The Phytoplankton of Lake Wawasee, Kosciusko County, Indiana

William A. Daily

Everett E. Miner

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Butler University
Botanical Studies
(1929-1964)

Edited by

J. E. Potzger
The *Butler University Botanical Studies* journal was published by the Botany Department of Butler University, Indianapolis, Indiana, from 1929 to 1964. The scientific journal featured original papers primarily on plant ecology, taxonomy, and microbiology. The papers contain valuable historical studies, especially floristic surveys that document Indiana’s vegetation in past decades. Authors were Butler faculty, current and former master’s degree students and undergraduates, and other Indiana botanists. The journal was started by Stanley Cain, noted conservation biologist, and edited through most of its years of production by Ray C. Friesner, Butler’s first botanist and founder of the department in 1919. The journal was distributed to learned societies and libraries through exchange.

During the years of the journal’s publication, the Butler University Botany Department had an active program of research and student training. 201 bachelor’s degrees and 75 master’s degrees in Botany were conferred during this period. Thirty-five of these graduates went on to earn doctorates at other institutions.

The Botany Department attracted many notable faculty members and students. Distinguished faculty, in addition to Cain and Friesner, included John E. Potzger, a forest ecologist and palynologist, Willard Nelson Clute, co-founder of the American Fern Society, Marion T. Hall, former director of the Morton Arboretum, C. Mervin Palmer, Rex Webster, and John Pelton. Some of the former undergraduate and master’s students who made active contributions to the fields of botany and ecology include Dwight. W. Billings, Fay Kenoyer Daily, William A. Daily, Rexford Daudenmire, Francis Hueber, Frank McCormick, Scott McCoy, Robert Petty, Potzger, Helene Starcs, and Theodore Sperry. Cain, Daubenmire, Potzger, and Billings served as Presidents of the Ecological Society of America.

Requests for use of materials, especially figures and tables for use in ecology text books, from the *Butler University Botanical Studies* continue to be granted. For more information, visit www.butler.edu/herbarium.
Lake Wawasee located at Syracuse, Indiana, is the largest body of water in the state. It has an area of 2,618 acres, a maximum depth of 68 feet and a shore line of approximately 22 miles.

To our knowledge, the only paper published in which phytoplankters of Lake Wawasee are mentioned appeared in 1896 (C. H. Eigenmann, Proc. Ind. Acad. Sci. p. 240, 1895). Those were Ceratium hirundinella, Rivularia and "various forms of Palmella."

In 1950 from July 23 to July 30 and on April 28, 1951, W. A. and F. K. Daily made a total of 15 plankton net collections from different stations on the lake. Everett E. Miner of Syracuse, Indiana, then made 26 weekly (or nearly so) net hauls from the pier of the Eli Lilly estate during the period May 1, to October 30, 1951.

Thirty-five genera, 47 species and 3 varieties representing 6 classes of the algae are recorded. All of the above collections are to be found on file in the herbaria of Butler University and the Chicago Natural History Museum.

All of the photomicrographs were made from herbarium specimen mica slips mounted in water. At the magnification used, 1 millimeter equals 2.0 microns.

**MYXOPHYCEAE**

*Anacystis cyanec* (Kütz.) Drouet and Daily. Pl. 1, Fig. 9.

*Anacystis limnetica* (Lemm.) Drouet and Daily. limnetica. Pl. 1, Fig. 6.

*Anacystis dimidiata* (Kütz.) Drouet and Daily. Pl. 1, Figs. 4 & 5.

*MicrAmpoedia tranquilla* (Ehrenb.) Trevis. Pl. 1, Fig. 7.

*MicrAmpoedia thermalis* Kütz. Pl. 1, Fig. 8.

*Gomphosphaeria Wichuras* (Hiltse) Drouet and Daily. Pl. 1, Fig. 2.

*Gomphosphaeria lucustris* Choel. Pl. 1, Fig. 1.

*Gomphosphaeria aponina* Kütz. Pl. 1, Fig. 3.

*Anabaena flos-aquae* (Lyngb.) Ereb. ex B. and F. Pl. 2, Fig. 1.
Anabaena circinalis (Kütz.) Rabenh. ex B. and F. Pl. 2, Fig. 5.
Aphanizomenon flos-aquae (L.) Ralfs ex B. and F. Pl. 2, Fig. 2.
Gloeotrichia echinulata (J. E. Smith) Richter ex B. and F. Pl. 3, Fig. 3.
Oscillatoria rubescens Gom. Pl. 2, Fig. 4.
Lyngbya Bürger G. M. Smith. Pl. 2, Fig. 3.

CHLOROPHYCEAE

Pandorina morum Bory.
Eudorina elegans Ehrenb. Pl. 3, Fig. 1.
Sphaerocystis Schroeteri Chod. Pl. 5, Fig. 6.
Dimorphococcus lunatus A. Br. Pl. 4, Fig. 2.
Pediastrum Boryanum (Turp.) Menegh. Pl. 4, Fig. 5.
Pediastrum tetras (Ehrenb.) Ralfs. Pl. 5, Fig. 4.
Coelastrum microforum Näg. Pl. 4, Fig. 4.
Coelastrum reticulatum (Dang.) Senn.
Kirchneriella lunaris (Kirchner) Möbius
Ankistrodesmus falcatus (Corda) Ralfs.
Crucigenia rectangularis (A. Br.) Gay. Pl. 4, Fig. 1.
Scenedesmus bijuga (Turp.) Lagerh.
Scenedesmus quadricauda (Turp.) Breb. Pl. 4, Fig. 3.
Scenedesmus arcaus Lemm. Pl. 5, Fig. 2.
Staurastrum sp.

BACILLARIOPHYCEAE

Melosira granulata (Ehrenb.) Ralfs. Pl. 6, Fig. 6.
Identified by Mr. J. H. Wallace.
Melosira granulata var. angustissima Müller.
Melosira stelica (Ehrenb.) Kütz.
Identified by Mr. J. H. Wallace.
Cyclotella Meneghiniana Kütz. Pl. 5, Fig. 3.
Cyclotella compta (Ehrenb.) Kütz.
Identified by Mr. J. H. Wallace and Dr. M. H. Hohn.
Stephanodiscus niagarae Ehrenb. Pl. 6, Fig. 2.
Rhizosolenia eriensis H. L. Smith. Pl. 6, Fig. 4.
Tabellaria fenestrata (Lyngb.) Kütz. Pl. 5, Fig. 7.
Tabellaria flocculosa (Roth) Kütz.
Fragilaria crotonensis Kitton. Pl. 6, Fig. 3.
Fragilaria virescens Ralfs. Pl. 5, Fig. 5.
Asterionella formosa Hass. Pl. 5, Fig. 1.
Syndera ulna var. Chaseana (Thomas) Boyer. Pl. 6, Fig. 5.
Identified by Mr. J. H. Wallace and Dr. M. H. Hohn.
Syndera ulna var. danica (Kütz.) Grun.
Identified by Mr. J. H. Wallace and Dr. M. H. Hohn.
Amphiprora ornata Bailey.
Cymatopleura solea (Breb.) W. Smith. Pl. 6. Fig. 7.
Surirella ovalis Breb.

DINOPHYCEAE

Gonyaulax palustre Lemm. Pl. 4, Fig. 1. in lower right hand quadrant.
Ceratium hirundinella (O.F.M.) Schrank. Pl. 6, Fig. 1.

XANTHOPHYCEAE

Botryococcus Braunii Kütz. Pl. 3, Fig. 2.

CHRYSPHYCEAE

Mallomonas alpina Pascher and Ruttner.
Dinobryon divergens Imhof. Pl. 4, Fig. 6.

We wish to thank Mrs. Fay K. Daily for aid in preparation of this paper, Mr. John H. Wallace and Dr. Matthew H. Hohn for identifying several of the diatoms and Dr. Francis Drouet for suggestions.

Technical advice given by Mr. E. B. Byfield and Mr. O. G. Klein of the Printing Department of Eli Lilly and Company is gratefully acknowledged.

The Herbarium
Butler University
Plate 1. Fig. 1. Gomphosphaeria lacustris Chod. Fig. 2. Gomphosphaeria Wichurae (Hilse) Dr. & Daily. Fig. 3. Gomphosphaeria aponina Kütz. Figs. 4 & 5. Anacystis dimidiata (Kütz.) Dr. & Daily. Fig. 6. Anacystis limnetica (Lemm.) Dr. & Daily. Fig. 7. Merismopedia tranquilla (Ehrenb.) Trevis. Fig. 8. Merismopedia thermalis Kütz. Fig. 9. Anacystis cyanea (Kütz.) Dr. & Daily.
Plate 2. Fig. 1. Anabaena flos-aquae (Lyngb.) Breb. ex B. & F. Fig. 2. Aphanizomenon flos-aquae (L.) Ralfs ex B. & F. Fig. 3. Lyngbya Birgei G. M. Smith. Fig. 4. Oscillatoria rubescens D. C. ex Gom. Fig. 5. Anabaena circinalis (Kütz.) Rabenh. ex B. & F.
Plate 3. Fig. 1. Eudorina elegans Ehrenb. Fig. 2. Börgesox coccus Braunii Kütz. Fig. 3. Gloeotrichia echinulata (J. E. Smith) P. Richt. ex B. & F.
Plate 4. Fig. 1. Crucigenia rectangula (Nag.) Gay. In lower right quadrant, Gonyaulax palustris Lemm. Fig. 2. Dimorphococcus lunatus A. Br. Fig. 3. Scedesmus quadricauda (Turp.) Breb. Fig. 4. Coelastrium microtorum Nag. Fig. 5. Pediastrum Boryanum (Turp.) Menegh. Fig. 6. Dinobryon diversum Imbres.
Plate 1. Asterionella formosa Hass. Fig. 2. Scenedesmus arcuatus Lemm. Fig. 3. Cyclotella Meneghiniana Kütz. Fig. 4. Pediastrum tetras (Ehrenb.) Ralfs. Fig. 5. Fragilaria croceus Ralfs. Fig. 6. Sphaeroicytis Schroeteri Chodat. Fig. 7. Tabellaria fenestrata (Lyngb.) Kütz.
Plate 6. Fig. 1. Ceratium Hirundinella (O.F.M.) Schrank. Fig. 2. Stephanodiscus nigropurpureus Ehrenb. Fig. 3. Fragilaria crotonensis Kit. Fig. 4. Rhizosolenia eriensis H. L. Smith. Fig. 5. Synedra ulna var. Chatazana (Thomas) Boyer. Fig. 6. Melosira granulata Ehrenb. Fig. 7. Cymbopleura sola (Breh.) W. Smith.