Competing sexual-asexual generic names in Agaricomycotina (Basidiomycota) with recommendations for use

Joost A. Stalpers1, Scott A. Redhead2, Tom W. May3, Amy Y. Rossman4*, Jo Anne Crouch5, Marc A. Cubeta6, Yu-Cheng Dai7, Roland Kirschner8, Gitta Jutta Langer9, Karl-Henrik Larsson10, Jonathan Mack2, Lorelei L. Norvell11, Franz Oberwinkler12, Viktor Papp13, Peter Roberts14, Mario Rajchenberg15,16, Keith A. Seifert17 and R. Greg Thorn18

Abstract

With the change to one scientific name for fungal taxa, generic names typified by species with sexual or asexual morph types are being evaluated to determine which names represent the same genus and thus compete for use. In this paper generic names of the Agaricomycotina (Basidiomycota) were evaluated to determine synonymy based on their type. Forty-seven sets of sexually and asexually typified names were determined to be congeneric and recommendations are made for which generic name to use. In most cases the principle of priority is followed. However, 16 generic names are recommended for use that do not have priority and thus need to be protected: Alectorocystis over Matula; Armillaria over Acurtis and Rhizomorpha; Asterophora over Ugola; Botryobasidium over Acladium, Allescheriella, Alysidium, Haploatrichum, Physospora, and Sporoccephalum; Coprinellus over Ozonium; Coprinopsis over Racophylus; Dendrocollybia over Sclerostilbum and Tilachlidiopsis; Diaconthodes over Bometina; Echinoporia over Echinodia; Neolentinus over Digitellus; Postia over Psychogaster; Ropa over Sporotrichum; Scytinostroma over Artocreas, Michenera, and Stereolomata; Tulasnella over Hormonema; Typhula over Sclerotium; and Wolfiporia over Gemmularia and Pachyma. Nine species names are proposed for protection: Botryobasidium aureum, B. conspersum, B. croceum, B. simile, Pellicularia lembosporum (syn. B. lembosporum), Phanerochaete chrysosporium, Polyporus metaromorphosus (syn. Riopa metamorphosa), Polyporus mylittae (syn. Laccocephalum mylittae), and Polyporus psychogaster (syn. Postia psychogaster). Two families are proposed for protection: Psathyrellaceae and Typhulaceae. Three new species names and 30 new combinations are established, and one lectotype is designated.

Keywords: Basidiomycetes, Dual nomenclature, Pleomorphic fungi, Taxonomy, Unit nomenclature, New taxa

INTRODUCTION

With the change to one scientific name for fungal taxa in accordance with the International Code of Nomenclature for algae, fungi, and plants (McNeill et al. 2012; Turland et al. 2018), there is a need to determine which generic name should be applied when two or more generic names typified by types representing different morphs are congeneric. Formal recommendations about which generic name to use have been made by specialized Subcommissions or Working Groups (WG) of the International Commission for the Taxonomy of Fungi (ICTF) as discussed by May (2017). A number of publications have recommended generic names for use in major groups of Ascomycota, including Sordariomycetes such as Diaporthales (Rossman et al. 2015a), Hypocreales (Rossman et al. 2013; Quandt et al. 2014; Kepler et al. 2017), Magnaporthales (Zhang et al. 2016), Microascales and Ophiostomatales (De Beer et al. 2013), Xylariaceae (Stadler et al. 2013) and remaining Sordariomycetes
(Rěblová et al. 2016), as well as *Dothideomycetes* (Rossman et al. 2015b), *Eurotiales* (Samson et al. 2014; Visagie et al. 2014), *Leotiomycetes* including *Erysiphales* (Braun 2013; Johnston et al. 2014), *Pezizomycetes* (Healy et al. 2016), yeast fungi (Daniel et al. 2014), and overlooked generic names in the *Ascomycota* (Rossman et al. 2016a). Within the *Basidiomycota* a paper on the *Pucciniomycotina* and *Ustilaginomycotina* has been published (Aime et al. 2018). Where recommended names do not follow the principle of priority, such names need to be confirmed for protection by the Nomenclature Committee for Fungi (NCF) appointed by the International Mycological Congress and ultimately by the General Committee on Nomenclature appointed by the International Botanical Congress. Names approved so far by the NCF have been compiled by May (2017). Once approved, protected names appear in the on-line Appendix to the *International Code of Nomenclature for algae, fungi, and plants* (Wiersema et al. 2020).

Generic names of *Agaricomycotina* representing sexually and asexually typified genera that compete for use have been evaluated by the *Homobasidiomycetes* WG of the ICTF*. The original members of this group were assembled prior to compilation of the list of names needing assessment and once the list was prepared, additional mycologists who have an interest in the nomenclature of this group were involved, leading to the recommendations made herein about which generic name to use. The comprehensive list of sexual-asexual generic names by Wijayawardene et al. (2012) was used as the initial starting point for determining which generic names in the *Agaricomycotina* compete for use. Citations for generic names and their types are based on *Index Fungorum* (Kirk 2020). Each set of generic names was evaluated using the current literature about the phylogenetic placement of their types to determine if the names are congeneric. A recommendation for use is presented based on consideration of such factors as priority, number of species, required name changes, and frequency of citations in the literature based primarily on Google Scholar searches (GSS). Because there are relatively few competing generic names, they are listed in alphabetical order rather than by fungal order.

Forty-seven sets of generic names were identified and evaluated. Details about each set of generic names and the basis for each decision are presented below with an S indicating a sexually typified name, an A indicating an asexually typified name, and A/S indicating either ambiguity or both. The citation for each generic name, their types, accepted name of type, and action required are listed in Table 1. Many generic names recommended for use have priority by date with relatively few or no name changes required. However, 16 generic names recommended for use do not have priority and are thus recommended for protection: *Aleurocystis* over *Matula*; *Aunnillaria* over *Acurtis* and *Rhizomorpha*; *Asterophora* over *Ugola*; *Botryobasidium* over *Acladium*, *Allescheriella*, *Alysidiun*, *Haplotrichium*, *Physospora*, and *Sporocephalium*; *Coprinellus* over *Ozonium*; *Coprinopsis* over *Rhacophyllus*; *Dendrocollybia* over *Sclerotilbum* and *Tilachlidiopsis*; *Diascanthodes* over *Borinetina*; *Echinoporia* over *Echinodia*; *Neoellinuss* over *Digitelis*; *Postia* over *Ptychogaster*; *Rioa* over *Sporotrichum*; *Scytinosstoma* over *Artocreas*, *Michenera*, and *Stereofomes*; *Tulasnella* over *Hornomyces*; *Typhula* over *Sclerotium*; and *Wolfiporia* over *Gemnularia* and *Pachyma*. In addition, nine specific names are proposed for protection: *Botryobasidium aureum*; *B. conspersum*; *B. croceum*; *B. simile*, *Pellicularia lembosporum* (syn. *B. lembosporum*), *Phanerochaete chrysosporium*, *Polyporus metamorphosus* (*Rioa* *metamorphosa*), *P. mylittae* (*Lacoccephalum mylittae*) and *P. ptychogaster* (*Postia ptychogaster*) as listed in Table 2. Two family names are proposed for protection: *Psathyrellaceae* over *Zeroveaecycotina* and *Typhulaceae* over *Sclerotiaecae* as listed in Table 3. Three new species names and 30 new combinations are established and one lectotype is designated.

**GENERIC AND FAMILY NAMES RECOMMENDED FOR USE IN AGARICOMYCOTINA**

*Use Aegerita Pers. 1794 (A) rather than Crocysporium Corda 1837 or Bulbillomyces Jülich 1974 (S)*

The monotypic genus *Bulbillomyces*, typified by *B. farinosus*, was described as the sexual morph of *A. candida* (Jülich 1974), the type of *Aegerita*, thus these generic names are synonyms. Lyman (1907) had earlier demonstrated the link between the sexual and asexual morphs using cultures and transferred *Aegerita candida* to *Peniophora* as *P. candida* (Pers.) Lyman 1907. Although two species were originally included in the protologue of *Aegerita*, Donk (1962) explains the history and selection of *A. candida* as type by Brongniart (1824, 1825), although Donk’s interpretation of validation dates he used in 1962 must be adjusted by application of the current Shenzhen Code (Turland et al. 2018). Forty names have been described in *Aegerita*, although some of these have been found to belong outside of *Aegerita* in both *Ascomycota* and *Basidiomycota* (Kirk 2020). Within *Aegerita* only *A. candida* (as *B. farinosus*) has been sequenced. Recently Justo et al. (2017) showed that *A. candida* (as *B. farinosus*) was sister to the type of *Hypnochnicium*, *H. bombycinum*. The name *Aegerita candida* is used about equally with *B. farinosus* (GSS *A. candida* = 131, *B. farinosus* = 105).

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*ICTF Homobasidiomycetes* WG initial membership: Conveners Tom May & Scott Redhead, Members Nico Dam, Ursula Eberhardt, Karl-Henrik Larsson, Ludmila Marvanová, Luis Morgado, Bernard Moyersoen, Lorelei Norvell, Manon Neilen, Joost Stalpers, and Benjamin Stuelow.
Table 1  Recommended names of genera of *Agaricomycotina* among those that compete for use. The recommended accepted name is in bold; see text for the rationale for these decisions. For each name this list provides the author, its date and place of publication, type, its basionym, their dates of publication and the currently accepted name, if different. The action required is indicated in the last column, specifically approval by the Nomenclature Committee for Fungi (NCF) for those generic names that do not have priority and thus need protection.

| Recommended generic name | Synonymous alternate morph generic name(s) | Action required |
|--------------------------|------------------------------------------|-----------------|
| **Agerita** Pers. in Neues Mag. Bot. 1: 120. 1794, nom. sanct., Fr., Syst. Mycol. 1: 41. 1821. Typus: *A. candida* Pers. 1794, nom. sanct., Fr. | Crocyporum Corda, Icon. Fung. 1: 3. 1837. Typus: *Crocyporum aerugno* Corda 1837, now regarded as *Agerita candida* Pers. 1794, nom. sanct., Fr. Bulbiliomyces Jülich in Persoonia 8: 69. 1974. Typus: *B. furaceus* (Bres.) Jülich 1974, basionym *Kleistia furaceia* Bres. 1903, now regarded as *Agerita candida* Pers. 1794, nom. sanct., Fr. | None. |
| **Aleurocytis** Lloyd ex G. Cunn. in Trans. Roy. Soc. New Zealand 84: 234. 1956. Typus: *A. halophilae* (Berk. & Broome) G. Cunn. 1956, basionym: *Corticium halophilae* Berk. & Broome 1875. | Matula Masssee in J. Roy. Microscop. Soc. London, ser. 2 8: 176. 1888. Typus: *M. poroniforme* (Berk. & Broome) Masssee 1888, basionym: *Arctotus poroniforme* Berk. & Broome 1875, now regarded as *Aleurocytis Rollelens* (Berk. & Broome) G. Cunn. 1956. | Protection needed by NCF. |
| **Armillaria** (Fr) Staude, Schwämme Mitteldeutschl 28: 130. 1857, basionym: *A. auricula* [trib.] ([unranked]) *Armillaria* Fr. 1821, nom. sanct. Typus: *A. mellea* (Vahl) P. Kumm. 1871, basionym: *Agaricus melleus* Vahl 1790, nom. sanct., Fr. | Rhizomorpho Roth in Ann. Bot. (Usteri) 1: 7. 1791, nom. sanct., Fr. Typus: *R. fragilis* Roth 1791, now regarded as *Armillaria mellea* (Vahl) P. Kumm. 1871. Acunti Fr., Summa Veg. Scand., Sectio Post. (Stockholm) 337. 1849, now regarded as *Armillaria mellea* (Vahl) P. Kumm. 1871. | Protection needed by NCF. |
| **Arthrosporella** Singer in Fl. Neotrop. Monogr. 3: 17. 1970. Typus: *A. ditopa* (Singer) Singer 1970, basionym: *Armillariella ditopa* Singer 1951. | Nastocaulovina Singer in Fl. Neotrop. Monogr. 3: 18. 1970. Typus: *N. ditopa* Singer 1970, now regarded as *Arthrosporella ditopa* (Singer) Singer 1951. | None. |
| **Asterophora** Ditmar in J. Bot. (Schaden) 3: 56. 1808, nom. sanct., Fr., Syst. Mycol. 3: 205. 1829. Typus: *A. lykoperoxidis* (Bull.) Ditmar 1809, nom. cons., basionym: *Agaricus lykoperoxidis* Bull. 1784, nom. cons. | Ugojo Adams, Fam. PL 2: 5. 1763. Typus: *Asterophora physisporoides* Fr. 1817, nom. sanct., Fr., synonym: *Ugojo physisporoides* (Fr) Redhead & Seifert 2001, now regarded as *Asterophora lykoperoxidis* (Bull.) Ditmar 1809. Nyctalis Fr., Syst. Orb. Veg. 1: 78. 1825. Typus: *N. parasitica* (Bull) Fr. 1838, basionym: *Agaricus parasiticus* Bull. 1791, nom. sanct., Fr., now regarded as *Asterophora parasitica* (Bull) Singer 1951. | Protection needed by NCF. |
| **Athelia** Pers., Traité-Champ. Comest. 57. 1817. Typus: *A. ephylea* Pers. 1818 (Thelephora ephylea (Pers.) Fr., nom sanct., Fr.) | Fibulohizotonia G.C. Adams & Kropp in Mycologia 68: 464. 1976. Typus: *F. carotae* (Rader) G.C. Adams & Kropp 1996, basionym *Rhizoctonia carotae* Rader 1948, now regarded as *Athelia arachnoidea* (Burt) Jülich 1972. | None. |
| **Bjerkania** P. Karst. in, Meddelanden af Societas pro Fauna et Flora Fennica 5: 38. 1879. Typus: *Bjerkania adusta* (Willk.) P. Karst. 1879, basionym: *Boletus adustus* Willd. 1878, nom. sanct., Fr. | Geotrichopsis Tzean & Estey in Mycological Research 95: 1351. 1991. Typus: *G. mycocalvicolor* Tzean & Estey 1991. | None. |
| **Botryobasidium** Donk in Meded. Ned. Mycol. Ver. 18–20: 116. 1931. Typus: *B. subcoronatum* (Höhn. & Litsch.) Donk 1931, basionym: *Corticium subcoronatum* Höhn. & Litsch. 1907. | Acladium Link in Ges. Naturf. Freunde Berlin Mag. 3: 11. 1809. Typus: *A. conspersum* Link 1809, now regarded as *Botryobasidium conspersum* J. Erikss. 1958. Alysidum Kunze in Kunze & Schmidt, Mykol. Hefte 1: 11. 1817. Typus: *A. fulvum* Kunze & J.C. Schmidt 1817, nom. sanct., Fr., now regarded as *Botryobasidium aureum* Parmasto 1965. Haplotrichum Link in Willd., Sp. PI. 6(1): 52. 1824. Typus: *H. capitatum* Link 1824, now regarded as *Botryobasidium capitatum* (Link) Rossman & W.C. Allen 2016. Sporotrichum Chevall., Fl. Gén. Env. Paris 1: 59. 1825. Typus: *S. capitatum* (Link) Chevall. 1825, basionym: *Haplotrichum capitatum* Link 1824, now regarded as *Botryobasidium capitatum* (Link) Rossman & W.C. Allen 2016. Physospora Fr., Fl. Scan. 360. 1837. Typus: *Sporotrichum rubiginosum* Fr. 1832, now regarded as *Botryobasidium rubiginosum* (Fr) W.C. Allen & Rossman 2016. Allelicheriella Höhn. in Hedwigia 36: 244. 1897. Typus: *A. urensoides* Höhn. 1897, now regarded as | Protection needed by NCF. |
Table 1 (Continued)

| Recommended generic name | Synonymous alternate morph generic name(s) | Action required |
|--------------------------|-------------------------------------------|-----------------|
| _Botryobasidium croceum_ Lentz. 1967. | Neoacladium P.N. Singh & S.K. Singh in Fungal Diversity 96: 189. 2019. | Protection needed by NCF. |
| _Deconica_ (W.G. Sm.) P. Karst. in Bidrag Kännedom Finlands Natur Folk 32: 515. 1879, basionym: Agaricus subgen. Deconica W.G. Sm. 1870. | Typos: N. indicus P.N. Singh & S.K. Singh 2019, now regarded as Botryobasidium indicum (P.N. Singh & S.K. Singh) Kirschner & G. Langer 2021. | Protection needed by NCF. |
| _Dacrymyces_ Nees, Syst. Pilze 89. 1816 [1816 | None. |
| _Dendrocollybia_ R.H. Petersen & Redhead in Mycol. Res. 105: 169. 2001. | Protection needed by NCF. |
| _Discacanthodes_ Singer in Lloydia 8: 141. 1945. | Protection needed by NCF. |
| _Ehfulobasidium_ K.Wells in Mycologia 67: 148. 1975. | Protection needed by NCF. |
| _Filobasidiella_ Vuill. in Rev. Gén. Sci. Pures Appl. 12: 741. 1901, nom. cons. | Protection needed by NCF. |
| _Hormographiella_ Gorovij, Gené & De Vroey 1992, now regarded as Coprinopsis cinerea (Schaeff.) Redhead et al. 2001. | Protection needed by NCF. |
| _Iotacolus_ (Schwein.) Fr. 1849, basionym: Helotium radicatum Alb. & Schwein. 1805, now regarded as Dacrymyces radicatus (Alb. & Schwein.) Donk 1931. | Protection needed by NCF. |
| _Neoacladium_ P.N. Singh & S.K. Singh in Fungal Diversity 104: 793. 2000. | Protection needed by NCF. |
| Table 1 (Continued) |
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| **Recommended generic name** | **Synonymous alternate morph generic name(s)** | **Action required** |
| Ditangium | P. Karst., Fungi Fenniae Exsiccati 7: 656. 1867. | | |
| | Typus: D. insigne P. Karst. 1870. | | |
| | Craterocolla Bref. in Unters. Gesammtgeb. Mykol. 7: 98. 1888. | | None. |
| | Typus: C. cerei (Schumach.) Sacc. 1888, basionym: Tremella cerei Schumach. 1803, now regarded as Ditangium cerei (Schumach.) Constantini & J.L. Dufour 1891. | | |
| | Pyronia Göttler ex G. Winter, Rabenh. Krypt.-Fl., ed. 2 1, 2: 275. 1885. | | |
| | Typus: P. pyriformis Göttler ex G. Winter 1885, now regarded as Ditangium cerei (Schumach.) Constantini & J.L. Dufour 1891. | | |
| Echinoporia | Ryvarden in Ryvarden & Johansen, Prelim. Polyp. Fl. East Africa 325. 1980. | Echinolus Pat. in Bull. Soc. Mycol. France 34: 199. 1918. | Protection needed by NCF. |
| | Typus: E. hydrophora (Berk. & Broome) Ryvarden 1980. | | |
| | Cerinostaurus R.T. Moore in Stud. Mycol. 30: 216. 1987. | | None. |
| | Typus: C. luteolus (de Hoog) R.T. Moore 1987, basionym: Spongiphorius luteolus de Hoog 1974, now regarded as a synonym of Cerinostaurus peziziformis (Lév.) P. Karst. 1876. | | |
| | Confluenta Stalpers in Canad. J. Bot. 61: 1660. 1983. | | |
| | Typus: C. hepatica (Sacc.) Stalpers 1983, basionym: Cerinomyces hepaticus Sacc. 1888, now regarded as Confluenta hepatica (Scheaff) Withl. 1801. | | |
| Heteroaebantherella | Oberw. in Trans. Mycol. Soc. Japan 31: 206. 1990. | Acanthellorhiza P. Roberts, Rhizoctonia-Forming Fungi 130. 1998. | |
| | Typus: H. variabilis Oberw. & Langer 1990. | | |
| | Spinniger Stalpers in Proc. Kon. Ned. Akad. Wetensc. C. 77: 402. 1974. | | None. |
| | Typus: S. meineckii (A.J. Olson) Stalpers 1974, basionym: Cunninghamella meineckii A.J. Olson 1941, now regarded as Heteroaebantherella annosum (Fr.) Basionym: 1888. | | |
| Hohenbuehelia | Schulzer in Verh. K. K. Zool.-bot. Ges. Wien 16: 45. 1866. | Nematocactus Drechsler in Phytopathology 31: 779. 1941. | |
| | Typus: H. petaloides (Bull.) Schulzer 1866, basionym: Agaricus petaloides Bull. 1785, nom. sanct., Fr. | | None. |
| | Atrimyces Kreisel in Z. Allg. Mikrobiol. Morphol. Physiol. Ökol. Mikroorgan. 12: 648. 1972. | | None. |
| | Typus: A. bromatificus Kreisel 1972, now regarded as Leucocoprinus gongylophorus (Möller) R. Heimp 1957. | | |
| Leucocoprinus | Pat. in J. Bot. (Morot) 2: 16. 1888. | | |
| | Typus: L. cepistipes Pat. 1889 | | None. |
| Marchandiozymes | Diederich & D. Hawksw. in Mycotaaxon 37: 311. 1990. | Marchandiozymes Ghobad-Nejad & Hallenb. in Taxon 59: 1530. 2010. | |
| | Typus: M. corallinus (Roberge) Diederich & D. Hawksw. 1990, basionym: Exidia corallinum Roberge 1847. | | None. |
| | | | |
| Mycenula | (Pers.) Roussel, Fl. Calvados, ed. 2 64 (‘45). 1806, basionym: Agaricus sect. Mycena Pers. 1797. | | |
| | Typus: M. galericulatus (Scop.) Gray 1821, basionym: Agaricus galericulatus Scop. 1772, nom. sanct., Fr. | | |
| | | | |
| Mysaxium | Wallr., Fl. Crypt. Germ. 2: 260. 1833. | Hylotinia Möller in Bot. Mitt. Tropen 8: 137. 1895. | |
| | Typus: M. nuculatum Wall. 1833. | | None. |
| | Typus: H. pilaceae Möller 1895, now regarded as Mysaxium pilaceum (Möller) R. Kirschner 2018. | | |
| | | | |
| Necator | Masseé, Bull. Misc. Inf., Kew 1898: 119. 1898. | Upasia Hangojo-Tjokrosodarmo & Rifai. Ilmu Pertanian (Agric. Sci.) 5(2): 566. 1992. | |
| | Typus: N. decretus Masseé, 1898. | | None. |
| | | | |
| Neolentinus | Redhead & Grinns, Trans. Mycol. Soc. Japan 26(3): 357. 1985. | Digitellus Paullet, Traité champ. (Paris) 2: 420, [485] and in Index. 1793. | Protection needed by NCF. |
| | Typus: N. kauffmannii (A.H. Sm.) Redhead & Grinns 1985, basionym: Lentinus kauffmannii A.H. Sm. 1946. | Typus: D. pyriformis Paullet 1793, now regarded as Neolentinus leptodeus (Fr.) Redhead & Grinns 1985. | |
| Oliveovia | Donk in Fungus 28: 20. 1958. | Oliveovia P. Roberts in Folia Cryptog. Estonica 33: 128. 1998. | |
| | Typus: C. fibulosa (Burt) Donk 1958, basionym: | | None. |
### Table 1 (Continued)

| Recommended generic name | Synonymous alternate morph generic name(s) | Action required |
|--------------------------|------------------------------------------|-----------------|
| Sebacina fibrillosa Burt 1926. | Typos: O. ophiococcum P. Roberts 1998, now regarded as Oliiveochara paxilloides (H.S. Jacks.) Donk 1958. | None. |
| Pleurotus (Fr.) P. Kumm. Führ. Pilzk. (Zerbst) 104. 1871, basionym: Agaricus trib. (unranked) Pleurotus Fr. 1821, nom. sanct. | Typos: A. brasiliensis Pat. & Trab. in Bull. Soc. Mycol. France 13: 215. 1897. | None. |
| Polyporus Mitchell ex Adans. Fam. Pl. 2: 10. 1763, nom. sanct. Fr., Syst. Mycol. 1: 341. 1821. Typus: P. tuberaster (Jacq. ex Pers.) Fr. 1815, nom. sanct. Fr., basionym: Boletus tuberaster Jacq. ex Pers. 1801. | Mycelthe Gasp. in Atti Accad. Pontan. 2: 221. 1842. Typus: M. fungifera Gasp. 1842, now regarded as Polyporus tuberaster (Jacq. ex Pers.) Fr. 1815. | None. |
| Postia Fr. Hymenomy. Eur. 586. Oct 1874. Typus: Polyporus lacteus Fr. 1821, nom. sanct., now Postia lactea (Fr.) P. Karst. 1981. | Psychogaster Cordia, Icon. Fung. 2: 23. 1838. Typos: P. albus Cordia 1838, now regarded as Postia psychogaster (F. Luc. (V.) Westr.) 1896. | Protection needed by NCF. |
| Rhizoctonia DC. in Larmack & de Candolle, Fl. Franç., ed. 3: 5. 1815. Typus: R. solani J.G. Kühn 1858. | Thanatophorus Donk in Reinwardtia 3: 376. 1956. Typos: T. cucumeris (A.B. Frank) Donk 1956, basionym: Hypochorus cucumeris A.B. Frank 1888, now regarded as Rhizoctonia solani J.G. Kühn 1858. | None. |
| Riopa D.A. Reid in Revue Mycol., Paris 33: 244. 1969. Typus: Riopa duidii D.A. Reid 1969, now regarded as Riopa metamorphosa (Fuckel) Miettinen & Spirin 2016, basionym: Polyporus metamorphosus Fuckel in Jahrb. Nassauischen Vereins Naturk. 27–28: 87. 1874. | Spiratrichum Link in Ges. Naturf. Freunde Berlin Mag. 3: 13. 1809. Typus: S. aureum Link 1809 non, illeg. non (Pers) Fr. 1832 (= Trichoderma aureum Pers. 1796 = Botryobasidium aureum Parmasto 1965), now regarded as Riopa metamorphosa (Fuckel) Miettinen & Spirin 2016. | Protection needed by NCF. |
| Scytinostroma Donk in Fungus 26: 19. 1956. Typus: S. portentosum (Berk. & M.A. Curtis) Donk 1956, basionym: Corticium portentosum Berk. & M.A. Curtis 1873. | Michenera Berk. & M.A. Curtis in J. Linn. Soc., Bot. 10: 333. 1868. "1869". Typos: M. artocreas Berk. & M.A. Curtis 1868, now regarded as Scytinostroma artocreas (Berk. & M.A. Curtis) K.H. Larss. 2018. | Protection needed by NCF. |
| Sistotrema Fr., Syst. Mycol. 1: 426. 1821, nom. sanct. Typus: S. confinis Pers. 1794, nom. sanct., Fr. | Typos: O. ophiococcum P. Roberts 1998, now regarded as Oliiveochara paxilloides (H.S. Jacks.) Donk 1958. | None. |
| Sterigmatosporidium G. Kraep. & U. Schulze in Antonie van Leeuwenhoek 48: 479. 1981 "1982". Typus: S. polymorphum G. Kraep. & U. Schulze 1983. | Cuniculotrema J.P. Samp. & R. Kirschner in Antonie van Leeuwenhoek 80: 155. 2001. Typos: C. polymorpha R. Kirschner & J.P. Samp. 2001. | None. |
| Subulicystidium Parmasto, Conspl. System. Corticiaceae (Tartu) 120. 1968. Typus: S. longiporum (Pat.) Parmasto 1968, basionym: Hypocorticium longiporum Pat. 1894. | Aegentina Jülich in Int. J. Mycol. Lichenol. 1: 282. 1984. Typos: A. tortuosa (Bourdot & Galzin) Jülich 1894, basionym: Aegentina tortuosa Bourdot & Galzin 1828, now regarded as Subulicystidium longiporum (Pat.) Parmasto 1968. | None. |
| Tomaphagus Murrill in Torreya 5: 197. 1901. Typus: T. colossus (Fr.) Murrill 1901, basionym: Polyporus colossus Fr. 1851. | Thermophytophoma Udagawa et al. in Mycotaxon 27: 100. 1986. Typos: T. fibuligera Udagawa, et al. 1986, now regarded as Tomaphagus colossus (Fr.) Murrill 1905. | None. |
| Trechispora P. Karst. in Hedwiggia 29: 147. 1890. Typus: T. onusta P. Karst. 1890, now regarded as Trechispora hymenocystis (Berk. & Broome) K.H. Larss. 1994. | Osteomorpha G. Arnaud ex Watling & W.B. Kendr. in Naturalist (Hull) ser. 3 104: 1. 1978. Typos: O. fragilis G. Arnaud ex Watling & W.B. Kendr. 1979, now regarded as Trechispora stevensonii (Berk. & Broome) K.H. Larss. 1995. | None. |
| Trimorphomyces Bandoni & Oberw. in Syst. Appl. Microbiol. 4: 106. 1983. Typus: T. papilionaceus Bandoni & Oberw. 1983. | Anastomysis W.P. Wu et al. in Mycol. Res. 101: 1318. 1997. Typos: A. microsporus W.P. Wu, et al. 1997, now regarded as Trimorphomyces papilionaceus Bandoni & Oberw. 1983. | None. |
### Table 1 (Continued)

| Recommended generic name | Synonymous alternate morph generic name(s) | Action required |
|--------------------------|------------------------------------------|-----------------|
| **Tulasnella** J. Schröt. in Cohn, Krypt.-fl. Schlesien 3(1): 397. June 1888. | *Harmonomyces* Bonord, Handb. Mykol. 150. 1851. | Protection needed by NCF. |
| Typus: T. nacina J. Schröt. 1888, now regarded as *Tulasnella violata* (Quell.) Bourd & Galz. 1909, basionym *Hypocnemis violacea* Quell. 1883. | *Tulasnella aurantica* (Bonord.) J. Mack & Seifert 2021. | |
| | *Phytotremella* Pat. in J. Bot. (Morot) 2: 269. 1888. | |
| | *P. tulasnei* Pat. August 1888, now regarded as *Tulasnella tulasnei* (Pat.) Juel 1887. | |
| | *Hormiscipsis* Sumst. in Mycologia 6: 32. 1914. | |
| | *T. phacorrhiza* Sumst. 1914, now regarded as *Typhula phacorrhiza* (Bonord.) J. Mack & Seifert 2021. | |
| | *Euphorhiza* R.T. Moore in Mycologia 29: 94. 1987. | |
| | *E. repens* (G.E. Bernard) R.T. Moore 1987, basionym: *Rhizoctonia repens* G.E. Bernard 1909, now regarded as *Tulasnella deliquescentes* (Juel) Juel 1914. | |
| **Typhula** (Pers.) Fr., Obser. Mycol. 2: 296. 1818. | *Scionizum* Tode, Fung. Medklenb. Sel. 1: 2. 1790, nom. sanct., Fr. | Protection needed by NCF. |
| Typus: *T. phacorrhiza* (Reichard) Fr. 1818, nom. sanct., Fr., basionym: *Clavaria phacorrhiza* Reichard 1780. | *S. complanatum* Tode 1790, now regarded as *Typhula phacorrhiza* (Reichard) Fr. 1818. | |
| **Wairae** Warcup & P.H.B. Talbot in Trans. Br. Mycol. Soc. 45: 303. 1962. | *Chrysohiza* T.F. Andersen & Stalpers in Sneh et al., Rhizoctonia Species, Taxonomy, Molecular Biology, Ecology, Pathology and Disease Control (Dordrecht): 58. 1996. | None. |
| Typus: *W. cichorato* Warcup & P.H.B. Talbot 1962. | *Rhizoctonia zeae* Voorhees 1934, now regarded as *Wairae zeae* (Voorhees) J.A. Crouch & Cubeta 2021. | |
| **Wolfiporia** Ryvarden & Gilb. in Mycotaxon 19: 141. 1984. | *Gemmulares* in J. Phys. Chim. Hist. Nat. Arts 89: 106. 1819, nom. sanct., Fr., 1823. | Protection needed by NCF. |
| Typus: *W. cocos* (F.A. Wolf) Ryvarden & Gilb. 1984, basionym: *Poris cocos* F.A. Wolf 1922, nom. cons. | *G. rugosa* Raf. 1819, now regarded as *Wolfiporia cocos* (F.A. Wolf) Ryvarden & Gilb. 1884. | |
| | *Pachyphylla* Fr., Syst. Mycol. 2: 242. 1822, nom. sanct. | |
| | *P. cocos* Fr. 1822, basionym: *Scerotium cocos* Schwein. 1822, now regarded as *Wolfiporia cocos* (F.A. Wolf) Ryvarden & Gilb. 1884. | |
| | *Tuscarus* Raf., Medical flora, or, Manual of the medical botany of the United States of North America. 2 270. 1830. | |
| | *T. rugosus* (Raf.) Raf., now regarded as *Wolfiporia cocos* (F.A. Wolf) Ryvarden & Gilb. 1884. | |

**Aegerita candida** is the name used by ecologists who have examined the extracellular enzymatic activity of this aeroaquatic fungus (Abdullah and Taj-Aldeen 1989). An obscure generic name, *Crocysporium* (GSS 32), is typified by *C. aegerita*, a name that is considered a synonym of *Aegerita candida* (Donk 1962), thus *Crocysporium* is a later synonym of *Aegerita*. Five other species names have been described in *Crocysporium* of which all but two are placed elsewhere and none have been widely used. Given its priority, the greater number of names, and use in ecological literature, we recommend the use of *Aegerita*.

**Protect Aleurocystis Lloyd ex G. Cunn. 1956 (S) over Matula Masssee 1888 (A)**

The sexual morph of the type of *Aleurocystis*, *A. hakgal-lae* (as *Peniophora hakgaliae*), was connected to the asexual morph *Matula poroniforme*, type of *Matula*, by Petch (1926) and later accepted by Martin (1940) and Giraldo et al. (2017), thus the generic names *Aleurocystis* and *Matula* are synonyms. When he validated the name *Aleurocystis*, Cunningham (1956) included the generic name *Matula* as a synonym, and also listed *Artocreas poroniforme* [as poroniaeforme] as a synonym of the type, *Aleurocystis hakgaliae*. Cunningham (1956) also corrected the orthography from “Aleurocystus” that had been attributed to “McGinty” by Lloyd (1921). Under Art. F.8.1 both generic names *Aleurocystis* and *Matula* are legitimate. The basionyms for these species, namely *Corticium hakgaliae* and *Artocreas poroniforme*, were published in the same article (Berkeley and Broome 1875) and thus had equal priority. Cunningham (1956) placed *Artocreas poroniforme* in synonymy of *Aleurocystis hakgaliae*, thereby establishing priority for the species epithet, *hakgaliae*. The only additional species in *Matula*, *M. rombellii*, is considered a synonym of *M. poroniforme*, thus is *A. hakgaliae* (Martin 1942). The only additional species of *Artocreas* is its lectotype, *A. micheneri*, also considered a synonym of *Scytinostroma artocreas* [see below under *Scytinostroma*]. The genus *Aleurocystis* has been widely used, includes four names (Ryvarden 1998; Hjørstam and Ryvarden 2000; Rajchenberg and Robledo 2005), and requires no name changes, thus *Aleurocystis* is recommended for protection.

One final note is that Massée (1888) published a new ordinal name, *Matulales* (as *Matulaceae*), typified by *Matula*, skipping over description of a family. Fortunately, priority of names only extends to the level of family (Art. 11.1).
Table 2 Species names proposed for protection with the names proposed for rejection. See text for the rationale about the proposed protected names. For each name this list provides the currently accepted name, if different, the name to be protected and rejected, author, place and date of publication, and type. The names proposed for protection will be evaluated and recommended for approval by the Nomenclature Committee for Fungi.

| Names proposed for protection            | Rejected names                                                                 |
|------------------------------------------|-------------------------------------------------------------------------------|
| **Botryobasidium conspersum** J. Erikss. in Symb. Bot. Upsal. 16: 133. 1958. | *Actadium conspersum Link in Ges. Naturf. Freunde Berlin Mag. 3: 11. 1809, nom. sanct, Fr., Syst. Mycol. 3: 419. 1832.* |
| Typus: Sweden: Gästrikland: Gädje, Lövudden, on decayed wood of Betula, 25 Jun 1951, J A Nannfeldt 11435a (UPS) | *Sporotrichum asporum Ehrenb., Sylv. Mycol. Berlin 22. 1818.* |
|                                          | *Sporotrichum helvolum Wallr., Fl. Crypt. Germ. 2: 280. 1833.*               |
|                                          | *Sporotrichum floccosum Bres. in Hedwigia 35: 301. 1896.*                   |
|                                          | *Rhinitrinchium olivaceum Bres., Fung. Trident. 2: 106. 1900.*             |
|                                          | *Rhinitrinchium bicolor Sumst. in Mycologia 3: 50. 1911.*                   |
|                                          | *Rhinitrinchium noblesiae Sumst. in Mycologia 29: 250. 1937.*               |
| **Botryobasidium croceum** Lentz in Mycpathol. Mycol. Appl. 32: 6. 1966 [1967]. | *Mucor croceus Mont. in Sagra. Ann. Soc. Nat., Bot. Sér. 2: 171. 1842.* |
| Typus: USA: Mississippi. Greenville, near Huntington Point, on dead stump, 1960, F.L. Lentz 60–394 (BPI 1107361 – holotype). | *Gymnosporium fulvum Berk. & M.A. Curtis in Berkeley, J. Linn. Soc., Bot. 10: 355. 1868 "1869".* |
|                                          | *Allescheniella uredinoides Henn. in Hedwigia 36: 244. 1897.*               |
|                                          | *Mylitta australis Berk. in Ann. Mag. Nat. Hist. 3: 326. 1839.*             |
|                                          | *Typus: [Australia, Tasmania], "Van Diemen’s Land, collection of Sir W.J. Hooker".* |
|                                          | *Sporotrichum pruinorum Gilman & E.V. Abbott in Iowa State Coll. J. Sci. 1: 306. 1927.* |
| **Laccocoeptum mylitta** (Cooke & Massee) Nüñez & Ryvarden. Syn. Fung. (Oslo) 10: 31. 1995 (Polyporus mylitta Cooke & Massee in Cooke, Grevillea 21: 37. 1892). | *Trichoderma fulginoideos Pers., Syn. Meth. Fung. 1: 231. 1801.* |
| Typus: [Australia, Victoria, Beechworth, J.W. Howard], “Growing on *Mylitta australis*. S. Australia [sic]” (KIM). | *Pychogaster albus Corda, Icon. Fung. 2: 24. 1838.* |
|                                          | *Mucor aurantius Bull., Hist. Champ. France 1: 103. 1791.*                 |
|                                          | *Sporotrichum aurantiacum Fr., Syst. Mycol. 3: 423. 1832, nom. sanct.*     |
| **Phanerochaete chrysosporium** Burds. in Mycotaxon 1: 124. 1974. |                                                              |
| Typus: U.S.A: Arizona, Cochine Co., Peloncillo Mts., Guadalupe Canyon, on dead wood of *Platanus wrightii* (Arizona sycamore), 25 Aug. 1971, Burdsall 6251 (Holotype: CFMR; Isotype: Same data ARIZ – AN 003206). | |
| **Postia ptychogaster** (F. Ludw.) Vesterh. in Knudson & Hansen, Nordic J. Bot. 16: 213. 1996 (Polyporus ptychogaster F. Ludw. in Z. Gesamten Naturwiss (Halle) 3: 424. 1880). | |
| Typus: Taf. XIII in Z. Gesamten Naturwiss (Halle) 1880. Lectotypus designated here: MBT 395397. | |
| **Riopa metamorphosa** (Fuckel) Miettinen & Spšrin in MycoKeys 17: 27. 2016 (Polyporus metamorphosus Fuckel in Jahrb. Nassauischen Vereins Naturk. 27:27-87. 1874). Typus: Germany: Oestrich (Nassau): Mittelheimer Vordenvald, rotten trunk of Quercus, “Herbier Fuckel 1894, Herbier Barby-Boissier”, no. 2008 (S.F.43290 – lectotype designated by Miettinen et al. 2016). Czech Republic. Moravia: Lanzhot, Ránšpůrk virgin forest, rotten trunk of Quercus robur, 5 Oct 1988, Z. Pouzar (PRM 871894 – epitype designated by Miettinen et al. 2016; H 7008579 – isoepitype). | |

Protect *Armillaria* (Fr.) Staude 1857 (S) over *Rhizomorpha Roth 1791 (A) and Acutris Fr. 1849 (A/S)

*Armillaria* is a well-known genus of mushroom-forming fungi lectotypified by *A. mellea* (Clements and Shear 1931), the honey fungus, which is now recognized in a restricted sense within a complex amalgam of segregate species (Pegler 2000). The lectotype of *Rhizomorpha, R. fragilis*, represents rhizomorphs of *A. mellea* (Donk 1962), thus *Armillaria* and *Rhizomorpha* are synonyms. Donk (1962) provides a lengthy discussion of the lectotypification of *Rhizomorpha*. *Rhizomorpha* was accepted at the rank of genus in Fries (1821) and therefore is sanctioned, whereas *Agaricus* [unranked “tribus”] *Armillaria* is sanctioned only as an infrageneric name. Therefore, at the generic rank, *Armillaria* requires protection over *Rhizomorpha*. Although 117 names exist in *Rhizomorpha*, this generic name has been applied to the sterile rhizomorphs produced by different kinds of fungi not related to the type. For example, *Rhizomorpha hippothrichoides* is *Xylaria hippothrichoides* and *R. necatrix* is *Rosellinia necatrix*, both in Ascomycota (Kirk 2020). The generic name *Armillaria* was based upon *Clavaria gigantea*, which itself was based upon structures now recognized as the so called carpophoroids of *Entoloma abortivum*. For many years these carpophoroids were considered to be aborted, parasitized basidiomes of the *Entoloma* (Donk 1962; Watling 1974), but it has been shown that they are aborted basidiomes of *Armillaria* (Lindner Czederpiltz et al. 2001; Fukuda et al. 2003). Instead of threatening the name *Entoloma*, this oft debated generic name threatens the name *Armillaria*. Because *Armillaria* is a clearly circumscribed and a well-known genus with species causing diseases of economic importance (Fox 2000), we recommend protection of the generic name *Armillaria*. 

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**Table 3** Family names proposed for protection with the names proposed for rejection. See text for the rationale about the proposed protected names. This list provides the names to be protected or rejected, author, their place and date of publication, and type. The names proposed for protection will be evaluated and recommended for approval by the Nomenclature Committee for Fungi.

| Names proposed for protection | Rejected names |
|-------------------------------|----------------|
| Psathyrellaceae Vigals, Moncalvo & Redhead in Taxon 50: 226. 2001. Typhus: Psathyrella (Fr.) Quél. | Zerovaemycetaceae Gorovij in Dopov. Akad. Nauk URSR, Ser. B 39B: 745. 1977. Typhus: Zerovaemycetes Gorovij |
| Typhulaceae Jülich in Biblioth. Mycol. 85: 393. 1982 [1981]. Typhus: Typhula (Pers.) Fr. | Sclerotaceae Dumort. [as 'Sclerocaraceae'], Comment. Bot. (Tournay) 69. 1822. Typhus: Sclerotium Tode, nom. sanct., Fr. |

**Use *Arthrosporella* Singer 1970 (S) rather than *Nothoclavulina* Singer 1970 (A)**

The monotypic generic names *Arthrosporella* and *Nothoclavulina* were published for the sexual and asexual morphs of the same species in the same publication (Singer 1970), specifically *A. ditopa* and *N. ditopa*, thus they are synonyms having equal priority. Here we designate *A. ditopa* as having priority. This species was re-described and discussed by Stalpers et al. (1991) and Baroni et al. (2007). Because *Arthrosporella* is more widely cited (GSS *Arthrosporella* = 24, *Nothoclavulina* = 11) and is typified by the mushroom-like sexual morph, we here designate *Arthrosporella* as having priority and recommend *Arthrosporella* for use.

**Protect Asterophora Ditmar 1809 (S) over Ugola Adans. 1763 (A) and use rather than *Nyctalis* Fr. 1825 (S)**

The generic name *Asterophora* includes species that are parasitic on other mushrooms especially *Lactarius* and *Russula* (*Russulaceae*). Asexual morphs of species of *Asterophora* have been described in *Ugola* typified by *U. physaroides*, a synonym of *Asterophora physaroides*. Redhead and Seifert (2001a) unraveled and re-classified and discussed of the name of these generic names including *Nyctalis* as a synonym of *Asterophora*. They also proposed conservation of the name of the type of *Asterophora* as *A. lycoperdoides* over the earlier name *A. agaricoides* (Redhead and Seifert 2001b) and this was approved by the NCF (Gams 2004). Redhead and Seifert (2001a) recognized three species in *Ugola*, all of which have names in *Asterophora*. Redhead and Seifert (2001b) also recognized *A. lycoperdoides* and *A. physaroides* as the same species, thus *Asterophora* and *Ugola* are synonyms. Although *Ugola* has priority, this generic name is rarely used while *Asterophora* includes approximately 20 names and is widely used. For these reasons we recommend that *Asterophora* be protected over *Ugola* and be used instead of *Nyctalis*.

**Use *Athelia* Pers. 1818 (S) rather than *Fibularhizoctonia* G.C. Adams & Kropp 1996 (A)**

The generic name *Athelia*, lectotypified by *A. epi-phylly* by Donk (1949), includes about 40 species names and is widely used for saprobic, crustose, wood-inhabiting fungi as well as important plant pathogens (Jülich 1972). *Fibularhizoctonia*, typified by *F. carotae*, was described for the sclerotial-forming *Rhizoctonia carotae* (Rader 1948) and is recognized as the asexual morph of *Athelia arachnoidea*, a species that causes a cold-storage disease of carrots throughout temperate regions of the world (Adams and Kropp 1996). The two additional species of *Fibularhizoctonia*, sometimes misspelled ‘Fibularhizoctonia’, are recognized in *Athelia* (De Vries et al. 2008; Kirk 2014). One species of *Athelia*, *A. rolfsii* (Curzi) C.C. Tu & Kimbr. 1978 (syn. *Sclerotium rolfsii* Sacc. 1911) is the scientific name for a soilborne pathogen that causes blight stem and root rot diseases of crop and nursery plants throughout the world (Punja 1985). *Athelia* is used much more commonly than *Fibularhizoctonia* (GSS *Athelia* = 5280, *Fibularhizoctonia* = 54). Given its priority, greater number of species, and widespread use, the generic name *Athelia* is recommended for use.

**Use *Bjerkandera* P. Karst. 1879 (S) over *Geotrichopsis* Tzean & Estey 1991 (A)**

*Geotrichopsis* was introduced for *G. mycoperasitica*, a hyphomycete that produced thallic-arthric conidia and was isolated as a mycoparasite in a culture of an *Arthrobotrys* species. Because it had dolipore septa, it was considered to be the asexual state of a basidiomycete (Tzean and Estey 1991). It was described as new because it did not match the features in culture of various basidiomycetes known to produce asexual morphs, including *Polyporus adustus* (now *Bjerkandera adusta*). However, sequences of the ITS (MH862453) and LSU (MH874100) regions have been obtained from CBS 687.93, the ex-type culture of *G. mycoperasitica* (Vu et al. 2019), and the sequences have high BLAST
matches to sequences identified in GenBank as *B. adusta* (ITS, 100% to several sequences including MF161298; LSU, 99.89% to KT305936). In a phylogenetic analysis of the combined ITS and LSU regions of a range of fungi isolated from *Prunus, G. mycoparasitica* CBS 687.93 fell within a well-supported clade otherwise comprised of *B. adusta* and *B. fumosa*, in a subclade with two sequences, one labelled *B. adusta* and the other *B. cf. adusta* (Bien and Damm 2020). Compared to sequences in the phylogeny of six species of *Bjerkandera* in Motato-Vásquez et al. (2020), which includes multiple sequences of each of *B. adusta* and *B. fumosa*, the ITS sequence from the ex-type culture of *G. mycoparasitica* has BLAST matches of 98.53–99.25% to sequences of *B. adusta*, 98.19–98.54% to sequences of *B. albocinerea* (the sister taxon to *B. adusta*), and 94.02–94.97% to sequences of *B. fumosa*. The sequence of *B. albocinerea* MH625420, which has the highest similarity, slightly overlapping with the range of similarity with *B. adusta*, is shorter, and lacks several characteristic bases that distinguish *B. albocinerea* from *B. adusta*. Consequently, *Geotrichopsis* should be considered a synonym of *Bjerkandera* and *G. mycoparasitica* placed in synonymy under *B. adusta*. The sequence of *B. albocinerea* has only been used for one species and is hardly mentioned in the literature (GSS *Bjerkandera* = 10,700, *Geotrichopsis* = 26), we recommend use of *Bjerkandera*.

**Protect Botryobasidium Donk 1931 (S) over Acladium Link 1809 (A), Alysidium Kunze 1817 (A), Haplotrichum Link 1824 (A), Sporoccephalium Chevall. 1826 (A), Physospora Fr. 1835 (A), Allescheriella Henri. 1897 (A) and Neoacladium P.N. Singh & S.K. Singh 2019 (A)**

The generic name *Botryobasidium* is typified by *B. subcoronatum*, while the holotype of *Haplotrichum* is *H. capitatum*. Holubová-Jechová (1976) recognized the generic name *Haplotrichum* for the asexual morphs of *Botryobasidium* "as a result of the conservation of the generic name *Oidium* for conidial states of *Erysiphe ..." (Partridge et al. 2001a) and this was accepted in a monographic account of *Botryobasidium* (Langer 1994). *Botryobasidium* includes species with or without *Haplotrichum* asexual morphs, clamp connections, smooth or ornamented basidiospores, and chlamydomspores or cystidia, but excludes morphologically similar species that produce secondary spores or outgrowing clamps (Langer 1994). Partridge et al. (2001a, b, 2002) provided a comprehensive study of *Haplotrichum* in which *H. capitatum* is recognized as the asexual morph of *B. candidans*. *Haplotrichum capitatum* is based on *Acladium capitatum*, therefore, Rossman et al. (2016b) recombined this name as *Botryobasidium capitatum*. *Botryobasidium candidans* is now considered a synonym of *B. capitatum*. They also placed *Sporotrichum rubiginosum* in *Botryobasidium* as *B. rubiginosum*. The type of *Physospora, P. rubiginosa*, is also based on *Sporotrichum rubiginosum*, thus *Physospora* is a synonym of *Botryobasidium*. Donk (1962) reviewed the typification of *Physospora* concluding that Sumstine (1911) was the first to lectotypify this genus. The generic name *Physospora* was considered dubious by Donk (1962) and has been little used. *Acladium*, lectotypified by A. conspersum, now regarded as *B. conspersum*, is also congeneric with *Botryobasidium* and *Haplotrichum* as outlined by Holubová-Jechová (1976). Four species were originally included in *Acladium*. Both Clements and Shear (1931) and Hughes (1958) regarded *A. conspersum* as the type according to Donk (1962). The generic name *Alysidium* typified by *A. fulvum* has been considered a synonym of *Haplotrichum* (Holubová-Jechová 1980) as explained by Partridge et al. (2001a) who regarded *A. fulvum* as a synonym of the asexual morph of *B. aureum*. *Sporocephalium* was lectotypified with *S. capitatum* by Hughes (1958) who considered *Sporocephalium* a synonym of *Acladium*. Partridge et al. (2002) regarded *Acladium* to be a synonym of *Haplotrichum* with *Sporocephalium capitatum* as the asexual morph of *B. candidans*, now regarded as *B. capitatum*. Only four species of *Sporocephalium*, typified by *S. capitatum*, now *B. capitatum*, have been described, and this generic name is relatively obscure. Another generic name, *Allescheriella* is typified by *A. uredinoides*, now regarded as a synonym of *B. croceum* by Partridge et al. (2002), although Hughes (1951) recognized it as *B. fulvum*. Either way *Allescheriella* is a synonym of *Botryobasidium*. A recently described monotypic asexual morph generic name, *Neoacladium*, is here considered to be a synonym of *Botryobasidium* rather than sister to that genus (Hyde et al. 2019).

Despite the lack of a known asexual morph of *B. subcoronatum*, type of *Botryobasidium*, this species is considered to be congeneric with *Botryobasidium conspersum*, as shown by Binder and Hibbett (2002) and Larsson (2007), in which *H. conspersum, H. curtisi*, and *B. isabellinum* constitute a monophyletic group. Based on a nuclear ribosomal DNA large subunit (nLSU) analysis, Moncalvo et al. (2006) demonstrated that *Botryobasidium* included species with asexual morphs and smooth basidiospores (e. g. *B. candidans, B. conspersum, B. simile*), species without asexual morphs and smooth basidiospores (e. g. *B. obtusisporum* and *B. vagum*), and species without an asexual morph and ornamented basidiospores (e. g. *B. isabellinum*) as well as the type *B. subcoronatum*. These species formed a well-supported monophyletic group as previously demonstrated by micromorphological and ultrastructural characters (Langer 1994; Langer and Langer 1998). Thus, *Botryobasidium, Acladium, and Haplotrichum*, as well as the lesser known *Alysidium, Sporoccephalium, Physospora, Allescheriella*, and *Neoacladium*, are all synonyms.
Although Acladium, Haplotrichum, Physospora and Allescheriella have priority, these names are less frequently cited than Botryobasidium (GSS Botryobasidium = 1010, Acladium = 884, Alysium = 196, Haplotrichum = 206, Sporoccephalium = 4, Physospora = 28, Allescheriella = 167). In addition, Botryobasidium includes a greater number of names, thus we recommend Botryobasidium for protection.

Five names in Botryobasidium are proposed for protection because they are widely used or already placed in Botryobasidium. In addition, 17 names described in Haplotrichum or other synonymous genera known to belong in Botryobasidium are re-combined in that genus here.

**Names proposed for protection:**

**Botryobasidium aureum** Parmasto, Eesti N. S. V. Tead. Akad. Toimet., Biol. 14: 220. 1965.

*Synonyms: Monilia aurea* J.F. Gmel., Syst. Nat., Edn 13 2(2): 1487. 1792.

*Trichoderma dubium* Pers., Syn. meth. fung. 1: 233. 1801, nom. sanct. Fr., Syst. Mycol. 3: 216. 1829.

Many additional earlier synonyms are listed in Kirk (2020).

**Botryobasidium conspersum** J. Erikss., Symb. Bot. Upsal. 16: 133. 1958.

*Type: See Table 2.*

*Synonyms to be protected over: Acladium conspersum* Link, Ges. Naturf. Freunde Berlin Mag. 3: 11. 1809.

*Sporotrichum oosporum* Ehrenb., Sylv. mycol. berol. 22. 1818.

*Sporotrichum helvolum* Wallr., Fl. crypt. Germ. 2: 280. 1833.

*Sporotrichum floccosum* Bres., Hedwigia 35: 301. 1896.

*Rhinotrichum olivaceum* Bres., Fung. trident. 2(14): 106. 1900.

*Rhinotrichum bicolor* Sumst., Mycologia 3: 50. 1911.

*Rhinotrichum noblesiae* Sumst., Mycologia 29: 250. 1937.

**Botryobasidium croceum** Lentz, Mycopathol. Mycol. Appl. 32: 6. 1967 “1966”.

*Type: See Table 2.*

*Synonyms to be protected over: Mucor croceus* Mont., Ann. Sci. Nat., Bot., sér. 2 17: 121. 1842.

*Gymnosporium fulvum* Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10: 355. 1868 “1869”.

*Rhinotrichum fulvum* (Berk. & M.A. Curtis) Berk. & M.A. Curtis, Grevillea 2(19): 108. 1874.

*Allescheriella uredinioides* Henn., Hedwigia 36: 244. 1897.

**Pellicularia lembospora** D.P. Rogers, Farlowia 1: 109. 1943 “1943–1944”.

**Synonyms: Botryobasidium lembosporum** (D.P. Rogers) Donk, Fungus 28: 26. 1958.

*Hymenochaete tomentosa* Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10: 335. 1868 “1869”.

**Botryobasidium simile** Hol.-Jech., Česká Mykol. 23: 99. 1969.

*Synonyms: Oidium simile* Berk., J. Bot. (Hooker) 4: 310. 1845.

*Monilia aureofulva* Cooke & Ellis, Grevillea 8(no. 45): 12. 1879.

*Oidium biforme* Linder, Lloydia 5: 188. 1942.

The names listed above for the sexual morph have older names that could be applied to the asexual morph. Because use of the oldest epithet would require a new combination that would displace a familiar and commonly used name, the five names in Botryobasidium listed above are proposed for protection. This synonymy is based primarily on Partridge et al. (2001a, b, 2002).

**New combinations:**

**Botryobasidium armeniacum** (Berk. & M.A. Curtis) G. Langer, **comb. nov.**

MycoBank MB 837648

*Basionym: Rhinotrichum armeniacum* Berk. & M.A. Curtis, Grevillea 3(27): 108. 1875.

**Botryobasidium caribense** (Hol.-Jech.) G. Langer, **comb. nov.**

MycoBank MB 837649

*Basionym: Oidium caribense* Hol.-Jech., Česká Mykol. 23: 218. 1969.

**Botryobasidium elongatum** (Linder) G. Langer, **comb. nov.**

MycoBank MB 837651

*Basionym: Oidium elongatum* Linder, Lloydia 5: 191. 1942.

**Botryobasidium gracile** (Hol.-Jech.) G. Langer, **comb. nov.**

MycoBank MB 837660

*Basionym: Haplotrichum gracile* Hol.-Jech., Česká Mykol. 30: 4. 1976.

**Botryobasidium indicum** (P.H. Singh & S.K. Singh) R. Kirschner & G. Langer, **comb. nov.**

MycoBank MB 837873

*Basionym: Neoacladium indicum* P.N. Singh & S.K. Singh, Fungal Diversity 96: 189. 2019.

**Botryobasidium laevisporum** (Cooke) G. Langer, **comb. nov.**

MycoBank MB 837652
Basionym: Zygodesmus laevisporus Cooke, Grevillea 6(40): 139. 1878.

**Botryobasidium magnisporum** (Linder) G. Langer, **comb. nov.**  
MycoBank MB 837653  
Basionym: Oidium magnisporum Linder, Lloydia 5: 179. 1942.

**Botryobasidium morganii** (Linder) G. Langer, **comb. nov.**  
MycoBank MB 836754  
Basionym: Oidium morganii Linder, Lloydia 5: 204. 1942.

**Botryobasidium ovalisporum** (Linder) G. Langer, **comb. nov.**  
MycoBank MB 837865  
Basionym: Oidium curtisii var. ovalisporum Linder, Lloydia 5: 204. 1942.

**Botryobasidium parastoi** (G. Langer) G. Langer, **comb. nov.**  
MycoBank MB 837665  
Basionym: Haplotrichum parastoi G. Langer, Folia Cryptog. Estonica 33: 63. 1998.

**Botryobasidium perseae** (R.F. Castañeda) G. Langer, **comb. nov.**  
MycoBan MB 837661  
Basionym: Haplotrichum perseae R.F. Castañeda, Mycotaxon 59: 449. 1996.

**Botryobasidium pulchrum** (Berk.) G. Langer, **comb. nov.**  
MycoBank MB 837662  
Basionym: Rhinotrichum pulchrum Berk., J. Linn. Soc., Bot. 13: 175. 1872 “1873”.

**Botryobasidium pul ASEum** (Ellis) G. Langer, **comb. nov.**  
MycoBank MB 837690  
Basionym: Monilia pulv erea Ellis, Bull. Washburn Coll. Lab. Nat. Hist. 1: 69. 1884.

**Botryobasidium ramosissimum** (Berk. & M.A. Curtis) G. Langer, **comb. nov.**  
MycoBank MB 837866  
Basionym: Rhinotrichum ramosissimum Berk. & M.A. Curtis Grevillea 3(27): 108. 1875.

**Botryobasidium sphaerosporum** (Linder) G. Langer, **comb. nov.**  
MycoBank MB 837867  
Basionym: Oidium sphaerosporum Linder, Lloydia 5: 200. 1942.

**Botryobasidium tenerum** (Sumst.) G. Langer, **comb. nov.**  
MycoBank MB 837691  
Basionym: Rhinotrichum tenerum Sumst., Mycologia 3: 51. 1911.

**Botryobasidium vesiculosum** (Linder) G. Langer, **comb. nov.**  
MycoBank MB 837693  
Basionym: Oidium vesiculosum Linder, Lloydia 5: 193. 1942.

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Use **Bullera** Derx 1930 (A) rather than **Bulleromyces** Boekhout & Á. Fonseca 1991 (S)

Bulleromyces albus, type of the monotypic generic name Bulleromyces, was described as the sexual state of Bullera alba, type of the generic name Bullera (Boekhout et al. 1991), thus Bullera and Bulleromyces are synonyms. Bullera is used more widely than Bulleromyces (GSS Bullera = 1230, Bulleromyces = 129). Given that Bullera has priority, currently includes over 60 species, and is widely used, we recommend the use of Bullera.

Use **Chaetospermum** Sacc. 1892 (A) rather than **Efibulobasidium** K. Wells 1975 (S)

Chaetospermum, typified by C. chaetosporum, the name of the original illegitimate name C. tuberculariorum (Smith and Ramsbottom 1914; Tangthirasunun et al. 2014), was placed in Sebacinales (Rungjindamai et al. 2008; Oberwinkler et al. 2014). A relationship of Chaetospermum to Efibulobasidium was shown by Wells and Bandoni (2001). Kirschner and Oberwinkler (2009) noted that conidia of C. gossypinum were associated with specimens of E. albescens, the type of Efibulobasidium, thus Chaetospermum and Efibulobasidium are most likely synonyms as accepted by Wells and Bandoni (2001) and Crous et al. (2014). In addition, Chaetospermum camelliae was studied by Kirschner et al. (2017) who placed its sexual morph in Efibulobasidium. Thirteen species have been accepted in Chaetospermum while only four names have been described in Efibulobasidium, one of which has since been transferred to Globulisebacina (Oberwinkler et al. 2014) and two of which are invalid (Kirk 2020). Given its priority, the greater number of species, and more common usage (GSS Chaetospermum = 208, Efibulobasidium = 83), we recommend the use of Chaetospermum.

Protect **Coprinellus** P. Karst. 1879 (S) over **Ozonium** Link 1809 (A)

The generic name Coprinellus, lectotypified by C. deliquescentis, was resurrected for a segregate group of approximately 50 species previously placed in
Coprinus (Redhead et al. 2001a). Many authors consider Coprinellus domesticus to be the sexual morph of Ozonium auricomum, type of the sanctioned generic name Ozonium (Plowright 1901; Buller 1924; Watling 1979). However, Cáceres et al. (2006) state that “it will probably never be possible to decide to which teleomorph belongs the type species Ozonium auricomum” and suggest referring to the asexual morph as “the Ozonium stage”. While one could determine the sexual morph of O. auricomum with an adequate holotype or lectotype and epitype with an ex-epitype culture, this is not necessary for the purpose of determining the synonymy of the genus Ozonium with Coprinellus. At the least O. auricomum is closely related to C. domesticus. Padamsee et al. (2008) demonstrated that C. deliquescentes and C. domesticus are congeneric, thus Coprinellus and Ozonium are synonyms. Use of Ozonium for species now currently recognized as Coprinellus would not be tenable. Instead, the term “ozonium-like” should be used to describe the asexual morph of species of Coprinellus as suggested by Cáceres et al. (2006). In addition, the generic name Coprinellus is more widely used than Ozonium (GSS Coprinellus = 621, Ozonium = 98). Given the widespread use of Coprinellus and the many species placed in that genus, it is recommended that Coprinellus be protected.

The generic name Ozonium has also been used for a fungus unrelated to O. auricomum, namely the non-sporulating morph of the ascomycete Phymatotrichopsis omnivora (Shear) Hennebert 1973, often listed in the literature as Ozonium omnivorun (Shear 1907). Now placed in Rhizinaeae (Peziales), Phymatotrichopsis omnivora is an ubiquitous, economically important plant pathogen that causes root rot of alfalfa, cotton, peanut, and pecan as well as diseases of approximately 2000 species of dicotyledonous plants (Marek et al. 2009).

Protect Coprinopsis P. Karst. 1881 (S) over Rhacophyllus Berk. & Broome 1871 (A/S) and use rather than Zerovaemyces Gorovij (A/S) 1977 or Hormographiella Guarro & Gené 1992 (A)

The generic name Coprinopsis, lectotypified by C. fiesii, is recognized for a group of species segregated from Coprinus and now includes over 100 species (Redhead et al. 2001a). Redhead et al. (2000) discussed in detail the debate over whether Rhacophyllus was based on an asexual or sexual morph and the history of the application of the name. Maniotis (1964) demonstrated that two morphs, a ‘Coprinus’ and Rhacophyllus represented one taxon. He named the sexual form Coprinus clastophyllus. Based upon morphological similarities to phylogenetically classified taxa, Redhead et al. (2001a) considered C. clastophyllus and C. fiesii to be congeneric and transferred Coprinus clastophyllus to Coprinopsis, thus Coprinopsis and Rhacophyllus are synonyms. While Coprinopsis is well known, Rhacophyllus has been rarely used (GSS Coprinopsis = 4530, Rhacophyllus = 45). The synonyms Rhacophyllus lilacinus and Coprinopsis clastophylla are currently both in use at a similar low frequency (GSS ca. 20 citations each, some of which are duplicates), and therefore there is no reason not to adopt the earlier name, which we do below. The generic name Hormographiella, typified by H. aspergillata, includes three species each isolated from animals or animal products, including humans (Guarro et al. 1992; Surmont et al. 2002). The relationship between the asexual morph H. aspergillata and the sexual morph Coprinus cinereus was determined by Gené et al. (1996) and C. cinereus was placed in Coprinopsis by Redhead et al. (2001a). Although Coprinopsis fiesii falls in sect. Alachuana and C. cinereus in the separate C. cinereus clade, both species are confirmed as members of the genus Coprinopsis (Nagy et al. 2013a, b), thus Coprinopsis and Hormographiella are synonyms. Coprinopsis includes over 100 species and is widely known while only three names have been placed in Hormographiella and it is less commonly used (GSS Hormographiella = 302). Zerovaemycis was described with a single species, Z. copriniformis, by Gorovij (1977). This species name is probably synonymous with Rhacophyllus lilacinus. Given that Coprinopsis is widely known and includes many species, we recommend protection of Coprinopsis over Rhacophyllus and use of Coprinopsis rather than Hormographiella and Zerovaemycis.

A new family, Zerovaemycetaceae, was proposed by Gorovij (1977) and competes for use with Psathyrellaceae [see below under Psathyrellaceae for a discussion about this].

The advantages of using the generic name Coprinopsis over the earlier name Pselliophora P. Karst. 1879 were discussed by Redhead et al. (2001b). Ultimately, a proposal to conserve Coprinopsis over Pselliophora was accepted by the NCF (Gams 2005).

**New combination:**

Coprinopsis lilacinus (Berk & Broome) Redhead, **combin nov.**

Mycobank MB 838345
Basionym: Rhacophyllus lilacinus Berk. & Broome, J. Linn. Soc., Bot. 11: 559. 1871.
Synonyms: Coprinus clastophyllus Maniotis, Amer. J. Bot. 51: 491. 1964.

Coprinopsis clastophylla (Maniotis) Redhead et al., Taxon 50: 227. 2001.
Use Cryptococcus Vuill. 1901 (A) rather than Filobasidiella
Kwon-Chung 1976 (S)
The generic name Filobasidiella was described by
Kwon-Chung (1976) for the sexual morph of Cryptococ-
cus neoformans, type of Cryptococcus, thus these generic
names are synonyms. Cryptococcus neoformans and re-
lated species cause serious respiratory diseases of
humans and animals that can be fatal for immunocom-
promised patients (May et al. 2016). More than 300 spe-
cies had been placed in Cryptococcus but recently Liu et al. (2015) re-circumscribed Cryptococcus to include
only ten species placing many names in other genera.
All except one of the five names in Filobasidiella are
now recognized in Cryptococcus (Kirk 2020; Liu et al.
2015). Given priority, its well-defined generic status, and
widespread use especially for the medically important C.
neoformans, we recommend the use of Cryptococcus.

Use Dacrymyces Nees 1816 (S) rather than Ditiola Fr. 1822
(S), Pionnotes Fr. 1849 (A) or Dacryoscyphus R. Kirschner &
Zhu L. Yang 2005 (A)
The generic name Ditiola Fr. 1822 was accepted over the
pre-Friesian Ditiola P. Browne 1756, now regarded as Schizopyllum, as well as by Donk (1958) based on Nannfeldt (1947) and as accepted and ex-
plained by McNabb (1966). Ditiola radicata was de-
signed as type of Ditiola by Bronniarti (1824). This
species was included in a study of Dacrymyces with
Ditiola radicata grouping inside Dacrymyces (Shir-
ouzu et al. 2013; Zamora and Ekman 2019), thus
Ditiola is a synonym of Dacrymyces. The type speci-
men of the type of Pionnotes, P. capitata based on Fusarium capitatum, was re-examined by Seifert (2013) and determined to be Dacrymyces chrysosper-
mus. Based on the phylogenetic trees presented by
Shirouzu et al. (2007, 2009, 2013), D. chrysospermus is congeneric with the type of Dacrymyces, D. stilla-
tus, thus Pionnotes is another synonym of Dacry-
myces. Pionnotes has often been used in regard to
species of Fusarium, while Dacrymyces includes over
100 names and is widely used. Phylogenetic studies of
Dacrymycetes by Kirschner and Yang (2005), Shirouzu
et al. (2009, 2013), and Zamora and Ekman (2020)
demonstrated that the type of the asexually typified
Dacryoscyphus, D. chrysochilus, grouped together with
Dacrymyces subarcticus in Dacrymyces. Dacrymyces
includes over 100 names while only three names have
been placed in Dacryoscyphus. Unless the genus Dacry-
myces is divided into many genera, Dacryoscyphus remains
a synonym of Dacrymyces. Among these synonymous gen-
ic names, Dacrymyces is the most widely used (GSS
Dacrymyces = 1580, Ditiola = 363, Pionnotes = 458,
Dacryoscyphus = 16). Given its priority, greater number of
names, and widespread use, we recommend the use of
Dacrymyces.

Use Deconica (W.G. Sm.) P. Karst. 1879 (S) rather than
Pseudohelicomyces Garnica & E. Valenz. 2000 (A)
Pseudohelicomyces albus, type of the monotypic generic
name Pseudohelicomyces, was described for the asexual
morph of Psilocybe merdaria (Valenzuela and Garnica
2000), now regarded as Deconica merdaria (Noordeloos
2009). Since then, the generic name Psilocybe has been
proposed for conservation with a new type, P. semilance-
ata, in order to include species that produce psilocybin
(Redhead et al. 2007); this proposal was accepted (Nor-
vell 2010) and is included in Appendix III of the ICN (Wiersema et al. 2020). Thus, P. merdaria and other
non-hallucinogenic species previously recognized in Psi-
locybe have been shown to fall outside of the group that
includes the conserved type of Psilocybe (Moncalvo et al.
2002). Although the type of Deconica, D. bullacea, has
not been sequenced, it is accepted that D. bullacea and
D. merdaria are congeneric (Noordeloos 2009), thus
Deconica and Pseudohelicomyces are synonyms. Deco-
nika includes 59 names and is widely used (GSS = 400)
while monotypic Pseudohelicomyces remains an obscure
name (GSS = 21). Given these reasons and based on pri-
ority, we recommend the use of Deconica.

Protect Dendrocollybia R.H. Petersen & Redhead 2001 (S)
over Tilachlidiopsis Keissl. 1924 (A) and Sclerostilbun
Povah 1932 (A)
The generic name Dendrocollybia is typified by D.
racemosa, a species previously placed in Collybia
(Hughes et al. 2001). The asexual morph of D. race-
mosa has been recognized in Tilachlidiopsis typified by
T. racemosa of which Sclerostilbum septentrionale,
the type of the monotypic generic name Sclerostilb-
num, was considered a synonym (Stalpers et al. 1991;
Hughes et al. 2001). Thus, the types of the latter two
generic names are synonyms of D. racemosa and
these three generic names are synonyms. Tilachlidiop-
sis has included diverse species in the Ascomycota and
Basidiomycota (Stalpers et al. 1991) and is rarely
used for the latter. Hofstetter et al. (2014) showed
that Dendrocollybia should be recognized as a distinct
genus. Although Tilachlidiopsis has been used more
than Dendrocollybia, many of those references are to
names now placed in the ascomycete genus Ophiocor-
dyceps (GSS Dendrocollybia = 85, D. racemosa = 61,
Tilachlidiopsis = 89, T. racemosa = 23, Sclerostilbun =
45). Given the widespread use of Dendrocollybia and
its distinct morphology, we recommend that Dendro-
collybia be protected over Tilachlidiopsis and Sclerostilbun.
Protect **Diacanthodes** Singer 1962 (S) over **Bornetina L. Mangin & Viala 1903 (A)**

The genus **Diacanthodes**, typified by *D. novoguineensis*, includes six species with two varieties of tropical fungi (Robledo et al. 2020). The asexual morph of *D. novoguineensis* was determined to be *Bornetina corium* in the monotypic genus *Bornetina* (Fidalgo 1962a, b), thus **Diacanthodes** and *Bornetina* are synonyms. **Diacanthodes** is a root disease known as phthiriasis of coffee and other tropical hosts (Rajchenberg and Robledo 2013). **Diacanthodes** is used more frequently (GSS = 118) and includes more species than *Bornetina* (GSS = 70), thus we recommend **Diacanthodes** for protection.

Use **Ditangium P. Karst. 1867 (A)** rather than **Craterocolla Bref. 1888 (S) or Poroidea Göttinger ex G. Winter 1885 (A)**

The connection between **Craterocolla, Ditangium** and **Poroidea** was reviewed by Donk (1962, 1966) who concluded that they were sexual and asexual morphs of the same species. **Craterocolla**, typified by *C. cerasi*, was confirmed as a distinct genus in **Sebacinales** by Weiss and Oberwinkler (2001). The generic name *Ditangium* is typified by *D. insigne* of which **Craterocolla cerasi** is a synonym (Donk 1962; Nag Raj 1978; Malysheva et al. 2019). Nag Raj (1978) included the monotypic genus **Poroidea**, typified by *P. pithyophila*, as a synonym of the asexual morph of *Craterocolla cerasi*. Thus, **Craterocolla, Ditangium**, and **Poroidea** are synonyms. Although **Craterocolla** is more widely used than **Ditangium** (GSS **Craterocolla** = 127, **Ditangium** = 34, **Poroidea** = 8), **Ditangium** has priority and was recommended for use by Malysheva et al. (2019), and we follow their recommendation.

Protect **Echinoporia Ryvarden 1980 (S) over Echinodia Pat. 1918 (A)**

The generic name *Echinoporia*, typified by *E. hydnophora*, was described as the sexual morph of **Echinodia theobromae**, the type of the monotypic genus **Echinodia** (Ryvarden and Johansen 1980; Ryvarden 1983), thus **Echinoporia and Echinodia** are synonyms. **Echinoporia** includes three species and is more commonly used than **Echinodia** (GSS **Echinoporia** = 66, **Echinodia** = 15). Because it has a greater number of species and has been used in the recent literature (Motato-Vasquez et al. 2015), we recommend the protection of **Echinoporia**.

Use **Femsjonia Fr. 1849 (S) rather than Cerinosterus R.T. Moore 1987 (A)**

The genus **Femsjonia** is typified by *F. luteoalba* for which **Exidia peziziformis** provides an earlier epithet, thus this species is regarded as **F. peziziformis** (McNab 1965). The putative asexual morph of **F. peziziformis** (as *F. luteoalba*) was named by de Hoog (1974) as **Sporothrix luteoalba**, and the connection was reiterated by Maekawa (1987) and Middlehoven et al. (2000). When **Cerinosterus** was described, it was typified by *S. luteoalba*, which erroneously interpreted as the asexual morph of a **Cerinomyces** sp. (Moore 1987). We confirm the relationship of **Cerinosterus luteoalbus** with **F. peziziformis** based on the 100% match of a BLAST search of an ITS sequence (MH856312) from an ex-paratype strain of **C. luteoalbus** (CBS 208.48) with **F. peziziformis**. Thus, **Cerinosterus and Femsjonia** are synonyms. **Femsjonia** includes 12 names while only two names have been placed in **Cerinosterus**, one of which, **C. cyanescens**, is now placed in **Quambalaria** (de Beer et al. 2006). Shirouzu et al. (2009, 2017) demonstrated that **F. peziziformis** groups outside of **Dacrymyces** and this was confirmed by Zamora and Ekman (2019) who placed **Femsjonia** in the **Dacrymycetaceae**. Given its priority, the greater number of names, and greater use (GSS **Femsjonia** = 175, **Cerinosterus** = 71), we recommend the use of **Femsjonia**.

Use **Fistulina Bull. 1791 (S) rather than Confistulina Stalpers 1983 (A)**

The asexual morph of **Fistulina hepatica**, type of **Fistulina**, was described in the monotypic genus **Confistulina** typified by **C. hepatica** (Stalpers and Vlug 1983), thus these generic names are synonyms. **Fistulina** currently includes 21 names and is widely used (GSS **Fistulina** = 2900, **Confistulina** = 23). Given its priority, greater number of species, and its widespread use, **Fistulina** is recommended for use.

Use **Heteroacanthella Oberw. 1990 (S) rather than Acanthellorhiza P. Roberts 1999 (A)**

The monotypic generic name **Acanthellorhiza** is typified by *A. globulifera*, which is the asexual morph of **Heteroacanthella acanthophylla** (Roberts 1999). **Heteroacanthella** is typified by **H. variabilis** (Oberwinkler et al. 1990). Zamora et al. (2014) regarded **H. acanthophylla** and **H. variabilis** as congeneric and added a third species. **Heteroacanthella** is more widely used than **Acanthellorhiza** (GSS **Heteroacanthella** = 35, **Acanthellorhiza** = 4). **Heteroacanthella** has priority and includes three species while **Acanthellorhiza** is monotypic and remains little known, thus we recommend the use of **Heteroacanthella**.

Use **Heterobasidion Bref. 1888 (S) rather than Spiniger Stalpers 1974 (A)**

The holotype of **Heterobasidion, H. annosum**, is the sexual morph of the type of **Spiniger, S. meineckellus** (Stalpers 1974), thus these generic names are synonyms. **Heterobasidion annosum**, often reported as its synonym **Fomes annosus**, is the cause of a serious tree disease resulting in root and butt rot of pine trees in
Eurasia, although previously this name had been used to represent a species complex occurring in temperate coniferous forests throughout the world (Ostrosina and Garbelotto 2010; Pegler and Waterston 1968). A number of segregate species have now been described in *Heterobasidion* (Ostrosina and Garbelotto 2010). *Heterobasidion* includes about 30 species, has priority, and is well known (GSS *Heterobasidion* = 14,200, *Spiniger* = 5700), while *Spiniger* includes only one additional species and remains relatively obscure, thus we recommend the use of *Heterobasidion*.

**Use Hohenbuehelia Schultzer 1866 (S) rather than Nematocotonus Drechsler 1941 (A)**
The generic synonymy of *Hohenbuehelia*, typified by *H. petaloides*, and *Nematocotonus*, typified by *N. tylosporus*, was proven by Koziai et al. (2007) in which they showed that *Hohenbuehelia-Nematocotonus* including their types formed a monophyletic clade in *Pleurotaceae*. Donk (1962) was the first to designate *N. tylosporus* as the type of *Nematocotonus* stating that he chose this as the best species to represent the genus. Thorn (2013) made the nomenclatural changes consistent with the recognition of the use of *Hohenbuehelia* rather than *Nematocotonus*. *Hohenbuehelia* produces a mushroom-like sexual morph and is more widely used than the nematode-trapping asexual morph represented by *Nematocotonus* (GSS *Hohenbuehelia* = 1500, *Nematocotonus* = 564). Given that *Hohenbuehelia* has priority and includes 182 names while *Nematocotonus* includes only 16 names and in agreement with Thorn (2013), we recommend *Hohenbuehelia* for use.

**Use Leucocoprinus Pat. 1888 (S) rather than Attamyces Kreisel 1972 (A)**
The monotypic generic name *Attamyces* is typified by *A. bromatificus*, a bromatia-forming fungus associated with attine or leaf-cutter ant nests in the western hemisphere (Kreisel 1972). *Attamyces bromatificus* was considered to refer to an asexual morph of *Leucoagaricus gongylophorus* (Chapela et al. 1994; North et al. 1997). Ortiz et al. (2008) analyzed sequences from *L. gongylophorus* and discussed the taxon under *Leucoagaricus*, although much earlier the combination *Leucocoprinus gongylophorus* had been introduced by Heim (1957). Controversy exists over the use of *Leucocoprinus* and *Leucoagaricus*. The older name *Leucocoprinus* is lectotypified by *L. cepistipes*, while confusion had existed over the type of *Leucoagaricus*, first validly published by Singer (1948) because he suggested as type an invalid name while including two other validly published names. This dilemma was resolved by Redhead (2016) who lectotypified the generic name *Leucoagaricus* by *L. rubrotinctus*, thus overriding the classification of *Leucocoprinus americanus* as *Leucoagaricus americus* by Vellinga (2000). Phylogenetic analyses of DNA sequence data place numerous species of *Leucoagaricus* and *Leucoagaricus*, including their types, in the same clade with an intermixing of species from each genus (Vellinga et al. 2011). Despite the evident synonymy of *Leucoagaricus* with *Leucocoprinus*, novel species continue to be described in both genera (Ge et al. 2015) pending a comprehensive treatment of the group. For the purpose of placing *Attamyces*, we treat *Leucocoprinus* and *Leucoagaricus* as synonyms with *Leucocoprinus* having priority. At present, *Attamyces* should be regarded as a synonym of *Leucocoprinus*. Given its greater number of names and widespread use, we recommend that *Leucocoprinus* be used rather than *Attamyces*.

*Coccobotrys* is another generic name that has been mentioned as a synonym of members of *Agaricaeae* such as *Leucoagaricus*. When introducing *Coccobotrys*, typified by *C. xylophilus*, Boudier and Patouillard (1900) noted that the specimen of the type from France differed in some respects from the characteristics of the original description of the basionym *Cenococcum xylophilum* Fr. 1829. Van Bambeke (1900) reported further material from Belgium, which he regarded as conspecific with the French specimen observed by Boudier and Patouillard (1900). Van Bambeke (1900) considered *Coccobotrys xylophilus* to be an asexual morph of *Lepiota meleagris* (now *Leucoagaricus meleagris*). According to Else C. Vellinga (pers. comm.), the material examined by Boudier and Patouillard (1900) and van Bambeke (1900) is not conspecific with the original collection of *Cenococcum xylophilum* from Russia. Therefore, the recognition of *Coccobotrys* as a lepiotaceous fungus is based on a misapplication. The identity of the type of *Coccobotrys* is unknown. A second species of *Coccobotrys*, *C. chilensis*, was transferred to *Leucoagaricus* by Ruiz and Molinari-Novoa (2016). Note also that *Coccobotrys* could be confused with the later homonym *Coccobotrys* R. Chodat 1913, a name applied to a group of algae.

**Use Marchandiomyces Diedrich. & D. Hawksw. 1990 (A) rather than Marchandiopsis Ghobad-Nejhad & Hallenb. 2010 (S)**
Ghobad-Nejhad et al. (2010) demonstrated that the species originally described as *Laeticiorticum quercinum* falls within a clade also containing *Marchandiomyces corallinus*, an asexual morph that is the type of *Marchandiomyces*. They chose to place the two species in the same genus, but under the rules of nomenclature at the time, they could not take up *Marchandiomyces* for the basidiospore-producing *L. quercinum*. Therefore, they introduced *Marchandiopsis*, typified by *L. quercinum*. With the move to one fungus-one name, Hawksworth and Henri (2015)
argued that Marchandiopsis had rarely been used in comparison to Marchandiomyces and they proposed to take up the latter name. They made the necessary new combination, Marchandiomyces quercinus. Diederich et al. (2018) transferred three other species originally described in Marchandiomyces to Laetisaria, placed Marchandiomyces aurantiacus in Erythricium, and retained three species in Marchandiomyces, including M. quercinus and M. corallinus. Given current usage of Marchandiomyces (GSS Marchandiomyces = 404, Marchandiopsis = 9) and in agreement with recent authors, we recommend that Marchandiomyces be used.

Use Mycena (Pers.) Roussel (S) 1806 rather than Decapitatus Redhead & Seifert (A) 2000
The generic name Mycena, typified by M. galericulata, is used for over 2000 species of small mushrooms, while the monotypic Decapitatus, typified by D. flavidus based on Stilbum flavidum, was used for the asexual morph of Mycena citicolor (Seifert 1985; Redhead et al. 2000). Several authors have considered M. citricolor and M. galericulata to be congeneric (Bermudes et al. 1991; Desjardin et al. 2007), thus Mycena and Decapitatus are synonyms. Mycena is more widely used than Decapitatus (GSS Mycena = 11,400, Decapitatus = 243). Given the widespread use of Mycena, the high number of species, and its priority, we recommend Mycena for use when Mycena is adopted with a broad concept.

Use Myxarium Wallr. 1833 (S) rather than Hyaloria Möller 1895 (S) or Helicomyxa R. Kirschner & Chee J. Chen 2004 (A)
Myxarium nucleatum, the type of Myxarium, and M. mesonucleatum were shown to form a strongly supported clade with Hyaloria pilacre, type of the generic name Hyaloria, by Kirschner and Chen (2004), thus Myxarium and Hyaloria are synonyms. They also showed that the type of the monotypic generic name Helicomyxa, H. everhartioides, is closely related to Myxarium. The small conidomata with conidia of M. tremelloides (as Exidia tremelloides) are similar to those of H. everhartioides suggesting that these names are synonyms or at least closely related. Thus, the available data suggest that Helicomyxa, Hyaloria, and Myxarium are synonyms. Given the greater number of species, greater use (GSS Myxarium = 213, Hyaloria = 53, Helicomyxa = 22), and priority, we recommend the use of Myxarium.

New combinations:
Myxarium everhartioides (R. Kirschner & Chee J. Chen) R. Kirschner, **comb. nov.**
MycoBank MB 837868

Basionym: Helicomyxa everhartioides R. Kirschner & Chee J. Chen, Stud. Mycol. 50: 339. 2004.

Myxarium pilacre (Möller) R. Kirschner, **comb. nov.**
MycoBank MB 837869
Basionym: Hyaloria pilacre Möller, Bot. Mitt. Tropen 8: 173. 1895.

Use Necator Massee 1898 (A) over Upasia Harsojo-Tjokrosoedarmo & Rifai 1992 (A/S)
Necator decertus was described as a destructive parasitic of young coffee branches in Malaysia (Massee 1898). Rant (1911) connected Necator to an unnamed Corticium and later Rant (1912) connected it to Corticium javanicum and C. salmonicolor (Petch 1912). Most recently the fungus in all stages has been classified as Erythricium salmonicolor (e. g. Moraes et al. 2006) but also has been shown to be an independent sister taxon to Erythricium (Roux and Coetzee 2005; Ghobad-Nejad et al. 2010; Diederich et al. 2011). In an overlooked publication, Harsojo-Tjokrosoedarmo (1992, 1995) proposed a new genus Upasia for E. salmonicolor. Recognized as a genus separate from Erythricium, Necator has priority and is here recommended for use. A new combination in Necator is required and proposed here.

Erythricium, typified by E. laetum, is considered to be a separate genus that includes as a synonym Marchandiobasidium, typified by M. aurantiacum now recognized as Erythricium aurantiacum (Hawksworth and Henrici 2015; Diederich et al. 2018). Erythricium and its synonym Marchandiobasidium are sexual morph names.

Necator salmonicolor (Berk. & Broome) K.H. Larss., Redhead, & T.W. May, **comb. nov.**
MycoBank MB 838387
Basionym: Corticium salmonicolor Berk. & Broome, J. Linn. Soc., Bot. 14(74): 71. 1873 "1875".

Protect Neolentinus Redhead & Ginns 1985 (S) over Digitellus Paulet 1793 (A/S)
Digitellus humanus, the lectotype of Digitellus, is presumed to be based upon the aborted basidiomes of Neolentinus, most probably N. lepideus (cf. Donk 1962; Redhead and Ginns 1985), which typically do not form expanded pilei but the sterile stipes often become multi-branched in complete darkness, such as on supporting timbers in abandoned mine shafts (Vlasenko et al. 2017). Hence, the generic name and species epithet refer to a hand-like form, which have also been named Neolentinus lepideus f. ceratoidei based upon Ramaria caratoidei. The validity of the Paulet names and the date of Paulet’s 1793 publication have been questioned because of its production during the French revolution and conflicting accounts of its distribution. Presuming the name
Digitellus published as genus XVI in his index is valid and noting its obscurity, when Neolentinus typified by N. kauffmanii includes N. lepideus, we recommend that the name Neolentinus should be protected. This is subject to resolution of a proposal to list Paulet’s publication as a “Suppressed Work” (Parra et al. 2015).

Use Oliveonia Donk 1958 (S) rather than Oliveorhiza P. Roberts 1998 (A)

The generic name Oliveonia, typified by O. fibrillosa, was established to replace the later homonym Heteromyces Olive 1957 non Müll. Arg. 1889 (Donk 1958). Although regarded as related to Ceratobasidiun, Oliveonia has been shown to be distinct including five species (Kotiranta and Saarenkoska 2005). Oliveorhiza anapauxilla, the type and only species of Oliveorhiza, was described for the asexual morph of Oliveonia pauxilla (Roberts 1998). Oliveonia fibrillosa and O. pauxilla are congeneric (Kotiranta and Saarenkoska 2005; Roberts 1998), thus Oliveonia and Oliveorhiza are synonyms. Oliveonia has been more widely used than Oliveorhiza (GSS Oliveonia = 107, Oliveorhiza = 6). Given its priority, greater number of species, and widespread use, we recommend the use of Oliveonia.

Use Pleurotus (Fr.) P. Kumm. 1871 (S) rather than Antromycopsis Pat. & Trab. 1897 (A)

The generic name Pleurotus is applied to a number of mushroom-forming fungi including the type, P. ostreatus, the oyster mushroom, one of the most commonly cultivated edible fungi in the world, and P. eryngii (DC.) Quél. 1872, the widely consumed king oyster mushroom (Zervakis et al. 2004). Species of Pleurotus are also used industrially to break down aromatic hydrocarbons (Adenipekun et al. 2015); in addition, they can produce toxic compounds that paralyze nematodes. The generic name Pleurotus has already been conserved over six earlier generic names (Wiersema et al. 2020). Miller Jr. (1969) described P. cystidiosus for the sexual morph of Antromycopsis broussonetiae, type of the generic name Antromycopsis. Pleurotus ostreatus and P. cystidiosus were shown to be congeneric by Gonzalez and Labarère (2000), thus Pleurotus and Antromycopsis are synonyms. The genus Pleurotus includes over 500 species names; of these, a few dozen have been well-studied and are nematophagous (Thorn and Barron 1984; Barron and Thorn 1987), whereas the name Antromycopsis is rarely used and includes only 19 names (GSS Pleurotus = 132,000, Antromycopsis = 175). Considering the widespread use of Pleurotus, its numerous species, its economic importance, and its priority, we recommended the use of Pleurotus.

Use Polyporus P. Micheli ex Adans. 1763 (S) rather than Mycelithe Gasp. 1841 (A)

The monotypic generic name Mycelithe, typified by M. fungifera, accommodates sclerotia of Polyporus tuberaster, lectotype of Polyporus. Donk (1962) provides one of the few references to the obscure generic name Mycelithe. Based on the original well-illustrated publication, Gasparini (1842) concluded that M. fungifera refers to sclerotia of a species in Polyporus, thus these two generic names are synonyms. Polyporus is a widely used name with over 3000 names described in this genus while the monotypic Mycelithe is uncommonly used (GSS Polyporus = 30,100, Mycelithe = 7). Given its widespread use and priority as well as the numerous described species, we recommend the use of Polyporus.

Controversy exists regarding the typification of the sanctioned name Polyporus. The earliest non-mechanical lectotypification was by Clements and Shear (1931) who selected P. brunalis for “Polyporus” (Mich.) Fr. Epicr. 427 1838”. However, Fries (1838) considered the generic name to link back to Fries (1821) and consequently Donk (1933) selected P. tuberaster as lectotype from species included by Fries (1821). For the moment, we follow Donk (1933) and current usage by indicating P. tuberaster as type of Polyporus, but we note that formal conservation with a conserved type may be required.

Protect Postia Fr. 1874 (S) over Ptychogaster Corda 1838 (A)

Postia, lectotypified by P. lactea, is a well-defined genus as recently circumscribed by Pildain and Rajchenberg (2013) and Shen et al. (2015, 2019). Walker (1996) provided an extensive discussion of the validity of the publication of the generic name Postia. The type of Ptychogaster, P. albus, was placed in Postia as P. ptychogaster by Knudsen and Hansen (1996) and is widely reported (Shen et al. 2015; Vampola et al. 2014; Vizzini and Zotti 2008). Given that Postia lactea and P. ptychogaster are congeneric, as demonstrated by Shen et al. (2015), then Postia and Ptychogaster are synonyms. Most names in Ptychogaster are now recognized in Postia or other related genera (Stalpers 2000). Postia is the most widely used of these two names (GSS Postia = 7950, Ptychogaster = 617), thus we recommend protection and use of the generic name Postia.

Two older synonyms are known for Postia ptychogaster based on Polyporus ptychogaster but neither of these synonyms listed below are widely used. This synonym has been supported by Shevchenko (2018) and Stalpers (2000), thus we propose the basionym Polyporus ptychogaster for protection:

Polyporus ptychogaster F. Ludw., Z. Gesammtten Naturwiss. (Halle) 3: 424. 1880.

Lectotype: See Table 2.
Accepted name: Postia ptychogaster (F. Ludw.) Vesterh., Nordic J. Bot. 16: 213. 1996.

Rejected synonyms: Ptychogaster albus Corda, Icon. fung. 2: 24. 1838.

Trichoderma faliginoides Pers., Syn. meth. fung. 1: 231. 1801.

Protect Psathyrellaceae Vilgalys et al. 2001 over Zerovaemycetaceae Gorovij 1977
Zerovaemycetes is regarded as a synonym of Coprinopsis with the type of Zerovaemycetes, Z. copriniformis, considered a synonym of Rhacophyllus lilacinus, now Coprinopsis lilacina as discussed above under Coprinopsis. Gorovij (1979) published a new class name, Loculomycetes. Redhead et al. (2000) argued that Zerovaemycetes and Zerovaemycetaceae, the latter introduced by Gorovij (1979), were asexual morphs and using the Code in force in 2000–2001, Redhead et al. (2001) elevated Coprinaceae subfam. Psathyrelloideae Singer to family level with priority based upon the date 2001. Coprinopsis (syn. Zerovaemycetes) is classified in the Psathyrellaceae in modern phylogenetic analyses, thus Zerovaemycetes is a synonym of Psathyrellaceae. Psathyrellaceae appears in over 1500 GS records while Zerovaemycetaceae appears in 3 GS hits, two of which are Redhead et al. (2000, 2001). The name Psathyrellaceae is adopted in modern phylogenetic analyses and in mushroom books. It would be disruptive to switch to a family name used so infrequently and based upon synonymized taxon names, thus we propose the name Psathyrellaceae for protection.

Use Rhizoctonia DC. 1815 (A) rather than Thanatephorus Donk 1956 (S)
The generic name Rhizoctonia has been conserved with R. solani as the conserved type and R. solani is formally conserved against R. napaeae (Stalpers et al. 1998; Wiersema et al. 2020). Rhizoctonia includes many species, especially ones causing plant diseases (Ajayi-Oyetunde and Bradley 2018; Oberwinkler et al. 2013). Some names in Rhizoctonia have been shown to be ascomycetous fungi and removed to Ascomycetota. Stalpers (1984) accepted three species in Rhizoctonichum, each of which has been shown to be phylogenetically distinct, i.e. not congeneric (Miettinen et al. 2016), thus Sporotrichum now includes only the type, S. aurantiacum Fr. 1832, a sanctioned, legitimate, later homonym of S. aurantiacum Grev. 1822 based on Mucor aurantius Bull. 1791. We follow Miettinen et al. (2016) and recommend Riopa for protection over Sporotrichum; in addition, we recommend the protection of R. metamorphosa over S. aurantiacum Fr.

See below in regard to species of Rhizoctonia that belong to Waitea.

Protect Riopa D.A. Reid 1969 (S) over Sporotrichum Link 1809 (A)
The generic name Riopa, previously considered a synonym of Ceriporia, is typified by R. davidii, which is regarded as a synonym of the older name R. metamorphosa by Miettinen et al. (2016). Based on the concept of Miettinen et al. (2016), the genus includes one additional species R. pudens. The typification of Sporotrichum is complicated. Sporotrichum has been cited as having various types over time, and the type accepted by recent authors, S. aureum Link 1809 (Hughes 1958; Donk 1962; Stalpers 1984; Miettinen et al. 2016), is a homonym of the sanctioned name S. aureum (Pers.) Fr. 1832 and thus not available without conservation. Stalpers (1984) and Miettinen et al. (2016) considered S. aureum Link 1809 synonymous with S. aurantiacum Fr., which is the asexual morph of R. metamorphosa. Although more than 300 names have been placed in Sporotrichum, the majority of these names belong in Ascomycotina. Stalpers (1984) accepted three species in Sporotrichum, each of which has been shown to be phylogenetically distinct, i.e. not congeneric (Miettinen et al. 2016), thus Sporotrichum now includes only the type, S. aurantiacum Fr. 1832, a sanctioned, legitimate, later homonym of S. aurantiacum Grev. 1822 based on Mucor aurantius Bull. 1791. We follow Miettinen et al. (2016) and recommend Riopa for protection over Sporotrichum; in addition, we recommend the protection of R. metamorphosa over S. aurantiacum Fr.

Name proposed for protection: Riopa metamorphosa (Fuckel) Miettinen & Spirin, MycoKeys 17: 27. 2016.
Basionym: Polyporus metamorphosus Fuckel, Jahrb. Nassauischen Vereins Naturk. 27-28: 87. 1874.
Type: see Table 2.

Synonyms to be protected over: Mucor aurantius Bull., Hist. Champ. France 1: 103. V. 1791.
Sporotrichum aurantiacum Fr., Syst. Mycol. 3: 423. 1832, nom. sanct., non Grev., Mem. Wern. Nat. Hist. Soc. 4: 67. 1822.

Protect Scytinostromma Donk 1956 (S) over Michenera Berk. & M.A. Curtis 1869 (A), Artocreas Berk. & Broome 1873 (A), and Stereofomes Rick 1928 (S) and use rather than Licrostroma P.A. Lemke 1964 (S)
The sexual morph of Michenera, typified by M. artocreas, was described as Licrostroma, typified by L. subgiganteum, by Lemke (1964). Lyman (1907) had earlier demonstrated that cultures derived from the basidiospores of what he called Corticium subgiganteum, the basionym of L. subgiganteum, produced what he called Michenera spores, but he was unable to induce the cultures to form hymenia and
basidiospores. Molecular data place \textit{L. subgiganteum} with \textit{Scytinostroma aluta} and \textit{S. portentosum}, the type of \textit{Scytinostroma} (Giraldo et al. 2017; K-H Larsson pers. comm. 2017) and with \textit{S. caudisporum} (Leal-Dutra et al. 2020). Thus, \textit{Scytinostroma}, \textit{Michenera}, and \textit{Licrostroma} are synonyms. Giraldo et al. (2017) recognized the synonymy of \textit{Licrostroma} with \textit{Michenera} but chose to use \textit{Licrostroma} despite the priority of \textit{Michenera}. Conversely, Liu et al. (2019) recognized \textit{Michenera} including a new species; their phylogeny placed both the type and the new species of \textit{Michenera} in a clade with the type of \textit{Scytinostroma}, \textit{S. portentosum}. Although the genus is not monophyletic (Larsson 2007), \textit{Scytinostroma} currently includes 25 names, one of which was added by Wang et al. (2020).

The type of the genus and other species of \textit{Scytinostroma} with globose basidiospores were placed in “group 1” by Boidin and Lanquetin (1987). To this group these authors also refer \textit{Stereofomes nodulosus}, the lectotype of \textit{Stereofomes} selected by Donk (1956), because it was the only species that included a description as later discussed and accepted by Boidin and Lanquetin (1987). They recognized the synonymy of \textit{Scytinostroma} with \textit{Stereofomes} and suggested that \textit{Scytinostroma} should be conserved over \textit{Stereofomes}, although this was never formally done. Among the 12 names placed in \textit{Stereofomes}, only four remain in that genus. Of these four synonymous generic names, \textit{Scytinostroma} is the most well-known (GSS Scytinostroma =612, \textit{Licrostroma} =30, \textit{Stereofomes} =13, \textit{Michenera} = ca 50, but confused with other meanings of the word). Despite its polyphyletic nature, it seems least disruptive to protect the generic name \textit{Scytinostroma} for the type \textit{S. portentosum} and its relatives.

A final note is that \textit{Artocreas}, lectotypified by \textit{Artocreas micheneri} by Massee (1888), was based on the same find as \textit{Michenera artocreas}, and may have been an unintentional flipping of the two binomial parts (cf. Donk 1962) but are clearly valid names. Considerable confusion was sown by Berkeley throughout the publication history of \textit{Artocreas} by one lapsus calami after another. Berkeley in Berkeley and Curtis (1869) first published the name \textit{Michenera artocreas}. Then he published \textit{Artocreas} with \textit{Artocreas micheneri} and \textit{A. poroniiforme} (Berkeley and Broome 1875). This was followed by an admission of error (Berkeley and Broome 1876) that introduced more errors, namely that \textit{Artocreas} is the same as \textit{Michenera}, but he spelled \textit{Artocreas} in two different ways with two different author citations, namely “\textit{Artocreas, B. & Br.”} and “\textit{Artocreas, B. & C.”}. Massee (1888) further clarified and then muddied the waters by first lectotypifying \textit{Artocreas} by \textit{A. micheneri}, then declaring after a long discussion on \textit{Artocreas poroniiforme}, “Under the circumstances it has been considered advisable to propose the genus \textit{Artocreas} as the type of a new order, occupying a position exactly intermediate between the \textit{Nidulariaceae} and the \textit{Hymenogastreae}”. He then proceeds to name a new order \textit{Matulales} (as \textit{Matulea}) with a new genus \textit{Matula}, typified by \textit{Matula poroniiforme}, and not by \textit{Artocreas}.

**New combinations:**

\textit{Scytinostroma artocreas} (Berk. & M.A. Curtis) K.-H. Larss., \textit{comb. nov.}

Mycobank MB 837870

Basionym: \textit{Michenera artocreas} Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10: 333. 1868 “1869”.

Synonyms: Corticium subgiganteum Berk., Grevillea 2(13): 3. 1873.

\textit{Licrostroma subgiganteum} (Berk.) P.A. Lemke, Canad. J. Bot. 42: 763. 1964.

\textit{Artocreas micheneri} Berk. & M.A. Curtis, in Berkeley & Broome, J. Linn. Soc., Bot. 14: 73. 1873 “1875”.

\textit{Aleurodiscus orientalis} Lloyd, Mycol. Writ. 6(62): 927. 1920.

\textit{Aleurodiscus reflexus} Yasuda, Bot. Mag. (Tokyo) 35(420): 269. 1921.

\textit{Globuliciopsis lindbladii} Hjortstam & Ryvarden, Syn. Fungorum 22: 19. 2007.

\textit{Scytinostroma incrustatum} (S.H. He et al.) K.H. Larss., \textit{comb. nov.}

Mycobank MB 838392

Basionym: \textit{Michenera incrustata} S.H. He et al., Nova Hedwigia 108: 199. 2018 “2019”.

\textit{Scytinostroma nodulosum} (Rick) K.H. Larss., \textit{comb. nov.}

Mycobank MB 837871

Basionym: \textit{Stereofomes nodulosus} Rick, Egatea 13: 435. 1928.

**Use Sistotrema Pers. 1794 (S) rather than \textit{Ingo diella} D.E. Shaw 1972 (A)**

In sanctioning \textit{Sistotrema}, Fries (1821) included only \textit{S. conf iu l ens} Pers. 1794, although listing \textit{Hydnum sublamellosum} Bull. 1787 as a synonym. Persoon (1794) had previously described \textit{Sistotrema} including \textit{S. conf iu l ens} with \textit{Hydnum sublamellosum} as a synonym as well as \textit{S. c in e rum} and \textit{Boletus unicolor}. \textit{Sistotrema hamatum} was described as the sexual morph of \textit{Ingo diella hamatum}, the type of \textit{Ingo diella}, according to Nawawi and Webster (1982) who obtained both morphs in pure culture from partially submerged decaying leaves collected in a stream in Malaysia. Although \textit{S. hamatum} has not been sequenced, it has been widely accepted in \textit{Sistotrema}, as congeneric with \textit{Sistotrema confiulens}, thus \textit{Sistotrema} and \textit{Ingo diella} are synonyms. The large genus \textit{Sistotrema} is classified in \textit{Hydnaceae}, \textit{Cantharellales}, with close relationships to \textit{Clavulina}, \textit{Hydnum}, and
Membranomyces. It is considered polyphyletic (Mascalvo et al. 2006; Bernicchia and Gorión 2010) or paraphyletic (Larsson 2007). Zhou and Qin (2013) determined that a monophyletic Sistotrema can be divided into subclades that include the type plus 13 members of the genus as well as other genera, however, S. hamatum was not included in this study. Sistotrema is more commonly used than Ingoldiella (GSS Sistotrema = 1250, Ingoldiella = 91) and includes over 200 names while Ingoldiella includes only three names. Given the widespread use of Sistotrema, the greater number of names, and its priority, we recommend the use of Sistotrema.

Use Sterigmatosporidium G. Kraep. & U. Schulze 1983 (A) rather than Cuniculitrema J.P. Samp. & R. Kirschner 2001 (S)

Sterigmatosporidium polymorphus, the type and only species in Sterigmatosporidium, was described for a species later determined to be the asexual morph of Cuniculitrema polymorpha, the type and only species of Cuniculitrema (Kirschner et al. 2001), thus these generic names are synonyms. Sterigmatosporidium was initially considered to be related to Sterigmatomyces (Kraepelin and Schulze 1982), the latter genus typified by S. halophilus, and now shown to belong in Pucciniomycotina (Aime et al. 2006, 2018). Liu et al. (2015) included Sterigmatosporidium polymorphus (as Cuniculitrema polymorpha) in their molecular study of Tremellomyctes and placed this species near Fellomyces in Agaricomycotina. Sterigmatosporidium is used more extensively than Cuniculitrema (GSS Sterigmatosporidium = 186, Cuniculitrema = 60). Given that both genera are monotypic but Sterigmatosporidium has priority and is more widely used, we recommend the use of Sterigmatosporidium.

Use Subulicystidium Parmasto 1968 (S) rather than Aegeritina Jülich 1984 (A)

The monotypic Aegeritina is typified by A. tortuosa, now considered a synonym of Subulicystidium longisporum, the type of Subulicystidium (Kendrick and Watling 1979), thus these generic names are synonyms. Because it has priority, includes 11 names, and is widely used (GSS Subulicystidium = 248, Aegeritina = 19), we recommend the use of Subulicystidium.

Use Tomophagus Murrill 1905 (S) rather than Thermophymatospora Udagawa, Aawo & Abdullah 1986 (A)

The generic name Tomophagus, typified by T. colossus, was established for an unusual species often referred to as Ganoderma colossus (Fr.) C.F. Baker 1920. Hong and Jung (2004) were the first to show that G. colossus fell outside Ganoderma. Le et al. (2012) recognized this species in Tomophagus and described a second species of Tomophagus, T. cattienensis. The monotypic Thermophymatospora, typified by T. fibuligera, was described for an asexual basidiomycete, which was later determined to be the asexual morph of Tomophagus colossus as G. colossus (Adaskaveg and Gilbertson 1989), thus Tomophagus and Thermophymatospora are synonyms. Given its priority, the greater number of names, widespread use (GSS Tomophagus = 115, Thermophymatospora = 19), and recent study, we recommend the use of Tomophagus.

Use Trechispora P. Karst. 1890 (S) rather than Osteomorpha Watling & W.B. Kendr. 1979 (A)
The type of Trechispora, T. onista, is now regarded as a synonym of T. hymenocystis (Larsson 1994). When Watling and Kendrick (1979) validated the name Osteomorpha, typified by O. fragilis, they noted its association with Trechispora farinacea, a species name used at that time in a broad sense (Liberta 1973). Since then, a number of authors have suggested that O. fragilis is the asexual morph of Trechispora farinacea (Hjortstam et al. 1988; Mel’nik 2011). Later studies have shown that several Trechispora species are associated with an asexual morph similar to Osteomorpha (Larsson 1995; Miettinen and Larsson 2006), although it is most commonly seen with T. stevensonii (Berk. & Broome) K.H. Larss. 1995. Ordynets et al. (2015) showed that T. farinacea and T. stevensonii are distinct species and that both resolve within Trechispora together with the type of Trechispora, thus Trechispora and Osteomorpha are synonyms. Trechispora is a widely used genus with over 90 names (GSS Trechispora = 1490, Osteomorpha = 39) and has priority, while Osteomorpha includes only the type, thus we recommend the use of Trechispora.

Use Trimorphomyces Bandoni & Oberw. 1983 (S) rather than Anastomycies W.P. Wu et al. & Gange 1997 (A)

In studying Trimorphomyces typified by T. papilionaceus, Kirschner and Chen (2008) concluded that the type of the monotypic genus Anastomycies, A. microsporus, was the asexual morph of T. papilionaceus, thus Trimorphomyces and Anastomycies are synonyms. Although both generic names include only one species name, Trimorphomyces is used more frequently (GS = 82) than Anastomycies (GS = 13). Given its priority and more common use, we recommend the use of Trimorphomyces.

Protect Tulasnella J. Schröt. 1888 [June] (S) over Hormomyces Bonord. 1851 (A) and use rather than Prototremella Pat. 1888 [August] (S), Hormisciopsis Sumst. 1914 (A), or Epulorhiza R.T. Moore 1987 (A)
The generic name Tulasnella is typified by T. lilacina, regarded as a synonym of T. violea by Donk (1966), but not by Roberts (1994a, b), and includes 91 names. Hormomyces is typified by H. aurantiacus and includes seven names. The latter was often considered
the asexual morph of *Tremella mesenterica* following the speculations of Saccardo (1916) and Bresadola (1932). This was never proven experimentally but was broadly accepted (e.g., McNabb 1969). After the cultural studies of *H. aurantiacus* by Tubaki (1976) and the description of the asexual morph of *T. mesenterica* by Pipolla and Kotiranta (2008), it was clear that this putative connection was incorrect. rDNA phylogenies by Mack et al. (2021) suggest that *H. aurantiacus* is a member of the same clade as *Tulasnella violea*, but is unlikely to be conspecific with it. *Hormisciopsis gelatinosa*, the only named species in that genus, is likely to be a synonym of *Hormomyces aurantiacus*. The generic name *Prototremella*, published in the same year as *Tulasnella*, is typified by *P. tulasei*, now *Tulasnella tulasei* (Pat.) Juel 1897. The synonymy of these two generic names and the selection of *Tulasnella* as the accepted name by Donk (1966) has never been questioned and is supported by Stafleu and Cowan (1976) and the monthly publication dates recorded in the *Journal de Botanique*. *Epulorhiza* with seven names is typified by *E. repens* based on *Rhizoctonia repens*. Warcup and Talbot (1967) identified the sexual morph of *R. repens* as *Tulasnella calospora*, with reference to Rogers (1933) and Olive (1957) both of whom used the name *T. calospora* for all *Tulasnella* collections with spores over 15 µm long, regardless of differences in spore shape. Roberts (1994a, b) re-examined type collections of *T. calospora* and *T. deliquescens* and distinguished the two species based on spore shape and size, noting that the illustration of “*Tulasnella calospora*” in Warcup and Talbot (1967) was misnamed and was actually *T. deliquescens*. The name *T. calospora* has continued to be used by many authors for the sexual morph of *R. repens*. Cruz et al. (2016) and papers cited therein could not resolve the synonymy of *T. calospora* and *T. deliquescens* and considered them to be distinct species as does Oberwinkler et al. (2017). Regardless, *T. calospora/T. deliquescens* and *T. violea* are conspecific (Cruz et al. 2016; Kristiansen et al. 2001; Moncalvo et al. 2006; Linde et al. 2017), thus *Tulasnella* and *Epulorhiza* are synonyms. Many of these species, especially *T. calospora/deliquescens*, are associated with the roots of orchids (Linde et al. 2017; McCormick et al. 2004; Weiss et al. 2004). Despite *Hormomyces* being an older name, it has rarely been used in the academic literature (GSS *Tulasnella* = 1629, *Hormomyces* = 42). Similarly, *Tulasnella* is more widely used than *Epulorhiza* (GSS = 875) and the two other obscure generic synonyms (GSS *Prototremella* = 35, *Hormisciopsis* = 9). Therefore, we recommend the use of *Tulasnella*.

*Epulorhiza* is already considered a taxonomic synonym of *Tulasnella* and several species, e.g. *E. amoniioides* and *E. anatica*, were already transferred to that genus (Fujimori et al. 2019). The remainder are recombined in *Tulasnella* below:

**New combinations:**

*Tulasnella albertensis* (Currah & Zelmer) J. Mack & P. Roberts, **comb. nov.**

*MycoBank MB 32427*

*Basionym: Epulorhiza albertensis* Currah & Zelmer, Rep. Tottori Mycol. Inst. **30**: 48. 1992.

*Tulasnella calendulina* (Zelmer & Currah) J. Mack & P. Roberts, **comb. nov.**

*MycoBank MB 832428*

*Basionym: Epulorhiza calendulina* Zelmer & Currah, Canad. J. Bot. **73**: 1984. 1995.

*Tulasnella epiphytica* (O.L. Pereira et al.) J. Mack & P. Roberts, **comb. nov.**

*MycoBank MB 832427*

*Basionym: Epulorhiza epiphytica* O.L. Pereira et al., Mycoscience **44**: 154. 2003.

*Tulasnella inquilina* (Currah et al.) J. Mack & P. Roberts, **comb. nov.**

*MycoBank MB 832430*

*Basionym: Epulorhiza inquilina* Currah et al., Mycotaxon **61**: 338. 1997.

**Protect Typhula** (Pers.) Fr. 1818 (S) over Sclerotium Tode 1790 (A)

The genus *Typhula*, lectotypified by *T. phacorrhiza* (Donk 1933), includes over 150 species. *Typhula* was originally published as *Clavaria* [unranked] *Typhula* by Persoon (1801) who included six species in the unranked infrageneric taxon. Fries (1818) listed four species when he recognized this taxon at the generic level. Donk (1954) noted that the proposed lectotype of *Typhula* by Clements and Shear (1931) of *S. sclerotoides* (Pers.) Fr. 1838 (syn. *Phacorhiza sclerotoides* Pers. 1822) was ineffective because this species was not included in the protologue or sanctioning work. The genus *Sclerotium*, typified by *S. complanatum*, was established for fungi producing asexual sclerotia. The typification of *Sclerotium* is explained by Donk (1962) in which the lectotypification by Clements and Shear (1931) followed by Cooke (1953) is accepted. The name *S. complanatum* is considered to be the asexual morph of *T. phacorrhiza* (Remsberg 1940), thus *Typhula* and *Sclerotium* are synonyms. Recently, the diverse phyllogenetic affinities of species of *Sclerotium* have been determined (Xu et al. 2010), many of which are members of Ascomycota. Given the confusion about the phylogeny of species of *Sclerotium* and the numerous species placed in the relatively well-defined genus *Typhula*, protection of the generic name *Typhula* is recommended.
Protect Typhulaceae Jülich 1982 (S) over Sclerotiacae Dumort. 1822 (A)
The type genus of Sclerotiacae is Sclerotium Tode. Sclerotiacae was first spelled ‘Sclerotaceae’ and correctly spelled by Link (1826). The name Sclerotiacae has fallen out of use as a generalized family name for any sclerotial-based genera whereas the name Typhulaceae is useful for this phylogenetically defined group.

Use Waitea Warcup & P.H.B. Talbot 1962 (S) rather than Chrysorhiza T.F. Andersen & Stalpers 1996 (A) and for some species previously placed in Rhizoctonia
The genus Waitea, typified by W. circinata (Warpuc and Talbot 1962), mainly includes pathogens that cause diseases of monocotyledonous plants such as brown ring patch of turfgrasses, sclerotial rot and ear rot of corn, sheath spot of rice, and damping off and root rot of cereals and grasses, which typically occur in temperate regions (Gutierrez et al. 2007; Toda et al. 2007). The monotypic name Chrysorhiza was introduced for Rhizoctonia zeae, the asexual form of Waitea circinata (Stalpers and Andersen 1996), although this has been determined to be incorrect [see below]. Chryso myxa has been little used (GSS Waitea = 1460, Chry orhiza = 163), thus we recommend the use of Waitea.

The generic name Rhizoctonia, typified by R. solani (Ceratobasidiaceae, Cantharellales), is not congeneric with W. circinata (syn. Rhizoctonia zeae) (Vilgalys and Cubeta 1994), as W. circinata and several invalid names in Rhizoctonia belong in Waitea within Corticiaceae (De Priest et al. 2005; Ghabad-Nejad et al. 2010). One new combination and three new species in Waitea are established below.

New combination:
Waitea zeae (Voorhees) J.A. Crouch & Cubeta, comb. nov.
MycoBank MB 837872
Basionym: Rhizoctonia zeae Voorhees, Phytopathology 24: 1299. 1938.
Synonyms: “Chrysorhiza zeae” (Voorhees) T.F. Andersen & Stalpers, Rhizoctonia-forming Fungi 58. 1996; nom. inval. (Art. 41.5).
Moniliosis zeae (Voorhees) R.T. Moore, Mycotaxon 29: 96. 1987.
Rhizoctonia endophytica var. filicata H.K. Saksena & Vaartaja, Canad. J. Bot. 38: 938. 1960.
“Waitea circinata var. zeae” Toda et al., Plant Disease 89: 536. 2007; nom. inval. (Arts 39.1, 40.1).

Several studies have shown that Rhizoctonia zeae should be placed in Waitea as a species distinct from W. circinata (Chang and Lee 2016; de la Cerda et al. 2007; Gürkanli et al. 2016; Toda et al. 2005, 2007; Vojvodić et al. 2020); the new combination is therefore made here.

New species:
Waitea agrostidis J.A. Crouch & Cubeta, sp. nov.
MycoBank MB 837874
Synonym: “Waitea circinata var. agrostis” S.J. Kammerer et al., Plant Disease 95: 521. 2011; nom. inval. (Art. 39.1, 40.1).
Diagnosis: Light yellow colony on PDA differs from pinkish-white colonies of W. circinata, white-salmon pink colonies of W. oryzae, yellow-pink colonies of W. prodiga, and orange colonies of W. zeae. Irregularly shaped, dark brown sclerotia differ from pinkish or orange sclerotia of W. circinata, irregular, salmon-pink to orange sclerotia of W. oryzae, irregular to spherical salmon to yellow-salmon sclerotia of W. prodiga, and the subspheroid, orange sclerotia of W. zeae.
Description: Toda et al., J. Gen. Plant Path. 73: 385. 2007.
Type: Illustration in J. Gen. Plant Path. 73: 383, fig. 1, 2007 (holotype) based on an unspecified collection made in Japan. Representative sequence: GenBank AB213567 (ITS) derived from a collection: Japan, Aichi, on Agrostis stolonifera L. var. palustris, June 1999, isolate NUK-3BG (deposition unknown).

An unidentified Rhizoctonia sp. was found causing a destructive new disease affecting Agrostis stolonifera and Poa pratensis turfgrasses in Japan; the disease is referred to as Waitea reddish-brown patch disease (Toda et al. 2007). Later authors referred to this Rhizoctonia sp. as “Waitea circinata var. agrostis” but the name was not validly published (Kammerer et al. 2011). Phylogenetic relationships based on DNA sequences show that this fungus is a member of the genus Waitea as a species distinct from W. circinata and other species in the genus (Kammerer et al. 2011; Toda et al. 2007), thus this new species is described here. Isolates utilized by Toda et al. (2007) could not be located, therefore an illustration is designated as the type and a reference sequence is selected from those obtained by Toda et al. (2007).

Waitea oryzae J.A. Crouch & Cubeta, sp. nov.
MycoBank MB 837881
Synonym: “Rhizoctonia oryzae” Ryker & Gooch, Phytopathology 28: 238. 1938; nom. inval. (Art. 39.1).
“Waitea circinata var. oryzae” Toda et al., Plant Disease 89: 536. 2007; nom. inval. (Arts 39.1, 40.1).
Diagnosis: White to salmon pink colony on PDA differs from pale yellow colonies of W. agrostidis, pinkish-white colony of W. circinata, yellowish pink colony of W. prodiga, and orange colony of W. zeae. Irregularly shaped, salmon-pink to orange sclerotia
differ from irregular, dark brown sclerotia of *W. agrostidis*, pinkish or orange sclerotia of *W. circinata*, irregular to spherical, salmon to yellow-salmon sclerotia of *W. prodiga*, and subspheroide, orange sclerotia of *W. zeae*.

**Description:** Ryker & Gooch, Phytopathology 28: 238. 1938; as "Rhizoctonia oryzae".

**Type:** USA: Louisiana: Crowley: on stems of *Oryza sativa*, 22 Jul. 1938, T.C. Ryker 3049 (BPJ 455795 – holotype). Representative sequence: GenBank AB213589 (ITS) derived from a collection: Japan, Toyama, on *Oryza sativa*, isolate RoTTS (deposition unknown).

*Rhizoctonia oryzae* and *W. circinata* var. *oryzae* are invalid names used by plant pathologists to refer to the causal agent of leaf and sheath spots of grasses and cereals. Although neither of these two names were validly published, there is no doubt that this fungus is congenic with *W. circinata* and distinct from other species in the genus (Chang and Lee 2016; de la Cerda et al. 2007; Gürkanli et al. 2016; Kammerer et al. 2011; Leiner and Carling 1994; Ryker and Gooch 1938; Sharon et al. 2006; Toda et al. 2005, 2007). Therefore, the new species *W. oryzae* is formally established here. The original collection made by Ryker and Gooch (1938) held by BPI has been chosen as the type specimen. In the absence of a sequence from the type, one of the five sequences included by Toda et al. (2007) under *R. circinata* var. *oryzae* is indicated as a reference sequence.

**Waitea prodiga** J.A. Crouch & Cubeta, sp. nov.

MycoBank MB 837883

**Synonym:** “Waitea circinata var. prodiga” S.J. Kammerer et al., Plant Disease 95: 521. 2011; as ‘prodigus’; nom. inval. (Arts 39.1, 40.1).

**Diagnosis:** Yellow-pink colony on PDA differs from pale yellow colony of *W. agrostidis*, dark brown colony of *W. circinata*, white-salmon pink colony of *W. oryzae*, and orange colony of *W. zeae*. Irregular to spherical, salmon to yellowish salmon sclerotia differ from irregular, dark brown sclerotia of *W. agrostidis*, pinkish or orange sclerotia of *W. circinata*, irregular, salmon pink to orange sclerotia of *W. oryzae*, and subspheroide, orange sclerotia of *W. zeae*.

**Description:** Kammerer et al., Plant Disease 95: 521. 2011.

**Type:** Illustration in Plant Disease 95: 517, fig. 2a, 2b (second sclerotium from left), 2011 (holotype), based on the collection: USA: Florida: Fort Myers, on leaves of *Paspalum vaginatum* ‘Sea Dwarf’, 4 Jan. 2008, S.J. Kammerer 44 SK-PSA-TM4 (ITS GenBank HM597146).

*Waitea circinata* var. *prodiga* was proposed as the name of a novel fungal pathogen responsible for a basal rot disease first identified from *Paspalum vaginatum* (Kammerer et al. 2011). The name was not validly published, but the phylogenetic relationship of this organism with other species of *Waitea* and distinctive morphological characters support the separation of *W. prodiga* from other species in the genus. Therefore, *Waitea prodiga* is here formally established as a new species. Isolates used by Kammerer et al. (2011) were not lodged in a reference collection, therefore an illustration is designated as the type, and a reference sequence is selected from those obtained by Kammerer et al. (2011).

**Protect Wolfiporia** Ryvarden & Gilb. 1984 (S) over *Gemmularia* Raf. 1819 (A), *Pachyma* Fr. 1822 (A), and *Tucahus* Raf. 1830 (A)

The generic name *Wolfiporia*, typified by *W. cocos*, was established for the fungus known as tuckahoe or *Poria cocos*, common throughout North America and regarded as the fungus used medicinally in Asia (Wang et al. 2013). A sclerotal morph of this fungus was described as *Sclerotium cocos* and placed in *Pachyma* as *P. cocos*, type of that genus, as typified and explained by Donk (1962). Although he chose the first species listed, he supports this decision citing that it was based on “a statement by Fries himself ... under *Pachyma* ...”. *Wolfiporia* was typified by *Poria cocos* F.A. Wolf, a now conserved name with a conserved type. Had it not been conserved, *Poria cocos* would, under Art. F. 8, be typified by the type of *Sclerotium cocos*. An earlier epithet for the sexual morph was discovered for this species, namely *W. extensa* (Ginns and Lowe 1983); however, prior to changes in the Code permitting one name for each fungus, Redhead and Ginns (2006) proposed to conserve the commonly used name *Poria cocos*. This was recommended for approval (Norvell 2008) and is now conserved (Wiersema et al. 2020). *Wolfiporia* itself is not conserved and is a later synonym of the sanctioned names *Gemmularia* and *Pachyma*. Wu et al. (2020) resurrected the generic name *Pachyma*, placing into synonymy the name *Wolfiporia*. They also distinguished between the commercially important eastern Asian cultivated fungus, formerly classified as *Poria cocos* or *Wolfiporia cocos*, and the North American fungi under those names. Wu et al. (2020) adopted the sanctioned name *Pachyma hoelen* Fr. for the commercial fungus in Asia. However, because they used a secondary source using an older Code, they overlooked the fact that the also sanctioned generic name *Gemmularia* predates *Pachyma*. They listed it as “*Gemmularia* Raf. per Steud.” dating from 1824 taken from Donk (1962) who was using a Code recognizing a starting date of 1821 for most fungi. In that same publication, Donk (1962) lectotypified *Gemmularia* with *G. rugosa* Raf. The latter species was said to be the tuckahoe of North America (Rafinesque 1819). Donk (1962) questioned whether *Gemmularia* was accepted taxonomically by Fries (1823, 1832), which would mean the name is not sanctioned, but this
argument is not currently accepted. Additionally, Fries (1832), while having the name Gemmularia typeset in smaller letters, nonetheless gave a direct reference to the page of his 1823 volume, which he did not do for other generic names he did not recognize. We conclude that Gemmularia like Pachyma is sanctioned. Rafinesque (1830) published yet another generic name, Tucahus, citing Gemmularia and the two species that he included in Gemmularia, but only describing T. rugosus.

While seven names have been placed in Wolfiporia, Lindner and Banik (2008) demonstrated that W. dilatohypha is not congeneric with W. cocos with the former species placed basal to Laetiporus. Only five names have been introduced in Pachyma, of which three (P. cocos, P. hoelen and P. pseudococos) relate to currently accepted species, while Pachyma tuber-regium is the sclerotial state of Pleurotus tuber-regium and Pachyma woernannii was introduced for the sclerotium of Lentinus woernannii, which is considered by Pegler (1983) to be a synonym of Pleurotus tuber-regium (as Lentinus tuber-regium). Wolfiporia is more widely used than Pachyma (GSS Wolfiporia = 2040, Pachyma = 479, Gemmularia = 8, Tucahus = 3) and the other names remain obscure. More recently, the entire genome of Wolfiporia cocos was sequenced and all sequences deposited under this name (Lee et al. 2019). Given its greater use and greater number of names, we recommend Wolfiporia for protection.

**New combination:**

*Wolfiporia hoelen* (Fr.) Y.-C. Dai & V. Papp, **comb. nov.**

*Basionym: Pachyma hoelen* Fr., *Syst. Mycol. (Index):* 125. 1832, nom. sanct.

*Mycobank MB 838346*

**Additional names to be protected:**

*Protect Phanerochaete chrysosporium Burds. 1974 (S) over Sporotrichum pruinosum Gilman & E.V. Abbott 1927 (A)*

*Type: See Table 2.*

*Phanerochaete chrysosporium* is widely known for its industrial use as a white rot fungus that breaks down the aromatic polymer lignin and thus is important in the degradation of wood products (Kersten and Cullen 2007; Matityahu et al. 2015). Recently, *Phanerochaete chrysosporium* was confirmed as a member of the genus *Phanerochaete s. str.* (Floudas and Hibbett 2015). The older names *Sporotrichum pruinosum* and *S. pulverulentum* have been regarded as the asexual morph of this species either as one or two species (Burdsall Jr and Eslyn 1974; Burdsall Jr 1985). James et al. (2011) concluded that *S. pulverulentum* was distinct from *S. pruinosum* with the later linked to and providing an earlier name for *P. chrysosporium*. Given its widespread use and importance to applied microbiology, the name *P. chrysosporium* is proposed for protection.

**Protect Polyporus mylittae Cooke & Massee 1892 (S) over Mylitta australis Berk. 1839 (A)**

*Type: See Table 2.*

The genus *Mylitta* Fr. 1825 is of uncertain application, but has been used for various growths, at least some of which were fungal sclerotia. *Mylitta australis* was introduced by Berkeley (1839) for the large sclerotium produced by a poly pore later described from sporophores as *Polyporus mylittae* (Cooke 1892). The connection was explicitly made in the protologue of the latter where it was stated that the sporophores of *P. mylittae* were ‘growing on Mylitta australis’ (Cooke 1892). All subsequent authors including Cunningham (1965) have accepted *M. australis* as synonymous with *P. mylittae*. Núñez and Ryvarden (1995) expanded the circumscription of *Laccocephalum* McAlpine & Tepper, typified by *L. basilapaloides* McAlpine & Tepper, to include several other sclerotium-forming austral poly pores, specifically *Laccocephalum mylittae* (Cooke & Massee) Núñez & Ryvarden based on *P. mylittae*. This species produces large sporophores after wildfires and has been frequently recorded from across Australia as both *Polyporus* and *Laccocephalum*, under the epithet *mylittae*, including as a target species for the Fungimap mapping scheme (Grey and Grey 2005). In *Polyporus*, the epithet *australis* is pre-occupied by *Polyporus australis* Fr. 1828, now *Ganoderma australe* (Fr.) Pat., but there is no such obstacle to the transfer of *M. australis* to *Laccocephalum*. However, the name *M. australis* has only ever been applied to the sclerotium, and little used since the discovery of the sporophores more than a century ago. Therefore, *P. mylittae* is proposed for protection over *M. australis* to allow the continued use of *L. mylittae.*
De Beer W, Beegerow D, Bauer R, Pegg G, Wingfield MJ (2006) Quambaralaceae fam. nov., a new family in the Microstromatales to accommodate Quambaria species. Studies in Mycology 55:289–298

De Beer ZW, Seifert KA, Wingfield MJ (2013) A nomenclator for ophiostomatoida genera and species in the Ophiostomatales and Microascales. CBS CDS Biodiversity Series 12:245–322

De Hoog GS (1974) The genera Glabrototryae, Sporotrichum, Calcarisporium and Calcarisporiella gen. nov. Studies in Mycology 7:1–84.

de la Cerda KA, Douhan GW, Wong FP (2007) Discovery and characterization of Wairaka cincta var. cincta affecting annual bluegrass from the western United States. Plant Disease 91:791–797.

De Priest PT, Sikaroodi M, Lawrey JD, Diederich P (2005) Marchandiomyces lignicola sp. nov. shows recent and related transition between a lignicolous and a lichenicolous habit. Mycological Research 109:57–70.

De Vries RP, de Lange ES, Wosten HAB, Stalpers JA (2008) Control and possible applications of a novel carotol-spoilage basidiomycete, Fibulohalosoratia psychrophila. Antonie van Leeuwenhoek 93:409–413

Desjardin DE, Capelari M, Stevani C (2007) Bioluminescent Hymenomycetes. Mycologia 99:317–331.

Diederich P, Lawrey JD, Sikaroodi M, Gilleve PM (2011) A new lichenicolous teleomorph is related to plant pathogens in Laetisaria and Limonomyces (Basidiomycota, Corticiaceae). Mycologia 103:525–533.

Diederich P, Zimmermann E, Sikaroodi M, Gbobaed-Nehjad M, Lawrey JD (2018) A first lichenicolous Corticioid species (Corticiaceae, Corticioides), described from Thermotolomy in Switzerland. Bulletin de la Société des Naturalistes Luxembourgeois 120:49–68.

Donk MA (1933) Revision der niederländischen Homobasidiomycetae. Rickia 1:145–Viala. Rickia 1:139

Donk MA (1956) The generic names proposed for Hymenomycetes. Taxon 7:164

Donk MA (1958) The generic names proposed for Hymenomycetes. Taxon 7:164

Dorji DP (2013) Revision of the nomenclature of the genus Allescheria. Mycotaxon 128:541–564

Donk MA (1962) The generic names proposed for Hymenomycetes. Taxon 7:164

Donk MA (1962) The generic names proposed for Hymenomycetes. Taxon 7:164

Donk MA (1962) The generic names proposed for Hymenomycetes. Taxon 7:164

Donk MA (1962) The generic names proposed for Hymenomycetes. Taxon 7:164

Donk MA (1966) Check list of European hymenomycetous Heterobasidiomycetes. Persoonia 41:445–449

Donk MA (1965) The generic names proposed for Hymenomycetes. XII. Thelphoraceae. Taxon 6:106–123

Donk MA (1958) The generic names proposed for Hymenomycetes. VIII. Auriculariales, Septobasidiales, Tremeliales, Dacrymycetales (continued). Taxon 7:164–178

Donk MA (1962) The generic names proposed for Hymenomycetes. XII. Auriculariales, Septobasidiales, Tremeliales, Dacrymycetales (continued). Taxon 7:164–178

Donk MA (1962) The generic names proposed for Hymenomycetes. XII. Dacrymycetales. Taxon 11:75–104

Donk MA (1966) The generic names proposed for Hymenomycetes. XII. Dacrymycetales. Taxon 11:75–104

Floudas D, Hribbett DS (2015) Revisiting the taxonomy of Phanerochaete (Polyporales, Basidiomycota) using a four gene dataset and extensive ITS sampling. Fungal Biology 119:679–696.

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