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# Atlantic Rainforest Myxomycetes: Species of the Serra do Teimoso Reserve (Bahia, Brazil)

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**Abstract:** Aiming to expanding the knowledge about the distribution of myxomycetes in the Atlantic Forest biome, a study was carried out in the Serra do Teimoso Reserve, a forest fragment located within one of the slopes of the Ouricana Mountain Range, Serra das Lontras Complex, Bahia state, northeast Brazil. Two five-day excursions were conducted at Serra do Teimoso Reserve (dry season/ rainy season), and 448 specimens were obtained from fallen trunks and ground litter. 240 moist chambers assembled with substrates from the same locations added 36 specimens. Twenty three genera and 73 species were recorded, of which 23 species are new records for the Bahia state, five for the Atlantic Forest biome, and Arcyria affinis, Didymium floccosum and Fuligo muscorum for Brazil. Licea clarkii and Stemonaria laxa are new records for the Neotropics. The distribution among the Brazilian states and biomes and comments on the species are supplied for the new records.

Keywords: Amoebozoa, biodiversity, biological reserve, geographical distribution, new records.



## Introduction

The first information on myxomycetes occurring in Brazil was published by American and European mycologists at the end of the Nineteenth Century and the beginning of the XX Century. Among those, Berkeley and Cooke (1876), Bresadola (1896), Hennings (1896), Pazschke (1896) and Jahn (1902; 1904) contributed to the accumulation of information. Father Camille Torrend published a list with 80 species, the first in the country, in which half were known for the state of Bahia (Torrend 1915, 1916). Farr (1960) reported 108 species, with new occurrences of genera and species for the Neotropics and Brazil, based on material collected in Pernambuco, in the country's Northeast region, and from the collection of the URM Mycological Herbarium, where the complete collection of C. Torrend is still maintained.

During the first decade of the Twenty First Century, Cavalcanti (2010) listed 216 species for the Brazilian myxobiota, 77 of which had occurrence records for the state of Bahia. Five years later, the same author added new records to the list, resulting in a total of 330 species for the country, 164 of them occurring in the Atlantic Forest biome, and 86 with records for Bahia (Maia et al. 2015).

The Atlantic Forest, which originally occupied 15% of the Brazilian territory, has been suffering intense destruction, which began in the 16th century, and the remaining fragments of its different ecosystems currently occupy just over 100 000 km², distributed in 15 states. The Atlantic Forest in Bahia's Southern region, for example, contains some of the highest levels of biodiversity in the world, with a record of 450 species of trees per hectare and is considered the most significant portion of the Northeast Region's biome (Thomas et al. 1998).

Cavalcanti et al. (2016) provided the first records of myxomycetes for the Serra do Teimoso Reserve, an Atlantic Rainforest fragment located in southern Bahia, citing *Perichaena pedata* (Lister & G. Lister) Lister ex E. Jahn as new record for Brazil, and *P. calongei* Lado, Wrigley de Basanta & Estrada-Torres as new for the Northeast Region. In this work, the species that occur in the Serra do Teimoso Reserve were investigated, aiming to increase the knowledge about myxomycetes assemblages of Bahia State and the Brazilian Atlantic Rainforest.

## Materials and methods

*Study site*

The state of Bahia is the fifth largest in the Brazilian Federation and the largest in the Northeast, comprising 564 692 km$^2$ located between 8º 32' 00" S to 18º 20' 07" S and 37º 20' 37" W to 46º 36' 59" W. Most of the territory is covered by Caatinga (54%), with some regions covered with Cerrado (27%) and Atlantic Forest (19%), distributed throughout seven mesogeographical regions (IBGE 2012). The Private Reserve of National Heritage Serra do Teimoso is located in the municipality of Jussari (15°08´S and 39°31´W, ca 850m alt.), in the mesoregion of South of Bahia, geographical microregion of Ilhéus-Itabuna, some 50 km from the coast (Figs 1-2).

The Reserve is located within one of the slopes of the Ouricana Mountain Range, which belongs to the Complex of Serra das Lontras, with elevation reaching up to 850 m (Amorim and Matos 2009; Thomas et al. 2009). The Koeppen Am type climate (Kottek et al. 2006) exhibits a high level of rainfall (1300 to 1600 mm annually), regularly distributed throughout the year, with two to three months of a dry season and average temperatures between 23-24ºC (Thomas et al. 2009; INMET 2012).

With its 200 ha, the Serra do Teimoso Reserve is one of the first private reserves created in the country (1997) and has a well-known composition of fauna and flora, due to the several scientific works conducted therein (Amorim et al. 2005; Oliveira et al. 2010). Despite the history of cocoa plantation in the region, the fragments of dense submontane ombrophilous forests and semi-deciduous forests are in a good state of conservation with a high diversity of plant species (Fig. 2). According to Thomas et al. (2009), in the arboreal-bush strata the families Fabaceae, Myrtaceae and Sapotaceae stand out for their species numbers; however, the most frequent trees correspond to *Discocarpus pedicellatus* Fiaschi & Cordeiro (Phyllanthaceae), *Ampelocera glabra* Kuhlm. (Cannabaceae), *Sorocea hilarii* Gaudich. (Moraceae) and *Scyphonychium multiflorum* (Mart.) Radlk (Sapindaceae).

*Data collection and identification*

Two excursions were conducted to Serra do Teimoso, the first in the dry period (July 2011), the second in the more humid period (December 2011), lasting five days each. In these excursions, 20 collection points located between 200 and 400 m high were established and georeferenced. In these locations, sporocarps of myxomycetes found in fallen trunks and in the ground, litter were collected. In each point, fallen dead tree trunks were explored for 90 minutes by four collectors, adding to a total of 120 hours of collection time. In addition, samples of several substrates were obtained to prepare a series of 240 moist chamber cultures.

Identification of taxa was performed according to Farr (1976), Lado and Pando (1997) and Poulain et al. (2011). The distribution in Brazil was based on the Brazilian Flora Group (BFG 2021), Bezerra et al. (2010), Araújo et al. (2012), Costa et al. (2014), Xavier de Lima and Cavalcanti (2015), and Velloso et al. (2020). Representative exsiccates of the collected material were deposited in the UFP Herbarium, Federal University of Pernambuco, Brazil.

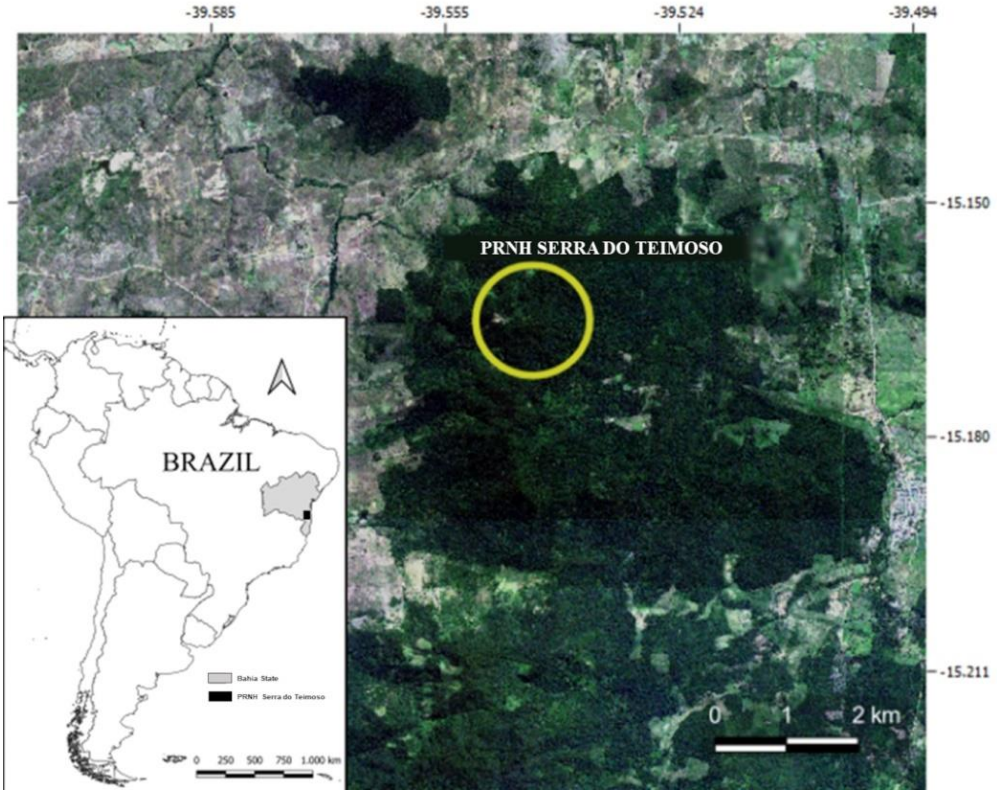


**Figure 1.** Location of PRNH Serra do Teimoso in southern Bahia, Brazil. Satellite image from Google Maps.

## Results

At the PRNH Serra do Teimoso, 484 specimens were obtained, the majority of which came from fallen dead trunks (80%), 11% from aerial litter, 5% from bark and 4% from ground litter. 92.5% of the records were direct field collections and 7.5% were obtained from moist chamber cultures. A total of 55

species were recorded exclusively in the field, 80.5 % of them sporulated on fallen trunks and 19.5% (*Diderma*, 2 spp.; *Didymium*,4 spp.; *Physarum*, 3 spp.) on ground litter. Species of the genera *Licea* and *Macbrideola* were recorded exclusively in moist chamber cultures (bark and aerial litter), as well as *Arcyria pomiformis* (Leers) Rostaf., *Didymium verrucisporum* A. L. Welden and some species of *Physarum* and *Perichaena*, all of them on aerial litter. Seventy-three species were identified in 23 genera, and six orders. Five species are new references for the Atlantic forests, 23 are recorded for the first time for Bahia state, three for Brazil and two for the Neotropics (Table 1).


**Figure 2.** A. External view of the PRNH Serra do Teimoso. B. Canopy view from an elevated platform. C, D. Internal view of the fragment.

One specimen of *Cribraria cancellata* (Batsch) Nann.-Bremek. (UFP 71.821), showing the characteristic calyculus of var. *fusca* (Lister) Nann.-Bremek., and one of *C. intricata* Schrad. (UFP 71.746), with an absent calyculus and star-shaped nodules of the peridial net, round and small, fitting the var. *dictydioides* (Cooke & Balf. f.) Lister, were found on fallen trunks.

Four specimens of *Stemonitis axifera* (Bull.) T.Macbr. showed dimensions on the sporangia and spores characteristic of the var. *smithii* (T. Macbr.) Hagelst. (UFP 71.820), and one specimen of *Stemonitopsis aequalis* (Peck) Y. Yamam. (UFP 71.775), with spores that varied from 5.5 to 6.0 µm in diameter, fit the var. *microspora* Nann-Bremenk. & Y. Yamam. The two varieties have no records for the myxobiota of Bahia.

The single specimen of *Physarum viride* (Bull.) Pers. (UFP 71.773), collected on a fallen trunk in the rainy season, had the orange color of the peridium typical of var *aurantium* (Bull.) Lister. The occurrence of *P. viride* is known for all regions in the country; however, the var. *aurantium* had only been recorded in the states of Pernambuco, in a fragment of the Atlantic Forest (Silva and Cavalcanti 2010), and Roraima, Amazon biome, according to records made at the Viruá National Park by Coelho (2019).

**Table 1.** List of Myxomycetes recorded in the Private Reserve of National Heritage Serra do Teimoso (Bahia, Brazil) *New record for Bahia. **New record for Brazil. ***New record for the Neotropics.

[1]New reference for Atlantic Forest. [2] Cavalcanti et al. (2016).

| Subclass/ Order | Species |
|---|---|
| CERATIOMYXOMYCETIDAE | |
| CERATIOMYXALES | *Ceratiomyxa fruticulosa* (O. F. Mull.) T. Macbr |
| MYXOGASTROMYCETIDAE | |
| ECHINOSTELIALES | *Clastoderma debaryanum* A. Blytt |
| | *Echinostelium minutum* de Bary |
| LICEALES | *Cribraria cancellata* (Batsch) Nann.-Bremek. |
| | *Cribraria cancellata var. fusca* (Lister) Nann.-Bremek. |
| | *Cribraria intricata* Schrad. |
| | *Cribraria intricata var. dictydioides* (Cooke & Balf.) Lister |
| | *Cribraria languescens* Rex * |
| | *Cribraria microcarpa* (Schrad.) Pers. |
| | *Cribraria splendens* (Schrad.) Pers. * |
| | *Cribraria tenella* Schrad. |
| | *Cribraria violacea* Rex |
| | *Licea biforis* Morgan * |
| | *Licea clarkii* Ing *** |
| | *Licea operculata* (Wingate) G.W. Martin |
| | *Dictydiaethalium plumbeum* (Schumach.) Rostaf. * |
| | *Lycogala exiguum* Morgan* |
| | *Lycogala epidendrum* (L.) Fr. |
| TRICHIALES | *Arcyria affinis* Rostaf. [1] ** |
| | *Arcyria cinerea* (Bull.) Pers. |
| | *Arcyria denudata* (L.) Wettst. |
| | *Arcyria minuta* Buchet * |
| | *Arcyria obvelata* (Oeder.) Onsberg * |
| | *Arcyria pomiformis* (Leers) Rostaf. |
| | *Hemitrichia calyculata* (Speg.) M. L. Farr |
| | *Hemitrichia minor* G. Lister |
| | *Hemitrichia serpula* (Scop.) Rostaf. ex Lister |
| | *Perichaena calongei* Lado, D. Wrigley & Estrada [2] |
| | *Perichaena chrysosperma* (Curr.) Lister |
| | *Perichaena corticalis* (Batsch) Rostaf. |
| | *Perichaena depressa* Libert |
| | *Perichaena pedata* (Lister & G. Lister) Lister ex. E. Jahn [2] |
| | *Perichaena vermicularis* (Schwein.) Rostaf. |
| | *Trichia affinis* de Bary * |
| PHYSARALES | *Diderma effusum* (Schwein.) Morgan * |

| | |
|---|---|
| | *Diderma hemisphaericum* (Bull.) Hornem. |
| | *Diderma rugosum* (Rex) T. Macbr. * |
| | *Didymium clavus* (Alb. & Schwein.) Rabenh. |
| | *Didymium floccosum* G.W. Martin, K.S. Thind & Rehill [1]** |
| | *Didymium melanospermum* (Pers.) T. Macbr |
| | *Didymium nigripes* (Link) Fr. * |
| | *Didymium squamulosum* (Alb. & Schwein.) Fr. & Palmquist |
| | *Didymium verrucisporum* A.L. Welden * |
| | *Craterium leucocephalum* (Pers. ex. J.F.Gmel.) Ditmar |
| | *Fuligo muscorum* Alb. &Schwein. [1]** |
| | *Physarella oblonga* (Berk. & M.A. Curt.) Morgan |
| | *Physarum album* (Bull.) Chevall. |
| | *Physarum auriscalpium* Cooke * |
| | *Physarum bivalve* Pers. |
| | *Physarum bogoriense* Racib. |
| | *Physarum compressum* Alb. & Schwein. |
| | *Physarum flavicomum* Berk. |
| | *Physarum globuliferum* (Bull.) Pers. |
| | *Physarum hongkongense* Chao H. Chung * |
| | *Physarum melleum* (Berk. & Broome) Massee |
| | *Physarum nucleatum* Rex * |
| | *Physarum penetrale* Rex * |
| | *Physarum stellatum* (Massee) G.W. Martin |
| | *Physarum tenerum* Rex |
| | *Physarum viride* (Bull.) Pers. |
| | *Physarum viride var. aurantium* (Bull.) Lister |
| STEMONITOMYCETIDAE | |
| STEMONITALES | *Comatricha elegans* (Racib.) G. Lister |
| | *Comatricha pulchella* (C. Bab.) Rostaf. |
| | *Macbrideola martinii* (Alexop. &Beneke) Alexop. * |
| | *Macbrideola scintillans* H.C. Gilbert * |
| | *Stemonaria laxa* Nann.-Bremek. & Y. Yamam [1]*** |
| | *Stemonaria longa* (Peck) Nann.-Bremek., R. Sharma & Y. Yamam. |
| | *Stemonitis axifera* (Bull.) T.Macbr. |
| | *Stemonitis axifera var. smithii* (T. Macbr.) Hagelst. |
| | *Stemonitis fusca* Roth |
| | *Stemonitis herbatica* Peck |
| | *Stemonitis pallida* Wingate |
| | *Stemonitis splendens* Rostaf. |
| | *Stemonitopsis aequalis* (Peck) Y. Yamam. |
| | *Stemonitopsis aequalis var. microspora* Nann-Bremenk. & Y. Yamam. |
| | *Stemonitopsis hyperopta* (Meyl.) Nann.-Bremek. |
| | *Stemonitopsis typhina* (F.H.Wigg.) Nann.-Bremek. |

*Comments on the new records*

1. *Cribraria languescens* Rex (UFP71.754) – Eight specimens were found on fallen trunks during the humid period (December). Despite its wide distribution, with records in almost all the regions in the country, this species is rarely collected, probably due to the small size of its sporangia that varied between 2-3 mm in height. In Brazil's Northeast Region, its occurrence was only known for the states of Paraiba, Pernambuco and Sergipe (Cavalcanti et al. 2020a). First record for Bahia.

Distribution in Brazil: North (Amazonas, Roraima), Northeast (Paraíba, Pernambuco, Sergipe), Southeast (São Paulo), South (Santa Catarina).

Biomes: Amazon, Atlantic Forest, Caatinga, Cerrado (BFG 2021).

*2. Cribraria splendens* (Schrad.) Pers. (UFP 71.747) – Only two specimens were collected, found on fallen trunks, in the months of July and December. Despite its wide distribution, with records in three of the five regions of the country, the occurrence of *C. splendens* was only known for the states of Pernambuco, Roraima, and São Paulo (Maimoni-Rodella 2002; Silva and Cavalcanti 2012; Cavalcanti et al. 2014). First record for Bahia.

Distribution in Brazil: North (Roraima), Northeast (Pernambuco), Southeast (São Paulo).

Biomes: Amazon, Atlantic Forest, Caatinga (BFG 2021).

*3. Dictydiaethalium plumbeum* (Schumach.) Rostaf. (UFP 71.794) – A species widely distributed throughout the world, though rarely collected in Brazil, probably due to the color of the sporocarps, which are similar to the fallen trunks, where it sporulates more frequently. Six specimens were collected on fallen trunks and one on an exposed root, five of which in the dry season (July). First record of the genus for Bahia.

Distribution in Brazil: Northeast (Ceará, Paraíba, Pernambuco), Southeast (Rio de Janeiro, São Paulo).

Biomes: Atlantic Forest, Caatinga, Cerrado (Agra et al. 2020a).

*4. Lycogala exiguum* Morgan (UFP 71.751) – In both collecting periods, 14 specimens were obtained, sporulating on fallen trunks and on a branch on the ground litter. Cosmopolitan, *L. exiguum* is widely distributed in Brazil, including the Northeast Region (Martin and Alexopoulos 1969; Agra et al. 2020b). New record for Bahia.

Distribution in Brazil: North (Roraima), Northeast (Alagoas, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe), Midwest (Distrito Federal, Mato Grosso), Southeast (São Paulo), South (Santa Catarina).

Biomes: Atlantic Forest, Cerrado, Pantanal (BFG 2021).

*5. Licea biforis* Morgan (UFP 71.797) – A single specimen was obtained, developed in a moist chamber on liana, exhibiting the species' characteristic dehiscence line on peridium. First record for Bahia.

Distribution in Brazil: Northeast (Alagoas, Paraíba, Pernambuco, Piauí, Sergipe), Southeast (São Paulo), South (Paraná, Santa Catarina, Rio Grande do Sul).

Biomes: Atlantic Forest, Pampa (Xavier de Lima and Cavalcanti 2017; BFG 2021).

*6. Licea clarkii* Ing (UFP71.796) – A single specimen, obtained from a moist chamber assembled with an unidentified liana, represents this rare species, still without reference for the Neotropics. The orange-nut

brown color of the sporocarp, the orange granules of the peridium with circumcised dehiscence, which remains as a lid and the gray-colored spores are part of this easily recognizable species.

Distribution in Brazil: First record for the country.

*7. Diderma effusum* (Schwein.) Morgan (UFP71.785) – Only one specimen was found sporulating on the ground litter at the more humid season (December). This cosmopolitan species is widely distributed in Brazil (Martin and Alexopoulos 1969; Maia et al. 2015); however, without any records for the myxobiota of Bahia.

Distribution in Brazil: Midwest (Goiás), North (Amazonas), Northeast (Paraíba, Pernambuco, Sergipe), Southeast (Espírito Santo, São Paulo), South (Paraná, Rio Grande do Sul).

Biomes: Amazon, Atlantic Forest, Cerrado (BFG 2021).

*8. Diderma rugosum* (Rex) T. Macbr. (UFP71.780) – The specimen obtained was collected on the ground litter in the more humid season (December). This specimen is the second record of *D. rugosum* for Brazil, with known occurrences only in Serra de Itabaiana National Park, in Sergipe, at an altitude of 654 m (Bezerra et al. 2008). First record for Bahia.

Distribution in Brazil: Northeast (Sergipe).

Biome: Atlantic Forest (BFG 2021).

*9. Didymium floccosum* G.W. Martin, K. S. Thind & Rehill (UFP71.778) – At the more humid season (December), two specimens were obtained, sporulating on ground litter. This species, with its type locality in India, has been recorded in China, Japan, Mexico, Costa Rica, Ecuador and Venezuela (Martin and Alexopoulos 1969; Lado and Wrigley de Basanta 2008) but its occurrence in Brazil was still unknown.

Distribution in Brazil: First record for the country.

*10. Didymium nigripes* (Link) Fr. (UFP71.776) – All six specimens were collected on ground litter, in the rainy period (December). Cosmopolitan, *D. nigripes* is widely distributed in Brazil, however in the Northeast Region, it had only been recorded in four of the nine states (Cavalcanti 2010). First record for Bahia.

Distribution in Brazil: North (Roraima), Northeast (Maranhão, Paraíba, Pernambuco, Piauí), Southeast (Rio de Janeiro, São Paulo), South (Rio Grande do Sul).

Biomes: Amazon, Atlantic Forest, Cerrado (BFG 2021).

*11. Didymium verrucisporum* A. L. Welden (UFP71.799) – The single specimen obtained sporulated on an unidentified liana within a moist chamber. Cosmopolitan, recorded in Brazil only in Pernambuco state (Xavier de Lima and Cavalcanti 2015), *D. verrucisporum* is distinguished by the presence of a columella,

which reaches almost half the sporotheca, associated with the typical ornamentation of the spores. First record for Bahia.

Distribution in Brazil: Northeast (Pernambuco).

Biome: Atlantic Forest (Xavier de Lima and Cavalcanti 2015).

*12. Fuligo muscorum* Alb. & Schwein. (UFP71.786) – A typically muscicolous species (Ing 1994), the single specimen obtained was collected on moss phyllids, on a fallen tree, in the dry period (July). *Fuligo muscorum* is predominantly a temperate-zone species, frequent in some countries in Europe and cold regions in North America, Japan and Sri Lanka (Ing 1994; Farr 1976). This is the first record for the species in Brazil, known in the Neotropics only in Cuba, Mexico and Venezuela (Lado and Wrigley de Basanta 2008; Kennedy 2021).

Distribution in Brazil: First record for the country.

*13. Physarum auriscalpium* Cooke (UFP 71.783) – A very typical specimen was collected on ground litter in the rainy season (December). Widely distributed in the Neotropics (Lado and Wrigley de Basanta 2008), this species has been recorded in only three states in Brazil (Cavalcanti 2002; Maimoni-Rodella 2002). First record for Bahia.

Distribution in Brazil: Northeast (Pernambuco), Southeast (Rio de Janeiro, São Paulo).

Biomes: Atlantic Forest, Cerrado (BFG 2021).

*14. Physarum hongkongense* Chao H. Chung (UFP71.777) – One specimen, found on branches on ground litter in a clearing formed by a fallen tree, was collected in December. This species is very similar to *P. bogoriense* Racib., from which is distinguished by its longer and ramified laterally compressed and light yellow plasmodiocarps and by the more regular dehiscence line. This is the third record of the species in Brazil and first in the Northeast region, known only in São Paulo and Roraima states (Coelho 2019, BFG 2021). First record for Bahia.

Distribution in Brazil: North (Roraima), Southeast (São Paulo).

Biomes: Amazon, Atlantic Forest (BFG 2021).

*15. Physarum nucleatum* Rex (UFP 71.749) – Six specimens were collected on fallen trunks, during both collecting periods. Included by Lado and Wrigley de Basanta (2008) among the species which are characteristically Neotropical, *P. nucleatum* has records in different Brazilian biomes but its occurrence in the state of Bahia was still unknown.

Distribution in Brazil: North (Amazonas, Roraima), Northeast (Alagoas, Ceará, Pernambuco, Piauí, Sergipe), Midwest (Distrito Federal, Goiás), Southeast (São Paulo), South (Paraná, Rio Grande do Sul).

Biomes: Amazon, Atlantic Forest, Caatinga, Cerrado (BFG 2021).

*16. Physarum penetrale* Rex (UFP 71.758) – Five specimens were collected on fallen trunks, all of them in the dry season (July). This species, with a wide world distribution, is easily identified by its non-calcareous, translucent, orange-red stalk that continues as a columella that reaches almost to the top of the sporotheca. First record for Bahia.

Distribution in Brazil: Northeast (Alagoas, Paraíba, Pernambuco, Sergipe), Southeast (São Paulo).

Biomes: Atlantic Forest, Cerrado (BFG 2021).

*17. Arcyria affinis* Rostaf. (UFP71.756) – A single specimen was collected on a fallen trunk, in the rainy season (December). A cosmopolitan species, common in Europe, but in the Neotropics it had only been recorded from Mexico and Ecuador (Lado and Wrigley de Basanta 2008; Poulain et al. 2011).

Distribution in Brazil: First record for the country.

*18. Arcyria minuta* Buchet (UFP 71.770) – The single specimen obtained in the present study was collected on fallen trunk in the rainy season (December) showing characteristics typical of the species, such as crowded, cylindrical, salmon-pink sporocarps, 1.7 mm in total height, with cylindrical stalk filled with cysts 12-18 µm diam. Despite being cosmopolitan, this species was recorded in only three states in Brazil (Cavalcanti 2002; Maimoni-Rodella 2002; Cavalcanti et al. 2006), and this is the first record for Bahia.

Distribution in Brazil: Northeast (Pernambuco, Piauí), Southeast (São Paulo).

Biomes: Atlantic Forest, Cerrado (BFG, 2021).

*19. Arcyria obvelata* (Oeder.) Onsberg (UFP 71.789) – The single specimen obtained during the period of study was collected in the dry season (July), on a fallen trunk. In Brazil, this species was collected from four of the five regions of the country but had not yet been recorded for the myxobiota of Bahia.

Distribution in Brazil: North (Roraima), Northeast (Pernambuco, Piauí, Sergipe), Southeast (São Paulo) and South (Paraná, Rio Grande do Sul, Santa Catarina).

Biomes: Amazon, Atlantic Forest, Cerrado (BFG 2021).

*20. Trichia affinis* de Bary (UFP71.750) – Two specimens were found on the same fallen trunk in the dry season (July). Despite being cosmopolitan and forming extensive fructifications, *T. affinis* has not been collected much in Brazil, recorded up to this moment only in six of the 26 Brazilian states. First record for Bahia.

Distribution in Brazil: Northeast (Paraíba, Pernambuco, Piauí, Sergipe), Southeast (São Paulo), South (Rio Grande do Sul).

Biome: Atlantic Forest (BFG 2021).

*21. Macbrideola martinii* (Alexop. & Beneke) Alexop. (UFP 71.802) – The three specimens obtained in the present study were developed in moist chambers assembled on unidentified living tree bark (2) and

liana (1). Although the species is widely distributed in the world, the small size of its sporocarps and its dark nut-brown color make it difficult to spot in the field. In Brazil, this species has been recorded only in three states, in the Northeast region (Cavalcanti et al. 2020b). This is the first record of the genus *Macbrideola* for Bahia.

Distribution in Brazil: Northeast (Alagoas, Pernambuco, Piauí).

Biomes: Atlantic Forest, Cerrado (Mobin and Cavalcanti 1999; BFG 2021).

*22. Macbrideola scintillans* H.C. Gilbert (UFP 71.801) – Three specimens were obtained in moist chambers assembled on bark of fallen trunks. The densely papillose inner side fits the var. *verrucosa* (Nann.-Bremek & Y. Yamam.) Y. Yamam., in agreement with observations by Costa et al. (2009), who made the first record for the species in Brazil. First record for Bahia.

Distribution in Brazil: North (Roraima), Northeast (Alagoas, Paraiba, Pernambuco).

Biomes: Amazon, Atlantic Forest (BFG 2021).

*23. Stemonaria laxa* Nann.-Bremek. & Y. Yamam. (UFP71.748) – Described in 1984, the geographical distribution of this species was known only for Japan (Poulain et al. 2011), and this is the first reference for the Neotropics. Only one specimen was obtained in the present study, sporulating in the dry season (July) on a fallen trunk. The species was easily identified by the small size of its sporocarps (1.4 mm), fusiform sporotheca and primary branches of the capillitium pointing upwards.

Distribution in Brazil: First record for the country.

## Discussion

In this study, a total of 73 species, distributed in 23 genera and all six orders recognized for the Class Myxomycetes were found. Among these species, *L. clarkii* and *S. laxa* constitute new records for the Neotropics, and *A. affinis*, *D. floccosum* and *F. muscorum* are reported for the first time in Brazil. Two genera, *Dictydiaethalium* Rostaf., and *Macbrideola* H.C. Gilbert, as well as 23 species and five varieties were new records for Bahia. Only one genus and two species of myxomycetes had been recorded previously from the Serra do Teimoso Reserve, and thus 97.2% of the taxa found in the present survey are new for this Atlantic Forest conservation unit.

The states with the highest number of myxomycete species recorded in Brazil are Pernambuco (180 spp.), Northeast region, and São Paulo (142 spp.), Southeast region (BFG 2021), equivalent or higher than that cited by Treviño-Zevallos and Lado (2020) for neotropical countries, such as Peru (174 spp.), Argentina (160 spp.), and Ecuador (136 spp.). With the new records obtained in the Serra do Teimoso Reserve, the current number of species with known occurrence for Bahia is 116 and this value represents a 25% increase in the number recorded by BFG (2021). This number, close to that cited for Ecuador, places the state among the three with the highest number of species in Brazil and probably will be significantly expanded when its large territorial area is better explored.

The number of species found in the Serra do Teimoso Reserve was higher than that recorded by Costa et al. (2014) in the Mata do Pau Ferro State Park (48 spp., 753 specimens), a highland Atlantic

Forest refuge (400-600 m a.s.l., 1400 mm per year) situated in the Borborema Plateau, surrounded by Caatinga biome, in the state of Paraíba, northeast Brazil (Campos and Lima 2020). Its richness is comparable to that found in studies carried out in lowland (190 - 400 m a.s.l., 3 200 mm per year) and montane forests (1 200 - 2 700 m a.s.l., 1 000 mm per year) in Ecuador, and montane forest (2 300-3 500 m a.s.l., 1 600 mm per year) in Peru, which resulted in 77 - 81 species (Schnittler et al. 2002; Lado et al. 2017; Treviño-Zevallos and Lado 2020). The taxonomic diversity index calculated for the myxobiota of Serra do Teimoso (3.2) falls within the range of S/G-values (2.2-4.6) usually found for the myxomycete biotas of temperate and tropical areas (Stephenson et al. 2000). This value was more similar to those obtained in the Yasuni National Park (3.1) and Maquipucuna Forest Reserve (3.5), Ecuador, than the value found in Mata do Pau Ferro State Park (2.0). Twenty-three species were present in all four conservation units, mainly those belonging to the orders Ceratiomyxales (1 sp.), Physarales (8 spp.) and Trichiales (6 spp). Pairwise comparison of myxobiotas among the two Ecuatorian forests (0.65) shows a certain similarity between them, despite the differences in climate and altitude, greater than that observed between the two Atlantic Forest fragments (0.56), whose value is close to the calculated for the lowland forest (ST/Y= 0.51; PF/Y= 0.52) and the montane forest (ST/M= 0.50; PF/M= 0.50).

To date, 223 species were recorded for the Atlantic Forest biome (BFG 2021), 59.5% of them belonging to the orders Physarales and Stemonitales, with dark spores. According to Novozhilov et al (1998) the taxonomic structure of the myxobiota differ in different climate zones, well evidenced when analyzing the proportion between taxa with light and dark spores. The species number ratio of Trichiales to Physarales calculated from the specimens collected in this survey (T/P= 0.61) and those of Mata do Pau Ferro (T/P=0.64), are similar. These rations decline in the lowland (T/P=0.46) and montane (T/P=0.47) Ecuadorian forests, that are situated in the same climatic zone of the Atlantic Forest fragments, but not under the same climate type (Am and As).

This study, carried out in only one fragment of dense submontane ombrophilous forest, added five species to the already known for the Atlantic Forest myxobiota, indicating a much higher species richness than currently known for the biome. Considering that the humid environments of its seven ecosystems are favorable for myxomycetes development, probably a larger diversity will be found with the exploration of a greater number of fragments.

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