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# Phallales (Agaricomycetes, Fungi) from the tropical Atlantic Forest of Brazil[1]

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MAGNAGO, A. C. (Programa de Pós-Graduação em Biologia Vegetal, Departamento de Botânica, CCB, Universidade Federal de Santa Catarina, Brazil), L. TRIERVEILER-PEREIRA (Programa de Pós-Graduação em Botânica, Departamento de Botânica, IB, Universidade Federal do Rio Grande do Sul, Brazil), AND M. A. NEVES (Programa de Pós-Graduação em Biologia Vegetal, Departamento de Botânica, CCB, Universidade Federal de Santa Catarina, Brazil). Phallales (Agaricomycetes, Fungi) from the tropical Atlantic Forest of Brazil. J. Torrey Bot. Soc. 140: 236–244. 2013.—Fourteen species of Phallales known to occur in the tropical region of the Atlantic Forest in Brazil are discussed. New records are reported for the country (*Laternea dringii*), Southeastern Brazil (*Abrachium floriforme*), Northeastern Brazil (*Clathrus columnatus* and *Mutinus argentinus*), and the states of Paraíba (*M. caninus* and *Staheliomyces cinctus*), Rio de Janeiro and Espírito Santo (*Phallus indusiatus*). Descriptions and illustrations of the new records and a key to the phalloid fungi from this region are presented.

Key words: Neotropical mycota, phalloid fungi, stinkhorns.

The order Phallales E. Fisch. was originally described to accommodate the Clathraceae (comprising nine genera) and Phallaceae (seven genera) (Fischer 1898). Later, Cunningham (1931a) added the monogeneric Claustulaceae (*Claustula* K.M. Curtis) to the order. Recently, based on a phylogenetic analysis using molecular data, Hosaka et al. (2006) divided the order into six families (Clathraceae, Claustulaceae, Lysuriaceae, Phallaceae, Protophallaceae, and Trappeaceae) including nonsequestrate and sequestrate forms.

Members of the Phallales are known for their bright colored basidiomata that are morphologically unusual and have unpleasant odors associated with entomochory. The tropics are thought to be the center of diversity for many of the species in this group and contain several endemic taxa from the order (Hosaka 2012). However, the diversity of phalloid fungi in the Neotropics is not well understood because there are very few specialists in the group, and the basidiomata are ephemeral and difficult to preserve. In Brazil, Phallales sensu Hosaka et al. (2006) is represented by fourteen genera and approximately 33 species (Trierveiler-Pereira and Baseia 2009, Trierveiler-Pereira et al. 2009a, Ottoni et al. 2010, Fazolino et al. 2010, Cortez et al. 2011a). Most of the records are from the Atlantic Forest and many species reported for southern Brazil (Braun 1932, Rick 1961) are considered synonyms or doubtful records because the voucher specimens are not well preserved (Cortez et al. 2011a, b).

The Atlantic Forest is a highly diverse biome with large environmental variation distributed along the Brazil's Atlantic coast and inland areas. Originally, it covered an area of 1,300,000 km$^2$, about 15% of the country. Currently, only 7% of this area preserves the original biotic characteristics. The Atlantic Forest is considered one of the most important

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environments in the world, and the fourth hottest biodiversity hotspot (Myers et al. 2000, SOS Mata Atlântica 2012). Although phalloid species are known from several Brazilian environments, a great diversity has been observed in the Atlantic Forest.

In a recent survey of Phallales from the tropical region of the Atlantic Forest of Brazil, several taxa collected were new country, regional or state records. This work presents descriptions, line drawings of the new records, a key, and comments about the phalloid fungi that are known from this region.

**Materials and Methods.** This work surveyed the Atlantic Forest in the Southeast and Northeast regions of Brazil (São Paulo, Minas Gerais, Rio de Janeiro, Espírito Santo, Bahia, Sergipe, Alagoas, Pernambuco, Paraíba and Rio Grande do Norte).

The list of species presented here was compiled from recent fieldwork and the literature. Macro and microscopic analysis of the material followed traditional methods used to study gasteroid basidiomycetes (Miller and Miller 1988). The macroscopic illustrations were based on photographs taken in the field. Color codes (e.g., OAC 663) are based on the Online Auction Color Chart (Kramer 2004). Voucher material was deposited at JPB, FLOR, and RB (Thiers 2012).

**Results (Taxonomy).**

***Abrachium floriforme*** (Baseia & Calonge) Baseia & T.S.Cabral, Mycotaxon 119: 424 (2012)

Unexpanded basidiome not observed. Expanded basidiome epigeous, 4.8 cm high, pseudostipe 4.3 cm high × 1.2 cm in diam., cylindrical, spongy, hollow, orange-pink (OAC 794) surface slightly reticulate. Volva 0.9 cm high × 1.5 cm in diam., sacculiform, externally white (OAC 909), internally with hyaline gelatinous content, whitish rhizomorphs attached at the base. Receptaculum applanate, sunflower-shaped, 4.8 cm in diam., spongy, orange-pink (OAC 794), central disc perforate, with reddish border (OAC 663), covered with glebal mass. Gleba viscous, olivaceous (OAC 866), odor fetid. Basidiospores 4.0–6.0 × 1.5–2.0 μm, cylindrical to ellipsoid, hyaline, smooth.

***Examined material***: BRAZIL. ESPÍRITO SANTO: Alfredo Chaves, Morro da caixa d'água 20/XII/2009, *Magnago A.C. 137* (FLOR 42358).

***Distribution in Brazil:*** Bahia (Bezerra et al. 2009), Ceará, Rio Grande do Norte (Trierveiler-Pereira and Baseia 2009), Paraíba (Trierveiler-Pereira and Baseia 2011) and Espírito Santo (present study).

***Remarks***: Originally described as *Aseroë floriformis*, this taxon was later segregated into a new genus based on molecular data and receptacle shape (Cabral et al. 2012). The only other *Aseroë* species recorded from Brazil is *A. rubra* (Trierveiler-Pereira and Baseia 2009), which can be easily separated from *Abrachium floriforme* by its bright red, branched receptacle. *Abrachium floriforme* has been reported from photographs from the state of São Paulo (Trierveiler-Pereira and Baseia 2011) but no voucher material was preserved. This is the first record of *A. floriforme* from Southeastern Brazil.

***Clathrus chrysomycelinus*** Möller, Bot. Mitt. Trop. 7: 22 (1895)

***Description in***: Dring (1980); Fazolino et al. (2010).

***Distribution in Brazil***: Rio Grande do Sul, Santa Catarina, Paraná, São Paulo (Trierveiler-Pereira and Baseia 2009) and Pernambuco (Fazolino et al. 2010).

***Remarks***: Originally described from Southern Brazil (Möller 1895), this species has also been reported for Venezuela (Dennis 1960, 1970) so it is thought to occur in South American tropical and subtropical forests. The clathroid receptaculum is white with mesh that is somewhat polygonal and elongated in the lower region. The gleba is confined to glebifers that are located at the intersection of the arms. *Clathrus preussi* (Henn.) Henn. also has a whitish receptacle but its mesh is surrounded by a fringe of membranaceous teeth. *Clathrus preusii* is common in Africa (Dring 1980), but there are also records from Brazil (1961), Venezuela and Jamaica (Dennis 1960).

***Clathrus columnatus*** Bosc, Mag. Gesell. naturf. Freunde, Berlin 5: 85 (1811)

Unexpanded basidiome epigeous, 2.5 × 3.0 cm, globose to subglobose, white (OAC 909). Expanded basidiome 6.3 cm high, consisting of four vertical columns that are joined together apically and then taper as they approach the base where they are free, vertical columns spongy, hollow, orange (OAC 812). Volva sacculiform, white (OAC 909), with

long, whitish rhizomorphs attached at the base. Gleba at the apex, spread on the internal portion where the columns are connected, viscous, olivaceous (OAC 866), odor fetid. Basidiospores 4.0–5.0 × 2.0–3.0 μm, cylindrical, hyaline, smooth.

***Examined material***: BRAZIL. PARAÍBA: Mamanguape, ReBio Guaribas, 28/V/2011, *Magnago A.C. 277* (JPB 47313).

***Distribution in Brazil***: Rio de Janeiro (Dring 1980), Paraná, Rio Grande do Sul, São Paulo (Trierveiler-Pereira and Baseia 2009) and Paraíba (present study).

***Remarks***: *Clathrus columnatus* is characterized by 2–5 robust, spongy, orange columns that are free at the base and fused at the apex. The gleba is spread in the internal portion of the columns and it is not confined to a glebifer. This species is treated in literature under different generic names (e.g., *Colonnaria* Rafinesque-Schmaltz, *Laternea* Turpin, *Linderia* G. Cunningham, and *Linderiella* G. Cunningham). In this study we follow Dring (1980). This is the first record of *C. columnatus* from Northeastern Brazil.

***Gelopellis thaxteri*** (Zeller and C.W. Dodge) Zeller, Mycologia 31(1): 22 (1939)

***Description in***: Zeller and Dodge (1929, as *Hysterangium thaxteri* Zeller and Dodge).

***Distribution in Brazil***: São Paulo (Bononi et al. 1984) and Rio Grande do Sul (Zeller and Dodge 1929, Homrich 1969).

***Remarks***: *Gelopellis thaxteri* has globose to subglobose, hypogeous to subhypogeous basidiomata. It has an olive gray gleba immersed in a gelatinous matrix and a central cylindrical columella that resembles the pseudostipe of a *Phallus* species (Homrich 1969). This species has basidiospores that are 3–4 μm long, which differentiates it from *G. macrospora* (basidiospores 7–14 μm long), a similar species described from Chile (Zeller 1939).

***Ileodictyon cibarium*** Tul. ex M. Raoul, Annls Sci. Nat., Bot., sér. 3 2: 114 (1844)

***Description in***: Dring (1980).

***Distribution in Brazil***: Rio Grande do Norte (Baseia et al. 2006).

***Remarks***: *Ileodictyon* species (*I. cibarium and I. gracile* Berk.) have white receptaculum and are sometimes confused with *C. chrysomycelinus*. However, *Ileodictyon* species never have arms that are tubular in transversal view and fused at the base to form a short pseudostipe. Although *I. cibarium* is more common in Australasia, it is also found in other parts of the world where it is probably introduced (Dring 1980, Gooday 1997). Lloyd (1907) stated that the species has been reported from South Africa, Chile and Brazil. Cunningham (1913) believed that records from South America and Africa were misidentifications of *C. chrysomycelinus* and *C. preusii*, and Dring (1980) confirmed the occurrence of the species in Chile and Africa.

***Laternea dringii*** A. López, D. Martínez & J. García, Bol. Soc. Mex. Micol. 16: 110 (1981)

Unexpanded basidiome not observed. Expanded basidiome epigeous, 1.5 cm high × 1.0 cm in diam., consisting of four vertical columns fused at the apex and forming a transversal arm, vertical columns 0.15–0.3 cm in diam., tapering toward their apices, free at the base, each furnished with internal longitudinal furrows, orange (OAC 764). Volva 0.7 × 1.0 cm, sacculiform, white (OAC 909), with whitish rhizomorphs attached at the base. Gleba confined to an internal, apical glebifer, glebifer approximately 0.25 cm in diam., glebal mass olivaceous (OAC 866), odor not recorded.

***Examined material***: BRAZIL. PARAÍBA: Mamanguape, ReBio Guaribas, 28/V/2011, *Magnago A.C.* (voucher not preserved).

***Distribution in Brazil***: Paraíba (present study).

***Remarks***: The Brazilian specimen of *L. dringii* was found growing on sandy soil among leaf litter; unfortunately, the specimen was not preserved. The macroscopic description and line drawing of this species were made from a fresh specimen that was lost. *Laternea dringii* is characterized by small-sized basidiomata (1.3–1.5 cm), yellowish to light orange columns and apical, solitary glebifer. Basidiospores were not seen, but according to López et al. (1981), they are bacilloid, smooth, hyaline to greenish, 4.2–5.0 (–5.6) × 1.4 μm. *Laternea triscapa* is a similar species with basidiomata that are larger (4–7 cm high), vertical columns that are reddish to pinkish and trapezoid in cross section, and lacks a transversal column (López et al. 1981). *Laternea dringii* was considered a synonym of *L. triscapa* by Calonge et al. (2004) but diagnostic features of the species presented by López et al. (1981) seem to be enough to separate it. The occurrence of *L. dringii* in

Brazil extends the range for this species that was previous only known from Mexico

***Laternea triscapa*** Turpin, Dict. Sci. Nat. 25: 248 (1822)

***Description in***: Baseia et al. (2006).

***Distribution in Brazil***: Rio Grande do Sul, São Paulo and Rio Grande do Norte (Trierveiler-Pereira and Baseia 2009).

***Remarks****: Laternea triscapa* has usually been described as having an orange, red to pinkish receptacle (Dennis 1970, Dring 1980, Calonge et al. 2005); however, the Brazilian material was described as yellowish white (Baseia et al. 2006). The species is easily distinguished from *L. pusilla* Berk. & M.A. Curtis because the latter has bright red arms with teeth. *Laternea triscapa* could be confused with *C. columnatus* but the latter has the glebal mass spread in the internal portion of the arms, instead of confined within a glebifer.

***Mutinus argentinus*** Speg., An. Soc. Cient. Argent. 24: 62 (1887).

Unexpanded basidiome epigeous, 1.0–1.2 × 2.1–2.3 cm, ovoid, white (OAC 909), dehiscence irregular. Expanded basidiome 6.0–8.2 cm high × 0.4–0.6 cm in diam., pseudostipe simple, fusiform, spongy, hollow, whitish pinkish (OAC 815), surface reticulate, slightly viscid. Volva sacculiform, gelatinous, white (OAC 909), with long, whitish rhizomorphs attached at the base. Fertile portion of the receptaculum 1.5–2.0 cm high, well-defined, tapered, reddish (OAC 628). Gleba viscous, olivaceous (OAC 638), odor fetid. Basidiospores 4.0–5.0 × 1.0–1.5 μm, cylindrical, hyaline, smooth, walls slightly thick.

***Examined material***: BRAZIL. PARAÍBA: João Pessoa, Universidade Federal da Paraíba, 28/IV/2010, *Magnago A.C. 206* (JPB 47301); 06/V/2011, *Magnago A.C. 276* (JPB 47312).

***Distribution in Brazil:*** Paraná (Meijer 2006) and Paraíba (present study).

***Remarks***: *Mutinus argentinus* is very similar to *M. bambusinus* (Zoll.) E.Fisch. These species have been treated as the same species by different authors (Kobayasi 1938, Cunningham 1944, Liu 1984); however, Dring and Rose (1976) distinguished the two species and presented illustrations of both taxa. According to these authors, *M. bambusinus* has a pseudostipe with a marked sterile tip. The sterile tip of *M. bambusinus* was also illustrated by Petch (1926) and Demoulin and Dring (1975). Kobayasi (1938) and Reid (1977) state that *M. mulleri* Fischer, originally described from Brazil, is a synonym of *M. argentinus*. According to Gube and Piepenbring (2009), it is possible that many records of *M. bambusinus* from the neotropics actually correspond to *M. argentinus*. This is the first record of the *M. argentinus* from Northeastern Brazil.

***Mutinus caninus*** (Huds.) Fr., Summa veg. Scand., Section Post. (Stockholm): 434 (1849)

Unexpanded basidiome epigeous, 1.0–1.2 × 2.0–2.2 cm, ovoid, white (OAC 909), dehiscence irregular. Expanded basidiome 5.5 cm high × 1.0 cm in diam., pseudostipe simple, fusiform, spongy, hollow, pinkish (OAC 548), surface reticulate. Volva sacculiform, gelatinous, white (OAC 909), with long, whitish rhizomorphs attached at the base. Fertile portion of the receptaculum 1.5 cm high, rugulose, well-defined, tapered, reddish (OAC 593). Gleba viscous, olivaceous (OAC 866), odor fetid. Basidiospores 2.5–4.0 × 1.0–1.5 μm, cylindrical, hyaline, smooth.

***Examined material:*** BRAZIL. PARAÍBA: Mamanguape, ReBio Guaribas, 15/V/2010, *Magnago A.C. 218* (JPB 47303).

***Distribution in Brazil***: Rio Grande do Norte (Baseia et al. 2006a), Rondônia (Trierveiler-Pereira et al. 2011) and Paraíba (present study).

***Remarks***: According to Calonge et al. (2004), the species has a cosmopolitan distribution. The pseudostipe can be different colors (yellowish, orange, pinkish, white) and the fertile portion is not as elongated as that of *M. argentinus*. The basidiospores from the examined material are smaller than those described from other Brazilian collections (Baseia et al. 2006a, Trierveiler-Pereira et al. 2011). This is the first record of *M. caninus* from Paraíba.

***Phallus indusiatus*** Vent., Mém. Inst. Natl. Sci., Sci. Math. 1: 520, 1798

Unexpanded basidiomata not observed. Volva epigeous, 2.0–2.2 × 2.5–2.3 cm, globose to subglobose, whitish brown (OAC 676), with purplish pigments at the base, dehiscence irregular. Pseudostipe 10–12.5 cm high × 1.2–2.3 cm in diam., cylindrical, spongy, hollow, white (OAC 909); indusium well-

developed, pendulous, 6.0–9.5 cm high, white (OAC 909). Receptaculum campanulate, reticulate, perforated at the apex. Gleba viscous, fetid, olivaceous (OAC 866). Basidiospores 3.0–4.0 × 1.0–2.0 μm, elliptical, hyaline, smooth.

***Examined material:*** BRAZIL. PARAÍBA: Mamanguape, ReBio Guaribas, 15/V/2010, *Magnago A.C. 216* (JPB 47302); 26/VIII/2010, *Magnago A.C. 263* (JPB 47306). ESPÍRITO SANTO: Alfredo Chaves, Morro da Caixa D'água, 23/XII/2009, *Magnago A.C. 142* (FLOR 42324). RIO DE JANEIRO: Rio de Janeiro, Floresta da Tijuca, 25/XI/2011, *Neves et al. MAN 872* (RB 524930). ***Additional material studied*:** SANTA CATARINA: Florianópolis, Campus da UFSC, 22/VI/2012, *Magnago A.C. 368* (FLOR 43229); XI/2006, *T-Pereira* (FLOR 31909).

***Distribution in Brazil:*** Rio Grande do Sul, Paraná, São Paulo, Paraíba, Rio Grande do Norte (Trierveiler-Pereira and Baseia 2009, 2011), Rondônia (Trierveiler-Pereira et al. 2009b), Espírito Santo, Santa Catarina and Rio de Janeiro (present study).

***Remarks***: *Phallus indusiatus* is a common species in Brazil, as well as in the tropics (Guzmán et al. 1990), so it was expected to occur in the surveyed areas. *Phallus indusiatus* can be characterized by a reticulate receptaculum, presence of a long indusium (reaching the base) and purplish pigment at the base of the volva and rhizomorphs. The indusium is usually white, but yellowish and pinkish forms have been described (Kobayasi 1965, Das et al. 2007). The yellowish form (f. *lutea*) was later erected to *Phallus luteus* (Liou and L. Hwang) T. Kasuya (Kasuya 2008); *Phallus indusiatus* f. *citrinus* K. Das, S.K. Singh & Calonge is a synonym (Das et al. 2007) of this name. This is the first record of *P. indusiatus* from Espírito Santo, Rio de Janeiro, and Santa Catarina.

***Phallus rubicundus*** (Bosc.) Fr., Syst. Mycol. 2: 284 (1822).

***Description in***: Cunningham (1944).

***Distribution in Brazil***: São Paulo (Bononi et al. 1984).

***Remarks***: The species is characterized by its yellow to bright red pseudostipe, and absence of an indusium and finely rugulose receptaculum (Dring 1964). According to Cunningham (1944) the species is widespread in tropical and subtropical areas and it is curious that it has been reported only once for Brazil. The voucher specimen (SP 178206) is very poorly preserved and its identity cannot be confirmed. For this reason it should be regarded as a doubtful record for the country.

***Protubera maracuja*** Möller, Bot. Mitt. Trop. 7: 10, 145 (1895)

***Description in***: Möller (1895), Furtado and Dring (1967).

***Distribution in Brazil***: Minas Gerais (Furtado and Dring 1967), Rio Grande do Sul, Santa Catarina, Paraná and São Paulo (Trierveiler-Pereira and Baseia 2009).

***Remarks:*** This species has been collected many times in Brazil, mostly in the subtropical region of the Atlantic Forest. Its basidiomata are epigeous, subglobose with grooves in the surface, and whitish to light brownish. In transversal section, it is possible to see the elongated glebal plates immersed in a hyaline gelatinous matrix. The glebal mass is dark olive green and a columella is absent.

***Staheliomyces cinctus*** E. Fischer, Mitt. Naturf. Ges. Bern 35: 142 (1920–1921)

Unexpanded basidiomata not observed. Expanded basidiome epigeous, volva, 1.2–1.6 × 2.3–2.5 cm, ovoid, light brown (OAC 781), dehiscence irregular. Pseudostipe 7–9.5 cm high × 0.8–1.5 cm in diam., simple, hollow, cylindrical, with an apical aperture and several lateral perforations, white (OAC 909), constricted by a ring where the glebal mass is spread. Gleba viscous, olive brown (OAC 866), odor pleasant, spread in the ring situated in the upper portion of the pseudostipe. Basidiospores 3.0–4.0 × 1.5–2.0 μm, elliptical, hyaline, smooth.

***Examined material***: BRAZIL. PARAÍBA: João Pessoa, Universidade Federal da Paraíba, 16/VI/2010, *Magnago A.C. 232* (JPB 47304); 03/VIII/2010, *Magnago A.C. 258* (JPB 47305).

***Distribution in Brazil***: Rio Grande do Norte (Baseia et al. 2006) and Paraíba (present study).

***Remarks***: *Staheliomyces cinctus* is a common species in the Neotropics (Saenz and Nassar 1982) and is characterized by its white, perforated pseudostipe constricted by a ring where the glebal mass is spread. This is the first record of the *S. cinctus* from Paraíba.

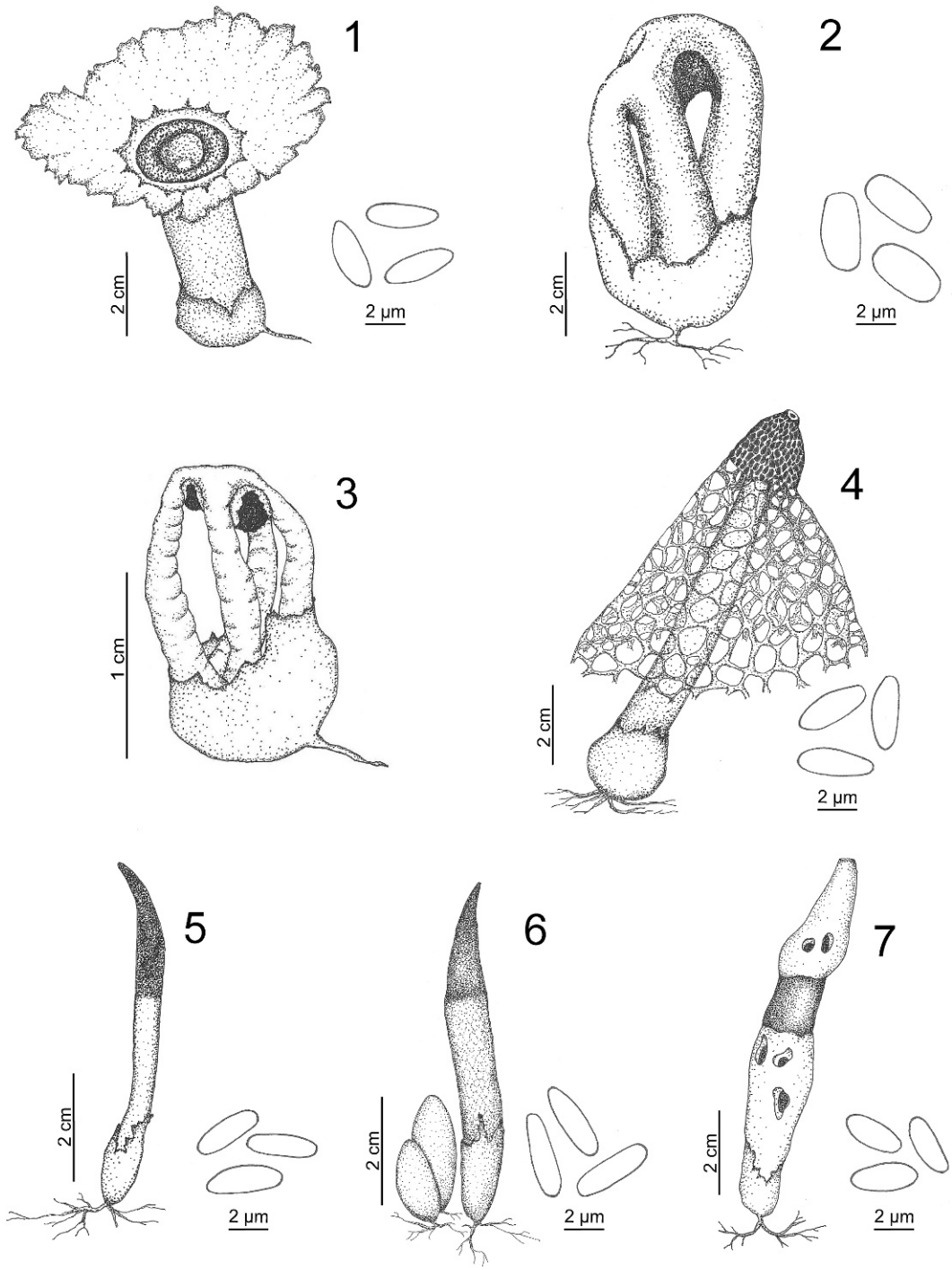


FIG. 1. Habit and spores. 1. *Abrachium floriforme*. 2. *Clathrus columnatus*. 3. *Laternea dringii*. 4. *Phallus indusiatus*. 5. *Mutinus argentinus*. 6. *Mutinus caninus*. 7. *Staheliomyces cinctus*.

***Xylophallus xylogenus*** (Mont.) E. Fisch., Nat. Pflanzenfam., 2 Aufl., 7a: 96 (1933).

***Description in***: Baseia et al. (2003, as *P. pygmaeus* Baseia), Trierveiler-Pereira and Silveira (2012).

***Distribution in Brazil***: Pernambuco (Trierveiler-Pereira and Baseia 2009).

***Remarks***: *Xylophallus xylogenus* is the smallest phalloid species found in Brazil, which has basidiomata that reach 1.5 cm high. This is a neotropical species recognized by its small size, xylophilous, gregarious habit, and pseudostipe with rectangular alveoles and prominent edges (Trierveiler-Pereira and Silveira 2012).

**Key to the Phallales from the tropical region of the Atlantic Forest**

1. Mature basidiome globose to subglobose, not forming expanded pseudostipe or receptaculum . . . . . **2**
1′. Mature basidiome with pseudostipe simple, ramified into arms, columns, or clathroid receptaculum . . . . . **3**
2. Basidiome hypogeous to subhypogeous, in longitudinal section it is possible to observe a thick gelatinous matrix below the peridium, glebal mass globose surrounding a central columella, gleba not connected to the peridium. . . . . ***Gelopellis thaxteri***
2′. Basidiome epigeous, in longitudinal section it is possible to observed elongated elliptical glebal plates immersed in a gelatinous matrix, columella absent, gleba plates connected to the inner part of the peridium by sutures . . . . . ***Protubera maracuja***
3. Basidiome with single pseudostipe. . . . **4**
3′. Basidiome with pseudostipe ramified into arms, columns, or clathroid receptaculum . . . . . **10**
4. Receptaculum applanate, sunflower-shaped, gleba covering a central perforate disc . . . . ***Abrachium floriforme***
4′. Receptaculum not applanate, gleba at the tip of the receptaculum or forming a ring. . . . . **5**
5. Pseudostipe perforated, constricted by a ring at the upper part, glebal mass covering the ring. . . . . ***Staheliomyces cinctus***
5′. Pseudostipe not perforated, constricted ring region absent . . . . . **6**
6. Glebal mass covering the apex of the pseudostipe, receptaculum absent . . . . **7**
6′. Glebal mass covering a campanulate receptaculum located at the apex of the stipe . . . . . **8**
7. Pseudostipe up to 8.2 cm high, whitish, glebal zone covering almost ½ of the pseudostipe . . . . . ***Mutinus argentinus***
7′. Pseudostipe up to 5.5 cm high, pinkish, glebal zone covering about 1/3 of the pseudostipe . . . . . ***Mutinus caninus***
8. Basidiome minute, up to 1.5 cm high, growing on dead wood . . . . . ***Xylophallus xylogenus***
8′. Basidiome larger, 10–18 cm high, growing on soil . . . . . **9**
9. Pseudostipe whitish, receptaculum surface reticulate, long indusium present . . . . . ***Phallus indusiatus***
9′. Pseudostipe orange to reddish, receptaculum finely rugulose, indusium absent. . . . . ***Phallus rubicundus***
10. Pseudostipe yellowish to reddish, ramified into 2–5 columns or arms. . . **11**
10′. Pseudostipe whitish, ramified into a clathroid receptaculum, forming more or less polygonal meshes . . . . . **13**
11. Glebal mass spread in the internal portion in the apex of the columns. . . . . ***Clathrus columnatus***
11′. Gleba confined into an apical glebifer . . . **12**
12. Basidiome 1.3–1.5 cm high, columns yellowish to light orange, transversal column present . . . . . ***Laternea dringii***
12′. Basidiome 4–7 cm high, columns reddish to pinkish, transversal column absent. . . . . ***Laternea triscapa***
13. Arms fused and forming a pseudostipe at the base, glebal mass confined into glebifers which are located at the arms connections . . . . . ***Clathrus chrysomycelinus***
13′. Arms not forming a pseudostipe at the base, glebal mass spread in the inner surface of the arms. . . . . ***Ileodictyon cibarium***

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