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THE FRESHWATER ALGAE OF ARKANSAS

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I. INTRODUCTION AND RECENT ADDITIONS

This paper presents an initial annotated inventory of the freshwater algae of Arkansas. These collections include one-hundred forty-eight new records. Thirty-three Chlorophyceae, 11 Xanthophyceae, 33 Chrysophyceae, 6 Bacillariophyceae, 11 Pyrrhophyceae, 27 Euglenophyceae, 6 Cryptophyceae, 20 Cyanophyceae and 1 Rhodophyceae are newly reported. A brief description of the habitat and sub-community position is given with each organism. A review of previously published literature is included.

This paper presents the first in a series of annotated inventories of Freshwater algae collected in Arkansas. These collections were made for the most part by the author. These collection were taken during the fall and winter of 1968-69; therefore, the numerous spring and summer organisms were not studied.

Published literature on the algae of Arkansas is limited. A partial search of the literature produced only three papers. Drs. Hoffman and Causey (1952) and Hoffman (1952) reported certain members of the phytoplankton in Lake Fort Smith. In a short paper of Bacillariophyceae from two ponds in Izard County Robinson, Jr. (1953) recorded 25 species. Further published records of Arkansas algae will be included in future papers.

The annotation accompanying the inventory gives a brief description of the habitats and principle aquatic sub-community in which the species was collected. The aquatic freshwater sub-communities used are those described by Round (1965) and indicated by the letters in parenthesis. There are: euplankton (P), neuston (N), epipellic (EP), epilithic (EL), epiphytic (ET) and epizooic (EZ). Those algae which are in close association with epiphytes but not attached to them are the metaphyton (M) (Behre, 1956).

A total of 148 species and varieties previously unreported are listed. Thirty-three Chlorophyceae, 11 Xanthophyceae, 33 Chrysophyceae, 6 Bacillariophyceae, 11 Pyrrhophyceae, 27 Euglenophyceae, 6 Cryptophyceae, 20 Cyanophyceae and 1 Rhodophyceae are newly reported. The new records for the State of Arkansas are indicated with an asterisk (*).

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Division Chlorophyta

Class Chlorophyceae

Order Volvocales

The nomenclature used within this order is that of Huber-Pestalozzi (1961).

Eudorina elegans Ehr.

Organically rich pools, Eutrophic lakes and ponds. (P)

Gonium pectorale Mul. *

Organically rich ponds. (P)

Pandorina morum (Mull.) Bory *

Eutrophic lake and organically rich ponds. (P)

Phacotus lenticularis (Ehr.) Stein *

Eutrophic lake. (P)

Pteromonas agulosa Lemm. *

Organically rich vernal pool. (P)

Order Tetrapsorales

Apiocystis brauniana Nag. *

Organically rich pond. (ET)

Asterococcus limneticus Smith *

Eutrophic lakes. (P)

Tetraspora gelatinosa (Vauch.) Desvaux. *

Organically rich pools and ditches. (ET & P)

Order Chlorococcales

Ankistrodesmis falcatus (Cor.) Ralfs *

Organically rich pool and ditches, eutrophic lakes. (P)

Botryococcus braunii Kutz. *

Organically rich ponds. (P)

Chlorella vulgaris Beij. *

Organically rich ponds. (P)

Closteriopsis longissima Lemm.

Organically rich ponds. (P)

Dictyosphaeridium ehrenbergianum Nag. *

Moderately eutrophic lakes. (P)

D. punchella Wood *

Slightly eutrophic lakes. (P)

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- Kirchneriella lunaris* (Kirch.) Mob. *
Eutrophic ponds and lakes, rivers. (P)
- Micractinium pusillum* Fres. *
Eutrophic lake. (P)
- M. quadrisetosum* (Lemm.) Smith *
Organically rich ponds. (P)
- Pediastrum boryanum* (Turp.) Menegh. *
River. (P)
- P. duplex* var. *gracilium* W. & W.
Slightly eutrophic lakes. (P)
- P. simplex* (Mey.) Lemm. *
Eutrophic lakes. (P)
- Planktosphaeria gelatinosa* Smith
Eutrophic lakes. (P)
- Scenedesmus acuminatus* (Lag.) Chod. *
Organically rich ponds. (P)
- S. dimorphus* (Turp.) Kutz. *
River. (P)
- S. incrassatulus* Boh. *
Organically rich ponds. (P)
- S. quadracaudata* (Turp.) deBreb. *
Eutrophic lakes. (P)
- Sphaerocystis schroeteri* Chod.
Eutrophic lakes. (P)
- Tetraedron minimum* (Braun) Hansg. *
Eutrophic lakes. (P)
- Tetrallantos lagerheimii* Teil. *
Eutrophic lakes and ponds. (P)
- Tetrastrum staurogeniaforme* (Schroed.) Lemm. *
Eutrophic lakes.

Order Ulotrichales

- Binuclearis tatrana* Witt. *
Organically rich roadside ditch. (ET)
- Geminella mutabilis* (deBreb.) Willie *
Moderately eutrophic lake. (EL)
- Microspora floccosa* (Vauch.) Thur. *
Eutrophic ponds. (EP)
- Stichococcus bacillifera* Nag. *
Eutrophic pond. (ET)

Order Chaetophorales

- Aphanochaete polychaete* (Hansg.) Fritsch *
Organically rich pond. (ET)

Chaetophora elegans (Roth) C. Ag. *
Organically rich roadside ditch. (ET)

C. incrassata (Huds.) Haz. *
Organically rich pond. (ET)

Draparnaldia glomerata (Vauch.) C. Ag. *
Seepage pool. (ET)

D. mutabilis (Roth) Bory *
Organically rich seeps and ditches. (ET)
Class Conjugatophyceae

Order Zygnematales

Desmidium baileyi (Ralfs) Nords.
River, tychoplankton. (P)

D. schwartzii C. Ag.
River, tychoplankton. (P)

Staurostrum furcigerum deBreb.
Eutrophic lake. (P)

Division Chrysophyceae

Class Xanthophyceae

The nomenclature used within this class is that of Pascher (1939).

Order Heterotrichales

Chloridella simplex Pasch. *
Organically rich pond. (P)

Chlorobotrys simplex Pasch. *
On damp clay soil. (EL)

Goniochloris fallax Fott *
Organically rich pond. (M)

Monallantus brevicylindrus Pasch. *
Organically rich pond. (M)

Ophiocytium cochleare A. Br. *
Organically rich pond. (M)

Order Heterococcales

Tribonema affine West
Moderately eutrophic lake. (M)

T. ambiguum Skuja *
Organically rich pond. (M)

T. minus Haz. *
Seepage pool. (M)

T. viride Pasch. *
Organically rich pond. (M)

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T. vulgare Pasch. *

Seepage pool. (M)

Class Chrysophyceae

Order Chrysomonadales

Anthophysa vegetans (Mul.) Stein *

River, tychoplankton. (P)

Chromophyton rosanoffii Wor. *

Organically rich vernal pool. (N)

Chromulina gonoides Skuja *

Seepage pool. (M)

C. tenera Matv. *

Organically rich vernal pool. (P)

Chrysochromulina parvum Lack. *

Eutrophic lake. (P)

Chrysococcus minutus (Fritsch) Nyg. *

Eutrophic lake. (P)

C. rufescens Klebs *

Organically rich roadside ditch and eutrophic lakes. (P)

C. triporus Matv. *

Organically rich pool. (P)

Dinobryon divergens Inn.

Eutrophic lakes. (P)

D. elegans Korsch. *

River, tychoplankton. (P)

D. sertularia Ehr. *

Eutrophic lakes and ponds. (P)

Epipyxis utriculus Ehr. *

Organically rich pond. (ET)

Kephyrion capuliforme Con. *

Eutrophic lakes. (P)

K. inconstans Schm. *

Eutrophic lakes. (P)

K. rubri-claustri Con. *

Eutrophic lakes. (P)

K. spirale (Lack.) Con. *

Eutrophic Lakes and ponds. (P)

Mallomonas acaroides Petry *em.* Kreig. *

Eutrophic lakes. (P)

M. caudata Iwan. *em.* Kreig. *

Mesotrophic lake. (P)

M. coronata Boloch. *

Eutrophic ponds and vernal pools. (P)

- M. elliptica* (Kiss.) Con. *
Organically rich roadside ditch. (P)
- M. spinifera* Con. *
Organically rich roadside ditch. (P)
- M. tonsurata* Teil. *
River. (P)
- Pseudokephyrion pilidum* Schil. *
Eutrophic lake. (P)
- P. schilleri* Con. *
Eutrophic lake. (P)
- Stenokalyx cylindrica* Schm. *
Eutrophic lake (P)
- S. laticollis* Con. *
Eutrophic lake. (P)
- Synura petersenii* Kor. *
River and lakes. (P)
- S. sphagnicola* Kor. *
Mesotrophic lake. (P)
- S. uvella* Ehr. *em.* Kor. *
Eutrophic ponds. (P)
- Order Rhizochrysidales
- Chrysoamphitrema brannea* Scher. *
Eutrophic lake. (ET)
- Chrysopyxis ascendens* Wisl. *
Organically rich pond. (ET)
- C. bipes* Stein *
Organically rich pond. (ET)
- Order Chrysocapsales
- Phaeoplaca thallosa* Chod. *
Creek. (ET)
- Class Bacillariophyceae
- Order Centrales
- Melosira granulata* (Ehr.) Ralfs *
Eutrophic lakes. (P)
- M. italica* Kutz.
Eutrophic lakes. (P)
- Order Pennales
- Eutrophic lakes. (P)
- Asterionella formosa* Hass. *

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- Fragillaria crotonensis* Kitt. *
Eutrophic lakes. (P)
- Synedra acus* Kutz.
Eutrophic lakes. (P)
- Tabellaria fenestrata* (Lyngb.) Kutz. *
Mesotrophic lake. (P)
- T. floccusosa* (Roth) Kutz. *
Eutrophic lake. (P)

Division Pyrrophyta

Class Dinophyceae

The nomenclature followed within this class is that of Schiller (1933)

Order Gymnodiniales

- Gymnodinium obesum* Schil. *
Organically rich pond. (P)
- Massartia musei* (Danysz.) Schil.
Organically rich pond. (P)

Order Peridinales

- Ceratium cornutum* Ehr. *
Mesotrophic lake. (P)
- C. hirundinella* Mull. *
Mesotrophic lake. (P)
- Hemidinium natusum* Stein *
Organically rich pond. (P)
- Peridinium bipes* Stein
Organically rich pond. (P)
- P. cinctum* Mull. *
Eutrophic lake. (P)
- P. palustre* (Lind.) Lefev. *
River. (P)
- P. pusillum* (Pen.) Lemm. *
Mesotrophic lake. (P)
- P. willei* Huit.-Kass. *
Eutrophic lake. (P)
- P. wisconsinense* Eddy. *
Mesotrophic lake. (P)

Division Euglenophyta

The nomenclature used within this division is that of Huber-Pestalozzi (1955).

Class Euglenophyceae

Order Euglenales

- Colacium vesiculosum* Ehr. *
Vernal pool. (EZ)
- Euglena agilis* Cart. *
Organically rich vernal pool. (P)
- E. piciformis* Klebs *
On damp clay soil and in eutrophic lakes. (P)
- E. sangunea* Ehr. *
Organically rich pond. (P)
- E. sangunea* var. *furcata* Hub. *
On damp clay soil. (EL)
- E. schmitzii* Goj. *
Organically rich pond. (P)
- E. spirogyra* Ehr. *
Mesotrophic lake. (P)
- E. van gooi* Defl. *
Vernal pool. (P)
- E. variabilis* Klebs *
Seepage pool. (M)
- E. viridis* Ehr. *
Creek. (P)
- Monomorphina pyrum* (Ehr.) Mereschk. *
Vernal pool. (P)
- Phacus acumunatus* Stokes *
Vernal pool. (P)
- P. brevicaudata* (Klebs) Lemm. *
Mesotrophic lake. (P)
- P. curvicaudata* Swir. *
Organically rich pond. (P)
- P. tortus* (Lemm.) Skv. *
Vernal pool. (P)
- Strombomona deflandrei* (Rool) Defl. *
Organically rich pond. (P)
- S. longicauda* (Swir.) Defl. *
Organically rich pond. (P)
- Trachelomonas helvetica* var. *cordiformis* (Roll) Pop. *
Organically rich pond. (P)
- T. hispida* var. *austroilica* Playf. *
Eutrophic lake. (P)
- T. hispida* var. *punctata* Lemma. *
Organically rich pond. (P)

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- T. *intermedia* Dang. *
Organically rich pond. (P)
- T. *rugulosa* Stein *
Organically rich pond. (P)
- T. *scabra* Playf. *
Organically rich pond. (P)
- T. *sydnensis* Playf. *
Organically rich ponds and vernal pools. (P)
- T. *volvocina* Ehr.
Mesotrophic and eutrophic lakes. (P)
- T. *volvocinopsis* Swir. *
Mesotrophic and eutrophic lakes and ponds. (P)

Order Heteronematales

- Peranema inflexum* Skuja *
Organically rich pasteur pool. (P)
- P. trichophora* (Ehr.) Stein *
Organically rich pasteur pool. (P)

Class Cryptophyceae

Order Cryptomonadales

- Chroomonas acuta* Uter. (?) *
Organically rich pond. (P)
- Cryptomonas caudata* Schil. *
Seepage pool. (M)
- C. erosa* Ehr. *
Organically rich ponds and mesotrophic lakes. (P)
- C. oblonga* Playf. *
River. (P)
- C. obovata* Skuja *
Organically rich pools. (P)
- C. ovata* Ehr. *
Mesotrophic lakes. (P)

Division Cyanophyta

Class Cyanophyceae

The nomenclature used within this class is that of Geitler

Order Chroococcales

- Anphanocapsa biformis* A. Br. *
On limestone seep. (EL)
- A. grevillei* (Hass.) Rab. *
River. (P)
- Chroococcus turgidus* (Kutz.) Nag. *
River (P)
- Dactylococcopsis smithii* Chod. et Chod. (?) *
Eutrophic lake. (P)
- Gomposphaera aponina* Kutz. *
River. (P)
- Merismopedia marsonii* Lemm. *
Organically rich pond. (P)
- M. punctata* Mey. *
Organically rich pond. (P)
- M. tenussima* Lemm. *
Organically rich, slow flowering stream. (P)
- Polycystis aeruginosa* Kutz. *
Organically rich ponds and eutrophic lakes. (P)

Order Chamaesiphonales

- Chamaesiphon incrustans* Grun. *
On *Cladophora* sp. in creek. (ET)

Order Oscillatoriales

- Aphanizomenon flos-aquae* (L.) Ralfs *
Eutrophic lakes and ponds. (P)
- Nostoc planctonicum* Por. et Tschern. *
Organically rich vernal pool. (P)
- Oscillatoria agardhii* Gom. *
Organically rich pond. (P)
- O. amoena* Gom. *
Seepage pool. (EL)
- O. chlorina* Kutz. *
Seepage on clay soid. (EL)
- O. ornata* Kutz. *
Organically rich pond. (P-EL)
- O. princeps* Vauch. *
Organically rich pond. (P)

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- O. rubescens* deCand. *
Mesotrophic lake. (P)
- O. tenuis* C. Ag. *
Mesotrophic lake. (P)
- O. tenuis* var. *natans* Gom. *
Organically rich vernal pool. (P)

Division Rhodophyta

Class Rhodophyceae

Order Nemaliniiales

- Audouinella violacea* (Kutz.) Ham. *
Stream. (EL)

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