Chapter 8
Fungi of São Tomé and Príncipe Islands: Basidiomycete Mushrooms and Allies

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Abstract Mushrooms and allies belong to the Agaricomycetes lineage of Basidiomycota. A total of 260 species, belonging in 109 genera, 51 families and 13 orders have been reported from São Tomé and Príncipe between 1851 and 2020, of which 66 were described as new species. They range in body forms from agarics and boletes to polyporoid, clavarioid, coralloid, thelephoroid, stereoid, corticioid, hydnoid, cantherelloid, gasteroid, and jelly fungi. The vast majority are saprotrophs, a small number are plant pathogens, and a rare few may be ectomycorrhizal. Sixty species, 23%, can be classified putative endemics. The current state of knowledge of the Agaricomycetes from the nation is based on fewer than ten expeditions in the past 170 years and represents only a snapshot of the actual diversity that is likely present.

Keywords Agaricomycetes · Fungal diversity · Mycota · Taxonomy

Introduction

This chapter constitutes a preliminary accounting of the mushrooms and allied taxa (Fungi, Basidiomycota) that occur in the West African island nation São Tomé and Príncipe (ST&P). Herein, we treat only organisms currently recognized as belonging to the Agaricomycetes lineage, comprising most mushroom-forming taxa. These charismatic megafungi are recognized easily in the field although understudied in tropical Africa. The names associated with each species are based historically on morphological features of their sexual reproductive structures, i.e., the mushrooms, supplemented now with molecular sequence data.

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The Agaricomycetes comprises organisms commonly called gilled fungi (agarics), boletes, polypores, club and coral fungi, thelephoroid and stereoid fungi, corticioid fungi (resupinates), tooth fungi, cantherelloid fungi, gasteroid fungi (puffballs, stinkhorns, bird's nest fungi, earthstars) and jelly fungi. They form sexual reproductive structures (basidiomes) large enough to be observed with the naked eye and broadly defined as mushrooms (= macrofungi). Their vegetative, mycelial stage serves numerous ecological roles as saprotrophs, mixotrophs, pathogens, endophytes, and mycorrhizae, and aids in soil generation, erosion control, biofiltration, nutrient retention and other important bioprocesses. Their sporulating stage, beyond functioning as the dispersal and reproductive phase, serves as a food source for myriad organisms. Many lineages produce basidiomes harvested by indigenous cultures in West Africa (e.g., chanterelles, boletes, oyster mushrooms, wood ears, etc.) and used for food, medicine, textile dyeing, a source of income and other sociological aspects (entheogens) (Osarenkhoe et al. 2014). Although the mycota of the region is diverse and abundant, only limited research has been published on the fungi of ST&P, primarily because few mycologists have visited the islands. Several expeditions in the late nineteenth century, a single excursion in the twentieth century, and several in the twenty-first century constitute the total acquisitions upon which our current knowledge of the diversity of Agaricomycetes from ST&P is based.

History of Agaricomycetes Research

The first published account of Agaricomycetes from São Tomé was a report by Elias M. Fries (1851) of six species collected by Krebs (no further collector information was provided) in a paper entitled *Novarum Symbolarum Mycologicarum Mantissa*. Four of these were described as new species, viz., *Agaricus papularis* Fr., *A. macromastes* Fr., *Panus troglodytes* Fr., and *Lentinus flaccidus* Fr., the first three of which have not been treated since, and their taxonomic placement is uncertain. This was followed by a more substantive contribution from G. Winter (1886) based on his study of specimens collected from São Tomé in 1885 by A. Moller, Inspector of the Botanical Garden of Coimbra, and Francisco A. Dias Quintas and F. Newton, Portuguese botanists. Winter's (1886) paper was an accounting of 100 species of Fungi as part of the *Flora de S. Thomé, Contribuições para o Estudo da Flora d'Africa*, compiled by J. Henriques (1886). Of these, 29 represented species of Basidiomycota; none were new species. Roumeguère (1889) examined a number of the fungal specimens collected from São Tomé by Moller, Quintas and Newton and reported four species of Basidiomycota, of which one, *Stereum amphirhytes* Sacc. & Berl. was reported as new (published again that same year by Saccardo and Berlese). The species has not been treated since. Saccardo and Berlese (1889) also studied some Moller and Newton specimens from ST&P and reported 13 species of Basidiomycota, of which six represented new species. In a paper on Fungi from Cameroon, Bresadola (1890) reported three

species of *Polyporus* from São Tomé, including one new species, *P. squamulosus* Bres. The most significant early accounting of Fungi from ST&P were the papers by Bresadola and Roumeguère (1890) and Bresadola (1891), which comprised a re-examination of the material reported by Winter (1886) and inclusion of additional taxa from specimens not treated by Winter. Collectively, these two papers reported 83 species of Basidiomycota from ST&P, of which 9 were new taxa. The specimens reported from ST&P between 1886 and 1891, representing 113 species, were deposited in the Herbarium of the Botanic Garden and Botanical Museum Berlin-Dahlem (B), but unfortunately were destroyed in a fire in 1943, making taxonomic confirmation now impossible. Consequently, the taxonomic placement of the new species is uncertain, and the occurrence on ST&P of many of the other species reported, which were based primarily on European epithets, is questionable.

During the twentieth century, the only significant contribution to our knowledge of Fungi from ST&P was that of António Xavier Pereira Coutinho, Professor of Horticulture at the Instituto Superior de Agronomia, Universidade de Lisboa. Coutinho (1925) reported 74 Basidiomycota and two Ascomycota from São Tomé, based on material collected in 1920 by his son Martinho de França Pereira Coutinho, and Professor Manuel de Sousa da Câmara, Head of Section and Director, respectively, of the Laboratory of Plant Pathology at the same Institute. Eighty-two percent of the species were collected at Água-Izé. Ten of the Basidiomycota represented new species.

Contemporary treatments of Agaricomycetes from ST&P based on newly collected specimens and molecular systematic approaches did not begin until the early twenty-first century. In 2001, Dr. Robert C. Drewes, Curator of Herpetology at the California Academy of Sciences, led a multidisciplinary research expedition to ST&P, the beginning of two decades of intensive exploration of the islands to document their biodiversity (Drewes 2002). In April 2006 (2 weeks) Desjardin, and in April 2008 (3 weeks), Desjardin and Perry conducted extensive fieldwork on ST&P, documenting the diversity of macrofungi (fleshy Agaricomycetes, excluding polypores and corticioid fungi). To honor Robert Drewes, who has dedicated more than 40 years of his life to research in Africa, and who introduced us to the island nation, we described *Phallus drewesii* Desjardin & B.A. Perry (Phallaceae, Fig. 8.1–5) in our premier paper (Desjardin and Perry 2009). Subsequently, partial results of these expeditions were published in nine additional papers (Desjardin and Perry 2015a, b, 2016, 2017, 2018, 2020; Desjardin et al. 2017; Cooper et al. 2018; Grace et al. 2019), reporting 126 species of Agaricomycetes, including 36 new species. This research is ongoing—78 additional specimens, representing approx. 50 species, await publication. Several other researchers have documented macrofungi from the region over the past decade. Decock (2011) described *Truncospora oboensis* Decock (Polyporaceae, Fig. 8.1–4) and *Coltricia oboensis* Decock (2013) (Hymenochaetaceae) as new from material collected from high elevation cloud forests on São Tomé. Degreef et al. (2013) reported two rare Phallaceae, *Blumenavia angolensis* (Welw. & Curr.) Dring and *Mutinus zenkeri* (Henn.) E. Fisch., from São Tomé. Most of the species included in these contemporary publications are

Fig. 8.1 Representative Agaricomycetes from São Tomé and Príncipe: (**1**) *Marasmius laranja* (Agaricales); (**2**) *Gymnopus rodhallii* (Agaricales); (**3**) *Cyathus poeppigii* (Agaricales); (**4**) *Truncospora oboensis* (Polyporales); (**5**) *Phallus drewesii* (Phallales); (**6**) *Geastrum schweinitzii* (Geastrales); (**7**) *Scytinopogon havencampii* (Trechisporales); (**8**) *Aphelaria subglobispora* (Cantharellales). Scale bar = 10 mm. Photo credits: (**1**–**3**, **5**, **6**, **8**) B. Perry, (**4**) C. Decock (**7**) W. Eckerman

represented by single or very few specimens, although the specimens are deposited in herbaria and accessible for future studies.

Diversity and Endemism

Our knowledge of the diversity of fungi globally is incomplete due to their unique biology (cryptic mycelium producing often inconspicuous, short-lived sporulating structures upon which their names are based) and difficulty in identification (Willis 2018). In ST&P, documentation of the diversity of Agaricomycetes is rather depauperate as a direct result of limited fieldwork conducted there to date. Fungal species reported prior to 1925 is a reflection of the peregrinations of itinerant botanists, not the result of a concerted effort to document the fungi from the region. Their serendipitous encounters with mushrooms produced exsiccati that were often squashed between paper and blotters in plant presses and dried amongst the plant specimens that were the focus of early expeditions. Subsequent research in the twentieth century (Coutinho 1925) produced better quality specimens, but as with earlier expeditions, focused primarily on easily collected and preserved polypores and allies. It was not until the twenty-first century that a concerted effort was made to document the Agaricomycetes from the nation, supported by well documented fungarium specimens and molecular data (research of Desjardin, Perry and colleagues). Combining the unsubstantiated early reports with new vouchered reports, we account for 260 species of Agaricomycetes from ST&P, representing 109 genera, 51 families and 13 orders (Appendix).

It is difficult to compare these numbers with those of Agaricomycetes recorded from neighboring countries of West Africa (Piepenbring et al. 2020). We recognize that what we are presenting herein is only a snapshot of the actual mushroom diversity from the islands. More effort needs to be focused on documenting the polypores and similar taxa with persistent basidiomes whose early reports are not vouchered, and continued work on taxa with fleshy, putrescent basidiomes in understudied lineages.

Determining the distribution status of fungi is fraught with difficulties. Many areas of the world have not been explored for fungi, and documentation from tropical Africa is especially limited. It is premature to state unequivocally that any species is "endemic" until we have more data on the diversity of fungi from understudied areas. For this treatise, if a species was described as new from São Tomé or Príncipe and it has not yet been reported from elsewhere, we recognize the taxon as a putative endemic and annotate as such in the Appendix. Under this scenario, 66 new species have been described from material collected on ST&P, of which six species have been reported as occurring elsewhere. Hence, 60 species can be considered as putative endemics, or a 23% level of endemism in the Agaricomycetes from ST&P.

Species reports, where identification was based on molecular phylogenetic data, indicate that ST&P mushrooms or their closest relatives occur in neighboring West and Central African countries (Cameroon, Sierra Leone, DR Congo), other parts of

continental Africa and Madagascar, South East and South-Central Asia, and tropical America (pers. obs.). No attempt was made to rate species as resident, migrant, vagrant or introduced as such categorizations would be only speculative. We recognize that the mushrooms commonly collected in habitats dominated by introduced plants, such as coastal cacao-banana groves, coffee plantations and other agricultural sites, most likely represent introduced species, however, we have not annotated them as such. Interestingly, a number of the species that we encountered in human-altered lowland habitats, either also occur in or have their closest known relatives in the Caribbean region. This could indicate unidirectional or bidirectional introduction of fungal species associated with aspects of the slave or agricultural trade.

Ecology and Conservation

The macrofungi of ST&P are primarily saprotrophic, decomposing leaf litter and woody substrates. A number of species may be pathogens, associated with root or heart rot of woody plants (e.g., *Bjerkandera*, *Fomes*), while a rare few are biotroph associates of mosses (*Cotylidia*). The ectomycorrhizal status of ST&P fungi is unknown, but we suspect that there are very few because of the paucity of ectotrophic host plant genera. A cross-reference of the annotated list of Angiosperms for ST&P (Figueiredo et al. 2011) with a list of global ectotrophic host plant genera (Brundrett 2009), yielded only six potential ectotrophic host plant genera in ST&P, viz., *Casuarina* (Casuarinaceae), *Lonchocarpus* and *Acacia* (Fabaceae), *Eucalyptus* and *Melaleuca* (Myrtaceae), and *Manilkara* (Sapotaceae), which include only ten local species. Of these ten, six are introduced species, and only four may represent native species, viz., *Lonchocarpus sericeus* (Poir.) Kunth, *Acacia kamerunensis* Gand., *Acacia pentagona* (Schumach.) Hook. and *Manilkara obovata* (Sabine & G. Don) J.H. Hemsl. Whether these potential plant host species are ectotrophic has not been determined.

Mushrooms and allies require adequate moisture and appropriate nutritional substrates for survival. Many species, whether saprotrophic, pathogenic, or mycorrhizal, are host specific (at various levels of specificity). When their habitats change due to changes in water availability (rain, humidity), anthropogenic disturbance, or an alteration in plant community structure, the abundance and diversity of fungi changes as well. Conservation efforts focused on fungi are in their infancy globally. Of the 135,000 species of fungi described to date (Kirk 2019), as noted by Piepenbring et al. (2020), only 91 have been evaluated for the global Red List established by the International Union for Conservation of Nature (IUCN). None of the species reported from ST&P are included in the list.

Agaricomycetes of São Tomé and Príncipe

An accounting of the history and diversity of ST&P mushrooms in each order is presented below, organized in accordance with the phylogenetic tree of Agaricomycetes adapted from Varga et al. (2019) (Fig. 8.2).

Order Agaricales

Approximately half of the known Agaricomycetes from ST&P belong to the Agaricales, this accounting primarily the result of recent research published by Desjardin and Perry. To date, 133 species of Agaricales have been reported from ST&P, belonging to 46 genera in 24 families. This order is comprised mainly of

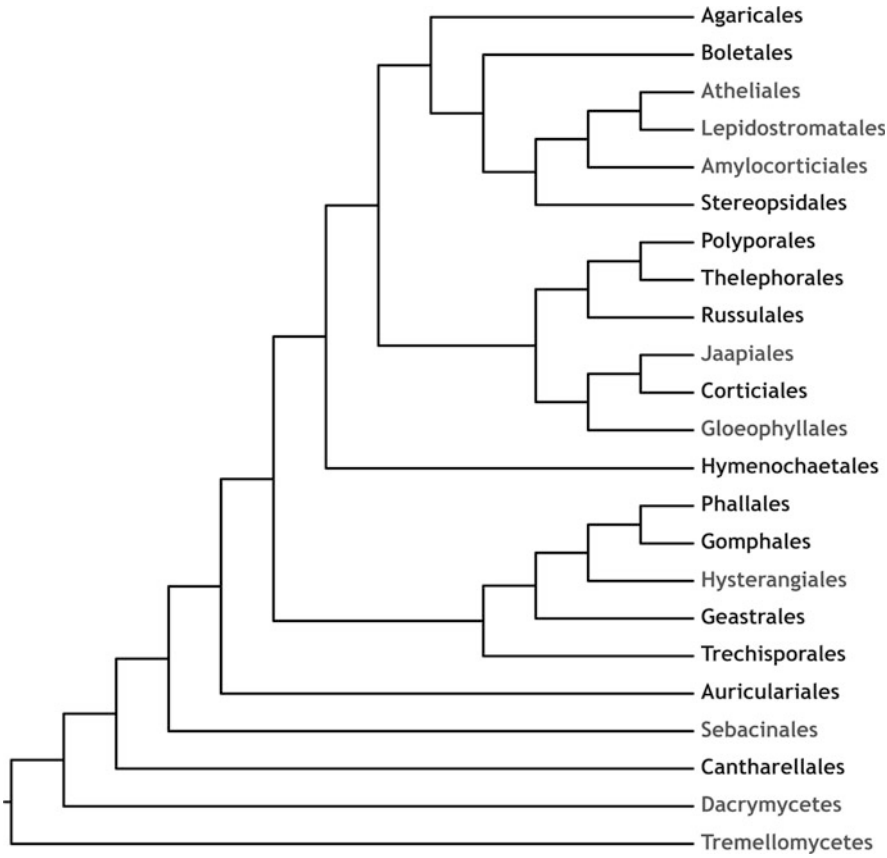

Fig. 8.2 Phylogenetic tree of Agaricomycetes adapted from Varga et al. (2019). Orders containing taxa reported from São Tomé and Príncipe are in bold

gilled mushrooms, i.e., basidiomes with the hymenium (spore-producing tissue) located on radiating plate-like structures (gills = lamellae) suspended under a cap (pileus), and together typically elevated by a stem (stipe). A few families in the order contain species with clavarioid (club-shaped), coralloid (branched, coral-shaped), gasteroid (enclosed, puffball-like) or corticioid (crust-like, with smooth, resupinate hymenophores) basidiomes. These mushrooms are typically putrescent, lasting from only a few hours to a few days, then wither and disappear. They form only after abundant moisture is available, usually during the wet season, and encountering them is often serendipitous. To obtain quality specimens for study and determination, basidiomes must be collected fresh, their taxonomically important features documented, and then dried immediately for long-term preservation. This procedure presents many difficulties in understudied tropical habitats and most likely accounts for the limited number of early reports. Between 1851 and 1891, only 19 species of Agaricales were reported from ST&P, four of which were new species, and two of the latter remain *incertae sedis* (Fries 1851; Winter 1886; Roumeguère 1889; Saccardo and Berlese 1889; Bresadola and Roumeguère 1890; Bresadola 1891). Coutinho (1925) reported 17 gilled mushroom species from São Tomé, of which six were new species and two of these are currently of unknown taxonomic placement. Most of the known Agaricales from ST&P were reported by Desjardin, Perry and colleagues, viz., 101 species of which 32 were new to science. They provided comprehensive coverage of clavarioid and gasteroid species in the Clavariaceae, Lycoperdaceae and Nidulariaceae (Desjardin and Perry 2015b), dark-spored species in the Bolbitiaceae, Crepidotaceae, Hymenogastraceae, Psathyrellaceae and Strophariaceae (Desjardin and Perry 2016), gymnopoid species in the Agaricaceae, Catathelasmataceae, Hydropoid clade, Hygrophoraceae, Marasmiaceae, Mycenaceae, Omphalotaceae, Physalacriaceae and Tricholomataceae (Desjardin and Perry 2017, Desjardin et al. 2017), species of *Pluteus* of Pluteaceae (Desjardin and Perry 2018), mycenoid species in the Hydropoid clade and Mycenaceae (Cooper et al. 2018), marasmioid species in the Marasmiaceae (Grace et al. 2019), and hygrophoroid species in the Hygrophoraceae (Desjardin and Perry 2020). Additional specimens collected during the 2008 expedition await diagnosis.

Order Boletales

Most members of order Boletales are ectomycorrhizal and require specific plant hosts to support their mutualistic symbiosis. As noted in the section on ecology, few ectotrophic plant species occur on ST&P, and accordingly, ectomycorrhizal Agaricomycetes are rare. Most Boletales form putrescent basidiomes with a thick fleshy cap supporting a tubular hymenophore with the hymenium lining the inside of the vertically oriented tubes, and all elevated on a stipe—a body form known as a bolete. A few lineages form gasteroid basidiomes, while others form corticioid (crust-like, resupinate with smooth or wrinkled hymenophore) basidiomes. Only a single species of Boletales has been reported from Príncipe, the gasteroid

Scleroderma dictyosporum Pat. (Sclerodermataceae) (Desjardin and Perry 2015b). We are aware of several boletes that occur on São Tomé, although official reports have not yet been published. Desjardin and Perry (unpubl.) have collected a single specimen of a *Tylopilus* sp. (deposited in SFSU) and have seen photographs of a probable *Phlebopus* sp. (no specimens retained). Whether these taxa are ectomycorrhizal or saprotrophic is currently unknown.

Order Stereopsidales

Members of order Stereopsidales form corticioid or thelephoroid (tough, with a smooth or wrinkled hymenophore) basidiomes. Only a single species from the order, the thelephoroid *Stereopsis radicans* (Berk.) D.A. Reid (Stereopsidaceae) has been reported, apparently collected twice on São Tomé, once on wood by F. Quintas in 1885 (Bresadola and Roumeguère 1890), and once on soil in 1920 (Coutinho 1925).

Order Polyporales

The first fungi collected and repeatedly reported from West African countries were mostly polypores, belonging mainly to the Polyporales and Hymenochaetales (Piepenbring et al. 2020). This is because of their persistent basidiomes, which may be encountered throughout the year when fleshy species are not apparent, and due to the ease of collecting, drying and transporting specimens. Basidiomes are typically tough and woody, with a tubular hymenophore, lack a stem, and grow on woody substrates as saprotrophs or pathogens. Seventy-one species of order Polyporales have been documented from ST&P; 55 of these were reported prior to 1925, of which six represented new species, viz., *Daedalea newtonii* Bres. & Roum. (Fomitopsidaceae), *Tyromyces squamulosus* (Bres.) Ryvarden (Incrustoporiaceae), and *Favolus jacobeus* Sacc. & Berl., *Polyporus torquescens* Sacc. & Berl. and *Trametes discolor* Sacc. & Berl. (Polyporaceae) (Saccardo and Berlese 1889; Bresadola 1890; Bresadola and Roumeguère 1890). *Stereum pulchellum* Sacc. & Berl. was described as new from Príncipe, but is currently accepted as a synonym of *Podoscypha involuta* (Klotsch ex Fr.) Imazeki (Podoscyphaceae). Apparently, the specimen vouchers of these 55 species were destroyed in the 1943 fire at the Berlin Herbarium. Coutinho (1925) added another 16 species to the list, including two new species, *Fomes ferrugineobrunneus* Cout. and *Lentinus thomensis* Cout. (Polyporaceae). Since then, only a single species of Polyporales has been reported from São Tomé, the new species *Truncospora oboensis* Decock (Polyporaceae, Fig. 8.1–4) (Decock 2011). Although many species of polypores were observed on ST&P during the expeditions by Desjardin and Perry (in 2006 and 2008), this fungal group was not the focus of their research and no specimens were collected. Future

research should focus on documenting order Polyporales from ST&P, to verify early reports with vouchered material and to clarify polypore diversity for the region.

Order Thelephorales

Members of this order form tough, stipitate basidiomes with a smooth hymenophore (thelephoroid) and stipitate or sessile basidiomes with a toothed hymenophore (hydnoid). Only a single species has been reported from São Tomé, the new sessile hydnoid taxon *Phaeodon thomensis* Cout. (Bankeraceae) (Coutinho 1925). The species is known from a single collection made in 1920 and has not been reported since from West Africa.

Order Russulales

Species of order Russulales are quite common and abundant in Africa. They develop basidiomes with a great variety of body forms, from gilled and poroid to hydnoid, corticioid, clavarioid and coralloid. Many are ectomycorrhizal, while others are saprotrophs or plant pathogens. Unfortunately, the speciose ectomycorrhizal genera *Russula* and *Lactarius*, so common in the miombo woodlands of Western Africa, are lacking in ST&P because of the near absence of ectotrophic host plants. Only 14 species of Russulales have been documented from ST&P, all but one species reported before 1925 (Winter 1886; Saccardo and Berlese 1889; Bresadola and Roumeguère 1890). Most of these represent saprotrophic or pathogenic taxa with corticioid or stereoid (sessile, with a cap and smooth hymenophore) basidiomes in the Hericiaceae, Peniophoraceae and Stereaceae, although two *Lentinellus* species are gilled fungi in Auriscalpiaceae. Only two species were described as new from São Tomé, the corticioid *Scytinostroma quintasianum* (Bres. & Roum.) Nakasone (Peniophoraceae), named after the early Portuguese collector F. Quintas (Bresadola and Roumeguère 1890), and the stereoid *Stereum amphirhytes* Sacc. & Berl. (Stereaceae) (Saccardo and Berlese 1889).

Order Hymenochaetales

Similar to the Polyporales, the ST&P representatives of order Hymenochaetales form primarily persistent basidiomes with tubular hymenophore and saprotrophic or pathogenic ecology (Hymenochataceae), but the order also contains an unusual lineage with small, fleshy basidiomes with gilled or smooth hymenophore (Rickenellaceae) that are associated with mosses. Twelve species have been documented from São Tomé, ten of which were reported prior to 1925 (Winter

1886; Roumeguère 1889; Bresadola and Roumeguère 1890), whose material has been lost, although four of these species were recollected and reported again by Coutinho (1925). Two lignicolous species were described as new, *Polystictus albocinereus* Cout. (Coutinho 1925) and *Coltricia oboensis* Decock (Hymenochaetaceae) (Decock 2013). This is another group that needs attention from contemporary researchers.

Order Phallales

The Phallales constitute the "stinkhorns," a lineage of bizarrely-shaped mushrooms with a dispersal strategy symbiotic with insects. All basidiomes are initially globose or egg-shaped with the hymenophore enclosed (gasteroid), and as they mature, the outer peridium layer ruptures, and the inner sporulating structure erupts into a plethora of shapes, allowing for common names like octopus stinkhorn, basket stinkhorn, Devil's horn, etc. The spores are produced in a gelatinous, putrid-scented mass on the elevated structure. The often carrion-like odor attracts insects, primarily flies, who lay their eggs in the stinkhorn to provide a food source for their larvae, and the adults also consume the spores which pass through their digestive system and when defecated, aid in stinkhorn dispersal. Six species belonging to the Phallaceae have been documented from ST&P. The first reported was a new species, *Clathrus parvulus* Bres. & Roum., a very small (<20 mm diam), reddish basket stinkhorn that has not been reported since first discovery (Bresadola and Roumeguère 1890). The remaining five species are recent reports (Degreef et al. 2013; Desjardin and Perry 2015b), including a new species, *Phallus drewesii* (Fig. 8.1–5).

Order Gomphales

Three families comprise the order Gomphales, but only members of the Gomphaceae have been reported from ST&P. The family contains species with funnel-shaped basidiomes with wrinkled to venous or gilled hymenophore (cantharelloid) and coralloid basidiomes. Only a single genus of coralloid species has been reported from São Tomé, representing three species of *Ramaria*. Two represent new species described in 1890 that have not been recollected, viz., *Ramaria henriquesii* (Bres. & Roum.) Corner (*ut Clavaria*), and *Ramaria mollerianum* (Bres. & Roum.) Corner (*ut Lachnocladium*) (Bresadola and Roumeguère 1890), both named after the early Portuguese botanists who conducted fieldwork on São Tomé. The genus *Ramaria* is ectomycorrhizal in other parts of the world, but the nutritional status of the São Tomé species is unknown.

Order Geastrales

The order Geastrales, with the single family Geastraceae, are commonly known as the "Earthstars." The basidiomes, initially fully enclosed (gasteroid), rupture, and the outer layers split and fold back into ray-shaped arms (star-like), exposing the interior puffball, which opens by a central apical pore to passively release the internal spores. Three species of *Geastrum* were recently reported from ST&P (Desjardin and Perry 2015b), the most unusual being *Geastrum schweinitzii* (Berk. & M.A. Curtis) Zeller (Fig. 8.1–6), which forms very small earthstar basidiomes that arise from a thick membranous sheet of mycelium (subiculum) that covers the substrate.

Order Trechisporales

Members of this order form corticioid basidiomes (type genus *Trechispora*) or coralloid basidiomes (*Scytinopogon*). Only a single species from the group has been recently reported, the new species *Scytinopogon havencampii* Desjardin & B.A. Perry (Fig. 8.1–7), described from material collected on Príncipe (Desjardin and Perry 2015a). Although it grows from the soil, we suspect that it is a saprotroph. The genus *Scytinopogon* with coralloid basidiomes was recently accepted as a synonym of *Trechispora*, a genus composed primarily of corticioid species, based on multi-gene analyses (Meiras-Ottoni et al. 2021).

Order Auriculariales

The "jelly fungi" is a heterogeneous assemblage of fungi representing numerous lineages, wherein the basidiomes are rubbery-gelatinous and hydrophilic/hygroscopic. Order Auriculariales comprises a number of families, several of which contain species that form such basidiomes. Members of the Auriculariaceae often form lignicolous, ear-shaped basidiomes that are commonly known as "wood ear" mushrooms, which are edible and both wild-harvested and artificially cultivated. Three species of *Auricularia* were documented early from São Tomé (Winter 1886; Bresadola and Roumeguère 1890; Bresadola 1891) and reported again by Coutinho (1925) from additional specimens. We have no information on whether local cultures consume these commonly encountered mushrooms.

Order Cantharellales

Basidiome morphology is quite variable in order Cantharellales, and includes clavarioid, coralloid, cantharelloid (funnel-shaped with decurrent gills or veins),

and hydnoid body forms. Three species, one from each of three families (Aphelariaceae, Cantharellaceae, Hydnaceae), have been reported from ST&P. The earliest report was for *Craterellus crispus* (Bull.) Berk. (Bresadola 1891), accepted now as a synonym of *Pseudocraterellus undulatus* (Pers.) Rauschert. This species is considered ectomycorrhizal, and given the paucity of ectotrophic plant species on São Tomé, we question the original identification by Bresadola (1891). The two additional reports of Cantharellales are from recently collected specimens, viz., *Aphelaria subglobispora* P. Roberts (Fig. 8.1–8) and *Clavulina vanderystii* (Bres.) Corner (Desjardin and Perry 2015b).

Summary and Future Research

Although the Gulf of Guinea oceanic islands of São Tomé (13+ my) and Príncipe (31+ my) are volcanic in origin and have never been part of or connected by a land bridge to continental Africa (Lee et al. 1994), they are rich in Agaricomycetes diversity. The fungal species or their ancestors reached the islands by wind, avian or human-mediated dispersal, or on flotsam. Only a handful of expeditions have been conducted since 1851, which produced specimens of Agaricomycetes that allowed documentation of mushroom diversity from the islands. To date, 260 species, belonging in 109 genera, 51 families and 13 orders have been reported from ST&P, providing only a snapshot of the estimated actual diversity of this important fungal group. Twenty-three percent of these may represent endemic species. Reported taxa represent myriad body forms, from agarics and boletes, to polypores, club and coral fungi, thelephoroid, stereoid, corticioid, hydnoid and cantherelloid fungi, puffballs, stinkhorns, bird's nest fungi, earthstars, and jelly fungi. Nearly half (113 spp.) of the recorded 260 species are known only from published reports, as their vouchered specimens were destroyed during World War II, and hence the accuracy of their determinations is questionable. The majority of reported species are saprotrophic, functioning as important litter and wood decomposers, while a number are plant pathogens and a rare few are putatively ectotrophic. The islands provide a wide variety of native and human-disturbed habitats that undoubtedly house hidden Agaricomycetes diversity. Future research should focus on recollecting the lineages containing unvouchered species reports (polypores, thelephoroid, stereoid, corticioid fungi), on identifying available specimens belonging to difficult taxonomic groups (e.g., lepiotoid, entolomatoid, hemimycenoid taxa), and on further intensive fieldwork conducted monthly in undisturbed native forests. Our knowledge of the mushrooms and allies from ST&P is in its infancy, and additional field and lab work will surely yield surprises, new distribution records and new taxa.

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Appendix

List of Agaricomycetes reported from Príncipe (P) and São Tomé (ST). Author abbreviations and nomenclature are according to Index Fungorum (www.indexfungorum.org). Phylogenetic placement and synonymy are based on current literature, or as reported in Species Fungorum (www.speciesfungorum.org) and Mycobank (www.mycobank.org). E—putative endemic

Currently accepted name	Name reported in literature	Citation	P	ST
ORDER AGARICALES				
Agaricaceae				
Agaricus subflabellatus Cout.	*Agaricus subflabellatus* Cout.	Coutinho (1925)		E
Agaricus sylvaticus Schaeff.	*Psalliota sylvatica* (Schaeff.) P. Kumm.	Coutinho (1925)		X
Phellorinia herculeana (Pers.) Kreisel	*Phellorinia delestrei* (Durieu & Mont.) E. Fisch.	Coutinho (1925)		X
Ripartitella brasiliensis (Speg.) Singer	*Ripartitella brasiliensis* (Speg.) Singer	Desjardin and Perry (2017)		X
Tulostoma mollerianum Bres. & Roum.	*Tylostoma mollerianum* Bres. & Roum.	Bresadola and Roumeguère (1890)		E
Bolbitiaceae				
Conocybe zeylanica (Petch) Boedijn	*Conocybe zeylanica* (Petch) Boedijn	Desjardin and Perry (2016)		X
Catathelasmataceae				
Callistosporium cystidiatum (T.J. Baroni, Lodge & D.L. Lindner) Vizzini, Consiglio & M. Marchetti	*Pleurocollybia cystidiata* T.J. Baroni, Lodge & D.L. Lindner	Desjardin and Perry (2017)		X
Callistosporium elegans Desjardin & B.A. Perry	*Callistosporium elegans* Desjardin & B.A. Perry	Desjardin and Perry (2017)		E
Callistosporium praemultifolium (Murrill) Vizzini, Consiglio & M. Marchetti	*Pleurocollybia praemultifolia* (Murrill) Singer	Desjardin and Perry (2017)	X	

(continued)

Currently accepted name	Name reported in literature	Citation	P	ST
Clavariaceae				
Clavaria phoenicea Zoll. & Moritzi	*Clavaria phoenicea* Zoll. & Moritzi	Desjardin and Perry (2015b)	X	
Clavulinopsis amoena (Zoll. & Moritzi) Corner	*Clavulinopsis amoena* (Zoll. & Moritzi) Corner	Desjardin and Perry (2015b)	X	
Crepidotaceae				
Crepidotus hemiphlebius (Berk. & M.A. Curtis) Murrill	*Agaricus hemiphlebius* Berk. & M.A. Curtis	Coutinho (1925)		X
Crepidotus kangoliformis Desjardin & B.A. Perry	*Crepidotus kangoliformis* Desjardin & B.A. Perry	Desjardin and Perry (2016)		E
Crepidotus nephrodes (Berk. & M.A. Curtis) Sacc.	*Crepidotus nephrodes* (Berk. & M.A. Curtis) Sacc.	Desjardin and Perry (2016)	X	
Simocybe centunculus (Fr.) P. Karst.	*Simocybe centunculus* (Fr.) P. Karst.	Desjardin and Perry (2016)		X
Cyphellaceae				
Chondrostereum purpureum (Pers.) Pouzar	*Stereum purpureum* Pers.	Bresadola and Roumeguère (1890)		X
Entolomataceae				
Entoloma mammosum (L.) Hesler	*Hyporrhodius mammosus* (L.) J. Schröt.	Coutinho (1925)		X
Entoloma papillatum (Bres.) Dennis	*Nolanea papillata* Bres.	Bresadola (1891)		X
Hydropoid Clade				
Clitocybula intervenosa A.C. Cooper, Desjardin & B.A. Perry	*Clitocybula intervenosa* A.C. Cooper, Desjardin & B.A. Perry	Cooper et al. (2018)		E
Hydropus globosporus A.C. Cooper, Desjardin & B.A. Perry	*Hydropus globosporus* A.C. Cooper, Desjardin & B.A. Perry	Cooper et al. (2018)		E
Hydropus murinus A.C. Cooper, Desjardin & B.A. Perry	*Hydropus murinus* A.C. Cooper, Desjardin & B.A. Perry	Cooper et al. (2018)		E
Trogia anthidepas (Berk. & Broome) Corner	*Trogia anthidepas* (Berk. & Broome) Corner	Desjardin and Perry (2017)	X	
Trogia aff. *brevipes* Corner	*Trogia* aff. *brevipes* Corner	Desjardin and Perry (2017)		X
Trogia buccinalis (Mont.) Pat.	*Cantharellus buccinalis* Mont.	Bresadola and Roumeguère (1890)		X
Trogia delicata Corner	*Trogia delicata* Corner	Cooper et al. (2018)		X
Trogia aff. furcata Corner	*Trogia* aff. *furcata* Corner	Desjardin and Perry (2017)		X
Trogia infundibuliformis Berk. & Broome	*Trogia infundibuliformis* Berk. & Broome	Desjardin and Perry (2017)	X	
Hygrophoraceae				
Arrhenia cystidiata Desjardin & B.A. Perry	*Arrhenia cystidiata* Desjardin & B.A. Perry	Desjardin and Perry (2017)		E
Cuphophyllus laranja Desjardin & B.A. Perry	*Cuphophyllus laranja* Desjardin & B.A. Perry	Desjardin and Perry (2020)		E
Cuphophyllus pratensis (Fr.) Bon	*Cuphophyllus pratensis* (Fr.) Bon	Desjardin and Perry (2020)	X	
Hygrocybe macambrarensis Desjardin & B.A. Perry	*Hygrocybe macambrarensis* Desjardin & B.A. Perry	Desjardin and Perry (2020)		E
Hygrocybe aff. *miniata* (Fr.) P. Kumm.	*Hygrocybe* aff. *miniata* (Fr.) P. Kumm.	Desjardin and Perry (2020)	X	
Hygrocybe sp.	*Hygrocybe* sp.	Desjardin and Perry (2020)	X	
Hymenogastraceae				
Galerina makereriensis Pegler	*Galerina makereriensis* Pegler	Desjardin and Perry (2016)		X

(continued)

Currently accepted name	Name reported in literature	Citation	P	ST
Galerina physospora Singer	*Galerina physospora* Singer	Desjardin and Perry (2016)		X
Gymnopilus aculeatus (Bres. & Roum.) Singer	*Pholiota aculeata* Bres. & Roum.	Bresadola and Roumeguère (1890), Coutinho (1925)		E
Gymnopilus aureobrunneus (Berk. & M.A. Curtis) Murrill	*Naucoria aureobrunnea* (Berk. & M.A. Curtis) Cout.	Coutinho (1925)		X
	Gymnopilus aureobrunneus (Berk. & M.A. Curtis) Murrill	Desjardin and Perry (2016)		X
Gymnopilus delipis (Berk. & Broome) Singer	*Naucoria delipis* (Berk. & Broome) Cout.	Coutinho (1925)		X
Gymnopilus purpureosquamulosus Høiland	*Gymnopilus purpureosquamulosus* Høiland	Desjardin and Perry (2016)	X	X
Naucoria brevipes Cout.	*Naucoria brevipes* Cout.	Coutinho (1925)		E
Naucoria chrysotricha (Berk. & M.A. Curtis) Cout.	*Naucoria chrysotricha* (Berk. & M.A. Curtis) Cout.	Coutinho (1925)		X
Naucoria fusco-olivacea Bres. & Roum.	*Naucoria fusco-olivacea* Bres. & Roum.	Bresadola and Roumeguère (1890)		E
Naucoria papularis (Fr.) Sacc.	*Naucoria papularis* (Fr.) Sacc.	Coutinho (1925)		X
Inocybaceae				
Inocybe hystrix (Fr.) P. Karst.	*Inocybe hystrix* (Fr.) P. Karst.	Coutinho (1925)–doubtful (see Desjardin and Perry (2016))		E
Inocybe reticulata Cout.	*Inocybe reticulata* Cout.	Coutinho (1925)–doubtful (see Desjardin and Perry (2016))		E
Lycoperdaceae				
Lycoperdon molle Pers.	*Lycoperdon molle* Pers.	Desjardin and Perry (2015b)	X	
Marasmiaceae				
Campanella buettneri Henn.	*Campanella buettneri Henn.*	Desjardin et al. (2017)	X	
Campanella burkei Desjardin & B.A. Perry	*Campanella burkei* Desjardin & B.A. Perry	Desjardin and Perry (2017)	E	
Lactocollybia variicystis D.A. Reid & Eicker	*Lactocollybia variicystis* D.A. Reid & Eicker	Desjardin and Perry (2017)		X
Marasmius albisubiculosus C.L. Grace, Desjardin & B.A. Perry	*Marasmius albisubiculosus* C.L. Grace, Desjardin & B.A. Perry	Grace et al. (2019)	E	
Marasmius aff. *apatelius* Singer	*Marasmius* aff. *apatelius* Singer	Grace et al. (2019)	X	
Marasmius collinus (Scop.) P. Kumm.	*Collybia collina* (Scop.) P. Kumm.	Bresadola and Roumeguère (1890)		X
Marasmius colorimarginatus Antonín	*Marasmius colorimarginatus* Antonín	Grace et al. (2019)	X	
Marasmius corrugatiformis Singer	*Marasmius corrugatiformis* Singer	Grace et al. (2019)		X
Marasmius diversus C.L. Grace, Desjardin & B.A. Perry	*Marasmius diversus* C.L. Grace, Desjardin & B.A. Perry	Grace et al. (2019)		E
Marasmius elaeocephaliformis C.L. Grace, Desjardin & B.A. Perry	*Marasmius elaeocephaliformis* C.L. Grace, Desjardin & B.A. Perry	Grace et al. (2019)		E
Marasmius elaeocephalus Singer	*Marasmius elaeocephalus* Singer	Grace et al. (2019)		X

(continued)

Currently accepted name	Name reported in literature	Citation	P	ST
Marasmius grandisetulosus Singer	*Marasmius grandisetulosus* Singer	Grace et al. (2019)		X
Marasmius aff. *guyanensis* Mont.	*Marasmius* aff. *guyanensis* Mont.	Grace et al. (2019)	X	
Marasmius haediniformis Singer	*Marasmius haediniformis* Singer	Grace et al. (2019)		X
Marasmius laranja C.L. Grace, Desjardin & B.A. Perry	*Marasmius laranja* C.L. Grace, Desjardin & B.A. Perry	Grace et al. (2019)		E
Marasmius leptocephalus C.L. Grace, Desjardin & B.A. Perry	*Marasmius leptocephalus* C.L. Grace, Desjardin & B.A. Perry	Grace et al. (2019)		E
Marasmius aff. *megistus* Singer	*Marasmius* aff. *megistus* Singer	Grace et al. (2019)		X
Marasmius nodulocystis Pegler	*Marasmius nodulocystis* Pegler	Grace et al. (2019)	X	X
Marasmius palmivorus Sharples	*Marasmius palmivorus* Sharples	Desjardin and Perry (2017)		X
Marasmius paratrichotus C.L. Grace, Desjardin & B.A. Perry	*Marasmius paratrichotus* C.L. Grace, Desjardin & B.A. Perry	Grace et al. (2019)		X
Marasmius rotalis Berk. & Broome	*Marasmius rotalis* Berk. & Broome	Grace et al. (2019)		X
Marasmius segregatus C.L. Grace, Desjardin & B.A. Perry	*Marasmius segregatus* C.L. Grace, Desjardin & B.A. Perry	Grace et al. (2019)		E
Marasmius subarborescens Singer	*Marasmius subarborescens* Singer	Grace et al. (2019)		X
Marasmius subruforotula Singer	*Marasmius subruforotula* Singer	Grace et al. (2019)	X	
Marasmius suthepensis Wannathes, Desjardin & Lumyong	*Marasmius suthepensis* Wannathes, Desjardin & Lumyong	Grace et al. (2019)	X	
Marasmius tenuisetulosus (Singer) Singer	*Marasmius tenuisetulosus* (Singer) Singer	Grace et al. (2019)		X
Mycenaceae				
Favolaschia auriscalpium (Mont.) Henn.	*Laschia auriscalpium* Mont.	Winter (1886), Bresadola and Roumeguère (1890)		X
Filoboletus pallescens (Boedijn) Maas Geest.	*Filoboletus pallescens* (Boedijn) Maas Geest.	Cooper et al. (2018)	X	
Heimiomyces tenuipes (Schwein.) Singer	*Heimiomyces tenuipes* (Schwein.) Singer	Desjardin and Perry (2017)	X	
Mycena alphitophora (Berk.) Sacc.	*Mycena alphitophora* (Berk.) Sacc.	Cooper et al. (2018)		X
Mycena antennae A.C. Cooper, Desjardin & B.A. Perry	*Mycena antennae* A.C. Cooper, Desjardin & B.A. Perry	Cooper et al. (2018)		E
Mycena breviseta Höhnel	*Mycena breviseta* Höhnel	Cooper et al. (2018)	X	
Mycena brunneoviolacea A.C. Cooper, Desjardin & B.A. Perry	*Mycena brunneoviolacea* A.C. Cooper, Desjardin & B.A. Perry	Cooper et al. (2018)		E
Mycena aff. *discobasis* Métrod	*Mycena* aff. *discobasis* Métrod	Cooper et al. (2018)		X
Mycena discogena Singer	*Mycena discogena* Singer	Cooper et al. (2018)	X	
Mycena galopus (Pers.) P. Kumm.	*Mycena galopus* (Pers.) P. Kumm.	Cooper et al. (2018)		X

(continued)

Currently accepted name	Name reported in literature	Citation	P	ST
Mycena aff. *holoporphyra* (Berk. & M.A. Curtis) Singer	*Mycena* aff. *holoporphyra* (Berk. & M.A. Curtis) Singer	Cooper et al. (2018)		X
Mycena lamprospora (Corner) E. Horak	*Mycena lamprospora* (Corner) E. Horak	Cooper et al. (2018)	X	
Mycena lasiopus Maas Geest. & de Meijer	*Mycena lasiopus* Maas Geest. & de Meijer	Cooper et al. (2018)	X	X
Mycena longinqua A.C. Cooper, Desjardin & B.A. Perry	*Mycena longinqua* A.C. Cooper, Desjardin & B.A. Perry	Cooper et al. (2018)	E	
Mycena oboensis A.C. Cooper, Desjardin & B.A. Perry	*Mycena oboensis* A.C. Cooper, Desjardin & B.A. Perry	Cooper et al. (2018)		E
Mycena phaeonox A.C. Cooper, Desjardin & B.A. Perry	*Mycena phaeonox* A.C. Cooper, Desjardin & B.A. Perry	Cooper et al. (2018)		E
Mycena rosea Gramberg	*Agaricus roseus* Schaeff.	Coutinho (1925)		X
Mycena solis A.C. Cooper, Desjardin & B.A. Perry	*Mycena solis* A.C. Cooper, Desjardin & B.A. Perry	Cooper et al. (2018)		E
Mycena tintinnabulum (Paulet) Quél.	*Mycena tintinnabulum* (Paulet) Quél.	Bresadola and Roumeguère (1890)		X
Nidulariaceae				
Cyathus limbatus Tul. & C. Tul.	*Cyathus limbatus* Tul. & C. Tul.	Desjardin and Perry (2015b)		X
Cyathus poeppigii Tul. & C. Tul.	*Cyathus poeppigii* Tul. & C. Tul.	Desjardin and Perry (2015b)	X	
Omphalotaceae				
Gymnopus billbowesii Desjardin & B.A. Perry	*Gymnopus billbowesii* Desjardin & B.A. Perry	Desjardin and Perry (2017)		X
Gymnopus aff. *brunneigracilis* (Corner) A.W. Wilson & Desjardin	*Gymnopus* aff. *brunneigracilis* (Corner) A.W. Wilson & Desjardin	Desjardin and Perry (2017)		X
Gymnopus cervinus (Henn.) Desjardin & B.A. Perry	*Gymnopus cervinus* (Henn.) Desjardin & B.A. Perry	Desjardin and Perry (2017)	X	X
Gymnopus gibbosus (Corner) A.W. Wilson, Desjardin & E. Horak	*Gymnopus gibbosus* (Corner) A.W. Wilson, Desjardin & E. Horak	Desjardin and Perry (2017)		X
Gymnopus hirtelloides Desjardin & B.A. Perry	*Gymnopus hirtelloides* Desjardin & B.A. Perry	Desjardin and Perry (2017)	E	
Gymnopus hirtellus (Berk. & Broome) Desjardin & B.A. Perry	*Gymnopus hirtellus* (Berk. & Broome) Desjardin & B.A. Perry	Desjardin and Perry (2017)	X	
Gymnopus irresolutus Desjardin & B.A. Perry	*Gymnopus irresolutus* Desjardin & B.A. Perry	Desjardin and Perry (2017)		E
Gymnopus melanopus A.W. Wilson, Desjardin & E. Horak	*Gymnopus melanopus* A.W. Wilson, Desjardin & E. Horak	Desjardin and Perry (2017)		X
Gymnopus mustachius Desjardin & B.A. Perry	*Gymnopus mustachius* Desjardin & B.A. Perry	Desjardin and Perry (2017)		E
Gymnopus ocellus Desjardin & B.A. Perry	*Gymnopus ocellus* Desjardin & B.A. Perry	Desjardin and Perry (2017)	E	
Gymnopus ocior (Pers.) Antonín & Noordel.	*Agaricus xanthopus* Fr.	Coutinho (1925)		X
Gymnopus pleurocystidiatus Desjardin & B.A. Perry	*Gymnopus pleurocystidiatus* Desjardin & B.A. Perry	Desjardin and Perry (2017)	E	

(continued)

Currently accepted name	Name reported in literature	Citation	P	ST
Gymnopus aff. *polygrammus* (Mont.) J.L. Mata	*Gymnopus* aff. *polygrammus* (Mont.) J.L. Mata	Desjardin and Perry (2017)		X
Gymnopus quercophilus (Pouzar) Antonín & Noordel.	*Marasmius splachnoides* (Hornem.) Fr.	Bresadola and Roumeguère (1890)		X
Gymnopus rodhallii Desjardin & B.A. Perry	*Gymnopus rodhallii* Desjardin & B.A. Perry	Desjardin and Perry (2017)	E	E
Gymnopus ugandensis (Pegler) Desjardin & B.A. Perry	*Gymnopus ugandensis* (Pegler) Desjardin & B.A. Perry	Desjardin and Perry (2017)		X
Marasmiellus ramealis (Bull.) Singer	*Marasmius amadelphus* (Bull.) Fr.	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Mycetinis ignobilis (Berk. & Broome) Desjardin & B.A. Perry	*Mycetinis ignobilis* (Berk. & Broome) Desjardin & B.A. Perry	Desjardin and Perry (2017)		X
Setulipes afibulatus Antonín	*Setulipes afibulatus* Antonín	Desjardin and Perry (2017)		X
Physalacriaceae				
Cyptotrama asprata (Berk.) Redhead & Ginns	*Cyptotrama asprata* (Berk.) Redhead & Ginns	Desjardin and Perry (2017)	X	X
Pleurotaceae				
Pleurotus tuber-regium (Fr.) Singer	*Lentinus tuber-regium* (Fr.) Fr.	Coutinho (1925)		X
	Lentinus descendens Afzel ex Fr.	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Pluteaceae				
Pluteus albidus Beeli	*Pluteus albidus* Beeli	Desjardin and Perry (2018)		X
Pluteus albostipitatus (Dennis) Singer	*Pluteus albostipitatus* (Dennis) Singer	Desjardin and Perry (2018)		X
Pluteus chrysaegis (Berk. & Broome) Petch	*Pluteus chrysaegis* (Berk. & Broome) Petch	Desjardin and Perry (2018)		X
Pluteus hirtellus Desjardin & B.A. Perry	*Pluteus hirtellus* Desjardin & B.A. Perry	Desjardin and Perry (2018)		E
Pluteus losulus Justo	*Pluteus losulus* Justo	Desjardin and Perry (2018)	X	
Pluteus thomensis Desjardin & B.A. Perry	*Pluteus thomensis* Desjardin & B.A. Perry	Desjardin and Perry (2018)		E
Psathyrellaceae				
Candolleomyces albipes (Murrill) Wächter & A. Melzer	*Psathyrella albipes* (Murrill) A.H. Sm.	Desjardin and Perry (2016)		X
Candolleomyces cacao (Desjardin & B.A. Perry) Wächter & A. Melzer	*Psathyrella cacao* Desjardin & B.A. Perry	Desjardin and Perry (2016)		E
Coprinellus aureogranulatus (Uljé & Aptroot) Redhead, Vilgalys & Moncalvo	*Coprinellus aureogranulatus* (Uljé & Aptroot) Redhead, Vilgalys & Moncalvo	Desjardin and Perry (2016)		X
Coprinellus disseminatus (Pers.) J.E. Lange	*Coprinellus disseminatus* (Pers.) J.E. Lange	Desjardin and Perry (2016)		X
	Coprinarius disseminatus (Pers.) P. Kumm.	Coutinho (1925)		X
	Psathyrella disseminata (Pers.) Quél.	Bresadola and Roumeguère (1890)		X
Coprinopsis afronivea Desjardin & B.A. Perry	*Coprinopsis afronivea* Desjardin & B.A. Perry	Desjardin and Perry (2016)		E
Coprinopsis cinerea (Schaeff.) Redhead, Vilgalys & Moncalvo	*Coprinus cinereus* (Schaeff.) Gray	Saccardo and Berlese (1889)		X

(continued)

Currently accepted name	Name reported in literature	Citation	P	ST
Psathyrella oboensis Desjardin & B.A. Perry	*Psathyrella oboensis* Desjardin & B.A. Perry	Desjardin and Perry (2016)		E
Pterulaceae				
Pterulicium xylogenum (Berk. & Broome) Corner	*Pterula subaquatica* Bres. & Roum.	Bresadola and Roumeguère (1890)		X
Schizophyllaceae				
Schizophyllum commune Fr.	*Schizophyllum commune* Fr.	Winter (1886)		X
	Schizophyllum commune var. *multifidum* (Batsch) Cooke	Bresadola and Roumeguère (1890)		X
	Schizophyllum alneum (L.) J. Schröt.	Coutinho (1925)		X
Strophariaceae				
Deconica overeemii (E. Horak & Desjardin) Desjardin & B.A. Perry	*Deconica overeemii* (E. Horak & Desjardin) Desjardin & B.A. Perry	Desjardin and Perry (2016)		X
Deconica protea (Kalchbr.) Desjardin & B.A. Perry	*Deconica protea* (Kalchbr.) Desjardin & B.A. Perry	Desjardin and Perry (2016)		X
Hypholoma aff. *subviride* (Berk. & M.A. Curtis) Dennis	*Hypholoma* aff. *subviride* (Berk. & M.A. Curtis) Dennis	Desjardin and Perry (2016)		X
Tricholomataceae s.l.				
Tricholomopsis aurea (Beeli) Desjardin & B.A. Perry	*Tricholomopsis aurea* (Beeli) Desjardin & B.A. Perry	Desjardin and Perry (2017)		X
ORDER BOLETALES				
Sclerodermataceae				
Scleroderma dictyosporum Pat.	*Scleroderma dictyosporum* Pat.	Desjardin and Perry (2015b)	X	
ORDER STEREOPSIDALES				
Stereopsidaceae				
Stereopsis radicans (Berk.) D.A. Reid	*Thelephora radicans* Berk.	Bresadola and Roumeguère (1890), Coutinho (1925)		X
ORDER POLYPORALES				
Cerrenaceae				
Cerrena hydnoides (Sw.) Zmitr.	*Trametes hydnoides* (Sw.) Fr.	Bresadola and Roumeguère (1890)		X
Fomitopsidaceae				
Antrodia albida (Fr.) Donk	*Trametes sepium* Berk.	Coutinho (1925)		X
Daedalea newtonii Bres. & Roum.	*Daedalea newtonii* Bres. & Roum.	Bresadola and Roumeguère (1890), Coutinho (1925)	E	E
Daedalea quercina (L.) Pers.	*Daedalea quercina* (L.) Pers.	Bresadola and Roumeguère (1890)		X
Ranadivia modesta (Kunze ex Fr.) Zmitr.	*Polyporus atypus* Lév.	Bresadola and Roumeguère (1890)		X
Incrustoporiaceae				
Tyromyces albogilvus (Berk. & M.A. Curtis) Murrill	*Polyporus albogilvus* Berk. & M.A. Curtis	Winter (1886), Coutinho (1925)		X
Tyromyces squamulosus (Bres.) Ryvarden	*Polyporus squamosus* Bres.	Bresadola (1890)		E
Irpicaceae				
Flavodon flavus (Klotzsch) Ryvarden	*Irpex flavus* Klotzsch	Bresadola and Roumeguère (1890), Coutinho (1925)		X

(continued)

Currently accepted name	Name reported in literature	Citation	P	ST
Meripilaceae				
Rigidoporus lineatus (Pers.) Ryvarden	*Polyporus zonalis* Berk.	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Rigidoporus microporus (Sw.) Overeem	*Polyporus auberianus* Mont.	Winter (1886), Bresadola and Roumeguère (1890), Coutinho (1925)		X
Meruliaceae				
Steccherinum rawakense (Pers.) Banker	*Hydnum rawakense* Pers.	Saccardo and Berlese (1889)		X
Phanerochaetaceae				
Bjerkandera adusta (Pers.) P. Karst.	*Polyporus adusta* (Willd.) Fr.	Bresadola (1890)		X
Bjerkandera fumosa (Pers.) P. Karst.	*Polyporus imberbis* (Bull.) Fr.	Bresadola (1890)		X
Porostereum spadiceum (Pers.) Hjortstam & Ryvarden	*Stereum spadiceum* var. *venosum* Quél.	Bresadola and Roumeguère (1890)		X
Terana caerulea (Schrad. ex Lam.) Kuntze	*Corticium caeruleum* (Schrad. ex Lam.) Fr.	Bresadola and Roumeguère (1890)		X
Podoscyphaceae				
Podoscypha involuta (Klotzsch ex Fr.) Imazeki	*Stereum involutum* Klotzsch ex Fr.	Bresadola and Roumeguère (1890)	X	
	Stereum pulchellum Sacc. & Berl.	Saccardo and Berlese (1889)	X	
Polyporaceae				
Asterotus dealbatus (Berk.) Singer	*Lentinus sprucei* (Berk.) Cout.	Coutinho (1925)		X
	Panus sprucei Berk.	Bresadola and Roumeguère (1890)		X
Coriolopsis badia (Berk.) Murrill	*Trametes badia* Berk.	Bresadola and Roumeguère (1890)	X	
Coriolopsis occidentalis (Klotzsch) Murrill	*Polystictus occidentalis* (Klotzsch) Sacc.	Coutinho (1925)		X
Coriolus sprucei (Berk.) G. Cunn.	*Trametes sprucei* Berk.	Coutinho (1925)		X
Earliella scabrosa (Pers.) Gilb. & Ryvarden	*Trametes sanguinea* (Klotzsch) Pat.	Coutinho (1925)		X
	Daedalea sanguinea Klotzsch	Winter (1886)		X
Favolus grammocephalus (Berk.) Imazeki	*Favolus multiplex* Lév.	Bresadola and Roumeguère (1890), Coutinho (1925)		X
	Polyporus grammocephalus Berk.	Winter (1886)		X
Favolus jacobeus Sacc. & Berl.	*Favolus jacobeus* Sacc. & Berl.	Saccardo and Berlese (1889), Bresadola and Roumeguère (1890)	E	E
Favolus platyporus Berk. & M.A. Curtis	*Favolus platyporus* Berk. & M.A. Curtis	Bresadola and Roumeguère (1890)		X
Favolus tenuiculus P. Beauv.	*Favolus tesselatus* Mont.	Coutinho (1925)		X
	Hexagonia tenuicola (P. Beauv.)	Bresadola and Roumeguère (1890)		X
	Favolus brasiliensis (Fr.) Fr.	Bresadola (1891)		X
Fomes amboinensis (Lam.) Cooke	*Fomes amboinensis* (Lam.) Cooke	Coutinho (1925)		X

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Currently accepted name	Name reported in literature	Citation	P	ST
Fomes ferrugineobrunneus Cout.	*Fomes ferrugineobrunneus* Cout.	Coutinho (1925)		E
Fomes fulvellus (Bres.) Sacc.	*Ganoderma fulvellum* Bres.	Bresadola and Roumeguère (1890)		X
Funalia caperata (Berk.) Zmitr. & Malysheva	*Polyporus caperatus* Berk.	Winter (1886)		X
Ganoderma amboinense (Lam.) Pat.	*Ganoderma amboinense* (Lam.) Pat.	Bresadola and Roumeguère (1890)		X
Ganoderma applanatum (Pers.) Pat.	*Fomes applanatus* (Pers.) Fr.	Coutinho (1925)		X
Ganoderma australe (Fr.) Pat.	*Ganoderma australe* (Fr.) Pat.	Bresadola and Roumeguère (1890)		X
	Polyporus australis Fr.	Winter (1886)		X
Ganoderma lucidum (Curtis) P. Karst.	*Ganoderma lucidum* (Curtis) P. Karst.	Bresadola and Roumeguère (1890)		X
	Fomes lucidus (Curtis) Sacc.	Coutinho (1925)		X
	Polyporus lucidus (Curtis) Fr.	Winter (1886)		X
Ganoderma multiplicatum (Mont.) Pat.	*Ganoderma multiplicatum* (Mont.) Pat.	Bresadola and Roumeguère (1890)	X	
	Fomes multiplicatus (Mont.) Sacc.	Coutinho (1925)		X
Ganoderma ochrolaccatum (Mont.) Pat.	*Ganoderma ochrolaccatum* (Mont.) Pat.	Bresadola and Roumeguère (1890)		X
	Fomes ochrolaccatus (Mont.) Pat.	Coutinho (1925)		X
Ganoderma oerstedii (Fr.) Torrend	*Fomes oerstedii* (Fr.) Cooke	Coutinho (1925)		X
Hexagonia cucullata (Mont.) Murrill	*Favolus cucullatus* Mont.	Bresadola and Roumeguère (1890)		X
Hexagonia purpurascens (Berk. & M.A. Curtis) Murrill	*Favolus purpurascens* Berk. & M.A. Curtis	Winter (1886)		X
Leiotrametes menziesii (Berk.) Welti & Courtec.	*Polystictus kurzianus* Cooke	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Lentinus striatulus Lév.	*Lentinus flaccidus* Fr.	Fries (1851)		X
Lentinus thomensis Cout.	*Lentinus thomensis* Cout.	Coutinho (1925)		E
Lentinus villosus Klotzsch	*Lentinus villosus* Klotzsch	Winter (1886), Bresadola and Roumeguère (1890)	X	X
Lenzites applanatus (Klotzsch) Fr.	*Lenzites applanatus* (Klotzsch) Fr.	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Lenzites asperus (Klotzsch) Fr.	*Lenzites asperus* (Klotzsch) Fr.	Winter (1886), Bresadola and Roumeguère (1890), Coutinho (1925)		X
Lenzites deplanatus Fr.	*Lenzites deplanatus* Fr.	Winter (1886)		X
Lenzites repandus Fr.	*Lenzites repandus* Fr.	Winter (1886), Coutinho (1925)		X
Lopharia cinerascens (Schwein.) G. Cunn.	*Lopharia lirellosa* Kalchbr. & MacOwen	Coutinho (1925)		X
Microporus affinis (Blume & T. Nees) Kuntze	*Polystictus affinis* (Blume & T. Nees) Fr.	Roumeguère (1889)		X
	Polyporus flabelliformis Klotzsch	Winter (1886)		X
	Polystictus flabelliformis Fr.	Bresadola and Roumeguère (1890), Coutinho (1925)		X

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Currently accepted name	Name reported in literature	Citation	P	ST
	Polystictus carneoniger (Berk. ex Cooke) Cooke	Bresadola and Roumeguère (1890)	X	
Microporus xanthopus (Fr.) Kuntze	*Polystictus xanthopus* (Fr.) Fr.	Saccardo and Berlese (1889), Bresadola and Roumeguère (1890)	X	
Panus neostrigosus Drechsler-Santos & Wartchow	*Lentinus strigosus* Fr.	Bresadola and Roumeguère (1890)	X	
Perenniporia ohiensis (Berk.) Ryvarden	*Trametes ohiensis* Berk.	Coutinho (1925)		X
Polyporus amboinensis Fr.	*Polyporus amboinensis* Fr.	Winter (1886)		X
Polyporus dictyopus Mont.	*Polyporus dictyopus* Mont.	Bresadola and Roumeguère (1890)		X
Polyporus philippinensis Berk.	*Favolus philippinensis* (Berk.) Sacc.	Coutinho (1925)		X
Polyporus rugulosus Lév.	*Polyporus rugulosus* Lév.	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Polyporus torquescens Sacc. & Berl.	*Polyporus torquescens* Sacc. & Berl.	Saccardo and Berlese (1889)		E
Polyporus venezuelae Berk. & M.A. Curtis ex Cooke	*Polyporus venezuelae* Berk. & M.A. Curtis ex Cooke	Winter (1886)		X
Pseudofavolus polygrammus (Mont.) G. Cunn.	*Hexagonia polygramma* (Mont.) Fr.	Winter (1886)		X
Pycnoporus sanguineus (L.) Murrill	*Polystictus sanguineus* (L.) G. Mey.	Coutinho (1925)		X
Szczepkamyces campestris (Quél.) Zmitr.	*Trametes campestris* Quél.	Bresadola and Roumeguère (1890)		X
Trametes cubensis (Mont.) Sacc.	*Trametes cubensis* (Mont.) Sacc.	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Trametes discolor Sacc. & Berl.	*Trametes discolor* Sacc. & Berl.	Saccardo and Berlese (1889)	E	
Trametes gibbosa (Pers.) Fr.	*Trametes gibbosa* (Pers.) Fr.	Coutinho (1925)		X
Trametes hirsuta (Wulfen) Lloyd	*Polystictus hirsutus* (Wulfen) Fr.	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Trametes meyenii (Klotzsch) Lloyd	*Daedalea ochracea* Kalchbr.	Coutinho (1925)		X
Trametes pubescens (Schumach.) Pilát	*Polystictus velutinus* (Pers.) Sacc.	Saccardo and Berlese (1889), Bresadola and Roumeguère (1890), Coutinho (1925)		X
Trametes strumosa (Fr.) Zmitr., Wasser & Ezhov	*Polyporus strumosus* Fr.	Coutinho (1925)		X
Trametes versicolor (L.) Lloyd	*Polysticus versicolor* (L.) Fr.	Bresadola and Roumeguère (1890)		X
Trametes villosa (Sw.) Kreisel	*Polystictus pinsitus* (Fr.) Fr.	Fries (1851)		X
Truncospora oboensis Decock	*Truncospora oboensis* Decock	Decock (2011)		E
Xenasmataceae				
Xenasmatella vaga (Fr.) Stalpers	*Phlebia vaga* Fr.	Coutinho (1925)		X
ORDER THELEPHORALES				
Bankeraceae				
Phaeodon thomensis Cout.	*Phaeodon thomensis* Cout.	Coutinho (1925)		E
ORDER RUSSULALES				

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Currently accepted name	Name reported in literature	Citation	P	ST
Auriscalpiaceae				
Lentinellus cochleatus (Pers.) P. Karst	*Lentinus cochleatus* var. *occidentalis* (Pers.) Fr.	Fries (1851)		X
Lentinellus flabelliformis (Bolton) S. Ito	*Lentinus flabelliformis* (Bolton) Fr.	Coutinho (1925)		X
Hericiaceae				
Laxitextum bicolor (Pers.) Lentz	*Stereum bicolor* (Pers.) Fr.	Bresadola and Roumeguère (1890)		X
Peniophoraceae				
Scytinostroma duriusculum (Berk. & Broome) Donk	*Stereum duriusculum* Berk. & Broome	Bresadola and Roumeguère (1890)		X
Scytinostroma quintasianum (Bres. & Roum.) Nakasone	*Corticium quintasianum* Bres. & Roum.	Bresadola and Roumeguère (1890)		E
Stereaceae				
Stereum amphirhytes Sacc. & Berl.	*Stereum amphirhytes* Sacc. & Berl.	Saccardo and Berlese (1889), Roumeguère (1889)		E
Stereum bellum (Kunze) Sacc.	*Stereum bellum* (Kunze) Sacc.	Winter (1886), Bresadola and Roumeguère (1890)		X
Stereum hirsutum (Willd.) Pers.	*Stereum hirsutum* (Willd.) Pers.	Bresadola and Roumeguère (1890)		X
Stereum kalchbrenneri Sacc.	*Stereum kalchbrenneri* Sacc.	Saccardo and Berlese (1889), Bresadola and Roumeguère (1890)		X
Stereum lobatum (Kunze ex Fr.) Fr.	*Stereum lobatum* (Kunze ex Fr.) Fr.	Winter (1886), Bresadola and Roumeguère (1890), Coutinho (1925)		X
Stereum obliquum Mont. & Berk.	*Stereum obliquum* Mont. & Berk.	Bresadola and Roumeguère (1890)		X
Stereum ostrea (Blume & T. Nees) Fr.	*Stereum fasciatum* (Schwein.) Fr.	Winter (1886), Bresadola and Roumeguère (1890), Coutinho (1925)	X	X
Stereum versicolor (Sw.) Fr.	*Stereum versicolor* (Sw.) Fr.	Winter (1886)		X
Xylobolus subpileatus (Berk. & M.A. Curtis) Boidin	*Stereum subpileatum* Berk. & M.A. Curtis	Winter (1886), Bresadola and Roumeguère (1890)		X
ORDER HYMENOCHAETALES				
Hymenochaetaceae				
Coltricia oboensis Decock	*Coltricia oboensis* Decock	Decock (2013)		E
Fuscoporia ferruginosa (Schrad.) Murrill	*Poria ferruginosa* (Schrad.) P. Karst.	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Fuscoporia senex (Nees & Mont.) Gohb.-Nejh.	*Fomes senex* (Nees & Mont.) Cooke	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Hydnoporia tabacina (Sowerby) Spirin, Miettinen & K.H. Larss.	*Hymenochaete tabacina* (Sowerby) Lév.	Bresadola and Roumeguère (1890)		X
Hymenochaete damicornis (Link) Lév.	*Hymenochaete damicornis* (Link) Lév.	Bresadola and Roumeguère (1890)		X
Hymenochaete tenuissima Berk.	*Hymenochaete tenuissima* Berk.	Bresadola and Roumeguère (1890)		X
Inonotus sideroides (Lév.) Ryvarden	*Polystictus sideroides* (Lév.) Cooke	Coutinho (1925)		X
Phellinus gilvus (Schwein.) Pat.	*Polyporus gilvus* (Schwein.) Fr.	Roumeguère (1889), Saccardo and Berlese		X

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Currently accepted name	Name reported in literature	Citation	P	ST
		(1889), Bresadola and Roumeguère (1890)		
	Polyporus gilvus var. *scruposus* (Fr.) Henn.	Bresadola and Roumeguère (1890)		X
	Polyporus scruposus Fr.	Winter (1886)		X
	Polyporus scruposus var. *isidioides* (Berk.) Cooke	Winter (1886)		X
	Polyporus licnoides Mont.	Bresadola and Roumeguère (1890)		X
Phellinus igniarius (L.) Quél.	*Polyporus igniarius* (L.) Fr.	Winter (1886)		X
	Fomes igniarius (L.) Fr.	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Phylloporia pectinata (Klotzsch) Ryvarden	*Fomes pectinatus* (Klotzsch) Gillet	Bresadola and Roumeguère (1890), Coutinho (1925)		X
Polystictus albidocinereus Cout.	*Polystictus albidocinereus* Cout.	Coutinho (1925)		E
Polystictus russogramme (Berk.) Cooke	*Polyporus russogramme* Berk.	Winter (1886)		X
Rickenellaceae				
Cotylidia aurantiaca (Pat.) A.L. Welden	*Thelephora aurantiaca* Pers.	Bresadola and Roumeguère (1890)		X
	Thelephora affinis Berk. & M.A. Curtis	Winter (1886)		X
ORDER PHALLALES				
Phallaceae				
Blumenavia angolensis (Welw. & Curr.) Dring	*Blumenavia angolensis* (Welw. & Curr.) Dring	Degreef et al. (2013), Desjardin and Perry (2015b)		X
Clathrus parvulus Bres. & Roum.	*Clathrus parvulus* Bres. & Roum.	Bresadola and Roumeguère (1890)		E
Mutinus bambusinus (Zoll.) E. Fisch.	*Mutinus bambusinus* (Zoll.) E. Fisch.	Desjardin and Perry (2015b)	X	
Mutinus zenkeri (Henn.) E. Fisch.	*Mutinus zenkeri* (Henn.) E. Fisch.	Degreef et al. (2013), Desjardin and Perry (2015b)	X	X
Phallus drewesii Desjardin & B.A. Perry	*Phallus drewesii* Desjardin & B.A. Perry	Desjardin and Perry (2009)		E
Phallus indusiatus Vent.	*Phallus indusiatus* Vent.	Desjardin and Perry (2015b)	X	
ORDER GOMPHALES				
Gomphaceae				
Ramaria henriquesii (Bres. & Roum.) Corner	*Clavaria henriquesii* Bres. & Roum.	Bresadola and Roumeguère (1890)		X
Ramaria mollearianа (Bres. & Roum.) Corner	*Lachnocladium mollerianum* Bres. & Roum.	Bresadola and Roumeguère (1890)		X
Ramaria polypus Corner	*Ramaria polypus* Corner	Desjardin and Perry (2015b)		X
ORDER GEASTRALES				
Geastraceae				
Geastrum fimbriatum Fr.	*Geastrum fimbriatum* Fr.	Desjardin and Perry (2015b)		X

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Currently accepted name	Name reported in literature	Citation	P	ST
Geastrum schweinitzii (Berk. & M.A. Curtis) Zeller	*Geastrum schweinitzii* (Berk. & M.A. Curtis) Zeller	Desjardin and Perry (2015b)	X	X
Geastrum velutinum Morgan	*Geastrum velutinum* Morgan	Desjardin and Perry (2015b)		X
ORDER TRECHISPORALES				
Hydnodontaceae				
Trechispora havencampii (Desjardin & B.A. Perry) Meiras-Ottoni & Gibertoni	*Scytinopogon havencampii* Desjardin & B.A. Perry	Desjardin and Perry (2015a)	E	
ORDER AURICULARIALES				
Auriculariaceae				
Auricularia auricula-judae (Bull.) Quél.	*Auricularia auricula-judae* (Bull.) Quél.	Coutinho (1925)		X
	Hirneola auricula-judae (Bull.) Berk.	Bresadola (1891)		X
	Laschia tremellosa Fr.	Winter (1886)		X
Auricularia fuscosuccinea (Mont.) Henn.	*Auricularia fuscosuccinea* (Mont.) Henn.	Coutinho (1925)		X
	Hirneola fuscosuccinea (Mont.) Sacc.	Bresadola and Roumeguère (1890)		X
Auricularia nigricans (Sw.) Birkebak, Looney & Sánchez-García	*Auricularia polytricha* (Mont.) Sacc.	Coutinho (1925)		X
	Hirneola polytricha (Mont.) Fr.	Bresadola and Roumeguère (1890)		X
ORDER CANTHARELLALES				
Aphelariaceae				
Aphelaria subglobispora P. Roberts	*Aphelaria subglobispora* P. Roberts	Desjardin and Perry (2015b)	X	
Cantharellaceae				
Pseudocraterellus undulatus (Pers.) Rauschert	*Craterellus crispus* (Bull.) Berk.	Bresadola (1891)		X
Hydnaceae				
Clavulina vanderystii (Bres.) Corner	*Clavulina vanderystii* (Bres.) Corner	Desjardin and Perry (2015b)	X	
INCERTAE SEDIS—**insufficient data, problematic nomenclature**				
Agaricus (*Collybia*) *diffractus* Cout. *nom. illeg.*	Competing epithet; not treated since publication	Coutinho (1925)		E
Agaricus (*Galera*) *macromastes* Fr.	Not treated since publication	Fries (1851) (see Desjardin and Perry (2016))		E
Agaricus (*Mycena*) *rufescens* Cout. *nom. illeg.*	Competing epithet; not treated since publication	Coutinho (1925) (see Cooper et al. (2018))		E
Agaricus (*Naucoria*) *papularis* Fr.	Not treated since publication	Fries (1851) (see Desjardin and Perry (2016))		E
Panus troglodytes Fr.	Not treated since publication	Fries (1851)		E
Polystictus affinis var. *cyathoidea* Sacc. & Berl.	Not treated since publication	Saccardo and Berlese (1889), Roumeguère (1889)		E
Polystictus mollerianus Sacc., Berl. & Roum.	Not treated since publication	Saccardo and Berlese (1889)		E

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