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GENERAL NOTES

The Desmids (Conjugatophyceae) from Arkansas

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Introduction

Several algal records for the state of Arkansas have formerly been reported. These published works include the Cyanophyceae, Chrysophyceae, Bacillariophyceae, Chlorophyceae, Dinophyceae, Euglenophyceae (Hoffman and Causey, 1952), Conjugatophyceae, Xanthophyceae, Cryptophyceae, Rhodophyceae (Meyer, 1969; Meyer et al., 1970), the loricate Chrysophyceae (Meyer, 1971), and the scaled Chrysophyceae (Andersen and Meyer, 1977). A list of the Cyanophyceae also has been distributed by Meyer through the Arkansas Academy of Science flora and fauna series.

Through additional research previously unreported and new Conjugatophyceae taxa have been observed. These observations have been joined with those previously reported for a complete list of the known desmid flora of Arkansas. This paper presents a current inventory of the desmid flora (Conjugatophyceae) collected in the Ozark and Salem Plateaus and adjacent regions in Arkansas. Desmid taxa previously reported by Meyer (1969), Meyer et. al., (1970), and Hoffman and Causey (1952) are denoted by a (1), (2), and (3) respectively.

The majority of the newly reported desmids were collected within islands of vascular vegetation, as the metaphytic subcommunity, from diverse communities; ponds, pools, and lakes. This subcommunity is defined by Round (1965) as the algae which are in close association with vegetation but not stringently attached to the macrophytes or euplanktonic. Additional taxa from the euplanktonic or open water subcommunity are included. The classification of most of the *Actinotaenium* and *Staurodesmus* follows the nomenclature of Teiling (1954, 1948). All other taxa follow the nomenclature of Prescott et al., (1972, 1975, 1977, 1981a, 1981b, 1981c).

This paper lists a total of 191 species and 128 varieties formerly unreported for the state. Newly reported taxa of 10 Mesotaeniaceae and 237 Desmidiaceae are presented. Sixteen new combinations of *Staurodesmus* are established.

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tributions to this collection.

Class Conjugatophyceae

Order Mesotaeniales

Family Mesotaeniaceae

Cylindrocystis crassa v. *elliptica* West et West 1895*Cylindrocystis Brebissonii* Meneghini 1838*Gonatozygon aculeatum* Hastings 1892 3*Gonatozygon kinahani* (Archer) Rabenhorst 1868*Gonatozygon monotaenium* v. *monotaenium* De Bary 1858 ex Rabenhorst*Gonatozygon pilosum* Wolle 1882*Netrium digitus* (Ehrenb.) Itzigson et Rothe 1856 ex Rabenhorst*Roya anglica* f. *major* N. Carter 1935*Roya anglica* West 1920 ex Hodgetts*Spirotaenia condensata* Brebisson 1848 ex Ralfs*Spirotaenia minutissima* Walton 1930

Order Desmidiiales

Family Desmidiaceae

Actinotaenium australe (Racib.) Croasdale 1981*Actinotaenium subglobosum* (Nordst.) Teiling 1954*Actinotaenium Wollei* (Gronbl.) Teiling 1954*Actinotaenium trachypolum* (West et West) Teiling 1954*Actinotaenium trachypolum* v. *Messikommeri* Teiling 1954*Arthrodesmus convergens* Ehrenberg ex Ralfs 1848*Arthrodesmus extensus* (Borge) Hirano 1957*Arthrodesmus michiganensis* Johnson 1895*Arthrodesmus minor* Turner 1892*Arthrodesmus octocornis* Ehrenberg ex Archer ex Pritchard 1861 3*Arthrodesmus octocornis* v. *tenuis* Irene-Marie 1954*Arthrodesmus subulatus* v. *subulatus* f. *incrassatus* Scott et Prescott 1958*Bambusina Brebissonii* v. *Brebissonii* f. *Brebissonii* Kutzing 1945*Closterium abruptum* v. *abruptum* West 1892*Closterium abruptum* v. *canadense* Bourrelly 1966*Closterium abruptum* v. *majus* Huber-Pestalozzi 1928*Closterium acerosum* (Schrank) Ehrenberg 1828*Closterium acerosum* v. *angustius* Hughes 1950

- Closterium aciculare* v. *aciculare* f. *aciculare* T. West 1860
Closterium acutum (Lyngbye) Brebisson ex Ralfs 1848
Closterium acutum v. *tenuius* Nordstedt 1888
Closterium acutum v. *variabile* (Lemm.) Krieger 1937
Closterium angustatum v. *augustatum* Kutzing 1845
Closterium archerianum f. *archerianum* Cleve ex Lundell 1871
Closterium Baillyanum v. *Baillyanum* f. *crassa* Irene-Marie 1959
Closterium balmacarense Turner 1893
Closterium ceratium Perty 1852
Closterium cornu v. *minor* Irene-Marie 1952
Closterium costatum Corda 1835
Closterium costatum v. *dilatatum* (West et West) Krieger 1937
Closterium costatum v. *subcostatum* (Nordst.) Krieger 1937
Closterium costatum v. *Westii* Cushman 1905
Closterium Delpontei (Klebs) Wolle 1885
Closterium diana Ehrenberg 1838
Closterium diana v. *brevius* (Witr.) Petkoff 1910
Closterium didymotocum (Corda) Ralfs 1948
Closterium eboracense (Ehrenb.) Turner 1886
Closterium Ehrenbergii v. *Michailovskoense* Elenkin 1914
Closterium gracile v. *gracile* Brebisson 1839
Closterium idiosporum West et West 1900
Closterium incurvum f. *incurvum* Brebisson 1856
Closterium Jenneri Ralfs 1848
Closterium iagoense Nordstedt 1870
Closterium libellula v. *libellula* Focke 1847
Closterium lineatum v. *lineatum* Ehrenberg 1835
Closterium lunula (Mull.) Nitzsch 1817
Closterium lunula v. *lunula* f. *gracilis* Messikommer 1935
Closterium lunula v. *Massartii* (Wildem.) Krieger 1937
Closterium moniliferum (Bory) Ehrenberg 1838 3
Closterium moniliferum v. *moniliferum* (Bory) Ehrenberg 1838
Closterium navicula (Breb.) Lutkemuller 1902
Closterium parvulum v. *maius* West 1901
Closterium parvulum v. *parvulum* Nageli 1849
Closterium parvulum v. *Taylorii* Jackson 1971
Closterium parvulum v. *tortum* (Griffiths) Skuja 1948
Closterium pseudodiana Roy 1890
Closterium pseudolunula v. *major* Irene-Marie 1954
Closterium pseudolunula v. *pseudolunula* Borge 1909
Closterium Ralfsii v. *gracilius* (Maskell) Krieger 1937
Closterium Ralfsii v. *Ralfsii* Brebisson ex Ralfs 1848
Closterium rostratum v. *extensum* Prescott 1981
Closterium setaceum v. *setaceum* Ehrenberg 1835
Closterium striolatum v. *erectum* Klebs 1879
Closterium subfusiforme Messikommer 1951
Closterium tumidum Johnson 1895
Closterium ulna v. *ulna* Focke 1847
Closterium venus v. *apollonionis* Croasdale 1965
Closterium venus v. *venus* Kutzing 1845
Cosmarium abbreviatum v. *minus* (West et West) Krieger et Gerloff 1969
Cosmarium Arnellii v. *notatum* Gronblad 1956
Cosmarium bioculatum v. *depressum* (Schaarschm.) Schmidle 1894
Cosmarium Boeckii Wille 1880
Cosmarium botrytis (Menegh.) Ralfs 1848 3
Cosmarium botrytis v. *canadense* Irene-Marie 1955
Cosmarium candianum Delponte 1877
Cosmarium clepsydra v. *nanum* Scott et Gronblad 1957
Cosmarium contractum v. *contractum* Kirchner 1878 3
Cosmarium contractum v. *maximum* West et West 1896
Cosmarium contractum v. *ornatum* Forster 1972
Cosmarium contractum v. *rotundatum* Borge 1925
Cosmarium costatum Nordstedt 1875
Cosmarium cucumis Corda ex Ralfs 1848
Cosmarium cuneatum Joshua 1886
Cosmarium dentatum v. *dentatum* f. *dentatum* Wolle 1876
Cosmarium dentatum v. *ornatum* Scott et Gronblad 1957
Cosmarium depressum (Nag.) Lundell 1871
Cosmarium depressum v. *achondrum* (Boldt) West et West 1905
Cosmarium dispersum f. *dispersum* Johnson 1895
Cosmarium emarginatum West et West 1895
Cosmarium formosulum v. *Nathorstii* (Boldt) West et West 1908
Cosmarium galeritum v. *galeritum* Nordstedt 1870
Cosmarium galeritum v. *subtumidum* Borge 1903
Cosmarium granatum Brebisson ex Ralfs 1848
Cosmarium impressulum Elfving 1881
Cosmarium Kjellmanii Wille 1879
Cosmarium latipyramidatum Scott et Gronblad 1957
Cosmarium levinotabile Croasdale 1981
Cosmarium logiense f. *expansa* West et West 1912
Cosmarium Lundelli v. *ellipticum* West et West 1894
Cosmarium minutissimum Archer 1877
Cosmarium modestum West et West 1898
Cosmarium monomazum v. *polymazum* Nordstedt 1873
Cosmarium monomazum v. *tristichum* West et West 1898
Cosmarium montrealense Croasdale 1981
Cosmarium ochthodes Nordstedt 1875
Cosmarium ovale v. *Prescottii* Irene-Marie 1938
Cosmarium pachydermum v. *aethiopicum* West et West 1905
Cosmarium pachydermum v. *pachydermum* f. *parvum* Croasdale 1981
Cosmarium pachydermum v. *pusillum* Irene-Marie 1952
Cosmarium phaseolus v. *elevatum* Nordstedt 1873
Cosmarium phaseolus v. *phaseolus* f. *phaseolus* Brebisson ex Ralfs 1848
Cosmarium portianum v. *orthostichum* Schmidle 1893
Cosmarium portianum v. *portianum* f. *portianum* Archer 1860
Cosmarium praegrandidforme v. *praegrandidforme* Schmidle 1898

- Cosmarium protractum* v. *protractum* (Nag.) De Bary 1858
Cosmarium pseudobroomei v. *pseudobroomei* Wolle 1884
Cosmarium pseudoprotuberans Kirchner 1878
Cosmarium pseudoquadratum v. *pseudoquadratum* Prescott et Scott 1952
Cosmarium pyramidatum Brebisson ex Ralfs 1848
Cosmarium quadratum Ralfs 1848
Cosmarium quadripapillatum Scott et Gronbald 1957 3
Cosmarium quadrum Lundell 1871
Cosmarium rectangulare Grunow ex Rabenhorst 1868
Cosmarium regnellii v. *regnellii* Wille 1884
Cosmarium reniforme v. *alaskanum* Croasdale 1956
Cosmarium reniforme v. *reinforme* (Ralfs) Archer 1874
Cosmarium sexangulare v. *sexangulare* Lundell 1871
Cosmarium speciosum Lundell 1871
Cosmarium subimpressulum Borge 1894
Cosmarium subtumidum v. *subtumidum* Nordstedt ex Wittrock et Nordstedt 1878
Cosmarium succisum v. *Jaoi* Krieger et Gerloff 1962
Cosmarium taxichondrum Lundell 1871
Cosmarium tenue Archer 1868
Cosmarium tinctum v. *subretusum* Messikommer 1942
Cosmarium transitorium (Heimerl) Ducellier 1918
Cosmarium tuddalense v. *americanum* Krieger et Gerloff 1962
Cosmarium Turpinii Brebisson 1856
Cosmarium undulatum Corda ex Ralfs 1848
Cosmarium viride v. *compressum* Taft 1945
Cosmarium wembaerense Schmidle 1898
Desmidium Baileyi (Ralfs) Nordstedt 1880 1, 3
Desmidium Grevillii v. *Grevillii* (Kutz.) De Bary 1858
Desmidium quadrangulatum Ralfs 1845
Desmidium Swartzii (C.A.Ag.) C.A. Agardh ex Ralfs 1848 1, 3
Desmidium Swartzii v. *amblyodon* (Itzigs.) Rabenhorst 1863
Euastrum abruptum v. *lagoense* (Nordst.) Krieger 1937
Euastrum abruptum v. *subglaziovii* f. *inflatum* Prescott 1977
Euastrum binale (Turp.) Ehrenberg ex Ralfs 1848
Euastrum denticulatum (Kirch.) Gay 1884
Euastrum divaricatum v. *divaricatum* Lundell 1871
Euastrum Kriegeri Prescott 1977
Euastrum lapponicum v. *lapponicum* f. *laeve* Prescott 1977
Euastrum oblongum v. *oblongum* (Grev.) Ralfs 1848
Euastrum pseudoboldtii Gronblad 1921
Euastrum sinuosum v. *subjenneri* West et West 1902
Euastrum verrucosum Ehrenberg ex Ralfs 1848
Groenbladia undulata (Nordst.) Forster 1972
Hyalotheca dissiliens v. *dissiliens* f. *dissiliens* (Smith) Brebisson ex Ralfs 1848 3
Hyalotheca mucosa (Mert.) Ehrenberg ex Ralfs 1848 2, 3
Micrasterias americana (Ehrenb.) Ralfs 1848 3
Micrasterias apiculata v. *fimbriata* (Ralfs) Nordstedt 1888
Micrasterias apiculata v. *fimbriata* f. *elephanta* (Wolle) Croasdale 1977
Micrasterias denticulata v. *denticulata* Brebisson ex Ralfs 1848
Micrasterias denticulata v. *Taylorii* f. *mammillata* Prescott et Scott 1952
Micrasterias denticulata v. *Taylorii* f. *Taylorii* Krieger 1939
Micrasterias laticeps v. *laticeps* f. *laticeps* Nordstedt 1870
Micrasterias muricata v. *muricata* f. *muricata* (Bail.) Ralfs 1848
Micrasterias radiata v. *radiata* f. *radiata* Hassall 1845 3
Micrasterias radiosa v. *ornata* f. *ornata* Nordstedt 1870
Micrasterias radiosa v. *ornata* Nordstedt 1870 3
Micrasterias rotata v. *rotata* (Grev.) Ralfs 1848
Micrasterias rotata v. *rotata* f. *evoluta* Turner 1892
Micrasterias truncata v. *pusilla* G. S. West 1914
Micrasterias truncata v. *truncata* f. *semiradiata* (Nag.) Cleve 1864
Onychonema filiforme (Ehrenb.) Roy et Bisset 1886
Onychonema laeve Nordstedt 1870 3
Penium cylindrus v. *cylindrus* (Ehrenb.) Brebisson ex Ralfs 1848
Penium margaritaceum v. *elongatum* Klebs 1879
Penium margaritaceum v. *margaritaceum* f. *margaritaceum* (Ehrenb.) Brebisson ex Ralfs 1848
Phymatodocis Nordstedtiana Wolle 1884
Pleurotaenium baculoides v. *brevius* (Skuja) Krieger 1937
Pleurotaenium caldense Nordstedt 1877
Pleurotaenium cladense v. *cratum* (Turner) Krieger 1937
Pleurotaenium Ehrenbergii v. *crenatum* f. *Croasdaleae* Forster 1963
Pleurotaenium Ehrenbergii v. *Ehrenbergii* (Breb.) De Bary 1858
Pleurotaenium gloriosum (Turner) West et West 1901
Pleurotaenium lobatum Phillips 1993
Pleurotaenium maximum (Reinsch) Lundell 1871
Pleurotaenium nodosum (Bailey) Lundell 1871
Pleurotaenium ovatum Nordstedt 1877
Pleurotaenium subcoronulatum v. *detum* West et West 1896
Pleurotaenium trabecula v. *trabecula* (Ehrenb.) Nageli 1849 3
Spondylosium ellipticum West et West 1902
Spondylosium moniliforme v. *moniliforme* Lundell 1871
Spondylosium planum (Wolle) West et West 1912 3
Spondylosium pulchellum v. *bambusinoides* (Wittr.) Lundell 1871
Spondylosium pulchrum v. *pulchrum* (Bail.) Archer ex Pritchard 1861
Spondylosium pygmaeum (Cooke) West 1892
Staurastrum americanum (West et West) G.M. Smith (1921) 1922
Staurastrum anatinum Cooke et Wills ex Cooke 1881
Staurastrum anatinum v. *anatinum* f. *denticulatum* (G.M. Smith) Brook 1959
Staurastrum ankyroides Wolle 1884
Staurastrum arachne Ralfs ex Ralfs 1848

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- Stauastrum arachne* v. *gyrans* (Johnson) Scott et Gronblad 1957
Stauastrum arcticon (Ehrenb.) Lundell 1871 3
Stauastrum bicornis Hauptfleisch 1888
Stauastrum brachiatum Ralfs 1848
Stauastrum chaetoceras (Schrod.) G.M. Smith 1924, 2, 3
Stauastrum cingulum v. *floridense* Scott et Gronblad 1957
Stauastrum cingulum v. *ornatum* Irene-Marie 1949
Stauastrum curvatum v. *elongatum* G.M. Smith 1924
Stauastrum curvatum West (1892) 1893
Stauastrum cyathipes Scott et Gronblad 1957
Stauastrum cyclacanthum v. *subacanthum* Gronblad 1962
Stauastrum duplex Wolle 1883
Stauastrum floriferum West et West 1896 3
Stauastrum furcigerum Brebisson ex Meneghini 1840 1
Stauastrum gracile v. *nanum* Wille 1880
Stauastrum inflexum Brebisson 1856
Stauastrum Johnsonii v. *bifurcatum* Scott et Gronblad 1957
Stauastrum leptocladum Nordstedt (1869) 1870
Stauastrum leptocladum v. *cornutum* f. *evolutum* Scott et Gronblad 1957
Stauastrum leptocladum v. *subinsigne* Scott et Gronblad 1957
Stauastrum longipes v. *contractum* Teiling 1946
Stauastrum Manfeldtii v. *parvum* Messikommer 1942
Stauastrum natator v. *Boldtii* Gronblad 1921
Stauastrum ophiura Lundell 1871
Stauastrum polymorphum Brebisson ex Ralfs 1848
Stauastrum protectum v. *planctonicum* G.M. Smith (1921) 1922 3
Stauastrum radians West et West 1898
Stauastrum tetracerum (Kutz.) Ralfs 1845
Stauroidesmus alternans (Breb.) Akin et Meyer *nov. comb.* 1996
Stauroidesmus apiculatus (Breb.) Akin et Meyer *nov. comb.* 1996
Stauroidesmus aviculatus (Breb. ex Ralfs) Akin et Meyer *nov. comb.* 1996
Stauroidesmus curvatus (Turner) Thomasson 1965
Stauroidesmus cuspidatus (Breb.) Teiling 1948
Stauroidesmus cuspidatus f. *alaskanus* Croasdale 1957
Stauroidesmus dejectus (Breb.) Teiling 1954
Stauroidesmus dejectus v. *inflatus* (West) Teiling 1954
Stauroidesmus Dickiei (Ralfs) Lillieroth 1950 2
Stauroidesmus Dickiei v. *maximum* (West et West) Thomasson 1963 3
Stauroidesmus dilatatus (Ehrenb.) Akin et Meyer *nov. comb.* 1996
Stauroidesmus disputatus (West et West) Akin et Meyer *nov. comb.* 1996
Stauroidesmus disputatus v. *extensus* (Borge) Akin et Meyer *nov. comb.* 1996
Stauroidesmus gladius (Turner) Akin et Meyer *nov. comb.* 1996
Stauroidesmus grandis v. *rotundatum* (West) Teiling 1967
Stauroidesmus hirsutus (Ehrenb.) Akin et Meyer *nov. comb.* 1996
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Stauroidesmus maamense (Archer) Akin et Meyer *nov. comb.* 1996
Stauroidesmus megacanthus (Lund.) Thunmark 1948 3
Stauroidesmus muticus (Breb.) Akin et Meyer *nov. comb.* 1996
Stauroidesmus orbiculare (Ehrenb.) Akin et Meyer *nov. comb.* 1996
Stauroidesmus orbiculare v. *depressus* (Roy et Bissett) Akin et Meyer *nov. comb.* 1996
Stauroidesmus pachyrhynchus v. *pseudopachyrhynchus* (Wolle) Teiling 1967
Stauroidesmus punctulatus (Breb.) Akin et Meyer *nov. comb.* 1996
Stauroidesmus quadrangulare (Breb.) Akin et Meyer *nov. comb.* 1996
Stauroidesmus turgescens (De Notaris) Akin et Meyer *nov. comb.* 1996
Teilingia granulata (Roy et Biss.) Bourrelly 1964
Xanthidium antilopaeum v. *minneapolisense* Wolle 1884 3
Xanthidium antilopaeum v. *polymazum* Nordstedt 1873
Xanthidium cristatum v. *pustulatum* Scott et Gronblad 1957
Xanthidium subhastiferum v. *toweri* (Cushman) G.M. Smith (1921) 1922 3

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