

Myxomycota census of Western Australia

Karina J. Knight and Margaret H. Brims

Western Australian Herbarium, Department of Environment & Conservation,
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

Abstract

Knight, K.J. & Brims, M.H. Myxomycota census of Western Australia. *Nuytsia* 20: 283–307 (2010). A census of the slime mould species found in Western Australia, based on publications recording slime mould species and collections housed at the Western Australian Herbarium (PERTH), is presented. A total of 159 species in 37 genera and 12 families are recorded.

Introduction

The phylum Myxomycota is comprised of plasmodial slime moulds which are fungi-like organisms with a two stage life cycle; the plasmodium (a slime-like single celled amoeboid stage) and sporangia (a multicellular spore producing organ required for identification) (Figure 1). This census is comprised of both classes of Myxomycota; Myxomycetes and Protosteliomycetes (Hawksworth *et al.* 1995); however all but one record are Myxomycetes.

There have been a number of publications recording Myxomycota occurrences in Western Australia; the earliest (Cooke 1892) recorded 17 species in 12 genera and seven families. In the proceeding 90 years there appeared to be little interest in slime moulds in Western Australia, as shown by the lack of publications listing slime mould records combined with the low number of specimen records at the Western Australian Herbarium (PERTH). The earliest (and only) published listing of slime moulds was prepared by Hnatiuk (1978), who recorded just nine species in seven genera and four families, all based on field collections housed at PERTH. There has since been an increased interest in slime moulds, with a number of publications reporting records from both field collections and/or moist chamber cultures from substrate collected in Western Australia (Hnatiuk & Kenneally 1981; Ing & Spooner 1994; Mitchell 1995; McHugh *et al.* 2003; Jordan *et al.* 2006; McHugh *et al.* 2009).

In the last decade there has been an exponential increase in awareness in slime moulds in Western Australia, particularly as a result of the enthusiasm and developing identification expertise of one of us (M.B.). This has included the use of moist chamber cultures rather than relying on field collections only. The number of collections from Western Australia housed at PERTH has increased more than six fold in the past ten years, from 102 accessions in 2000 to 624 accessions in early 2010. Unsurprisingly, there has been an associated increase in the number of species recorded for the State, with 142 species from 35 genera and 12 families now represented at PERTH. Up until now, a comprehensive listing of all known species for the state has been lacking; this census reports 159 species in 37 genera and 12 families, based on both publications listing slime mould species and collections housed at PERTH (Table 1).



Figure 1. All figures are sporangia unless otherwise mentioned. A – *Ceratiomyxa fruticulosa*; B – *Badhamia foliicola*; C – *Fuligo septica*, immature; D – *Physarum viride*; E – *Lycogala epidendrum*; F – *Stemonitis smithii*; G – *Trichia persimilis*; H – Plasmodium, indeterminate; I – *Trichia decipiens*, immature. Photographs by Neale Bougher (B, I) and Peter Davison (A, C–H).

Table 1. Slime mould class, families and genera of Western Australia. The family name is systematically arranged according to Hawksworth *et al.* (1995), whilst the genera are alphabetically listed within each family.

Class	Family	Genus	No. of species
Myxomycetes	Clastodermataceae	<i>Clastoderma</i>	1
	Echinosteliaceae	<i>Echinostelium</i>	5
	Cribrariaceae	<i>Cribraria</i>	9
	Liceaceae	<i>Licea</i>	11
	Lycogalaceae	<i>Dictydiaethalium</i>	1
		<i>Lycogala</i>	2
		<i>Reticularia</i>	3
		<i>Tubifera</i>	1
	Didymiaceae	<i>Diderma</i>	7
		<i>Didymium</i>	13
	Physaraceae	<i>Badhamia</i>	6
		<i>Craterium</i>	3
		<i>Fuligo</i>	3
		<i>Leocarpus</i>	1
		<i>Physarum</i>	23
	Stemonitidaceae	<i>Willkommlangea</i>	1
		<i>Collaria</i>	1
		<i>Colloderma</i>	1
		<i>Comatricha</i>	10
		<i>Diachea</i>	2
		<i>Enerthenema</i>	1
		<i>Lamproderma</i>	2
		<i>Macbrideola</i>	4
		<i>Paradiachea</i>	1
		<i>Paradiacheopsis</i>	2
		<i>Stemonitis</i>	7
		<i>Stemonitopsis</i>	5
<i>Symphytocarpus</i>		1	
Arcyriaceae	<i>Arcyria</i>	12	
Dianemataceae	<i>Calomyxa</i>	1	
	<i>Dianema</i>	1	
Trichiaceae	<i>Hemitrichia</i>	3	
	<i>Metatrichia</i>	1	
	<i>Oligonema</i>	1	
	<i>Perichaena</i>	3	
	<i>Trichia</i>	9	
Protosteliomycetes	Ceratiomyxaceae	<i>Ceratiomyxa</i>	1

Despite these recent efforts, slime moulds remain grossly under collected. PERTH has very few records for the size of the State; with just one slime mould specimen recorded per 3920 km². Few areas of the State have been sampled (Figure 2), with most collections from the south-west region where the climate is more conducive to opportunistic collecting (due to the ephemeral nature of slime moulds). In contrast, specimens collected in the more arid or remote regions of the state have nearly all been from moist chamber collections. The number of collections per species is also very low: 80 per cent of species are represented by less than five specimens and ten per cent of the species are based on literature records only, where specimens have not been lodged or duplicated in PERTH. In 2009, one in five specimens lodged at PERTH were new records for Western Australia. It follows that an increased collection effort in the future will inevitably lead to new records. It is of note that one sixth of the specimens lodged at PERTH are not identifiable to species level, often due to the immaturity of the collections (plasmodium only or the sporangia are immature), but also due to the lack of taxonomic expertise in Western Australia to determine if some of the specimens represent new and undescribed species.

This paper provides a census of known species occurring within Western Australia and has been prepared so that this phylum can be included on *FloraBase* (Western Australian Herbarium 1998–), providing a platform to enable attachment of additional information such as images, maps and descriptions. This census cannot be considered representative of the diversity or distribution of slime moulds in Western Australia, rather a baseline against which future improvements in our knowledge

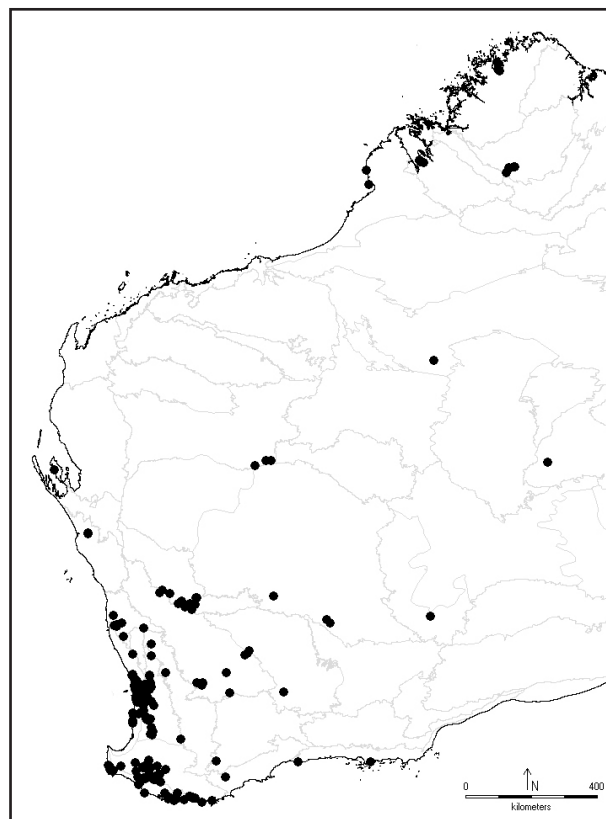


Figure 2. Distribution of Western Australian slime mould accessions housed at the Western Australian Herbarium. *Version 6.1 IBRA subregions* (Department of the Environment, Water, Heritage and the Arts 2008) are indicated in grey.

can be measured. It is hoped that this census will provide a further stimulus for collections of slime mould specimens in Western Australia. At this early stage in slime mould interest in Western Australia, nearly every specimen lodged at PERTH will provide valuable information.

Methods

This census lists the names of all currently recognised species of Myxomycota for Western Australia. The records are based on published literature records and specimens lodged at PERTH. Included in the listing is the accepted name of the taxon, the author(s) name(s), details of the original publication, published literature records and the number of specimens housed at PERTH. Synonyms are not included in this publication as it has been prepared as a Census not as a nomenclatural publication. The family names follow the systematic arrangement of Hawksworth *et al.* (1995) as this is the arrangement currently used at PERTH. Within each family the species are arranged alphabetically. Nomenclature complies with that given by Lado (2001) and Hernandez-Crespo and Lado (2005), but has been updated to incorporate subsequent nomenclatural acts approved recently by the Committee for Fungi (Gams 2005). Author abbreviations follow Brummitt and Powell (1992) or when not included in that work, are abbreviated using the same criteria. Journal titles are abbreviated in accordance with Stafleu and Cowan (1988), except that upper case initial letters are used for proper names and significant words. Other literature is abbreviated in accordance with Lawrence *et al.* (1968) and Bridson and Smith (1991).

Western Australian Myxomycota census

Clastodermataceae

Clastoderma debaryanum A.Blytt, *Bot. Zeitung (Berlin)* 38: 343 (1880).

McHugh *et al.* (2009: 58, as *Clastoderma debaryanum* var. *debaryanum*).

Represented by four specimens at PERTH.

Echinosteliaceae

Echinostelium apitectum K.D.Whitney, *Mycologia* 72: 954 (1980).

McHugh *et al.* (2003: 491, as *Echinostelium vanderpoelii*).

Represented by three specimens at PERTH.

Echinostelium bisporum (L.S.Olive & Stoian.) K.D.Whitney & L.S.Olive, in Whitney, Bennett & Olive, *Mycologia* 74: 680 (1982).

McHugh *et al.* (2009: 58).

Not represented at PERTH.

Echinostelium corynophorum K.D. Whitney, *Mycologia* 72: 963 (1980).

McHugh *et al.* (2003: 490); McHugh *et al.* (2009: 58).

Not represented at PERTH.

Echinostelium elachiston Alexop., *Mycologia* 50: 52 (1958).

Jordan *et al.* (2006: 360).

Represented by one specimen at PERTH.

Echinostelium minutum de Bary, in Rostafinsky, *Vers. Syst. Mycetozoen* 7 (1873).

Mitchell (1995: 272); McHugh *et al.* (2003: 491); Jordan *et al.* (2006: 360).

Represented by five specimens at PERTH.

Cribrariaceae

Cribraria argillacea (Pers.) Pers., in Roemer, *Neu. Mag. Bot.* 1: 91 (1794).

Represented by one specimen at PERTH.

Cribraria aurantiaca Schumach., *Enum. Pl.* 2: 218 (1803).

Represented by one specimen at PERTH.

Cribraria cancellata (Batsch) Nann.-Bremek., *Nederlandse Myxomyceten (Amsterdam)* 92 (1975) [1974].

McHugh *et al.* (2003: 491, as *Cribraria cancellata* var. *fusca*); McHugh *et al.* (2009: 58).

Represented by nine specimens at PERTH.

Cribraria microcarpa (Schrad.) Pers., *Syn. Meth. Fung.* 190 (1801).

Represented by three specimens at PERTH.

Cribraria minutissima Schwein., *Trans. Amer. Philos. Soc.*, N.S. 4: 260 (1832).

McHugh *et al.* (2003: 491); Jordan *et al.* (2006: 360).

Represented by ten specimens at PERTH.

Cribraria mirabilis (Rostaf.) Masee, *Monogr. Myxogastr.* 60 (1892).

Represented by one specimen at PERTH.

Cribraria rufa (Roth) Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 6(1): 232 (1875).

Represented by three specimens at PERTH.

Cribraria tenella Schrad., *Nov. Gen. Pl.* 6 (1797).

Represented by two specimens at PERTH.

Cribraria violacea Rex, *Proc. Acad. Nat. Sci. Philadelphia* 43: 393 (1891).

McHugh *et al.* (2009: 58).

Represented by two specimens at PERTH.

Liceaceae

Licea biforis Morgan, *J. Cincinnati Soc. Nat. Hist.* 15: 131 (1893).

McHugh *et al.* (2003: 491); McHugh *et al.* (2009: 59).

Represented by one specimen at PERTH.

Licea denudescens H.W.Keller & T.E.Brooks, *Mycologia* 69: 679 (1977).

McHugh *et al.* (2003: 492).

Not represented at PERTH.

Licea gloeoderma Döbbeler & Nann.-Bremek., *Z. Mykol.* 45: 235 (1979).

Represented by one specimen at PERTH.

Licea kleistobolus G.W.Martin, *Mycologia* 34: 702 (1942).

Mitchell (1995: 273); McHugh *et al.* (2003: 492); Jordan *et al.* (2006: 360).

Represented by nine specimens at PERTH.

Licea minima Fr., *Syst. Mycol.* 3: 199 (1829).

Represented by two specimens at PERTH.

Licea operculata (Wingate) G.W.Martin, *Mycologia* 34: 702 (1942).

McHugh *et al.* (2003: 492).

Represented by one specimen at PERTH.

Licea parasitica (Zukal) G.W.Martin, *Mycologia* 34: 702 (1942)

Mitchell (1995: 273)

Not represented at PERTH

Licea pedicillata (H.C.Gilbert) H.C.Gilbert, *Mycologia* 34: 702 (1942).

Mitchell (1995: 273).

Not represented at PERTH.

Licea pusilla Schrad., *Nov. Gen. Pl.* 19 (1797).

McHugh *et al.* (2003: 492).

Represented by one specimen at PERTH.

Licea pygmaea (Meyl.) Ing, *Trans. Brit. Mycol. Soc.* 78: 443 (1982).

Represented by two specimens at PERTH.

Licea rufocuprea Nann.-Bremek. & Y.Yamam., *Proc. Kon. Ned. Akad. Wetensch.*, Ser. C, 90(3): 325 (1987).

McHugh *et al.* (2003: 492).

Represented by one specimen at PERTH.

Lycogalaceae

Dictydiaethalium plumbeum (Schumach.) Rostaf. ex Lister, *Monogr. Mycetozoa* 157 (1894).

Cooke (1892: 393, as *Clathroptychium rugulosum*); MacAlpine (1895: 194); Cheeseman & Lister (1915: 207); Mitchell (1995: 273).

Not represented at PERTH.

Lycogala conicum Pers., *Syn. Meth. Fung.* 159 (1801).

Represented by one specimen at PERTH.

Lycogala epidendrum (L.) Fr., *Syst. Mycol.* 3: 80 (1829).

Cooke (1892: 396); MacAlpine (1895: 194); Hnatiuk (1978: 17); Mitchell (1995: 273).

Represented by 15 specimens at PERTH.

Reticularia intermedia Nann.-Bremek., *Acta Bot. Neerl.* 7: 773 (1958).

Represented by one specimen at PERTH.

Reticularia lycoperdon Bull., *Hist. Champ. France* 1: 95 (1791).

Mitchell (1995: 274).

Represented by two specimens at PERTH.

Reticularia olivacea (Ehrenb.) Fr., *Syst. Mycol.* 3: 89 (1829).

MacAlpine (1895: 194, as *Enteridium olivaceum*); Cooke (1892: 393, as *E. olivaceum*); Mitchell (1995: 274).

Represented by one specimen at PERTH.

Tubifera ferruginosa (Batsch) J.F.Gmel., *Syst. Nat. pars 2*, 1472 (1792).

Represented by four specimens at PERTH.

Didymiaceae

Diderma asteroides (Lister & G.Lister) G.Lister, in Lister, *Monogr. Mycetozoa*, Ed. 2, 113 (1911).

Represented by two specimens at PERTH.

Diderma cinereum Morgan, *J. Cincinnati Soc. Nat. Hist.* 16: 154 (1894).

Represented by one specimen at PERTH.

Diderma crustaceum Peck, *Ann. Rep. New York State Mus. Nat. Hist.* 26: 74 (1874).

Represented by one specimen at PERTH.

Diderma effusum (Schwein.) Morgan, *J. Cincinnati Soc. Nat. Hist.* 16: 155 (1894).

Ing & Spooner (1994: 74); McHugh *et al.* (2003: 495).

Represented by one specimen at PERTH.

Diderma hemisphaericum (Bull.) Hornem., *Fl. Danic.* 33: 13 (1829).

McHugh *et al.* (2003: 495).

Represented by one specimen at PERTH.

Diderma saundersii (Berk. & Broome ex Masee) Ladó, *Cuad. Trab. Fl. Micol. Iber.* 16: 35(2001).

McHugh *et al.* (2003: 495, as *Diderma saundersii* var. *berkeleyanum*).

Represented by one specimen at PERTH.

Diderma spumarioides (Fr.) Fr., *Syst. Mycol.* 3: 104 (1829).

Ing & Spooner (1994: 74).

Not represented at PERTH.

Didymium anellus Morgan, *J. Cincinnati Soc. Nat. Hist.* 16: 148 (1894).

McHugh *et al.* (2009: 61).

Represented by one specimen at PERTH.

Didymium bahiense Gottsb., *Nova Hedwigia* 15: 365 (1968).

Ing & Spooner (1994: 74); McHugh *et al.* (2003: 495).

Represented by three specimens at PERTH.

Didymium clavus (Alb. & Schwein.) Rabenh., *Deutschl. Krypt.-Fl.* 1: 280 (1844).

Represented by one specimen at PERTH.

Didymium difforme (Pers.) Gray, *Nat. Arr. Brit. Pl.* 1: 571 (1821).

Ing & Spooner (1994: 74).

Represented by five specimens at PERTH.

Didymium dubium Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 5(4): 152 (1874).

Represented by one specimen at PERTH

Didymium floccosum G.W.Martin, K.S.Thind & Rehill, *Mycologia* 51: 160 (1959)

Ing & Spooner (1994: 74).

Not represented at PERTH.

Didymium intermedium J.Schröt., *Hedwigia* 35: 209 (1896).

Ing & Spooner (1994: 73).

Not represented at PERTH.

Didymium megalosporum Berk. & M.A.Curtis, *Grevillea* 2: 53 (1873).

Represented by one specimen at PERTH.

Didymium minus (Lister) Morgan, *J. Cincinnati Soc. Nat. Hist.* 16: 145 (1894).

McHugh *et al.* (2009: 61).

Not represented at PERTH.

Didymium perforatum Yamash., *J. Sci. Hiroshima Univ., Ser. B, Div. 2, Bot.* 3: 33 (1936).

Represented by one specimen at PERTH.

Didymium serpula Fr., *Syst. Mycol.* 3: 126 (1829).

Ing & Spooner (1994: 74).

Represented by three specimens at PERTH.

Didymium squamulosum (Alb. & Schwein.) Fr., *Symb. Gasteromyc., Fasc.* 1-3: 19 (1818).

Ing & Spooner (1994: 74).

Represented by four specimens at PERTH.

Didymium verrucosporum A.L.Welden, *Mycologia* 46: 98 (1954).

Represented by one specimen at PERTH.

Physaraceae

Badhamia capsulifera (Bull.) Berk., *Trans. Linn. Soc. London* 21: 153 (1853).

Represented by one specimen at PERTH.

Badhamia foliicola Lister, *J. Bot.* 35: 209 (1897).

McHugh *et al.* (2009: 60).

Represented by five specimens at PERTH.

Badhamia goniospora Meyl., *Bull. Soc. Vaud. Sci. Nat.* 56: 66 (1925).

Represented by one specimen at PERTH.

Badhamia panicea (Fr.) Rostaf., in Fuckel, *Jahrb. Nassauischen Vereins Naturk.* 27–28: 71 (1873).

Represented by one specimen at PERTH.

Badhamia utricularis (Bull.) Berk., *Trans. Linn. Soc. London* 21: 153 (1853).

Represented by one specimen at PERTH.

Badhamia versicolor Lister, *J. Bot.* 39: 81 (1901).

Represented by one specimen at PERTH.

Craterium aureum (Schumach.) Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 5(4): 124 (1874).

Represented by one specimen at PERTH.

Craterium leucocephalum (Pers.) Ditmar, in Sturm, *Deutschl. Fl.* 1: 21 (1813).

McHugh *et al.* (2009: 60).

Represented by two specimens at PERTH.

Craterium minutum (Leers) Fr., *Syst. Mycol.* 3: 151 (1829).

Cooke (1892: 404, as *Craterium confusum*); MacAlpine (1895: 198, as *C. confusum*); Cheeseman & Lister (1915: 207); Mitchell (1995: 282).

Represented by two specimens at PERTH.

Fuligo cinerea (Schwein.) Morgan, *J. Cincinnati Soc. Nat. Hist.* 19: 33 (1896).

Mitchell (1995: 282).

Represented by two specimens at PERTH.

Fuligo megaspora Sturgis, *Colorado Coll. Stud.*, Sci. Ser. 12: 443 (1913).

Represented by one specimen at PERTH.

Fuligo septica (L.) F.H. Wigg., *Prim. Fl. Holsat.* 112 (1780).

Cooke (1892: 408, as *Fuligo varians*); MacAlpine (1895: 198, as *F. varians*); Cleland (1927: 62, as *F. candida*: 63, as *F. candida* var. *candida*); Mitchell (1995: 282).

Represented by 20 specimens at PERTH.

Leocarpus fragilis (Dicks.) Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 5(4): 132 (1874).

McHugh *et al.* (2003: 495, as *Leocarpus fragilis* var. *fragilis*).

Represented by eight specimens at PERTH.

Physarum album (Bull.) Chevall., *Fl. Gén. Env. Paris* 1: 336 (1826).

Cooke (1892: 407, as *Tilmadoche nutans*); MacAlpine (1895: 198, as *T. nutans*); Cheeseman & Lister (1915: 207, as *Physarum nutans*); Hnatiuk (1978: 17, as *P. nutans*); Hnatiuk & Kenneally (1981: 53, as *P. nutans*); Mitchell (1995: 287, as *P. nutans*).

Represented by two specimens at PERTH.

Physarum bitectum G. Lister, *Monogr. Mycetozoa*, Ed. 2, 78 (1911).

Ing & Spooner (1994: 75).

Represented by two specimens at PERTH.

Physarum bivalve Pers., *Ann. Bot. (Usteri)* 15: 5 (1795).

Ing & Spooner (1994: 75).

Represented by one specimen at PERTH.

Physarum brunneolum (W.Phillips) Masee, *Monogr. Myxogastr.* 280 (1892).

Ing & Spooner (1994: 75).

Not represented at PERTH.

Physarum cinereum (Batsch) Pers., in Roemer, *Neu. Mag. Bot.* 1: 89 (1794).

Cooke (1892: 406, as *Physarum scrobiculatum*); MacAlpine (1895: 198, as *Physarum cinereum* and *P. scrobiculatum*); Cheeseman & Lister (1915: 207); Ing & Spooner (1994: 75); Mitchell (1995: 284).

Represented by 7 specimens at PERTH.

Physarum citrinum Schumach., *Enum. Pl.* 2: 201 (1803).

Represented by one specimen at PERTH.

Physarum compressum Alb. & Schwein., *Consp. Fung. Lusat.* 97 (1805).

Represented by four specimens at PERTH.

Physarum conglomeratum (Fr.) Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 5(4): 108 (1874).

Represented by one specimen at PERTH.

Physarum crateriforme Petch, *Ann. Roy. Bot. Gard. Peradeniya* 4: 304 (1909).

McHugh *et al.* (2003: 495, as *Physarum crateriforme* var. *columellatum*).

Not represented at PERTH.

Physarum daamsii Nann.-Bremek., *Proc. Kon. Ned. Akad. Wetensch.*, Ser. C, 74(4): 363 (1971).

Represented by one specimen at PERTH.

Physarum decipiens M.A.Curtis, *Amer. J. Sci. Arts*, Ser. 2, 6: 352 (1848).

Represented by one specimen at PERTH.

Physarum famintzinii Rostaf., *Pamiet. Towarz. Nauk. Sci. Parzyu* 5(4): 107 (1874).

McHugh *et al.* (2003: 496).

Represented by one specimen at PERTH.

Physarum flavicomum Berk., *London J. Bot.* 4: 66 (1845).

Cooke (1892: 403, as *Didymium flavicomum*); MacAlpine (1895: 196, as *D. flavicomum*); Cheesman & Lister (1915: 207); Mitchell (1995: 286).

Not represented at PERTH.

Physarum leucophaeum Fr., *Symb. Gasteromyc.*, Fasc. 1-3: 24 (1818).

Represented by one specimen at PERTH.

Physarum luteolum Peck, *Ann. Rep. New York State Mus. Nat. Hist.* 30: 50 (1878).

Represented by one specimen at PERTH.

Physarum melleum (Berk. & Broome) Masee, *Monogr. Myxogastr.* 278 (1892).

Represented by three specimens at PERTH.

Physarum nudum T.Macbr., in Peck & Gilbert, *Amer. J. Bot.* 19: 134 (1932).

Mitchell (1995: 286).

Represented by one specimen at PERTH.

Physarum pusillum (Berk. & M.A.Curtis) G.Lister, in Lister, *Monogr. Mycetozoa*, Ed. 2, 64 (1911).

McHugh *et al.* (2003: 496).

Represented by eight specimens at PERTH.

Physarum robustum (Lister) Nann.-Bremek., *Proc. Kon. Ned. Akad. Wetensch.*, Ser. C, 76(5): 484 (1973).

Represented by one specimen at PERTH.

Physarum sessile Brândză, *Ann. Sci. Univ. Jassy* 11: 116 (1921).

Represented by one specimen at PERTH.

Physarum straminipes Lister, *J. Bot.* 36: 163 (1898).

Represented by one specimen at PERTH.

Physarum vernum Sommerf., in Fries, *Syst. Mycol.* 3: 146 (1829).

McHugh *et al.* (2003: 496).

Represented by two specimens at PERTH.

Physarum viride (Bull.) Pers., *Ann. Bot. (Usteri)* 15: 6 (1795).

Cooke (1892: 407, as *Tilmadoche mutabilis*); MacAlpine (1895: 198, as *T. mutabilis*); Hnatiuk (1978: 17, as *Physarum nutans*); Mitchell (1995: 287).

Represented by 23 specimens at PERTH.

Willkommlangea reticulata (Alb. & Schwein.) Kuntze, *Revis. Gen. Pl.* 2: 875 (1891).

McHugh *et al.* (2009: 62).

Represented by four specimens at PERTH.

Stemonitidaceae

Collaria arcyronema (Rostaf.) Nann.-Bremek. ex Lado, *Ruizia* 9: 26 (1991).

Jordan *et al.* (2006: 360).

Represented by three specimens at PERTH.

Colloderma oculatum (C.Lippert) G.Lister, *J. Bot.* 48: 312 (1910).

Represented by two specimens at PERTH.

Comatricha elegans (Racib.) G.Lister, *Guide Brit. Mycetozoa*, Ed. 3, 31 (1909).

McHugh *et al.* (2003: 497); Jordan *et al.* (2006: 360).

Represented by 19 specimens at PERTH.

Comatricha ellae Härk., *Karstenia* 18: 23 (1978).

Jordan *et al.* (2006: 360).

Represented by nine specimens at PERTH.

Comatricha laxa Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 5(4): 201 (1874).

McHugh *et al.* (2003: 497); McHugh *et al.* (2009: 62).

Represented by two specimens at PERTH.

Comatricha longipila Nann.-Bremek., *Acta Bot. Neerl.* 11: 31 (1962).

Represented by one specimen at PERTH.

Comatricha nigra (Pers.) J.Schröt., in Cohn, *Krypt.-Fl. Schlesien* 3: 118 (1885).

Hnatiuk (1978: 17); Mitchell (1995: 291); Jordan *et al.* (2006: 360).

Represented by five specimens at PERTH.

Comatricha pulchella (C.Bab.) Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 8(4): 27 (1876).

McHugh *et al.* (2009: 62).

Represented by two specimens at PERTH.

Comatricha pulchelloides Nann.-Bremek., *Proc. Kon. Ned. Akad. Wetensch.*, Ser. C, 88(1): 125 (1985).

Represented by one specimen at PERTH.

Comatricha rigidireta Nann.-Bremek., *Proc. Kon. Ned. Akad. Wetensch.*, Ser. C, 69(3): 352 (1966).

Jordan *et al.* (2006: 360).

Represented by one specimen at PERTH.

Comatricha tenerrima (Berk. & M.A.Curtis) G.Lister, *Guide Brit. Mycetozoa*, Ed. 4, 39 (1919).

McHugh *et al.* (2009: 62).

Represented by one specimen at PERTH.

Comatricha vineatilis Nann.-Bremek., *Proc. Kon. Ned. Akad. Wetensch.*, Ser. C, 92(4): 505 (1989).

Represented by one specimen at PERTH.

Diachea leucopodia (Bull.) Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 5(4): 190 (1874).

Hnatiuk (1978: 17); Mitchell (1995: 288).

Represented by 12 specimens at PERTH.

Diachea radiata G.Lister & Petch, *J. Bot.* 54: 130 (1916).

Ing & Spooner (1994: 73).

Represented by one specimen at PERTH.

Enerthenema papillatum (Pers.) Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 8(4): 28 (1876).

McHugh *et al.* (2003: 497); Jordan *et al.* (2006: 360).

Represented by 11 specimens at PERTH.

Lamproderma collinsii T.N.Lakh. & Mukerji, *Kavaka* 6: 9 (1979).

Represented by one specimen at PERTH.

Lamproderma scintillans (Berk. & Broome) Morgan, *J. Cincinnati Soc. Nat. Hist.* 16: 131 (1894).

Represented by two specimens at PERTH.

Macbrideola cornea (G.Lister & Cran) Alexop., *Mycologia* 59: 112 (1967).

Represented by one specimen at PERTH.

Macbrideola decapillata H.C.Gilbert, *Stud. Nat. Hist. Iowa Univ.* 16: 158 (1934).

Represented by one specimen at PERTH.

Macbrideola martinii (Alexop. & Beneke) Alexop., *Mycologia* 59: 114 (1967).

Represented by one specimen at PERTH.

Macbrideola oblonga Pando & Lado., *Mycotaxon* 31: 302 (1988).

Represented by two specimens at PERTH.

Paradiachea caespitosa (Sturgis) Hertel ex H. Neubert, Nowotny & K. Baumann, *Myxomyceten* 3: 249 (2000).

McHugh *et al.* (2003: 497).

Represented by one specimen at PERTH.

Paradiacheopsis fimbriata (G. Lister & Cran) Hertel ex Nann.-Bremek., *Nederlandse Myxomyceten* 232 (1975).

McHugh *et al.* (2003: 497); Jordan *et al.* (2006: 360).

Represented by 15 specimens at PERTH.

Paradiacheopsis rigida (Brândză) Nann.-Bremek., in Martin & Alexopoulos, *Myxomycetes (New York)* 231 (1969).

Jordan *et al.* (2006: 360).

Not represented at PERTH.

Stemonitis fusca Roth, in Roemer & Usteri, *Mag. Bot.* 1(2): 26 (1788).

Cooke (1892: 393); MacAlpine (1895: 194); Hnatiuk (1978: 17); Mitchell (1995: 292).

Represented by six specimens at PERTH.

Stemonitis herbatica Peck, *Ann. Rep. New York State Mus. Nat. Hist.* 26: 75 (1874).

Cheeseman & Lister (1915: 207); Mitchell (1995: 293).

Not represented at PERTH.

Stemonitis laxifila Nannen.-Bremek. & Y. Yamam., in Watanabe & Malla, *Crypt. Himalayas* 1: 9 (1988).

Represented by one specimen at PERTH.

Stemonitis lignicola Nann.-Bremek., *Proc. Kon. Ned. Akad. Wetensch., Ser. C*, 76(5): 478 (1973).

Represented by three specimens at PERTH.

Stemonitis smithii T. Macbr., *Bull. Iowa Univ. Lab. Nat. Hist.* 2: 381 (1893).

Represented by one specimen at PERTH.

Stemonitis splendens Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 5(4): 195 (1874).

Ing & Spooner (1994: 75).

Represented by four specimens at PERTH.

Stemonitis virginiensis Rex, *Proc. Acad. Nat. Sci. Philadelphia* 43: 391 (1891).

Represented by two specimens at PERTH.

Stemonitopsis amoena (Nann.-Bremek.) Nann.-Bremek., *Nederlandse Myxomyceten* 205 (1975).

Jordan *et al.* (2006: 360).

Represented by two specimens at PERTH.

Stemonitopsis gracilis (G.Lister) Nann.-Bremek., *Nederlandse Myxomyceten* 210 (1975).

Represented by two specimens at PERTH.

Stemonitopsis peritricha Nann.-Bremek., *Nederlandse Myxomyceten* 212 (1975).

Represented by one specimen at PERTH.

Stemonitopsis reticulata (H.C.Gilbert) Nann.-Bremek. & Y.Yamam., in Yamamoto & Nannenga-Bremekamp, *Proc. Kon. Ned. Akad. Wetensch.*, Ser. C, 98(3): 325 (1995).

Represented by one specimen at PERTH.

Stemonitopsis typhina (F.H.Wigg.) Nann.-Bremek., *Nederlandse Myxomyceten* 209 (1975).

Cheeseman & Lister (1915: 203, 207, 210 as *Comatricha typhoides*); Mitchell (1995: 294).

Represented by six specimens at PERTH.

Symphycarpus amaurochaetoides Nann.-Bremek., in Ing & Nannenga-Bremekamp, *Proc. Kon. Ned. Akad. Wetensch.*, Ser. C, 70(2): 218 (1967).

Ing & Spooner (1994: 75).

Not represented at PERTH.

Arcyriaceae

Arcyria affinis Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 6(1): 276 (1875).

Represented by one specimen at PERTH.

Arcyria cinerea (Bull.) Pers., *Syn. Meth. Fung.* 184 (1801).

Hnatiuk (1978: 17); Hnatiuk & Kenneally (1981: 53); Ing & Spooner (1994: 73); Mitchell (1995: 276); McHugh *et al.* (2003: 492).

Represented by 11 specimens at PERTH.

Arcyria denudata (L.) Wettst., *Vorarb. Pilzfl. Steiermark* 1: 9 (1885).

Represented by three specimens at PERTH.

Arcyria ferruginea Saut., *Flora* 24: 316 (1841).

Represented by two specimens at PERTH.

Arcyria incarnata (J.F.Gmel.) Pers., *Observ. Mycol.* 1: 58 (1796).

Cooke (1892: 398); MacAlpine (1895: 196); Cheesman & Lister (1915: 208); Mitchell (1995: 277).

Represented by four specimens at PERTH.

Arcyria insignis Kalchbr. & Cooke, in Kalchbrenner, *Grevillea* 10: 143 (1882).

Ing & Spooner (1994: 73).

Represented by one specimen at PERTH.

Arcyria minuta Buchet, in Patouillard, *Mém. Acad. Malgache* 6: 42 (1927).

Mitchell (1995: 277).

Represented by five specimens at PERTH.

Arcyria obvelata (Oeder) Onsberg, *Mycologia* 70: 1286 (1979).

Cooke (1892: 398, as *Arcyria nutans*); MacAlpine (1895: 196, as *A. nutans*); Hnatiuk (1978: 17, as *A. nutans*); Mitchell (1995: 277, as *A. nutans*); McHugh *et al.* (2003: 493, as *A. nutans*).

Represented by 11 specimens at PERTH.

Arcyria occidentalis (T.Macbr.) G.Lister, in Lister, *Monogr. Mycetozoa*, Ed. 2, 245 (1911).

Represented by one specimen at PERTH.

Arcyria pausiaca H.W.Keller & Bub.-Zurey, in Keller, Whitney & Buben-Zurey, *Mycologia* 78: 433 (1986).

Represented by four specimens at PERTH.

Arcyria pomiformis (Leers) Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 6(1): 271 (1875).

Ing & Spooner (1994: 73); McHugh *et al.* (2003: 493); Jordan *et al.* (2006: 360).

Represented by 11 specimens at PERTH.

Arcyria stipata (Schwein.) Lister, *Monogr. Mycetozoa* 189 (1894).

Represented by two specimens at PERTH.

Dianemataceae

Calomyxa metallica (Berk.) Nieuwl., *Amer. Midl. Natural.* 4: 335 (1916).

McHugh *et al.* (2003: 493); McHugh *et al.* (2009: 59).

Represented by one specimen at PERTH.

Dianema corticatum Lister, *Monogr. Mycetozoa* 205 (1894).

Represented by one specimen at PERTH.

Trichiaceae

Hemitrichia calyculata (Speg.) M.L.Farr, *Mycologia* 66: 887 (1974).

Represented by one specimen at PERTH.

Hemitrichia minor G.Lister, *J. Bot.* 49: 62 (1911).

Mitchell (1995: 279, as *Perichaena minor*).

Represented by one specimen at PERTH.

Hemitrichia serpula (Scop.) Rostaf., in Lister, *Monogr. Mycetozoa*, Ed. 1, 179 (1894).

Cooke (1892: 399, as *Arcyria serpula*); MacAlpine (1895: 196, as *A. serpula*); Hnatiuk & Kenneally (1981: 54); Mitchell (1995: 278).

Not represented at PERTH.

Metatrichia floriformis (Schwein.) Nann.-Bremek., *Proc. Kon. Ned. Akad. Wetensch.*, Ser. C, 88(1): 127 (1985).

Represented by four specimens at PERTH.

Oligonema schweinitzii (Berk.) G.W.Martin, *Mycologia* 39: 460 (1947).

Represented by four specimens at PERTH.

Perichaena corticalis (Batsch) Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 6(1): 293 (1875).

Cooke (1892: 395); MacAlpine (1895: 194); Mitchell (1995: 278); McHugh *et al.* (2009: 60, as *Perichaena corticalis* var. *corticalis*).

Represented by eight specimens at PERTH.

Perichaena depressa Lib., *Pl. Crypt. Arduenna* 4: 378 (1837).

Hnatiuk & Kenneally (1981: 54); Mitchell (1995: 279).

Represented by eight specimens at PERTH.

Perichaena vermicularis (Schwein.) Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 8(4): 34 (1876).

McHugh *et al.* (2003: 494).

Represented by three specimens at PERTH.

Trichia affinis de Bary, in Fuckel, *Jahrb. Nassauischen Vereins Naturk.* 23-24: 336 (1869).

Mitchell (1995: 279).

Represented by eight specimens at PERTH.

Trichia botrytis (J.F.Gmel.) Pers., in Roemer, *Neu. Mag. Bot.* 1: 89 (1794).

Cooke (1892: 399, as *Trichia fragilis*); MacAlpine (1895: 196, as *T. fragilis*); Mitchell (1995: 279).

Represented by two specimens at PERTH.

Trichia contorta (Ditmar) Rostaf., *Pamiet. Towarz. Nauk. Sci. Paryzu* 6(1): 259 (1875).

McHugh *et al.* (2009: 60).

Represented by four specimens at PERTH.

Trichia decipiens (Pers.) T.Macbr., *N. Amer. Slime-Moulds* 218 (1899).

Mitchell (1995: 280).

Represented by 12 specimens at PERTH.

Trichia favoginea (Batsch) Pers., in Roemer, *Neu. Mag. Bot.* 1: 90 (1794).

Hnatiuk (1978: 17); Mitchell (1995: 280).

Represented by 12 specimens at PERTH.

Trichia munda (Lister) Meyl., *Bull. Soc. Vaud. Sci. Nat.* 56: 327 (1927).

Represented by one specimen at PERTH.

Trichia persimilis P.Karst., *Not. Sällsk. Fauna Fl. Fenn. Förh.* 9: 353 (1868).

Represented by nine specimens at PERTH.

Trichia varia (J.F.Gmel.) Pers., in Roemer, *Neu. Mag. Bot.* 1: 90 (1794).

McHugh *et al.* (2009: 60).

Represented by six specimens at PERTH.

Trichia verrucosa Berk., in Hooker, *Fl. Tasm.* 2: 269 (1859).

McHugh *et al.* (2003: 494).

Represented by three specimens at PERTH.

Ceratiomyxaceae

Ceratiomyxa fruticulosa (O.F.Müll.) T.Macbr., *N. Amer. Slime-Moulds* 18 (1889)

Mitchell (1995: 271); McHugh *et al.* (2003: 490, as *Famintzinia fruticulosa*)

Represented by ten specimens at PERTH.

Acknowledgements

Thank you to David W. Mitchell, J.P.M. van Hooff, Roland McHugh, Steven Stephenson and Elaine Davison for their unwavering assistance from the very beginning of our slime mould journey; and to the staff of the Western Australian Herbarium who enthusiastically brought in all sorts of things which they hadn't noticed in the field previously. We would also like to thank Juliet Wege, Terry Macfarlane for their encouragement and constructive comments on the draft, and Kevin Thiele, Louise Biggs and Claire Ellis for their technical input, and Neale Bougher and Peter Davison for providing images.

References

- Bridson, G.D.R. & Smith, E.R. (1991). *B-P-H-S: Botanico-periodicum-huntianum/supplementum* (Hunt Institute for Botanical Documentation: Pittsburgh.)
- Brummitt, R.K. & Powell C.E. (1992). *Authors of plant names: a list of authors of scientific names of plants*. (Royal Botanic Gardens: Kew, England.)
- Cheeseman W.N. & G.Lister (1915). Mycetoza of Australia and New Zealand. *Journal of Botany, British and Foreign* 53: 203–212.
- Cleland, J.B. (1927). Notes on a collection of Australian myxomycetes. *Transactions of the Royal Society of South Australia* 51: 62–64.
- Cooke, M.C. (1892). *Handbook of Australian fungi*. (Williams and Norgate: London.)
- Department of the Environment, Water, Heritage and the Arts (2008). *Interim Biogeographic Regionalisation for Australia (IBRA), Version 6.1*. <http://www.environment.gov.au/parks/nrs/science/bioregion-framework/ibra/index.html> [accessed March 2010]
- Gams, W. (2005). Report for the Committee for Fungi: 13. *Taxon* 54: 828–830.
- Hawksworth, D.L., Kirk, P.M., Sutton, B.C. & Pegler, D.N. (1995). *Ainsworth & Bisby's dictionary of the fungi*. 8th ed. (CAB International: Wallingford.)
- Hernandez-Crespo, J. & Lado, C. (2005). *An on-line nomenclatural information system of Eumycetozoa*. <http://www.nomen.eumycetozoa.com> [accessed December 2009]
- Hnatiuk, R.J. (1978). Records of myxomycetes in Western Australia. *Western Australian Herbarium Research Notes* 1: 17–18.
- Hnatiuk, R.J. & Kenneally, K.F. (1981). A survey of the vegetation and flora of Mitchell Plateau, Kimberley, Western Australia. *In: Biological survey of Mitchell Plateau and Admiralty Gulf, Kimberley, Western Australia*. pp. 13–94. (Western Australian Museum: Perth.)
- Ing, B. & Spooner B.M. (1994). Myxomycetes from the Kimberley Region, Western Australia. *Botanical Journal of the Linnean Society* 116: 71–76.
- Jordan C.C., Brims M.H., Speijers E.J. & Davison E.M. (2006). Myxomycetes on the bark of *Banksia attenuata* and *B. menziesii* (Proteaceae). *Australian Journal of Botany*. 54: 357–365.
- Lado, C. (2001). Nomenmyx: a nomenclatural taxabase of myxomycetes. *Cuadernos de Trabajo de Flora Micologica Iberica* Ser. 16, pp. 5–220.(CSIC: Madrid.)
- Lawrence G.H.M., Gunther Buchheim A.F., Daniels, G.S., Dolezal, H. (eds). (1968). *B-P-H: Botanico-periodicum-huntianum*. (Hunt Botanical Library: Pittsburgh.)
- McAlpine, D. (1895). *Systematic arrangement of Australian fungi together with host-index and list of works on the subject*. pp. 193–199 (Dept. of Agriculture: Melbourne.)
- McHugh R., Stephenson S.L., Mitchell D.W. & Brims M.H. (2003). New records of Australian Myxomycota. *New Zealand Journal of Botany* 41: 487–500.
- McHugh R., Stephenson S.L., Mitchell D.W. & Brims M.H. (2009). New additions to the Myxomycota of Australia. *Australasian Mycologist* 28: 56–64.
- Mitchell, D.W. (1995). The Myxomycota of Australia. *Nova Hedwigia* 60: 269–295.
- Stafleu, F.A. & Cowan, R.S. (1976–1988). *Taxonomic literature: a selective guide to botanical publications and collections with dates, commentaries and types*. 2nd ed. Vols 1–7 (Bohn, Scheltema & Holkema: Utrecht.)
- Western Australian Herbarium (1998–). *FloraBase*—The Western Australian flora. Department of Environment and Conservation. <http://florabase.dec.wa.gov.au/> [accessed March 2010]

