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Diatoms of Pilot Knob Sphagnum Bog, Hancock County, Iowa[1]

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The 47 diatom taxa listed here plus the 43 taxa in the genus *Pinnularia* reported earlier (Christensen 1976) constitute the numerically most important components of the diatom-flora of Pilot Knob Bog, the only known major *Sphagnum* bog in Iowa.
INDEX DESCRIPTORS: Diatoms, *Sphagnum* Bog, Hancock Co., Iowa.

Pilot Knob Bog and the associated Dead Man's Lake are found in Pilot Knob State Park, sections 3 and 4 of Ellington Twp., Hancock County, Iowa. The bog has been described in detail by Grant and Thorne (1955). Currently it is protected as an ecological preserve in the Iowa Preserves System under special rules which limit access to it. One special feature is the occurrence of soft, somewhat acid water in a state which generally is characterized by hard water. Partly for this reason it has attracted considerable attention from biologists. The present paper summarizes the more important members of the diatom-flora (Bacillariophyceae) exclusive of the genus *Pinnularia* which was treated in a separate paper (Christensen 1976). Christensen (1969) also published information on variability of members of the genus *Eunotia*.

METHODS AND MATERIALS

This report is based on samples collected at two-week intervals from early June through late August 1965.

Water samples taken at the same time as the diatom collections were analyzed for several chemical and physical factors using a Hach model DR-EL portable water testing kit. Typical values for several areas in the bog and lake are presented as Table 1.

Diatom samples were prepared for study using the method of Van der Werff (1955). Identifications were based on species concepts in Hustedt (1930) and Patrick and Reimer (1966, 1975). Sets of slides on which the report was based are in the Iowa State University Diatom Collection, the Iowa Lakeside Laboratory Diatom Collection, and the author's personal collection.

Table 1. *Typical values of chemical and physical parameters for water in Pilot Knob Bog and Dead Man's Lake*[1]

	Open Lake	Periphery of Bog	Bog Pools
Total Hardness (as Ca CO_3)	60 ppm	44 ppm	20 ppm
Sulfate	14 ppm	78 ppm	1 ppm
Silica	8 ppm	12 ppm	2.5 ppm
Iron	—	0.5 ppm	1.9 ppm
Orthophosphate	0.5 ppm	0.8 ppm	2.8 ppm
Nitrate	3.5 ppm	3.9 ppm	4.3 ppm
pH[1]	6.3	6.2	5.8
Temperature[1]	23.5 C	20 C	17.5 C

[1]This sample was taken at 8 a.m. on 5 June 1965

RESULTS AND DISCUSSION

A total of 47 species and subspecific taxa representing 15 genera were encountered in this study. In addition, 43 taxa from the 16th genus, *Pinnularia*, have been reported elsewhere (Christensen 1976).

Achnanthes
- *A. hungarica* (Grun.) Grun. v. *hungarica*
- *A. minutissima* Kütz. v. *minutissima*

Amphora
- *A. ovalis* (Kütz.) Kütz. v. *ovalis*
- *A. ovalis* v. *affinis* (Kütz.) V.H. ex De T.

Caloneis
- *C. limosa* (Kütz.) Patr. v. *limosa*
- *C. ventricosa* v. *truncatula* (Grun.) Meist.

Cocconeis
- *C. placentula* v. *lineata* (Ehr.) V.H.

Cymbella
- *C. aspera* (Ehr.) H. Perag. v. *aspera*
- *C. cistula* (Ehr.) Kirchn. v. *cistula*
- *C. minuta* Hilse ex Rabh. v. *minuta*
- *C. turgida* Greg. v. *turgida*

Eunotia
- *E. curvata* (Kütz.) Lagerst. v. *curvata*
- *E. exigua* v. *compacta* Hust.
- *E. formica* Ehr. v. *formica*
- *E. indica* Grun v. *indica*
- *E. kocheliensis O.* Müll v. *kocheliensis*

[1]Excerpted from a report prepared during an NSF Research Participation Program in the summer of 1965, administered at Iowa State University by Dr. J.J.L. Hinrichsen. The project supervisor was Dr. John D. Dodd.

[2]The author planned to revise and elaborate on this paper and had begun to do so in a series of papers on important genera (Christensen 1969, 1976) but his untimely death in the summer of 1980 intervened and prevented completion of the project according to his design. This short paper has been submitted in his behalf, based on the original 1965 report, modified only by updating of nomenclature. Send reprint requests to Dr. J.D. Dodd, Department of Botany, Iowa State University, Ames, Iowa 50011.

E. maior (W. Sm.) Rabh. v. *maior*
E. monodon Ehr. v. *monodon*
E. parallela Ehr. v. *parallela*
E. pectinalis v. *minor* (Kütz.) Rabh.
E. valida Hust. v. *valida*

Fragilaria
F. nitzschioides Grun. v. *nitzschioides*

Gomphonema
G. angustatum (Kütz.) Rabh. v. *angustatum*
G. angustatum v. *productum* Grun.
G. angustatum v. *sarcophagus* (Greg.) Grun.
G. gracile Ehr. emend. V.H. v. *gracile*
G. parvulum (Kütz.) Kütz. v. *parvulum*
G. truncatum Ehr. v. *truncatum*
G. truncatum v. *capitatum* (Ehr.) Patr.
G. turris Ehr. v. *turris*

Hantzschia
H. amphioxys f. *capitata* O. Müll.

Melosira
M. italica subsp. *subarctica* O. Müll.

Navicula
N. cuspidata (Kütz.) Kütz. v. *cuspidata*
N. cuspidata v. *ambigua* (Ehr.?) Cl.
N. laevissima Kütz. v. *laevissima*
N. lanceolata (Ag.) Kütz. v. *lanceolata*
N. mutica Kütz. v. *mutica*
N. pupula v. *rectangularis* (Greg.) Grun.
N. subtilissima Cl. v. *subtilissima*

Neidium
N. bisulcatum (Lagerst.) Cl. v. *bisulcatum*
N. bisulcatum v. *subundulatum* (Grun.) Reim.
N. hitchcockii (Ehr.) Cl. v. *hitchcockii*
N. iridis v. *ampliatum* (Ehr.) Cl.

Nitzschia
N. terrestris (Peters.) Hust. v. *terrestris*

Pinnularia
(The 43 species and subspecific taxa from this genus which were found in the Pilot Knob Bog have been reported earlier by Christensen (1976).)

Stauroneis
S. phoenicenteron (Nitz.) Ehr. v. *phoenicenteron*

Synedra
S. rumpens v. *familiaris* (Kütz.) Grun.
S. ulna (Nitz.) Ehr. v. *ulna*

The species composition of the diatom flora of this habitat is quite different from the typical flora of most Iowa lakes and streams. The large number of *Pinnularia* species, as well as the considerable numbers of *Eunotia* and *Neidium* species and the general scarcity of species of centric diatoms, are noteworthy.

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