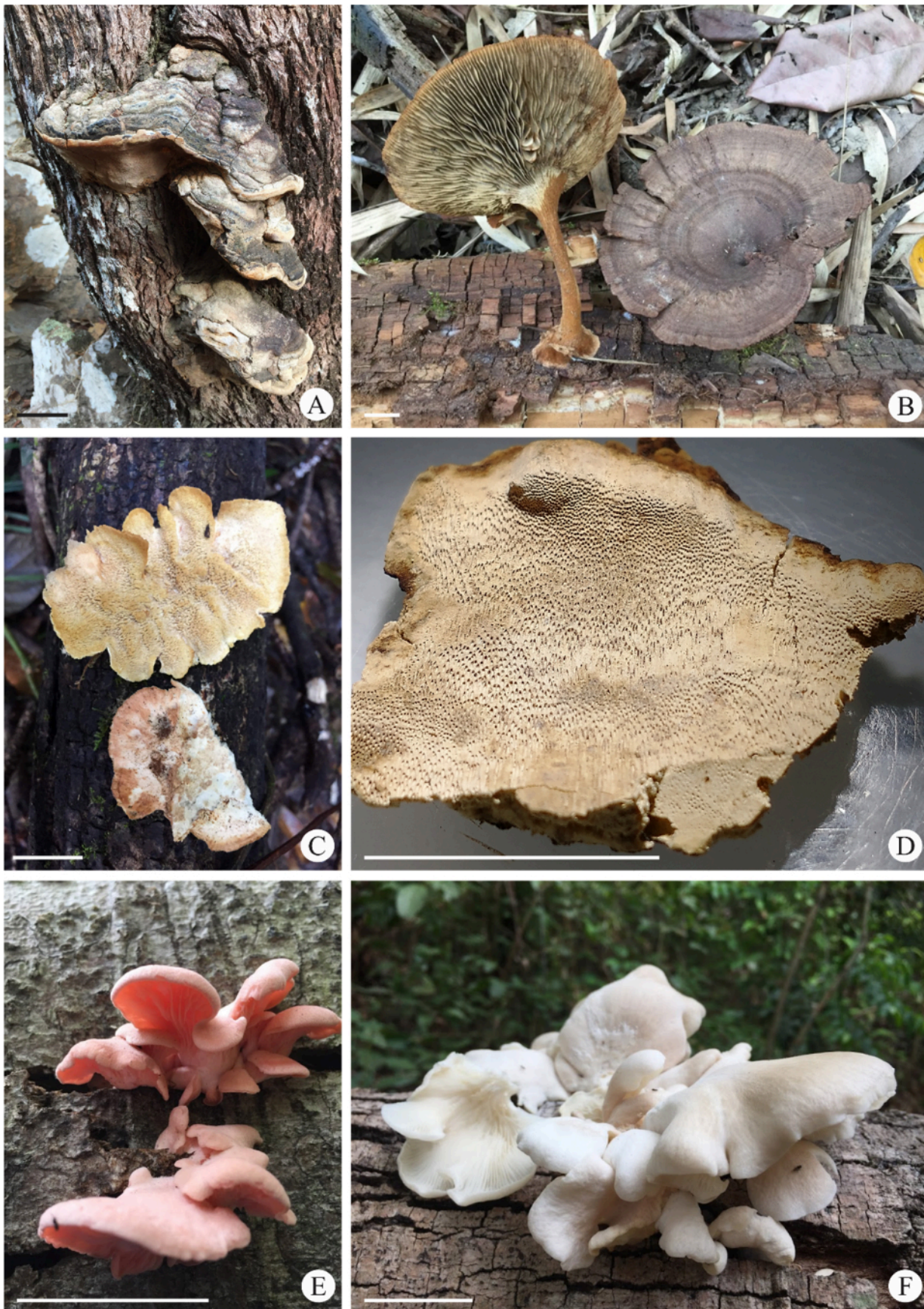
Remarks: This species is recognizable by the white to deep salmon basidiome, although recent studies suggest that difference in the pileus color does not support species separation in the genus (Menolli Jr. *et al.* 2014). An edible





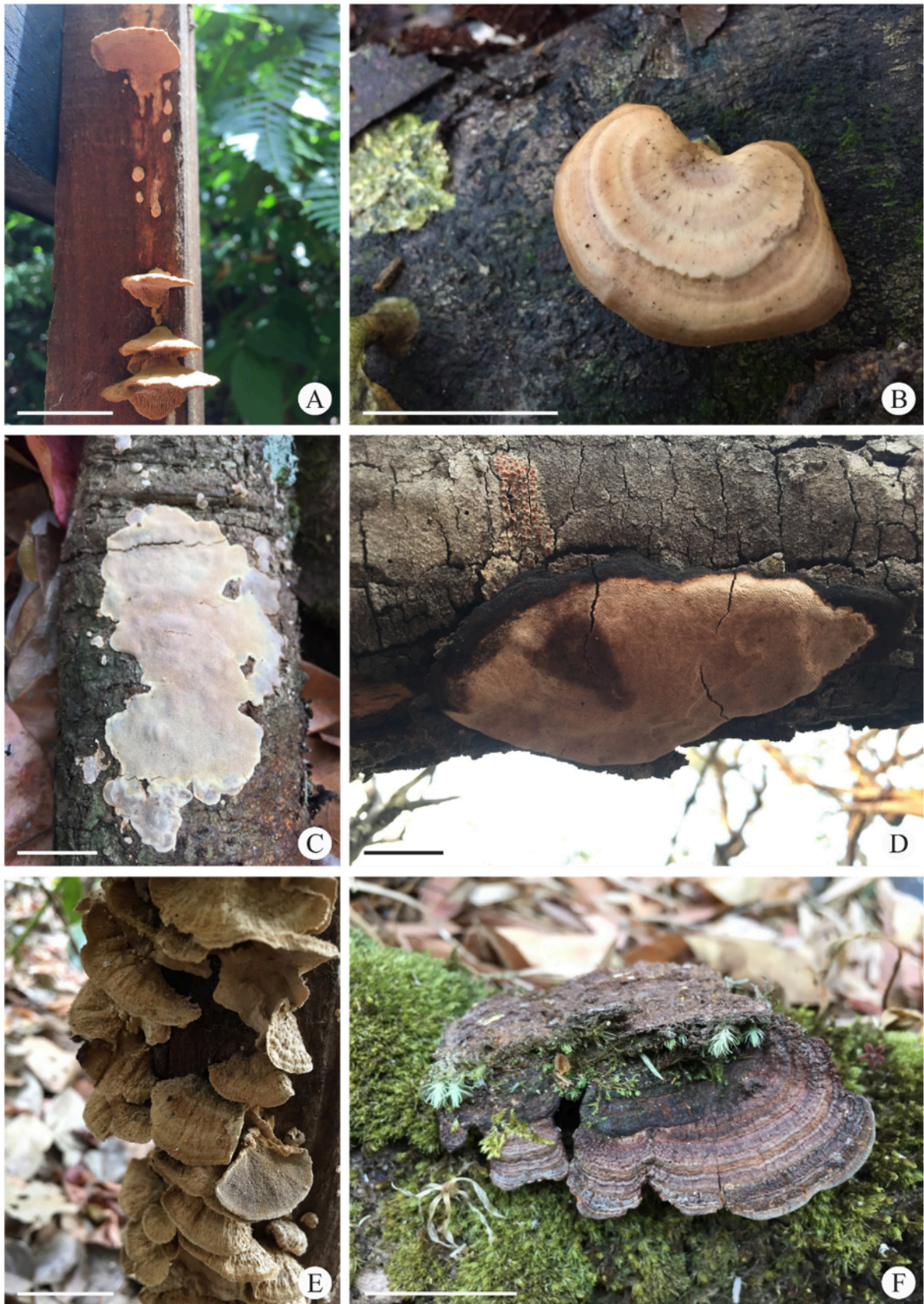
**Figure 1.** Some lignocellulolytic Agaricomycetes collected in the Cerrado region. **A.** *Gloeophyllum striatum* (Fr.) Murril; **B.** *Auricularia nigricans* (Sw.) Birkebak, Looney & Sánchez-García; **C.** *Trametes elegans* (Spreng) Fr.; **D.** *Auricularia delicata* (Mont. ex Fr.) Henn.; **E.** *Daedalea quercina* (L.) Pers.; **F.** *Auricularia mesenterica* (Dicks.) Pers. Bar = 2 cm. Photos: Melissa Palacio.





**Figure 2.** Some lignocellulolytic Agaricomycetes collected in the Cerrado region. **A.** *Inonotus portoricensis* (Overh.) Baltazar & Gibertoni; **B.** *Stiptophyllum erubescens* (Berk.) Rywarden; **C.** *Donkia pulcherrima* (Berk. & M. A. Curtis) Pilát; **D.** *Perenniporiella tepetitensis* (Murril) Decock & R. Valenz.; **E.** *Pleurotus djamor* (Ruph. ex Fr.) Boedijn; **F.** *Pleurotus pulmonarius* (Fr.) Quél. Bar = 2 cm. Photos: Melissa Palacio.





**Figure 3.** Some lignocellulolytic Agaricomycetes collected in the Cerrado region. **A.** *Corioloopsis aspera* (Jungh.) Teng; **B.** *Microporellus dealbatus* (Berk. & M. A. Curtis) Murril; **C.** *Perenniporia alboincarnata* (Pat. & Gaillard) Decock & Ryvarden; **D.** *Perenniporia tephropora* (Mont.) Ryvarden; **E.** *Trichaptum sector* (Ehrenb.) Kreisel; **F.** *Phellinus extensus* (Lév.) Pat. Bar = 2 cm. Photos: Melissa Palacio.



**Table 1.** List of species identified with their respective type localities based on the protologue reference. GO = Goiás, MA = Maranhão, TO = Tocantins, USA = United States of America. \* New record for the referred state. \*\* New record for the Cerrado region. \*\*\* New record for Brazil.

Species	Specimen Locality	Type locality
<i>Auricularia delicata</i> (Mont. ex Fr.) Henn*	MA	Guinea
<i>Auricularia mesenterica</i> (Dicks.) Pers.*	GO, TO	Great Britain
<i>Auricularia nigricans</i> (Sw.) Birkebak, Looney & Sánchez-García*	MG, GO, TO	Jamaica
<i>Corioloopsis aspera</i> (Jungh.) Teng**	GO, MA	Java
<i>Corioloopsis byrsina</i> (Mont.) Ryvarden*	GO	Cuba
<i>Corioloopsis caperata</i> (Berk.) Murrill	TO	Mauritius
<i>Daedalea quercina</i> (L.) Pers.**	GO	Europe
<i>Daedalea ryvardeniana</i> Drechsler-Santos & Robledo*	GO	Mato Grosso, Brazil
<i>Donkia pulcherrima</i> (Berk. & M.A. Curtis) Pilát**	MG	South Carolina, USA
<i>Favolus brasiliensis</i> (Fr.) Fr.	MG	Brazil
<i>Flavodon cf flavus</i> (Klotzsch) Ryvarden**	TO	USA
<i>Fomes fasciatus</i> (Sw.) Cooke*	GO	Jamaica
<i>Fuscoporia gilva</i> (Schwein.) T. Wagner & M. Fisch.*	GO, TO	North Carolina, USA
<i>Gloeophyllum striatum</i> (Fr.) Murrill*	MA	Jamaica
<i>Hexagonia papyracea</i> Berk.*	GO	Unknown
<i>Inonotus portoricensis</i> (Overh.) Baltazar & Gibertoni**	GO	Puerto Rico
<i>Microporellus dealbatus</i> (Berk. & M.A. Curtis) Murrill**	MG	South Carolina, USA
<i>Panus fulvus</i> (Berk.) Pegler & R.W. Rayner**	TO	Sri Lanka
<i>Perenniporia alboincarnata</i> (Pat. & Gaillard) Decock & Ryvarden*	GO	Venezuela
<i>Perenniporia tephropora</i> (Mont.) Ryvarden*	GO	Suriname
<i>Perenniporiella tepeitensis</i> (Murrill) Decock & R. Valenz.***	MG	Veracruz, México
<i>Phellinus extensus</i> (Lév.) Pat.*	GO	Guadaloupe
<i>Pleurotus djamor</i> (Rumph. ex Fr.) Boedijn**	TO	Asia
<i>Pleurotus pulmonarius</i> (Fr.) Quél.*	TO	Europe
<i>Pycnoporus sanguineus</i> (L.) Murrill*	GO, TO	Suriname
<i>Schizophyllum commune</i> Fr.*	GO	Sweden
<i>Stiptophyllum erubescens</i> (Berk.) Ryvarden	GO	Rio de Janeiro, Brazil
<i>Trametes cingulata</i> Berk.*	GO	India
<i>Trametes elegans</i> (Spreng.) Fr.*	MA, TO	Guadaloupe
<i>Trametes membranacea</i> (Sw.) Kreisel**	MA	Jamaica
<i>Trametes versicolor</i> (L.) Lloyd*	MA	Chile
<i>Trametes villosa</i> (Sw.) Kreisel*	GO	Jamaica
<i>Trichaptum byssogenum</i> (Jungh.) Ryvarden*	GO, TO	Java
<i>Trichaptum perrottetii</i> (Lév.) Ryvarden*	TO	Java
<i>Trichaptum sector</i> (Ehrenb.) Kreisel*	TO	Santa Catarina, Brazil
<i>Trichaptum sprucei</i> (Berk.) Rajchenb. & Bianchin.*	GO	Amazonas, Brazil
<i>Trullella duracina</i> (Pat.) Zmitr.*	MG	Guadaloupe

species, commonly known as pink oyster mushroom, it has several nutritional and nutraceutical attributes (Khan & Tania 2012) and great cultural importance too (Ruán-Soto et al. 2006).

Ecology & Distribution: Growing on deciduous wood. It is a Worldwide species (Menolli Jr. et al. 2014). In Brazil, it is known for the states of Amapá, Amazonas, Pará, Paraíba, Pernambuco, Paraná, Rio de Janeiro, Rio Grande do Sul, Rondônia and São Paulo (Menolli Jr. et al. 2014). Our specimen is the first record for the Cerrado region.

Specimen Examined: BRAZIL, TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°44'49.4"S, 47°33'48.0"W, 26.IX.2018, M. Palacio 364 (ICN202079).

*Pleurotus pulmonarius* (Fr.) Quél., Mém. Soc. Émul. Montbéliard, Sér. 2 5:11 (1872)

Remarks: This species is very similar to *Pleurotus ostreatus*, but the generally smaller, paler and short-stipitate basidiomes differentiate *P. pulmonarius* from *P. ostreatus*



(Stamets 2011). Yet, Menolli Jr. *et al.* (2014) emphasize that morphological and ecological data are not the best choice for the recognition of species in the genus. *P. pulmonarius* is an edible species, known to have several nutritional and nutraceutical attributes (Khan & Tania 2012) along with a great cultural importance too (Ruán-Soto *et al.* 2006). Our study provides the first two occurrences of the genus *Pleurotus* for the state of Tocantins.

**Ecology & Distribution:** Growing on deciduous wood. Temperate to subtropical regions of the world (Menolli Jr. *et al.* 2014). In Brazil, it is recorded for the states of Paraná, Rio Grande do Sul, São Paulo (Menolli Jr. *et al.* 2014), and for the Cerrado region of Mato Grosso do Sul (Bononi *et al.* 2017). This is the first record for Tocantins.

**Specimen Examined:** BRAZIL, TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°44'48.9"S, 47°33'47.3"W, 26.IX.2018, M. Palacio 363 (ICN202078).

### Schizophyllaceae Quél. (1888)

*Schizophyllum commune* Fr. [as '*Schizophyllum communis*'], *Observ. mycol.* (Havniae) 1: 103 (1815)

**Remarks:** A worldwide common species. Easy to recognize because of its light to dark gray basidiome and for the presence of split lamellae (Cooke 1961). Reported as edible in several locations, like Peru and Mexico (Cooke 1961, Ruán-Soto *et al.* 2006), but also as an opportunistic fungal pathogen in humans (Chowdhary *et al.* 2013).

**Ecology & Distribution:** Growing on deciduous wood. Worldwide distribution (Cooke 1961). In Brazil, known from all regions, including the Cerrado biome (Bononi *et al.* 2017). New record for the state of Goiás.

**Specimen Examined:** BRAZIL, GOIÁS, Alto Paraíso de Goiás, Fazenda Volta da Serra, 14°11'00.0"S, 47°47'27.9"W, 17.IX.2018, M. Palacio 329 (ICN202046).

Auriculariales J. Schröt. (1887)

### Auriculariaceae Fr. (1838)

*Auricularia delicata* (Mont. ex Fr.) Henn., *Bot. Jb.* 17: 492 (1893)

**Remarks:** This species is characterized by pinkish brown to brown basidiomes and reticulate hymenial surface (Alvarenga *et al.* 2015). Used as food by native communities of Colombia (Vasco-Palacio *et al.* 2008).

**Ecology & Distribution:** Growing on deciduous wood. Worldwide distribution (Alvarenga *et al.* 2015). In Brazil, it is known for the states of Amazonas, Bahia, Goiás, Mato Grosso, Rondônia, Santa Catarina, São Paulo, Pará and

Paraná (Alvarenga *et al.* 2015) and Rio Grande do Sul (Flora do Brasil 2020). New record for the state of Maranhão.

**Specimen Examined:** BRAZIL, MARANHÃO, Carolina, Pedra Caída, 7°02'39.5"S, 47°26'35.8"W, 21.IX.2018, M. Palacio 357 (ICN202073).

*Auricularia mesenterica* (Dicks.) Pers., *Mycol. eur.* (Erlanga) 1:97 (1822)

**Remarks:** This species is distinguishable by its light-gray colored pileus surface which contrasts with the dark-purple colored hymenial surface, when mature. *Auricularia mesenterica* is the only species in the genus that can present an effused-reflexed basidiome (Alvarenga *et al.* 2015).

**Ecology & Distribution:** Growing on deciduous wood. Worldwide distribution, in Brazil known for the states of Amazonas, Goiás, Mato Grosso, Pará, Rio Grande do Sul and São Paulo (Alvarenga *et al.* 2015). Our study provides a new record for the state of Tocantins.

**Specimen Examined:** BRAZIL, GOIÁS, Alto Paraíso de Goiás, Raizama, 14°12'10.6"S, 47°50'12.8"W, 17.IX.2018, M. Palacio 340 (ICN202057). TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°44'49.8"S, 47°33'43.6"W, 26.IX.2018, M. Palacio 370 (ICN202085).

*Auricularia nigricans* (Sw.) Birkebak, Looney & Sánchez-García, *in Looney, Birkebak & Matheny, N. Amer. Fung.* 8(6): 12 (2013)

**Remarks:** This edible species is the most common in *Auricularia* that occurs in Brazil (Alvarenga *et al.* 2015). Easy to recognize because of its densely tomentose pileus surface with long hairs (>450 µm). In addition, it is of recognized ethnocultural importance, being used for cooking as well as for children's toys in Mexican villages (Ruán-Soto *et al.* 2006).

**Ecology & Distribution:** Growing on deciduous wood. Worldwide distribution (Alvarenga *et al.* 2015). In Brazil, it is known for the states of Amapá, Rio Grande do Sul (as *Auricularia polytricha*), Roraima, Santa Catarina, São Paulo (Flora do Brasil 2020) Amazonas, Bahia, Ceará, Distrito Federal, Goiás, Minas Gerais, Mato Grosso, Pará, Rio de Janeiro and Rondônia (Alvarenga *et al.* 2015). New record for the state of Tocantins.

**Specimens Examined:** BRAZIL, GOIÁS, Alto Paraíso de Goiás, Fazenda Volta da Serra, 14°10'59.2"S, 47°47'27.4"W, 17.IX.2018, M. Palacio 327 (ICN202044). MINAS GERAIS, São Roque de Minas, Parque Nacional Serra da Canastra, 20°18'15.1"S, 46°31'26.4"W, 14.IX.2018, M. Palacio 299 (ICN202021). TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°44'49.4"S, 47°33'45.5"W, 26.IX.2018, M. Palacio 380 (ICN202095).



Gloeophyllales Thorn (2007)

**Gloeophyllaceae** Jülich (1982)

*Gloeophyllum striatum* (Fr.) Murrill, Bull. Torrey bot. Club 32(7):370 (1905)

Remarks: This species is easily recognizable by its lamellate to daedaleoid pileate hymenophore. Brown rot and resistance to drought and high temperatures are also good field characteristics (Ryvarden 2015). Our specimen differs for having a light-orange colored pileus, while Ryvarden (2015) describes it as dark brown.

Ecology & Distribution: Growing on deciduous wood. It is a pantropical species (Ryvarden 2015); widespread in Brazil (Flora do Brasil 2020). New record for Maranhão.

Specimen Examined: BRAZIL, MARANHÃO, Riachão, Poço Azul, 7°14'18.7"S, 46°29'14.9"W, 20.IX.2018, M. Palacio 352 (ICN202068).

*Stiptophyllum erubescens* (Berk.) Ryvarden, Norw. J Bot. 20:4 (1973)

Remarks: This species is easy to identify because of its unique large, dark brown, stipitate and lamellate basidiome (Ryvarden 2015, as *Gloeophyllum erubescens*).

Ecology & Distribution: Growing on deciduous wood. It is Neotropical, endemic to tropical South America (Campos-Santana & Loguercio-Leite 2008). In Brazil, it is known for the states of Acre, Amazonas, Mato Grosso, Paraíba, Paraná, Rio de Janeiro, Rio Grande do Norte, Rio Grande do Sul, Santa Catarina (Flora do Brasil 2020) Bahia and Goiás (Campos-Santana et al. 2008).

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Raizama, 14°12'08.9"S, 47°50'13.7"W, 17.IX.2018, M. Palacio 337 (ICN202054).

Hymenochaetales Oberw. (1977)

**Hymenochaetaceae** Donk. (1948)

*Fuscoporia gilva* (Schwein.) T. Wagner & M. Fisch., Mycologia 94(6):1013 (2002)

Remarks: This species is characterized by slightly tomentose to glabrous, smooth to striated pileus, small ellipsoid spores (2.6-3.5 x 2-2.5 µm) and by the presence of straight pointed hymenial setae (Wagner & Fischer 2002). Recent studies show close phylogenetic relationships among the species in the genus, suggesting that *F. gilva* s.l. may represent a species complex (Baltazar et al. 2009; Pires et al. 2015).

Ecology & Distribution: Growing on deciduous wood. Worldwide distribution (Bononi et al. 2017). Common in Brazil, it has been listed in all regions as *Phellinus gilvus* (Schwein.) Pat. (Flora do Brasil 2020). New records for the Goiás and Tocantins states.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Fazenda Volta da Serra, 14°09'39.6"S, 47°49'41.4"W, 17.IX.2018, M. Palacio 318 (ICN202037). Raizama, 14°12'14.1"S, 47°50'13.0"W, 17.IX.2018, M. Palacio 333 (ICN202050). TOCANTINS, Paraíso do Tocantins, 10°10'23.7"S, 48°52'04.6"W, 19.IX.2018, M. Palacio 348 (ICN202065).

*Inonotus portoricensis*\* (Overh.) Baltazar & Gibertoni, Mycotaxon 111:206 (2010)

Remarks: This species is characterized by sessile, applanate to effused-reflexed basidiomes, presence of setal hyphae (70-240 x 8-15 µm) and ellipsoid and slightly thick-walled basidiospores, 4.8-5.5 x 3.6-4.2 µm (Pires & Gugliotta 2016). Further studies should be made to determinate the true delimitation of this specimen.

Ecology & Distribution: Growing on deciduous wood. Neotropical species (Baltazar & Gibertoni 2010). In Brazil, it is known from Alagoas, Bahia, Pernambuco, Rio Grande do Sul and Santa Catarina (Pires & Gugliotta 2016). New record for the Cerrado region.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Raizama, 14°12'13.3"S, 47°50'11.6"W, 17.IX.2018, M. Palacio 347 (ICN202064).

*Phellinus extensus* (Lév.) Pat., Essai Tax. Hyménomyc. (Lons-le-Saunier):97 (1900)

Remarks: This species is characterized by an applanate basidiome, presence of short and strongly ventricose setae and small hyaline to pale brown basidiospores (Ryvarden 2004).

Ecology & Distribution: Growing on deciduous wood. It is known as a Pantropical species (Ryvarden 2004). In Brazil, it is known for the states of Amazonas, Bahia, Pernambuco, Rio Grande do Sul, Roraima, São Paulo and Tocantins (Flora do Brasil 2020) as *Fulvifomes nilgheriensis* (Mont.) Bondartseva & S. Herrera. New record for Goiás.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Raizama, 14°12'11.9"S, 47°50'13.4"W, 17.IX.2018, M. Palacio 332 (ICN202049).

**Incertae sedis**

*Trichaptum byssogenum* (Jungh.) Ryvarden [as 'byssogenus'], Norw. J Bot. 19(3-4):237 (1972)



Remarks: This species is characterized by its grayish pilear surface, tomentose to hispid or strigose, and is distinguishable from the others for its large pores (1-2 per mm) and abundant apically incrustated cystidia (Gibertoni *et al.* 2011; Ryvar den 2016).

Ecology & Distribution: Growing on deciduous wood. A Pantropical species (Ryvar den 2016), known in Brazil for the states of Acre, Amazonas, Bahia, Minas Gerais, Mato Grosso, Pará, Paraná, Pernambuco, Rio Grande do Sul, Rondônia, Roraima, Santa Catarina, and São Paulo (Flora do Brasil 2020). New records for the states of Goiás and Tocantins.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Raizama, 14°12'13.6"S, 47°50'12.3"W, 17.IX.2018, M. Palacio 342 (ICN202059). TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°45'08.1"S, 47°33'31.2"W, 26.IX.2018, M. Palacio 368 (ICN202083).

*Trichaptum perrottetii* (Lév.) Ryvar den, Norw. JI Bot. 19:237 (1972)

Remarks: This species is microscopically similar to *T. byssogenum*, but the dense mat of stiff black hairs on its pileus and a violet to brown hymenophore distinguishes it from the latter (Ryvar den 2016). Another morphologically similar species is *Hexagonia hydnooides*, but the apically encrustated cystidia present in *T. perrottetii* distinguish it from the former.

Ecology & Distribution: Growing on deciduous wood. It is a Neotropical species, known from Florida to northern Argentina (Ryvar den 2016). In Brazil, it is recorded for the states of Acre, Amapá, Amazonas, Bahia, Ceará, Goiás, Mato Grosso, Mato Grosso do Sul, Pará, Paraíba, Paraná, Rondônia, Roraima and São Paulo (Flora do Brasil 2020). New record for Tocantins.

Specimen Examined: BRAZIL, TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°44'45.1"S, 47°33'46.4"W, 26.IX.2018, M. Palacio 369 (ICN202084). 5°44'47.2"S, 47°33'45.3"W, 26.IX.2018, M. Palacio 372 (ICN202087).

*Trichaptum sector* (Ehrenb.) Kreisel, Monografias, Ciencias, Univ. Habana, Ser. 4 16:84 (1971)

Remarks: This species is recognizable because of its dark grayish to purplish gray pore surface and flabelliform white to grayish-brown basidiomes (Gibertoni *et al.* 2011).

Ecology & Distribution: Growing on deciduous wood. Neotropical species, widespread from Southeastern United States to Northern Argentina (Ryvar den 2016). In Brazil, it is reported for the states of Alagoas, Amazonas, Bahia, Mato Grosso, Pará, Paraná, Paraíba, Pernambuco, Rio de

Janeiro, Rio Grande do Sul, Rondônia, Roraima, Santa Catarina and São Paulo (Gibertoni *et al.* 2011). New records for Tocantins.

Specimen Examined: BRAZIL, TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°45'08.2"S, 47°33'31.2"W, 26.IX.2018, M. Palacio 366 (ICN202081). 5°44'43.0"S, 47°33'45.7"W, 26.IX.2018, M. Palacio 367 (ICN202082).

*Trichaptum sprucei* (Berk.) Rajchenb. & Bianchin., Mycol. Res. 96(11):957 (1992)

Remarks: This species is characterized by effused-reflexed to resupinate basidiomes with a violaceous-brown growing margin (turning brown with age), hymenophore varying from poroid to irpicoid, apically incrustated hymenial cystidia and the presence of thick-walled, globose to pyriform, brown chlamydospores (Gibertoni *et al.* 2011; Herrera Figueroa & Decock 2007; Rajchenberg & Bianchinotti 1992). These abundant and large chlamydospores (8.3-14.4 x 7.9-11.7 µm), commonly mistaken for spores, led to the reclassification of *T. sprucei* into the Amazonian tropical genus *Phaeodaedalea* (Fidalgo 1961), which was latter synonymized with *Trichaptum* Murril (Herrera Figueroa & Decock 2007). Currently, some authors consider it a synonymy of *Trametes incerta* (Curr.) Cooke, a species originally described in Myanmar. Even so, molecular data shows that these species form two distinct clades, with *T. sprucei* s.s. probably having a distribution restricted to the Neotropics, while *Trametes incerta* has an Asian distribution (Herrera Figueroa & Decock 2007). So, we decided to keep the name *Trichaptum sprucei* due to its Neotropical holotype, the presence of cystidia (very similar to those found in other species of the genus) and molecular data corroborating its circumscription in *Trichaptum*. Still, we endorse the need for further studies in this clade, along with all Neotropical specimens identified as Asian *Trichaptum* species.

Ecology & Distribution: Growing on deciduous wood. Neotropical, with few records from Asia and Africa (Gibertoni *et al.* 2011). In Brazil, it is recorded from Amazonas, Bahia, Mato Grosso, Pará, Paraíba, Paraná, Rio Grande do Sul, Rondônia and São Paulo (Flora do Brasil 2020 as *Trametes incerta* (Curr.) Cooke. New record for the state of Goiás.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Raizama, 14°12'08.9"S, 47°50'14.4"W, 17.IX.2018, M. Palacio 335 (ICN202052).

Polyporales Gäum. (1926)

Fomitopsidaceae Jülich (1982)

*Daedalea quercina*\* (L.) Pers., Syn. meth. fung. (Göttingen) 2:500 (1801)

Remarks: Easy to recognize because of its hard corky to woody pale colored basidiomes and distinctive daedaloid hymenophore (Ryvarden 2015). A common species, on the Northern Hemisphere it is known as oak mazegill due to its frequent occurrence in *Quercus* trees, although it is proved not to be a specific host (Zarzyński 2007). It also has anti-inflammatory importance (Gebhardt et al. 2007). Lindner et al. (2011) suggests that more studies should be developed to determine if this is a cryptic species complex.

Ecology & Distribution: Temperate to tropical species (Ryvarden 2015). In America, it is known from Colombia and Brazil, in the state of Rio Grande do Sul (Flora do Brasil 2020). New record for the Cerrado region.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Raizama, 14°12'11.0"S, 47°50'08.4"W, 17.IX.2018, M. Palacio 338 (ICN202055).

*Daedalea ryvardeniana* Drechsler-Santos & Robledo [as '*ryvardenica*'], Kurtziana 37(1):66 (2012)

Remarks: This species is recognizable by its effused-reflexed to pileate basidiomes, with ellipsoid basidiospores (7.5-11.0 x 2.5-3.5 µm), which are the largest in the genus (Drechsler-Santos et al. 2012).

Ecology & Distribution: Growing on deciduous wood. Known from inner dry areas of Brazil (Ryvarden 2015). It was described from the Cerrado region of Mato Grosso (Drechsler-Santos et al. 2012). New record for the state of Goiás.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Raizama, 14°12'09.0"S, 47°50'14.5"W, 17.IX.2018, M. Palacio 346 (ICN202063).

#### **Irpicaceae** Spirin & Zmitr. (2003)

*Flavodon cf. flavus*\* (Klotzsch) Ryvarden, Norw. Jl Bot. 20(1):3 (1973)

Description: Species recognizable because of its yellowish colored basidiome with poroid to hydroid hymenophore and reddish reaction with KOH (Ryvarden 2015). Our specimen was old and burnt due to wildfire, which occurs naturally in the Cerrado region. Nevertheless, we were able to identify the genus with the aid of microscopic traits, namely a dimitic hyphal system with simple-septate generative hyphae, and presence of metuloid cystidia (Ryvarden 2015). However, the cystidia observed were mainly in the trama of the tubes, with some distinctly bent skeletal hyphae, and none with an apical incrustation or projecting in the hymenium, as described by Ryvarden. Therefore, we believe that more studies are necessary to understand the real delimitation of this so-called "tropical

counterpart to the temperate-boreal genus *Irpex* s. str." (Ryvarden 2015).

Ecology & Distribution: Growing on deciduous wood, it presents a Pantropical distribution, from Florida to Brazil in the Neotropics (Ryvarden 2015). Although it is known to occur in the Brazilian territory, we only found one citation for state of Amazonas (Couceiro et al. 2017). First record of the genus *Flavodon* for the Cerrado region.

Specimen examined: BRAZIL, TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°45'07.8"S, 47°33'31.0"W, 26.IX.2018, M. Palacio 377 (ICN202092).

#### **Panaceae** Miettinen, Justo & Hibbett (2017)

*Panus fulvus*\* (Berk.) Pegler & R.W. Rayner, Kew Bull. 23(2):385 (1969)

Remarks: This species is characterized by a brown velutinous basidiome growing from a pseudosclerotium. It differs from *Panus velutinus* (Fr.) Sacc. by its shorter stipitate basidiomes and presence of bifurcated lamellae (Corner 1981).

Ecology & Distribution: Growing on deciduous wood. Tropical. There is no record for Brazil because previous authors probably follow *sensu* Pegler (1983) for identifications, which considers *Panus fulvus* a synonymy of *Panus velutinus*. Therefore, considering recent discoveries that reinforce *P. fulvus* as a distinctive species, we consider this a new record from the Cerrado region and suggest an in-depth analysis of the materials identified as *P. velutinus*.

Specimen Examined: BRAZIL, TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°44'45.2"S, 47°33'46.1"W, 26.IX.2018, M. Palacio 381 (ICN202096).

#### **Phanerochaetaceae** Jülich (1982)

*Donkia pulcherrima*\* (Berk. & M.A. Curtis) Pilát, Bull. trimest. Soc. mycol. Fr. 52(3):328 (1937) [1936]

Description: This species is characterized by its dimidiate basidiomes with an hydroid hymenophore and, microscopically, the presence of multiclamped septa in the context hyphae (Moreno et al. 2017). It is known to have antimicrobial activity (Rosa et al. 2003 as *Climacodon pulcherrimus*).

Ecology & Distribution: Growing on deciduous wood. Tropical to subtropical distribution (Moreno et al. 2017). In Brazil, it is known for the states of Pará, Paraíba, Pernambuco, Rio de Janeiro, Rio Grande do Sul, Rondônia and São Paulo (Gibertoni et al. 2004) as *Climacodon pulcherrimus* (Berk. & M.A. Curtis) Nikol. First record from the Cerrado region.



Specimen examined: BRAZIL, MINAS GERAIS, São Roque de Minas, Parque Nacional Serra da Canastra, 20°18'26.9"S, 46°31'24.1"W, 14.IX.2018, M. Palacio 301 (ICN 202022).

**Polyporaceae** Fr. ex Corda (1839)

*Corioloopsis aspera*\* (Jungh.) Teng, Chung-kuo Ti Chen-chun, [Fungi of China]:759 (1963)

Remarks: This species is characterized by reddish-brown basidiomes with large pores (3-4 per mm) and forked hairs erecting from the pilear surface, which later disappear leaving a more finely scurpuse to warted surface (Trierveiler-Pereira *et al.* 2009). It can be mistaken for *Corioloopsis hostmannii* (Berk.) Ryvarden, but it is distinguished by pore size (6–8 per mm in *C. hostmannii*).

Ecology & Distribution: Growing on deciduous wood. Pantropical distribution (Trierveiler-Pereira *et al.* 2009). In Brazil it is recorded for the states of Minas Gerais, Rio Grande do Sul, Santa Catarina and São Paulo (Flora do Brasil 2020). First record for the Cerrado region.

Specimens examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Parque Nacional Chapada dos Veadeiros, 14°09'39.8"S, 47°49'43.7"W, 16.IX.2018, M. Palacio 313 (ICN202033). MARANHÃO, Carolina, Pedra Caída, 7°02'39.2"S, 47°26'35.2"W, 21.IX.2018, M. Palacio 361 (ICN202077).

*Corioloopsis byrsina* (Mont.) Ryvarden, Norw. JI Bot. 19:230 (1972)

Remarks: This species is distinguishable by its soft rusty-brown basidiomes and ellipsoid to subcylindrical basidiospores, 9–14 × 4.5–5 µm (Nogueira-Melo *et al.* 2012).

Ecology & Distribution: Growing on deciduous wood. Tropical species, recorded for Africa, America and Asia (Nogueira-Melo *et al.* 2012). In Brazil, known for the states of Acre, Amazonas, Mato Grosso, Rio Grande do Sul, Rondônia, Roraima and São Paulo states (Flora do Brasil 2020). First record for Goiás.

Specimen examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Fazenda Volta da Serra, 14°09'58.4"S, 47°44'06.2"W, 17.IX.2018, M. Palacio 326 (ICN202043).

*Corioloopsis caperata* Murrill, *N. Amer. Fl. (New York)* 9(2): 77 (1908)

Remarks: This species has effused-reflexed to pileate basidiomes and a zonate brownish pilear surface, finely velutinate to adpressed tomentose (Nogueira-Melo *et al.* 2012).

Ecology & Distribution: Growing on deciduous wood. Tropical Africa and America (Nogueira-Melo *et al.* 2012). Almost widespread in the Brazilian territory (Flora do Brasil 2020).

Specimen Examined: BRAZIL, TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°44'45.4"S, 47°33'46.5"W, 26.IX.2018, M. Palacio 371 (ICN202086).

*Favolus brasiliensis* (Fr.) Fr., *Linnaea* 5:511 (1830)

Remarks: This species is characterized by fleshy white-yellowish basidiomes, laterally stipitate, with radially elongated pores. Considered edible and cultivated by Yanomami indigenous people (Sanuma *et al.* 2016).

Ecology & Distribution: Growing on deciduous wood. Tropical species. Almost widespread in the Brazilian territory (Flora do Brasil 2020 as *Polyporus tenuiculus*)

Specimen Examined: BRAZIL, MINAS GERAIS, São Roque de Minas, Parque Nacional Serra da Canastra, 20°18'24.8"S, 46°31'24.7"W, 14.IX.2018, M. Palacio 303 (ICN202023).

*Fomes fasciatus* (Sw.) Cooke, *Grevillea* 14(no. 69):21 (1885)

Remarks: Gray, dark-brown to black, robust basidiomes and cylindrical hyaline basidiospores (12-14 x 4-4.5 µm) characterize this species (Ryvarden 2015).

Ecology & Distribution: Growing on deciduous wood. American species, from south-eastern United States to Northern Argentina (Ryvarden 2015). In Brazil, it is known for the states of São Paulo (Abraão *et al.* 2012), Alagoas, Bahia, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Roraima and Santa Catarina (Flora do Brasil 2020). New record for Goiás.

Specimen Examined: BRAZIL. GOIÁS: Alto Paraíso de Goiás, Fazenda Volta da Serra, 14°10'00.6"S, 47°44'06.5"W, 17.IX.2018, M. Palacio 330 (ICN202047).

*Hexagonia papyracea* Berk., *Ann. Mag. nat. Hist., Ser. 1* 10:379 (1843) [1842]

Remarks: This species is recognizable because of its thin, flexible dark brown and strongly zoned basidiomes with hexagonal large pores (1-2 per mm) (Ryvarden 2015).

Ecology & Distribution: Growing on deciduous wood. It is a Neotropical species, from Southern United States to Northern Argentina (Ryvarden 2015). In Brazil, it is recorded from all regions (Flora do Brasil 2020). New records for the state of Goiás.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Fazenda Volta da Serra, 14°09'58.4"S, 47°44'32.5"W, 17.IX.2018, M. Palacio 322 (ICN202040). 14°09'56.6"S, 47°44'07.4"W, 17.IX.2018, M. Palacio 324 (ICN202041). 14°09'58.4"S, 47°44'31.0"W, 17.IX.2018, M. Palacio 331 (ICN202048).

*Microporellus dealbatus*\* (Berk. & M.A. Curtis) Murrill, Bull. Torrey bot. Club 32(9):483 (1905)

Remarks: This species is characterized by the laterally to centrally stipitate basidiomes, which are hard when dried. Small pores (8-10 per mm) and drop-shaped basidiospores (4.5-6 x 3.5-4.5 µm) differentiate *M. dealbatus* from other *Microporellus* species (Motato-Vásquez & Gugliotta 2016).

Ecology & Distribution: Growing on deciduous wood. Known from southern United States to Central and South America (Ryvarden 2015). In Brazil, it is recorded for the states of Amazonas, Pará, Rondônia and Santa Catarina (Flora do Brasil 2020). First record for the Cerrado region.

Specimen Examined: BRAZIL, MINAS GERAIS, São Roque de Minas, Parque Nacional Serra da Canastra, 20°18'27.6"S, 46°31'24.3"W, 14.IX.2018, M. Palacio 305 (ICN202025).

*Perenniporia alboincarnata* (Pat. & Gaillard) Decock & Ryvarden [as '*albo-incarnata*'], Cryptog. Mycol. 32(1):14 (2011)

Remarks: Resupinate basidiomes with a whitish to faintly pinkish hymenial surface and small pores (5-8 per mm) distinguish this species from others in the genus (Decock 2016). It can be mistaken as *Perenniporia medullapanis* (Jacq.) Donk due to its similar light-colored basidiomes (Costa-Rezende *et al.* 2015). However, Decock and Ryvarden (2011) suggest using this name only for European specimens, and so all the collections previously identified as *P. medullapanis* in Brazil should be revised and placed into proper Neotropical taxa, such as *P. alboincarnata* and *Perenniporia guyanensis* Decock & Ryvarden. Therefore, even though this is a new citation for Brazil, we do not consider this a new record, since *P. medullapanis* had been previously registered for the Cerrado region (Costa-Rezende *et al.* 2015). Thus, further studies should be made to fully understand the delimitation of this taxon within Brazil.

Ecology & Distribution: Growing on deciduous wood. Neotropical species, recorded from Costa Rica, Colombia and Venezuela (Decock & Ryvarden 2011). In Brazil, it is known for the states of Bahia, Pará, Paraná, Rio Grande do Sul, Santa Catarina, São Paulo and Sergipe as *Perenniporia medullapanis* (Jacq.) Donk (Flora do Brasil 2020). New record for Goiás.

Specimens Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Raizama, 14°12'14.1"S, 47°50'13.0"W, 17.IX.2018, M. Palacio 334 (ICN202051). 14°12'11.0"S, 47°50'08.4"W, 17.IX.2018, M. Palacio 339 (ICN202056).

*Perenniporia tephropora* (Mont.) Ryvarden, Norw. JI Bot. 19:233 (1972)

Remarks: Resupinate basidiomes with grayish to dark ochraceous pore surface, which becomes brown in KOH reaction, distinguish this species from the other resupinate *Perenniporia* species that occur in the Neotropics (Ryvarden 2016). Our specimen is totally resupinate with a dark portion in the margin, like in Costa-Rezende *et al.* (2015).

Ecology & Distribution: Growing on deciduous wood. Pantropical species (Ryvarden 2016). In Brazil, it is recorded for the states of Pernambuco, Piauí, Santa Catarina and São Paulo (Flora do Brasil 2020) and for the Cerrado region of Mato Grosso (Costa-Rezende *et al.* 2015). New record for Goiás.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Parque Nacional Chapada dos Veadeiros, 14°09'39.0"S, 47°49'51.3"W, 16.IX.2018, M. Palacio 308 (ICN202028).

*Perenniporiella tepeitensis*\* (Murrill) Decock & R. Valenz., Cryptog. Mycol. 31(4):424 (2010)

Remarks: This specimen represents the first record of the genus for the Cerrado region and the first of the species for Brazil. Identification was difficult due to its mixed characteristics between three phylogenetically related species known only from their type locations; *Perenniporiella chaquenia*, *Perenniporiella pendula* and *P. tepeitensis* (Decock *et al.* 2010). We prefer using the last one because of its broader distribution and for the resupinate to effused-reflexed basidiomes, which are not common for this group (Decock *et al.* 2010). More studies should be made to understand the actual delimitation of this exclusively Neotropical group (Decock & Ryvarden 2003).

Ecology & Distribution: Growing on deciduous wood. Known from Costa Rica, México and United States (Decock *et al.* 2010, Ryvarden 2016). First record for the Cerrado region and for Brazil.

Specimen examined: BRAZIL, MINAS GERAIS, São Roque de Minas, Parque Nacional Serra da Canastra, 20°18'24.8"S, 46°31'24.7"W, 14.IX.2018, M. Palacio 304 (ICN202024).

*Pycnoporus sanguineus* (L.) Murrill, Bull. Torrey bot. Club 31(8):421 (1904)



Remarks: A very common fungus, it is the only polypore with a sharp orange-red color and a trimitic hyphal system in the Neotropics (Ryvarden 2016).

Ecology & Distribution: Growing on deciduous wood. Throughout subtropical and tropical regions of the world (Ryvarden 2016). Widespread in Brazil (Flora do Brasil 2020). New record for the states of Goiás and Tocantins.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Fazenda Volta da Serra, 14°09'58.4"S, 47°44'31.0"W, 17.IX.2018, M. Palacio 331 (ICN202048). TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°45'08.1"S, 47°33'31.0"W, 26.IX.2018, M. Palacio 379 (ICN202094).

*Trametes cingulata* Berk., Hooker's J. Bot. Kew Gard. Misc. 6:164 (1854)

Remarks: This species is recognizable by the sooty black colors on the glabrous, sometimes concentrically sulcate, pileus (Ryvarden 2015). Our specimen differs from the other recorded from Brazil (Abrahão & Gugliotta 2012) for having a homogeneous context, with no distinctive black line, and a dark margin. Therefore, further studies should be made to understand the variability within this species in Brazil.

Ecology & Distribution: Growing on deciduous wood. It is a Pantropical species (Ryvarden 2015). First recorded in Brazil from São Paulo (Abrahão & Gugliotta 2012). New record for Goiás and for the Cerrado *stricto sensu* region.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Parque Nacional Chapada dos Veadeiros, 14°09'39.8"S, 47°49'43.7"W, 16.IX.2018, M. Palacio 314 (ICN202034).

*Trametes elegans* (Spreng.) Fr., Epicr. syst. mycol. (Upsaliae):492 (1838) [1836-1838]

Remarks: This species is easy to recognize because of its irregular hymenophore, which can range from pores to lamellae (Ryvarden 2016).

Ecology & Distribution: Growing on deciduous wood. It is widespread and common in all tropical areas (Ryvarden 2016). In Brazil, known from Amazonas, Bahia, Mato Grosso, Pará, Paraná, Pernambuco, Rio Grande do Sul, Rondônia, Santa Catarina and São Paulo (Flora do Brasil 2020) as *Lenzites elegans* (Spreng.) Pat. New record for Maranhão and Tocantins.

Specimen Examined: BRAZIL, MARANHÃO, Carolina, Pedra Caída, 7°02'42.6"S, 47°26'37.4"W, 21.IX.2018, M. Palacio 354 (ICN202070). TOCANTINS, Itaguatins, Fazenda Prof.<sup>a</sup> Neusa, 5°44'48.8"S, 47°33'45.3"W, 26.IX.2018, M. Palacio 374 (ICN202089). 5°44'57.6"S,

47°33'45.6"W, 26.IX.2018, M. Palacio 378 (ICN202093). 5°44'45.2"S, 47°33'46.1"W, 26.IX.2018, M. Palacio 382/2 (ICN202098).

*Trametes membranacea*\* (Sw.) Kreisel, Monografias, Ciencias, Univ. Habana, Ser. 4 16:83 (1971)

Remarks: This species is characterized by thin, papyraceous, flabelliform, cream to beige (becoming pale brown with age) basidiomes with tiny pores (5-6 per mm) (Gomes-Silva *et al.* 2010; Ryvarden 2016) *Trametes pavonia* (Hook.) Ryvarden has a similar morphology, but the cylindrical basidiospores of *Trametes membranacea* distinguish it.

Ecology & Distribution: Growing on deciduous wood. Neotropical, widespread and common throughout tropical America to Northern Argentina (Ryvarden 2016). In Brazil, it is recorded from Amapá, Amazonas, Bahia, Minas Gerais, Pará, Paraíba, Paraná, Pernambuco, Rio Grande do Sul and Santa Catarina (Flora do Brasil 2020). New record for the Cerrado region.

Specimen Examined: BRAZIL, MARANHÃO, Carolina, Pedra Caída, 7°02'35.4"S, 47°26'37.3"W, 21.IX.2018, M. Palacio 358 (ICN202074).

*Trametes versicolor* (L.) Lloyd, Mycol. Notes (Cincinnati) 65:1045 (1921) [1920]

Remarks: One of the most common wood-rotting polypore species in the American continent, commonly known as "turkey tail mushroom". It is recognizable by contrasted concentric zones in the pileus, which vary in shades of brown and gray (Ryvarden 2016).

Ecology & Distribution: Growing on deciduous wood. Worldwide distribution (Ryvarden 2016). In Brazil, it is recorded for the states of Amazonas, Bahia, Pará, Paraná, Rio Grande do Sul, Santa Catarina and São Paulo (Flora do Brasil 2020), and for the Cerrado region of Mato Grosso do Sul (Bononi *et al.* 2017). New record for the state of Maranhão.

Specimen Examined: BRAZIL, MARANHÃO, Carolina, Pedra Caída, 7°02'28.9"S, 47°26'34.7"W, 21.IX.2018, M. Palacio 355 (ICN202071).

*Trametes villosa* (Sw.) Kreisel, Monografias, Ciencias, Univ. Habana, Ser. 4 16:83 (1971)

Remarks: This species is recognizable by a thin basidiome with large dentate pores, 1-3 per mm (Gomes-Silva *et al.* 2010; Ryvarden 2016). *Trametes hirsuta* (Wulfen) Lloyd is a similar species, but it has thicker and larger basidiomes with smaller pores and no black line in the context (Ryvarden 2016; Westphalen & Silveira 2013).

Ecology & Distribution: Growing on deciduous wood. Known from subtropical areas of the United States to Argentina, common in the Neotropics (Gomes-Silva *et al.* 2010; Ryvardeen 2016). In Brazil, recorded from Amapá, Amazonas, Bahia, Mato Grosso do Sul, Pará, Paraná, Pernambuco, Rio de Janeiro, Rio Grande do Sul, Roraima, São Paulo and Santa Catarina (Flora do Brasil 2020). New record for the state of Goiás.

Specimen Examined: BRAZIL, GOIÁS, Alto Paraíso de Goiás, Raizama, 14°12'09.2"S, 47°50'10.7"W, 17.IX.2018, M. Palacio 344 (ICN202061).

#### Steccherinaceae Parmasto (1968)

*Trullella duracina* (Pat.) Zmitr., Folia Cryptogamica Petropolitana (Sankt-Peterburg) 6:104 (2018)

Remarks: This species is characterized by light-colored pileus and hymenophore with small pores (Ryvardeen 2015, as *Antrodiella duracina*). *Trullella duracina* is very similar to *Trullella meridae*, but they can be differentiated by pore size (7-9 per mm in *T. duracina* and 10-12 per mm in *T. meridae*) and basidiospores: straight to slightly curved (>4,5 µm long) in *T. duracina*, and strongly curved (>1,8 µm wide) in *T. meridae* (Miettinen & Ryvardeen 2016 as *Trulla duracina*; Westphalen *et al.* 2019).

Ecology & Distribution: Growing on deciduous wood. Neotropical species, from Central and South America (Ryvardeen 2015). In Brazil, it is known for the states of Bahia, Paraná, Pernambuco, Rio Grande do Sul, Santa Catarina and São Paulo (Flora do Brasil 2020) as *Tyromyces duracinus* (Pat.) Murrill. New record for Minas Gerais.

Specimen Examined: BRAZIL, MINAS GERAIS, São Roque de Minas, Parque Nacional Serra da Canastra, 20°18'23.0"S, 46°31'23.7"W, 14.IX.2018, M. Palacio 307 (ICN202027).

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