

A checklist of the Brazilian gasteroid fungi (*Basidiomycota*)

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Abstract — Based on the available literature, a list of 232 gasteroid species recorded from Brazil since the earliest known collection is presented. These species are distributed among 54 genera and 16 families (plus incertae sedis). *Morganella fuliginea*, *Calvatia cyathiformis*, *Geastrum saccatum*, *Scleroderma albidum* and *S. verrucosum* are the species with widest distribution in Brazil. Rio Grande do Sul is the State with the largest recorded asteroid mycota.

Key words — gasteromycetes, mycodiversity, Brazilian fungi

Introduction

Brazilian mycota studies started in 19th century with European naturalists' interest. Many foreign travelers were collectors and sent materials to scientists in different countries in Europe who identified the specimens (Fidalgo 1968).

Concerning the gasteromycetes, the first collection from Brazil was a *Clathrus* specimen gathered in 1826 by William John Burchell (Fidalgo 1974). Other foreigners who contributed to gasteroid fungi knowledge in Brazil were: Berkeley (Berkeley 1842, Berkeley & Cooke 1876), Möller (1895), Hennings (1902, 1904a, b, c), Lloyd (1906a, b, c, d, 1907a, b, c), Sydow & Sydow (1907), Patouillard (1907) and Rick (1930, 1961).

It was about the middle of the twentieth century that some Brazilian scientists began working with gasteroid fungi taxonomy (Silveira 1943, Batista & Vital 1955, 1957, Batista & Bezerra 1960), but only at the beginning of the new millennium that detailed studies concerning the group started (Baseia & Milanez 2000, 2001a, b, 2002a, b, c, 2003a, b).

Gasteroid fungi present a wide range of basidiomata structure and these distinctive life forms led to the designation of many genera monotypic or with few species. Nowadays, approximately a hundred genera of gasteromycetes are accepted (Dring 1973, Miller & Miller 1988).

The main objective of this article is to compile data about on Brazilian gasteroid fungi and present a list of species.

Material and methods

This checklist has been compiled based on intensive search of literature records of gasteroid fungi recorded from Brazil. Nomenclature and author names followed the databases: Index Fungorum – IFS (<http://www.indexfungorum.org/Names/Names.asp>) and The International Plant Names Index – IPNI (<http://www.ipni.org>). Genera and species are listed alphabetically inside each family according to Kirk et al. (2008). Genera with taxonomic position not well established are placed in ‘incertae sedis’. Names not found on the IFS database are marked with *. This checklist only includes records identified to the species level.

Names of the Brazilian States are abbreviated as follows: RS – Rio Grande do Sul, SC – Santa Catarina, PR – Paraná, SP – São Paulo, MG – Minas Gerais, GO – Goiás, DF – Federal District, RJ – Rio de Janeiro, ES – Espírito Santo, BA – Bahia, PE – Pernambuco, PB – Paraíba, RN – Rio Grande do Norte, CE – Ceará, RO – Rondônia, AM – Amazonas. When the article did not mention the name of the state where the gasteroid fungi was collected, the locality was defined as BR – Brazil.

Although this compiled list was carefully revised, minor errors can occur. We plan to regularly update the internet version of the checklist, so we gratefully encourage any remarks concerning errors or omitted data.

Results

The 232 gasteroid fungi species recorded from Brazil are distributed among 54 genera and 16 families. The most highly represented family is *Agaricaceae* with 104 species (44.8 %), followed by *Geastraceae* and *Phallaceae* (with 44 and 38 species, respectively). *Geastrum* is the genus with the highest number of species with 40 taxa (17.2 %).

The species with widest distribution in Brazil are *Morganella fuliginea* (recorded from 7 States), followed by *Calvatia cyathiformis*, *Geastrum saccatum*, *Scleroderma albidum* and *S. verrucosum* (6 States). Rio Grande do Sul is the State with the largest recorded gasteroid mycota (133 taxa/57.3 %), especially due the great contribution of Father Johannes Rick.

If there are proximally a hundred genera of gasteromycetes (Dring 1973, Miller & Miller 1988), the diversity of this group is still not well represented in Brazil, since only 54 genera are recorded in the literature.

Checklist for the gasteroid species from Brazil:

Agaricaceae Chevall.

Arachnion album Schwein.

LOCALITIES: BR (Lloyd 1906a), RS (Rick 1961), SP (Sydow & Sydow 1907).

Arachnion foetens Speg.

LOCALITY: RS (Rick 1961).

Arachnion iriema Rick

LOCALITY: RS (Rick 1961).

Arachnion scleroderma Lloyd

LOCALITY: RS (Rick 1961).

Battarrea phalloides (Dicks.) Pers.

BASIONYM: *Lycoperdon phalloides* Dicks.
LOCALITY: RS (Rick 1961, Sobestiansky 2005).

Battarrea stevenii (Libosch.) Fr.

BASIONYM: *Dendromyces stevenii* Libosch.
LOCALITY: PE (Silva et al. 2007a).

Bovista aestivalis (Bonord.) Demoulin

LOCALITIES: SP and PE (Baseia 2005a).

Bovista africana Kreisel

LOCALITY: RS (Homrich 1969).

Bovista bicolor Lév.

LOCALITY: RS (Rick 1961).

Bovista dermoxantha (Vittad.) De Toni

BASIONYM: *Lycoperdon dermoxanthum* Vittad.
LOCALITY: PR (de Meijer 2006).

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Bovista dominicensis (Masse) Kreisel

BASIONYM: *Lycoperdon dominicensis* Masee

LOCALITIES: RS (Homrich 1969, as *L. cf. dominicensis*), ES (Kreisel 1967).

Bovista aff. *dryina* (Morgan) Demoulin

BASIONYM: *Lycoperdon dryinum* Morgan

LOCALITY: PR (de Meijer 2006).

Bovista longispora Kreisel

LOCALITY: PR (de Meijer 2006).

Bovista pila Berk. & M.A. Curtis

LOCALITIES: SP and PE (Baseia 2005b).

Bovista plumbea Pers.

LOCALITIES: BR (Averna-Saccá 1923), SP and PE (Baseia 2005b).

Bovista pusilla (Batsch) Pers.

BASIONYM: *Lycoperdon pusillum* Batsch

LOCALITY: RS (Homrich 1969 – as *L. pusillum*), PE (Kreisel 1967).

Calvatia caelata (Bull.) Morgan

BASIONYM: *Lycoperdon caelatum* Bull.

LOCALITY: RS (Silveira 1943, Rick 1961).

Calvatia craniiformis (Schwein.) Fr.

BASIONYM: *Bovista craniiformis* Schwein.

LOCALITY: RS (Silveira 1943, Rick 1961).

Calvatia cruciata (Rostk.) Fr.

BASIONYM: *Lycoperdon cruciatum* Rostk.

LOCALITY: RS (Rick 1961).

Calvatia cyathiformis (Bosc) Morgan

BASIONYM: *Lycoperdon cyathiforme* Bosc

LOCALITIES: RS (Silveira 1943, Guerrero & Homrich 1999, Sobestiansky 2005), PR (de Meijer 2006), SP (Silveira 1943, Bononi et al. 1981, Baseia

2004), MG and RJ (Silveira 1943), PE (Baseia 2004, Wartchow & Silva 2007, Drechsler-Santos et al. 2008).

Calvatia fragilis (Vittad.) Morgan

BASIONYM: *Lycoperdon fragile* Vittad.

LOCALITIES: RS (Guerrero & Homrich 1999), RJ (Silveira 1943).

Calvatia excipuliformis (Scop.) Perdeck

BASIONYM: *Lycoperdon polymorphum* var. *excipuliforme* Scop.

LOCALITY: SP (Bononi et al. 1981, Baseia 2004).

Calvatia lachnoderma Pat.

LOCALITY: SP (Patouillard 1907).

Calvatia lilacina (Berk. & Mont.) Lloyd

BASIONYM: *Bovista lilacina* Berk. & Mont.

LOCALITY: SP (Hennings 1904c, Sydow & Sydow 1907, Viégas 1945).

Calvatia maxima (Schaeff.) Morgan

BASIONYM: *Lycoperdon maximum* Schaeff.

LOCALITIES: RS and RJ (Silveira 1943), CE (Batista & Bezerra 1960).

Calvatia rubroflava (Cragin) Lloyd

BASIONYM: *Lycoperdon rubroflavum* Cragin

LOCALITIES: RS (Silveira 1943, Rick 1961), SP (Bononi et al. 1981), RJ (Silveira 1943), PE (Kimbrough et al. 1994/1995).

Calvatia rugosa (Berk. & M.A. Curtis) D.A. Reid

BASIONYM: *Lycoperdon rugosum* Berk. & M.A. Curtis

LOCALITIES: RS (Guerrero & Homrich 1999, Sobestiansky 2005, Cortez et al. 2008a), PR (de Meijer 2006).

Calvatia saccata (Vahl) Morgan

BASIONYM: *Lycoperdon saccatum* Vahl

LOCALITY: PR (Silveira 1943).

Calvatia sculpta (Harkn.) Lloyd

BASIONYM: *Lycoperdon sculptum* Harkn.

LOCALITY: RN (Baseia & Calonge 2008).

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Catastoma circumscissum Berk. & M.A. Curtis

LOCALITY: RS (Rick 1961).

Crucibulum laeve (Huds.) Kambly

BASIONYM: *Peziza levis* Huds.

LOCALITIES: BR (Averna-Saccá 1923 – as *Crucibulum vulgare* Tul. & C. Tul.), RS (Rick 1961 – as *C. vulgare*), SP (Baseia & Milanez 2001a).

Cyathus berkeleyanus (Tul. & C. Tul.) Lloyd

BASIONYM: *Cyathus microsporus* var. *berkeleyanus* Tul. & C. Tul.

LOCALITIES: BR (Liu 1984), PR (de Meijer 2006), SP (Bononi et al. 1984, Baseia & Milanez 2003a), RJ (Lloyd 1906d).

Cyathus limbatus Tul. & C. Tul.

LOCALITIES: PR (de Meijer 2006 – as *C. cf. limbatus*), SP (Bononi et al. 1981, Baseia & Milanez 2003a), AM (Berkeley & Cooke 1876).

Cyathus microsporus Tul. & C. Tul.

LOCALITY: RJ (Berkeley & Cooke 1876).

Cyathus montagnei Tul. & C. Tul.

LOCALITIES: BR (Berkeley & Cooke 1876, Lloyd 1906d, Liu 1984), RS (Viégas 1945, Rick 1961), SP (Baseia & Milanez. 2003a, Viégas 1945), AM (Hennings 1904c).

COMMENTS: *Cyathus byssisedus* (Jungh.) Tul., recorded from RS (Rick 1961), is synonym of *C. montagnei* (Brodie 1975).

Cyathus olla (Batsch) Pers.

BASIONYM: *Peziza olla* Batsch

LOCALITIES: RS (Rick 1961 – as *Cyathus vernicosus* [Bull.] DC.), SP (Baseia & Milanez 2003a).

Cyathus pallidus Berk. & M.A. Curtis

LOCALITY: SP (Baseia & Milanez 2003a).

Cyathus poeppigii Tul. & C. Tul.

LOCALITIES: RS (Rick 1961), SC (Hennings 1904a), PR (de Meijer 2006), SP (Bononi et al. 1981, Baseia & Milanez 2003a), RJ (Berkeley 1842, Berkeley & Cooke 1876).

COMMENTS: *Cyathus ambiguous* Tul. & C. Tul., recorded from RS (Rick 1961), is synonym of *C. poeppigii* (Brodie 1975). *Cyathus plicatus* (Fr.) Tul., recorded from RJ (Berkeley 1842, Berkeley & Cooke 1876) is also a synonym.

Cyathus stercoreus (Schwein.) De Toni

BASIONYM: *Nidularia stercorea* Schwein.

LOCALITIES: RS (Rick 1961, Sobestiansky 2005), PR (de Meijer 2006), SP (Sydow & Sydow 1907, Bononi et al. 1981, Baseia & Milanez 2003a).

COMMENTS: *Cyathus lesueurii* Tul. & C. Tul., recorded from SP (Sydow & Sydow 1907), is synonym of *C. stercoreus* (Brodie 1975).

Cyathus striatus (Huds.) Willd.

BASIONYM: *Peziza striata* Huds.

LOCALITIES: RS (Rick 1961), SP (Bononi 1984, Baseia & Milanez 2003a).

Cyathus triplex Lloyd

LOCALITY: SP (Baseia & Milanez 2003a).

Gastropila fragilis (Lév.) Homrich & J.E. Wright

BASIONYM: *Mycenastrum fragile* Lév.

LOCALITY: RS (Guerrero & Homrich 1999).

Gastropila fumosa (Zeller) P. Ponce de León

BASIONYM: *Calvatia fumosa* Zeller

LOCALITIES: SP & PE (Baseia 2004 – as *Calvatia fumosa*).

Hippoperdon crucibulum Mont.

LOCALITY: MG (Berkeley & Cooke 1876).

Langermannia gigantea (Batsch) Rostk.

BASIONYM: *Lycoperdon giganteum* Batsch

LOCALITY: RS (Rick 1961 – as *Calvatia gigantea* [Batsch] Lloyd).

Langermannia wahlbergii (Fr.) Dring

LOCALITY: SP (Bononi et al. 1981 – as *Calvatia wahlbergii* [Fr.] Dring).

Lanopila bicolor (Lév.) Pat.

BASIONYM: *Bovista bicolor* Lév.

LOCALITY: RS (Guerrero & Homrich 1999).

Lycogalopsis hypostratosa Rick

LOCALITY: RS (Rick 1961).

Lycogalopsis hypoxilinoides Rick

LOCALITY: RS (Rick 1961).

Lycogalopsis leopoldensis Rick

LOCALITY: RS (Rick 1961).

Lycogalopsis solmsii E. Fisch.

LOCALITIES: PR (de Meijer 2006), PE (Drechsler-Santos et al. 2008).

Lycoperdon acuminatum Berk. & M.A. Curtis

LOCALITIES: RS (Rick 1961), SP (Sydow & Sydow 1907).

Lycoperdon astrocaryi Berk. & Cooke

LOCALITY: BR (Berkeley & Cooke 1876).

Lycoperdon brasiliense Fr.

LOCALITY: RS (Rick 1961).

Lycoperdon candidum Pers.

LOCALITY: SP (Bononi et al. 1984).

Lycoperdon cantareirensis Henn.

LOCALITY: SP (Hennings 1904c).

Lycoperdon cruciatum Rostk.

LOCALITY: SP (Sydow & Sydow 1907).

Lycoperdon cupricum Bonord.

LOCALITY: RS (Rick 1961).

Lycoperdon decipiens Durieu & Mont.

LOCALITY: RS (Rick 1961 – as *Lycoperdon cepiforme* [Wallr.] Bonord.).

Lycoperdon epixylon Berk. & M.A. Curtis

LOCALITY: AM (Hennings 1904b).

Lycoperdon foliicola Rick

LOCALITY: RS (Rick 1961).

Lycoperdon fuscum Bonord.

LOCALITY: RS (Rick 1961).

Lycoperdon griseolilacinum Henn.

LOCALITY: MT (Sampaio 1916).

Lycoperdon juruense Henn.

LOCALITIES: RS (Rick 1961), AM (Hennings 1904b).

Lycoperdon marginatum Vittad.

LOCALITIES: RS (Sobestiansky 2005), PR (de Meijer 2006).

Lycoperdon nigrescens Wahlenb.

LOCALITY: SP (Baseia 2005a).

Lycoperdon pedicellatum Peck

LOCALITY: RS (Rick 1961).

Lycoperdon perlatum Pers.

LOCALITIES: RS (Rick 1961 – as *L. gemmatum* Batsch, Guerrero & Homrich 1999, Cortez et al. 2008a), SP (Bononi et al. 1981, Baseia 2005a), PE (Baseia 2005a).

Lycoperdon pratense Pers.

LOCALITIES: RS (Rick 1961 – as *L. subpratense* Lloyd, Cortez et al. 2008a – as *Vascellum pratense* [Pers.] Kreisel), SP (Bononi et al. 1984, Baseia 2004 – as *Calvatia depressa* [Bonord.] Zeller & A.H. Sm.).

Lycoperdon proximum Rick

LOCALITY: RS (Rick 1961).

Lycoperdon pseudogemmatum Speg.

LOCALITY: PR (de Meijer 2006).

Lycoperdon purpurascens (Berk. & M.A. Curtis) Sacc.

BASIONYM: *Bovista purpurascens* Berk. & M.A. Curtis

LOCALITY: PR (de Meijer 2006 – as *Morganella* cf. *purpurascens* [Berk. & M.A. Curtis] Kreisel & Dring).

Lycoperdon pusillum Fr.

LOCALITY: SP (Sydow & Sydow 1907).

Lycoperdon rarum Rick

LOCALITY: RS (Rick 1961).

Lycoperdon simulatum Peck

LOCALITY: RS (Rick 1961).

Lycoperdon subincarnatum Peck

LOCALITY: RS (Rick 1961).

Lycoperdon tropicale Speg.

LOCALITY: RS (Rick 1961).

Lycoperdon wrightii Berk. & M.A. Curtis

LOCALITIES: RS (Rick 1961), SP (Sydow & Sydow 1907).

Montagnea haussknechtii Rabenh.

LOCALITY: SP (Baseia & Milanez 2002c).

Morganella albina (Cooke) P. Ponce de León

BASIONYM: *Lycoperdon albinum* Cooke

LOCALITY: BR (Ponce de León 1969).

Morganella benjaminii (Rick) Cortez, Calonge & Baseia

BASIONYM: *Lycoperdon benjamin* Rick

LOCALITY: RS (Rick 1961, Cortez et al. 2007).

Morganella fuliginea (Berk. & M.A. Curtis) Kreisel & Dring

BASIONYM: *Lycoperdon fuligineum* Berk. & M.A. Curtis

LOCALITIES: RS (Rick 1961, Homrich 1969 – as *M. mexicana* Zeller, Suárez & Wright 1996, Sobestiansky 2005), PR (de Meijer 2006), SP (Bononi et al. 1981, Bononi et al. 1984 – as *M. puiggarii* [Speg.] Kreisel &

Dring), RJ, GO, DF (Suárez & Wright 1996), RO (Capelari & Maziero 1988).

Morganella pyriformis (Schaeff.) Kreisel & D. Krüger

BASIONYM: *Lycoperdon pyriforme* Schaeff.

LOCALITIES: RS (Rick 1961, Homrich 1969), SP (Bononi et al. 1984, Baseia 2005a), MG (Sydow & Sydow 1907).

Morganella velutina (Berk. & M.A. Curtis) Kreisel & Dring

BASIONYM: *Lycoperdon velutinum* Berk. & M.A. Curtis

LOCALITIES: SP and RJ (Suárez & Wright 1996).

Mycenastrum chilense Mont.

LOCALITY: RS (Rick 1961).

Nidularia deformis (Willd.) Fr.

BASIONYM: *Cyathus deformis* Willd.

LOCALITY: BR (Lloyd 1906d – as *N. pisiformis* [Roth] Tul. & C. Tul.).

Nidularia pulvinata (Schwein.) Fr.

BASIONYM: *Cyathus pulvinatus* Schwein.

LOCALITIES: SP (Baseia & Milanez 2001b), RS (Cortez et al. 2006).

Tulostoma beccarianum Bres.

LOCALITY: SP (Baseia & Milanez 2002a).

Tulostoma brumale Pers.

LOCALITY: SP (Baseia & Milanez 2002a).

Tulostoma cretaceum Long

LOCALITY: PE (Silva et al. 2007b).

Tulostoma cyclophorum Lloyd

LOCALITIES: RS (Rick 1961, Silva et al. 2007b), PE (Batista & Vital 1955), RN (Silva et al. 2007b).

COMMENTS: *Tulostoma heroica*, *T. nanicum* and *T. recifensis*, described from PE by Batista & Vital (1955) are synonyms of *T. cyclophorum* (Wright 1987). *Tulostoma berterioanum* Lév., reported from RS (Rick 1961, Guerrero & Homrich 1999) is also a synonym.

Tulostoma exasperatum Mont.

LOCALITIES: BR (Lloyd 1906c), RS (Rick 1961, Silva et al. 2007b, Cortez et al. 2008a), PR (de Meijer 2006), SP (Bononi et al. 1984, Baseia & Milanez 2002a), PB (Baseia & Galvão 2002, Silva et al. 2007b), PE (Baseia & Galvão 2002).

Tulostoma excentricum Long

LOCALITY: PE (Silva et al. 2007b).

Tulostoma fimbriatum Fr.

LOCALITY: RN (Silva et al. 2007b).

Tulostoma obesum Cooke & Ellis

LOCALITY: PB (Silva et al. 2007b).

Tulostoma pygmaeum Lloyd

LOCALITY: RS (Rick 1961).

Tulostoma rickii Lloyd

LOCALITIES: BR (Lloyd 1906c), RS (Rick 1961), SC (Cortez et al. 2008b).

Tulostoma rufum Lloyd

LOCALITY: RS (Rick 1961).

Tulostoma verrucosum Morgan

LOCALITY: RS (Rick 1961).

Tulostoma xerophilum Long

LOCALITY: PE (Silva et al. 2007b).

Vascellum intermedium A.H. Sm.

LOCALITY: SP (Bononi et al. 1984).

Vascellum texense A.H. Sm.

LOCALITY: PR (de Meijer 2006).

Podaxis pistillaris (L.) Fr.

BASIONYM: *Lycoperdon pistillare* L.

LOCALITIES: PE (Batista 1950 – as *Podaxis dilabentis* Bat., *P. deciduus* Bat. and *P. fastigatus* Bat., Drechsler-Santos et al. 2008), PB (Baseia & Galvão 2002).

Albatrellaceae Nuss

Leucogaster braunii Rick

LOCALITY: RS (Rick 1961).

Boletaceae Chevall.

Octaviania luteocarnea Bres.

LOCALITIES: RS (Rick 1961, Singer 1962), PR (de Meijer 2006).

Octaviania radicans Rick

LOCALITY: RS (Rick 1961).

Octaviania stillingerii Lloyd

LOCALITY: RS (Rick 1961).

Calostomataceae E. Fisch.

Calostoma cinnabarinum Corda

LOCALITIES: SP and PE (Baseia et al. 2007a).

Calostoma zanchianum (Rick) Baseia & Calonge

BASIONYM: *Mitremyces zanchianus* Rick

LOCALITY: RS (Rick 1961, Baseia et al. 2006b, Baseia et al. 2007a).

Claustulaceae G. Cunn.

Gelopellis thaxteri (Zeller & C.W. Dodge) Zeller

BASIONYM: *Hysterangium thaxteri* Zeller & C.W. Dodge

LOCALITIES: RS (Homrich 1969), SP (Bononi et al. 1984).

Cortinariaceae R. Heim ex Pouzar

Descomyces albellus (Masse & Rodway) Bougher & Castellano

BASIONYM: *Hymenogaster albellus* Masse & Rodway

LOCALITY: SC (Giachini et al. 2000).

Descomyces albus (Klotzsch) Bougher & Castellano

BASIONYM: *Hymenangium album* Klotzsch

LOCALITY: SC (Giachini et al. 2000).

Descomyces giachinii Trappe, V.L. Oliveira, Castellano & Claridge

LOCALITY: SC (Giachini et al. 2000).

Diplocystidiaceae Kreisel

Astraeus hygrometricus (Pers.) Morgan

BASIONYM: *Geastrum hygrometricum* Pers.

LOCALITIES: RS (Rick 1961 – as *Geaster hygrometricum* Pers.), PB and PE (Baseia & Galvão 2002).

Geastraceae Corda

Geastrum ambiguum Mont.

LOCALITIES: RS (Rick 1961), SP (Bononi et al. 1981).

Geastrum archeri Berk.

LOCALITY: RS (Rick 1961).

Geastrum asper Lloyd

LOCALITY: RS (Rick 1961).

Geastrum calceus Lloyd

LOCALITY: RS (Rick 1961).

Geastrum coronatum Pers.

LOCALITIES: RS (Rick 1961), PE (Leite et al. 2007b).

Geastrum elegans Vittad.

LOCALITIES: RS (Rick 1961), PE (Leite et al. 2007b).

Geastrum englerianus Henn.

LOCALITIES: RS (Rick 1961), MG (Sydow & Sydow 1907), AM (Hennings 1904b).

Geastrum entomophilum Fazolino, Calonge & Baseia

LOCALITY: RN (Fazolino et al. 2008).

Geastrum fenestratum (Batsch) Lloyd

BASIONYM: *Lycoperdon fenestratum* Batsch

LOCALITY: RS (Rick 1961).

Geastrum fimbriatum Fr.

LOCALITIES: RS (Rick 1961, Leite et al. 2007b), RJ (Berkeley & Cooke 1876), PE (Leite et al. 2007b).

COMMENTS: Drechsler-Santos et al. (2008) registered *G. fimbriatum* var. *pseudohieronimii* Calonge & M. Mata from PE.

Geastrum fornicatum (Huds.) Hook.

BASIONYM: *Lycoperdon fornicatum* Huds.

LOCALITY: PE (Leite et al. 2007b).

Geastrum giacomellianus Speg.

LOCALITY: BR (Averna-Saccá 1923).

Geastrum hariotii Lloyd

LOCALITIES: BR (Lloyd 1907a), RS (Rick 1961).

Geastrum hieronymi Henn.

LOCALITY: PE (Leite et al. 2007b).

Geastrum hirsutum Baseia & Calonge

LOCALITY: PE (Baseia & Calonge 2006, Drechsler-Santos et al. 2008).

Geastrum juruensis Henn.

LOCALITY: AM (Hennings 1904b).

Geastrum lageniforme Vittad.

LOCALITIES: RS (Rick 1961, Cortez et al. 2008a), RJ (Hennings 1904a).

Geastrum cf. *lilloi* L.S. Domínguez

LOCALITY: PR (de Meijer 2006).

Geastrum limbatum Fr.

LOCALITY: RS (Rick 1961).

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Geastrum minimum Schwein.

LOCALITIES: RS (Rick 1961), PR (de Meijer 2006 – as *G. cf. minimum*).

Geastrum minutus Henn.

LOCALITY: SP (Viégas 1945).

Geastrum ovalisporum Calonge & Mor.-Arr.

LOCALITY: SC (Cortez et al. 2008b), RN (Leite et al. 2007b).

Geastrum reinkingii Lloyd

LOCALITY: RS (Rick 1961).

**Geastrum rickii* Lloyd

LOCALITY: MG (Sydow & Sydow 1907).

Geastrum rufescens Pers.

LOCALITIES: RS (Rick 1961), SP (Bononi et al. 1981).

Geastrum pectinatum Pers.

LOCALITIES: RS (Rick 1961, Cortez et al. 2008a), PR (de Meijer 2006 – as *G. cf. pectinatum*), SP & PE (Baseia et al. 2004).

Geastrum peruvianus Cooke

LOCALITY: RS (Rick 1961).

Geastrum saccatum Fr.

LOCALITIES: BR (Berkeley & Cooke 1876, Lloyd 1907a, Liu 1984), RS (Rick 1961, Sobestiansky 2005, Cortez et al. 2008a), PR (de Meijer 2006), SP (Sydow & Sydow 1907, Bononi et al. 1984, Baseia et al. 2004), PE (Kimbrough et al. 1994/1995, Baseia et al. 2004), RN (Leite & Baseia 2007), AM (Hennings 1904b).

Geastrum schweinitzii (Berk. & M.A. Curtis) Zeller

BASIONYM: *Coilomyces schweinitzii* Berk. & M.A. Curtis

LOCALITIES: RS (Rick 1961 – as *G. trichifer* Rick, Cortez et al. 2008a), SP (Bononi et al. 1981, Baseia et al. 2004), PE (Baseia et al. 2004,

Kimbrough *et al.* 1994/1995 – as *G. mirabile* Mont., Leite & Baseia 2007, Drechsler-Santos *et al.* 2008).

Geastrum scleroderma Mont.

LOCALITY: AM (Hennings 1904b).

Geastrum setiferum Baseia

LOCALITIES: SP (Baseia & Milanez. 2003b), PE (Baseia & Milanez. 2003b, Baseia *et al.* 2006a, Leite *et al.* 2007a), PB (Leite *et al.* 2007a).

Geastrum smardae V.J. Staněk

LOCALITIES: RS (Cortez *et al.* 2008a), SP (Baseia *et al.* 2004).

Geastrum stipitatus Solms

LOCALITY: RS (Rick 1961).

Geastrum striatum DC.

BASIONYM: *Geastrum bryantii* Berk.

LOCALITY: RS (Rick 1961 – as *Geaster bryantii* Berk.).

Geastrum subiculosum Cooke & Masee

LOCALITIES: RS (Rick 1961), SP (Bononi *et al.* 1981).

Geastrum triplex Jungh.

LOCALITIES: RS (Rick 1961), SC (Sobestiansky 2005), PR (de Meijer 2006), SP (Baseia *et al.* 2004), RN (Leite & Baseia 2007).

Geastrum cf. tunicatus Vittad.

LOCALITY: RJ (Hennings 1904a).

Geastrum velutinum Morgan

LOCALITIES: RS (Sobestiansky 2005), PR (de Meijer 2006), MG (Sydow & Sydow 1907).

Geastrum violaceus Rick

LOCALITY: RS (Rick 1961).

Geastrum vittatus Kalchbr.

LOCALITY: RS (Rick 1961).

Myriostoma coliforme (Dicks.) Corda

BASIONYM: *Lycoperdon coliforme* Dicks.

LOCALITIES: RS (Rick 1961, Homrich 1973, Guerrero & Homrich 1999),
SP (Homrich 1973), PE (Baseia & Galvão 2002, Leite & Baseia 2007),
PB (Baseia & Galvão 2002).

Radiigera paulensis Singer, J.E. Wright & E. Horak

LOCALITY: SP (Singer et al. 1963).

Sphaerobolus brunneocarneus Rick

LOCALITY: RS (Rick 1961).

Sphaerobolus stellatus Tode

LOCALITIES: RS (Rick 1961), SP (Bononi et al. 1981).

Hysterangiaceae E. Fisch.

Hysterangium australe Speg.

LOCALITY: RS (Rick 1961).

Hysterangium gardneri E. Fisch.

LOCALITY: SC (Giachini et al. 2000).

Lasiosphaeriaceae Nannf.

Lasiosphaeria fenzlii Rchb.

LOCALITIES: BR (Liu 1984), RS (Rick 1961).

Mesophelliaceae Jülich

Chondrogaster angustisporus Giachini, Castellano, Trappe & V.L.Oliveira

LOCALITY: SC (Giachini et al. 2000).

Mesophelliopsis pernambucensis Bat. & A.F. Vital

LOCALITIES: PE (Batista & Vital 1957), SP (Bononi et al. 1984).

Phallaceae Corda

Aseroë floriformis Baseia & Calonge

LOCALITIES: RN (Baseia & Calonge 2005, Baseia et al. 2006a, Leite et al. 2007a), CE (Leite et al. 2007a).

Aseroë rubra Labill.

LOCALITIES: RS (Rick 1961, Guerrero & Homrich 1999), PR (de Meijer 2006).

Blumenavia angolensis (Welw. & Curr.) Dring

BASIONYM: *Laternea angolensis* Welw. & Curr.

LOCALITIES: PR (de Meijer 2006), SP (Bononi et al. 1981 – as *Blumenavia usambarensis* Henn.).

Blumenavia rhacodes A. Möller

LOCALITIES: RS (Rick 1961 – as *Laternea rhacodes* [A. Möller] Lloyd), SC (Möller 1895, Lloyd 1907b).

Clathrus chrysomycelinus A. Möller

LOCALITIES: BR (Lloyd 1907c), RS (Rick 1961), SC (Möller 1895), PR (de Meijer 2006), SP (Bononi et al. 1984).

Clathrus columnatus Bosc

LOCALITIES: RS (Guerrero & Homrich 1999, Sobestiansky 2005 – as *Linderiella columnata* [Bosc] G. Cunn.), PR (de Meijer 2006 – as *L. columnata*), SP (Bononi et al. 1981).

Clathrus crispus Turpin

LOCALITIES: RS (Rick 1961), PR (de Meijer 2006).

Clathrus preussii Henn.

LOCALITY: RS (Rick 1961).

Clathrus pseudocrispus Lloyd

LOCALITY: RS (Rick 1961).

Clathrus pusillus Berk.

LOCALITY: RS (Rick 1961).

Ileodictyon cibarium Tul.

LOCALITIES: PE (Lloyd 1906b – as *Clathrus cibarius* [Tul.] E. Fisch.), RN (Baseia et al. 2006a, Leite et al. 2007a).

Laternea columnata Nees

LOCALITIES: BR (Möller 1895, Lloyd 1906b), RS (Rick 1961), SP (Hennings 1904c).

Laternea triscapa Turpin

LOCALITIES: RS (Rick 1961), SP (Bononi et al. 1984), RN (Baseia et al. 2006a, Leite et al. 2007a).

Lysurus borealis (Burt) Henn.

BASIONYM: *Anthurus borealis* Burt
LOCALITY: RS (Rick 1961).

Lysurus cruciatus (Lepr. & Mont.) Henn.

BASIONYM: *Aserophallus cruciatus* Lepr. & Mont.
LOCALITIES: RS (Rick 1961), PR (de Meijer 2006).

Lysurus mokusin (L.) Fr.

BASIONYM: *Phallus mokusin* L.
LOCALITIES: RS (Rick 1961).

Lysurus sanctae-catharinae (E. Fisch.) Henn.

BASIONYM: *Anthurus sanctae-catharinae* E. Fisch.
LOCALITY: RS (Rick 1961).

Lysurus woodii (MacOwan) Henn.

BASIONYM: *Anthurus woodii* MacOwan
LOCALITY: RS (Rick 1961).

Mutinus argentinus Speg.

LOCALITY: PR (de Meijer 2006).

Mutinus bambusinus (Zoll.) E. Fisch.

BASIONYM: *Phallus bambusinus* Zoll.
LOCALITIES: BR (Lloyd 1907c), RS (Rick 1961), SC (Möller 1895).

Mutinus borneensis Ces.

LOCALITY: RS (Rick 1961).

Mutinus caninus (Huds.) Fr.

BASIONYM: *Phallus caninus* Huds.

LOCALITY: RN (Baseia et al. 2006a).

Mutinus elegans (Mont.) E. Fisch.

BASIONYM: *Corynites elegans* Mont.

LOCALITY: RS (Cortez et al. 2008a).

Mutinus rugulosus Rick

LOCALITY: RS (Rick 1961).

Phallus callichrous (A. Möller) Lloyd

BASIONYM: *Dictyophora callichroa* A. Möller

LOCALITIES: SC (Möller 1895), PR (de Meijer 2006).

Phallus campanulatus Berk.

LOCALITY: RS (Rick 1961).

**Phallus granuloso-denticulatus* Braun

LOCALITY: RS (Rick 1961).

Phallus galericulatus (A. Möller) Kreisel

BASIONYM: *Itajahya galericulata* A. Möller

LOCALITIES: BR (Lloyd 1907b), RS (Rick 1961, Guerrero & Homrich 1999), SC and RJ (Möller 1895).

Phallus glutinolens (A. Möller) Kuntze

BASIONYM: *Ithyphallus glutinolens* A. Möller

LOCALITIES: BR (Lloyd 1907c), RS (Rick 1961), SC (Möller 1895).

Phallus impudicus L.

LOCALITY: BR (Averna-Saccá 1923).

Phallus indusiatus Schldtl.

LOCALITIES: BR (A. Möller 1895, Lloyd 1907b, Averna-Saccá 1923), RS (Rick 1961), PR (de Meijer 2006), SP (Sydow & Sydow 1907, Viégas 1945, Bononi et al. 1981, Bononi 1984), RN (Baseia et al. 2006a).

Phallus cf. *merulinus* (Berk.) Cooke

BASIONYM: *Dictyophora merulina* Berk.

LOCALITY: PR (de Meijer 2006).

Phallus pygmaeus Baseia

LOCALITY: PE (Baseia et al. 2003, Baseia et al. 2006a, Leite et al. 2007a).

Phallus rubicundus (Bosc) Fr.

BASIONYM: *Satyrum rubicundus* Bosc

LOCALITY: SP (Bononi et al. 1984).

Phallus subtilis (A. Möller) Lloyd

BASIONYM: *Aporophallus subtilis* A. Möller

LOCALITIES: RS (Rick 1961), SC (Möller 1895).

Pseudocolus garciae (A. Möller) Lloyd

BASIONYM: *Colus garciae* A. Möller

LOCALITIES: BR (Lloyd 1907c), RS (Rick 1961), SC (Möller 1985),

**Pseudocolus rugosus* (Kurz) Lloyd

LOCALITY: RS (Rick 1961).

Simblum sphaerocephalum Schldtl.

LOCALITIES: BR (Lloyd 1906b), RS (Rick 1961, Guerrero & Homrich 1999).

Staheliomyces cinctus E. Fisch.

LOCALITY: RN (Baseia et al. 2006a, Leite et al. 2007a).

***Phallogastraceae* Locq.**

Protuberia maracuja A. Möller

LOCALITIES: RS (Rick 1961), SC (Möller 1895), PR (de Meijer 2006), SP (Bononi et al. 1981).

***Rhizopogonaceae* Gäum. & C.W. Dodge**

Rhizopogon fuscorubens A.H. Sm.

LOCALITY: SC (Giachini et al. 2000).

Rhizopogon luteolus Fr. & Nordholm

LOCALITY: SP (Baseia & Milanez 2002b).

Rhizopogon nigrescens Coker & Couch

LOCALITY: SC (Giachini et al. 2000).

Rhizopogon roseolus (Corda) Th. Fr.

BASIONYM: *Splanchnomyces roseolus* Corda

LOCALITIES: SC (Giachini et al. 2000 – as *Rhizopogon rubescens* [Tul. & C. Tul.] Tul. & C. Tul.), PR (de Meijer 2006 – as *Rhizopogon* cf. *roseolus*), SP (Baseia & Milanez 2002b).

Rhizopogon rubescens (Tul. & C. Tul.) Tul. & C. Tul.

BASIONYM: *Hysterangium rubescens* Tul. & C. Tul.

LOCALITY: SP (Baseia & Milanez 2002b).

Rhizopogon vulgaris (Vittad.) M. Lange

BASIONYM: *Hysteromyces vulgaris* Vittad.

LOCALITY: SC (Giachini et al. 2000).

Rhizopogon zelleri A.H. Sm.

LOCALITY: SC (Giachini et al. 2000).

Sclerodermataceae

Durosaccum pisiforme Lloyd

LOCALITY: RS (Rick 1961).

Pisolithus albus (Cooke & Masee) Priest

BASIONYM: *Polysaccum album* Cooke & Masee

LOCALITY: SC (Giachini et al. 2000).

Pisolithus arhizus (Scop.) Rauschert

BASIONYM: *Lycoperdon arrizon* Scop.

LOCALITIES: RS (Guerrero & Homrich 1999), SP (Bononi et al. 1981).

COMMENTS: Recorded by the authors as *Pisolithus tinctorius* (Pers.) Coker & Couch., which is synonym of *P. arhizus* (Watling 2006).

Pisolithus microcarpus (Cooke & Masee) G. Cunn.

BASIONYM: *Polysaccum microcarpum* Cooke & Massee
LOCALITY: SC (Giachini et al. 2000).

Pisolithus pisiformis (Lloyd) Rick

BASIONYM: *Durosaccum pisiforme* Lloyd
LOCALITY: RS (Rick 1961).

Sclerangium brasiliense Henn.

LOCALITY: AM (Hennings 1904b).

Scleroderma albidum Pat. & Trab.

LOCALITIES: RS (Guzmán 1970, Cortez et al. 2008a), SP, MG and RJ (Guzmán 1970), SC (Giachini et al. 2000), PE (Drechsler-Santos et al. 2008, Gurgel et al. 2008).

Scleroderma areolatum Ehrenb.

LOCALITIES: SC (Giachini et al. 2000), RJ (Guzmán 1970).

Scleroderma bougheri Trappe, Castellano & Giachini

LOCALITY: SC (Giachini et al. 2000).

Scleroderma bovista Fr.

LOCALITIES: BR (Guzmán 1970), SC (Giachini et al. 2000 – as *Scleroderma fuscum* [Corda] E. Fisch.), PE (Gurgel et al. 2008).

Scleroderma cepa Pers.

LOCALITY: SC (Giachini et al. 2000).

Scleroderma citrinum Pers.

LOCALITIES: RS (Rick 1961 – as *Scleroderma vulgare* Hornem., Sobestiansky 2005), SC (Giachini et al. 2000), PR (de Meijer 2006), SP (Guzmán 1970, Bononi et al. 1981 – as *Scleroderma aurantium* Pers.), PB (Gurgel et al. 2008).

Scleroderma floridanum Guzmán

LOCALITY: SC (Giachini et al. 2000).

Scleroderma nitidum Berk.

LOCALITIES: BA, PE, PB & RN (Gurgel et al. 2008).

Scleroderma polyrhizum (J.F. Gmel.) Pers.

BASIONYM: *Lycoperdon polyrhizon* J.F. Gmel.

LOCALITY: SP (Baseia & Milanez 2000).

Scleroderma stellatum Berk.

LOCALITIES: BR (Guzmán 1970), AM (Berkeley & Cooke 1876).

Scleroderma tenerum Berk. & M.A. Curtis

LOCALITY: RS (Rick 1961).

Scleroderma tuberoideum Speg.

LOCALITY: SP (Bononi et al. 1981).

Scleroderma uruguayense (Guzmán) Guzmán

LOCALITIES: SC (Giachini et al. 2000), RJ (Guzmán 1970).

Scleroderma verrucosum (Bull.) Pers.

BASIONYM: *Lycoperdon verrucosum* Bull

LOCALITIES: RS (Rick 1961, Sobestiansky 2005), SC (Giachini et al. 2000), PR (de Meijer 2006 – as *Scleroderma* cf. *verrucosum*), SP (Hennings 1902, 1904c; Viégas 1945), RJ and BA (Guzmán 1970).

***Strophariaceae* Singer & A.H. Sm.**

Brauniella alba (Rick) Rick ex Singer

BASIONYM: *Braunia alba* Rick

LOCALITY: RS (Singer 1962).

Hymenogaster vulgaris Tul. & C. Tul.

LOCALITY: RS (Rick 1961).

Incertae sedis

Cycloderma weddellii Mont.

LOCALITY: BR (Berkeley & Cooke 1876).

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