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Ecological Research Series

DISTRIBUTION OF PHYTOPLANKTON IN ALABAMA LAKES



Environmental Monitoring and Support Laboratory
Office of Research and Development
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DISTRIBUTION OF PHYTOPLANKTON IN ALABAMA LAKES

by

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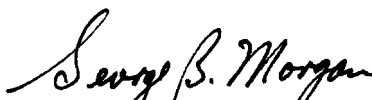
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FOREWORD

Protection of the environment requires effective regulatory actions which are based on sound technical and scientific information. This information must include the quantitative description and linking of pollutant sources, transport mechanisms, interactions, and resulting effects on man and his environment. Because of the complexities involved, assessment of specific pollutants in the environment requires a total systems approach which transcends the media of air, water, and land. The Environmental Monitoring and Support Laboratory-Las Vegas contributes to the formation and enhancement of a sound integrated monitoring data base through multidisciplinary, multimedia programs designed to:

- develop and optimize systems and strategies for monitoring pollutants and their impact on the environment
- demonstrate new monitoring systems and technologies by applying them to fulfill special monitoring needs of the Agency's operating programs

This report presents the species and abundance of phytoplankton in the 11 lakes sampled by the National Eutrophication Survey in the State of Alabama, along with results from the calculation of several commonly used biological indices of water quality and community structure. These data can be used to biologically characterize the study lakes, and as baseline data for future investigations. This report was written for use by Federal, State, and local governmental agencies concerned with water quality analysis, monitoring, and/or regulation. Private industry and individuals similarly involved with the biological aspects of water quality will find the document useful. For further information contact the Water and Land Quality Branch, Monitoring Operations Division.



George B. Morgan

Director

Environmental Monitoring and Support Laboratory
Las Vegas

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INTRODUCTION

The collection and analysis of phytoplankton data were included in the National Eutrophication Survey in an effort to determine relationships between algal characteristics and trophic status of individual lakes.

During spring, summer, and fall of 1973, the Survey sampled 250 lakes in 17 States. Over 700 algal species and varieties were identified and enumerated from the 743 water samples examined.

This report presents the species and abundance of phytoplankton in the 11 lakes sampled in the State of Alabama (Table 1). The Nygaard's Trophic State (Nygaard 1949), Palmer's Organic Pollution (Palmer 1969), and species diversity and abundance indices are also included.

TABLE 1. LAKES SAMPLED IN THE STATE OF ALABAMA

STORET No.	Lake Name	County
0101	Bankhead	Walker
0103	Gantt Reservoir	Covington
0104	Guntersville Reservoir	Marshall, Jackson
0105	Holt Lock and Dam	Tuscaloosa
0106	Lay Lake	Chilton, Coosa
0107	Martin Lake	Elmore, Tallapoosa
0108	Mitchell Lake	Coosa, Chilton
0109	Pickwick Lake	Colbert, Lauderdale (Tishmoningo in MS & Hardin in TN)
0112	Weiss Lake	Cherokee
0114	Wilson Lake	Sauderdale, Colbert, Lawrence
0115	Lake Purdy	Jefferson, Shelby

MATERIALS AND METHODS

LAKE AND SITE SELECTION

Lakes and reservoirs included in the Survey were selected through discussions with State water pollution agency personnel and U.S. Environmental Protection Agency Regional Offices (U.S. Environmental Protection Agency 1975). Screening and selection strongly emphasized lakes with actual or potential accelerated eutrophication problems. As a result, the selection was limited to lakes:

- (1) impacted by one or more municipal sewage treatment plant outfalls either directly into the lake or by discharge to an inlet tributary within approximately 40 kilometers of the lake;
- (2) 40 hectares or larger in size; and
- (3) with a mean hydraulic retention time of at least 30 days.

Specific selection criteria were waived for some lakes of particular State interest.

Sampling sites for a lake were selected based on available information on lake morphometry, potential major sources of nutrient input, and on-site judgment of the field limnologist (U.S. Environmental Protection Agency 1975). Primary sampling sites were chosen to reflect the deepest portion of each major basin in a test lake. Where many basins were present, selection was guided by nutrient source information on hand. At each sampling site, a depth-integrated phytoplankton sample was taken. Depth-integrated samples were a uniform mixture of water from the surface to a depth of 15 feet (4.6 meters) or from the surface to the lower limit of the photic zone representing 1 percent of the incident light, whichever was greater. If the depth at the sampling site was less than 15 feet (4.6 meters), the sample was taken from just off the bottom to the surface. Normally, a lake was sampled three times in 1 year, providing information on spring, summer, and fall conditions.

SAMPLE PREPARATION

Four milliliters (ml) of Acid-Lugol's solution (Prescott 1970) were added to each 130-ml sample from each site at the time of collection for preservation. The samples were shipped to the Environmental Monitoring and Support Laboratory, Las Vegas, Nevada, where equal volumes from each site were mixed to form two 130-ml composite samples for a given lake. One composite sample was put into storage and the other was used for the examination.

Prior to examination, the composite samples were concentrated by the settling method. Solids were allowed to settle for at least 24 hours prior to siphoning off the supernate. The volume of the removed supernate and the volume of the remaining concentrate were measured and concentrations determined. A small (8 ml) library subsample of the concentrate was then taken. The remaining concentrate was gently agitated to resuspend the plankton and poured into a capped, graduated test tube. If a preliminary examination of a sample indicated the need for a more concentrated sample, the contents of the test tube were further concentrated by repeating the settling method. Final concentrations varied from 15 to 40 times the original.

Permanent slides were prepared from concentrated samples after analysis was complete. A drop of superconcentrate from the bottom of the test tube was placed in a ring of clear Karo[®] Corn Syrup with phenol (a few crystals of phenol were added to each 100 ml of syrup) on a glass slide, thoroughly mixed, and topped with a coverglass. After the syrup at the edges of the coverglass had hardened, the excess was scraped away and the mount was sealed with clear fingernail polish. Permanent diatom slides were prepared by drying sample material on a coverglass, heating in a muffle furnace at 400° C for 45 minutes, and mounting in Hyrax[®]. Finally, the mounts were sealed clear fingernail polish.

Backup samples, library samples, permanent sample slides, and Hyrax[®]-mounted diatom slides are being stored and maintained at the U.S. Environmental Protection Agency's Environmental Monitoring and Support Laboratory-Las Vegas.

EXAMINATION

The phytoplankton samples were examined with the aid of binocular compound microscopes. A preliminary examination was performed to precisely identify and list all forms encountered. The length of this examination varied depending on the complexity of the sample. An attempt was made to find and identify all of the forms present in each sample. Often forms were observed which could not be identified to species or to genus. Abbreviated descriptions were used to keep a record of these forms (e.g., lunate cell, blue-green filament, Navicula #1). Diatom slides were examined using a standard light microscope. If greater resolution was essential to accurately identify the diatoms, a phase-contrast microscope was used.

After the species list was compiled, phytoplankton were enumerated using a Neubauer Counting Chamber with a 40X objective lens and a 10X ocular lens. All forms within each field were counted. The count was continued until a minimum of 100 fields had been viewed, or until the dominant form had been observed a minimum of 100 times.

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QUALITY CONTROL

Internal quality control checks on species identifications and counts were performed on a regular basis between project phycologists at the rate of 7 percent. Although an individual had primary responsibility for analyzing a sample, taxonomic problems were discussed among the phycologists.

Additional quality control checks were performed on the Survey samples by Dr. G. W. Prescott of the University of Montana at the rate of 5 percent. Quality control checks were made on 75 percent of these samples to verify species identifications while checks were made on the remaining 25 percent of the samples to verify genus counts. Presently, the agreement between quality control checks for species identification and genus enumerations is satisfactory.

RESULTS

The Appendix summarizes all of the phytoplankton data collected from the State by the Survey. It is organized by lake, including an alphabetical phytoplankton species list with concentrations for individual species given by sampling date. Results from the application of several indices are presented (Nygaard's Trophic State, Palmer's Organic Pollution, and species diversity and abundance). Each lake has been assigned a four digit STORET number. [STORET (STORage and RETrieval) is the U.S. Environmental Protection Agency's computer system which processes and maintains water quality data.] The first two digits of the STORET number identify the State; the last two digits identify the lake.

NYGAARD'S TROPHIC STATE INDICES

Five indices devised by Nygaard (1949) were proposed under the assumption that certain algal groups are indicative of levels of nutrient enrichment. These indices were calculated in order to aid in determining the surveyed lakes' trophic status. As a general rule, Cyanophyta, Euglenophyta, centric diatoms, and members of the Chlorococcales are found in waters that are eutrophic (rich in nutrients), while desmids and many pennate diatoms generally cannot tolerate high nutrient levels and so are found in oligotrophic waters (poor in nutrients).

In applying the indices to the Survey data, the number of taxa in each major group was determined from the species list for each sample. The ratios of these groups give numerical values which can be used as a biological index of water richness. The five indices and the ranges of values established for Danish lakes by Nygaard for each trophic state are presented in Table 2. The appropriate symbol, (E) eutrophic and (O) oligotrophic, follows each calculated value in the tables in the Appendix. A question mark (?) was entered in these tables when the calculated value was within the range of both classifications.

PALMER'S ORGANIC POLLUTION INDICES

Palmer (1969) analyzed reports from 165 authors and developed algal pollution indices for use in rating water samples with high organic pollution. Two lists of organic pollutiontolerant forms were prepared, one containing 20 genera, the other, 20 species (Tables 3 and 4). Each form was assigned a pollution index number ranging from 1 for moderately tolerant forms to 6 for extremely tolerant forms. Palmer based the index numbers on occurrence records and/or where emphasized by the authors as being especially tolerant of organic pollution.

TABLE 2. NYGAARD'S TROPHIC STATE INDICES ADAPTED FROM HUTCHINSON (1967)

Index	Calculation	Oligotrophic	Eutrophic
Myxophycean	<u>Myxophyceae</u> <u>Desmideae</u>	0.0-0.4	0.1-3.0
Chlorophycean	<u>Chlorococcales</u>	0.0-0.7	0.2-9.0
Diatom	<u>Centric Diatoms</u> <u>Pennate Diatoms</u>	0.0-0.3	0.0-1.75
Euglenophyte	<u>Euglenophyta</u> <u>Myxophyceae + Chlorococcales</u>	0.0-0.2	0.0-1.0
Compound	<u>Myxophyceae + Chlorococcales +</u> <u>Centric Diatoms + Euglenophyta</u> <u>Desmideae</u>	0.0-1.0	1.2-25

TABLE 3. ALGAL GENUS POLLUTION INDEX
(Palmer 1969)

Genus	Pollution Index
<i>Anacystis</i>	1
<i>Ankistrodesmus</i>	2
<i>Chlamydomonas</i>	4
<i>Chlorella</i>	3
<i>Closterium</i>	1
<i>Cyclotella</i>	1
<i>Euglena</i>	5
<i>Gomphonema</i>	1
<i>Lepocinclis</i>	1
<i>Melosira</i>	1
<i>Micractinium</i>	1
<i>Navicula</i>	3
<i>Nitzschia</i>	3
<i>Oscillatoria</i>	5
<i>Pandorina</i>	1
<i>Phacus</i>	2
<i>Phormidium</i>	1
<i>Scenedesmus</i>	4
<i>Stigeoclonium</i>	2
<i>Synedra</i>	2

TABLE 4. ALGAL SPECIES POLLUTION
INDEX (Palmer 1969)

Species	Pollution Index
<i>Ankistrodesmus falcatus</i>	3
<i>Arthrospira jenneri</i>	2
<i>Chlorella vulgaris</i>	2
<i>Cyclotella meneghiniana</i>	2
<i>Euglena gracilis</i>	1
<i>Euglena viridis</i>	6
<i>Gomphonema parvulum</i>	1
<i>Melosira varians</i>	2
<i>Navicula cryptocephala</i>	1
<i>Nitzschia acicularis</i>	1
<i>Nitzschia palea</i>	5
<i>Oscillatoria chlorina</i>	2
<i>Oscillatoria limosa</i>	4
<i>Oscillatoria princeps</i>	1
<i>Oscillatoria putrida</i>	1
<i>Oscillatoria tenuis</i>	4
<i>Pandorina morum</i>	3
<i>Scenedesmus quadricauda</i>	4
<i>Stigeoclonium tenue</i>	3
<i>Synedra ulna</i>	3

In analyzing a water sample, any of the 20 genera or species of algae present in concentrations of 50 per milliliter or more are recorded. The pollution index numbers of the algae present are totaled, providing a genus score and a species score. Palmer determined that a score of 20 or more for either index can be taken as evidence of high organic pollution, while a score of 15 to 19 is taken as probable evidence of high organic pollution. Lower figures suggest that the organic pollution of the sample is not high, that the sample is not representative, or that some substance or factor interfering with algal persistence is present and active.

SPECIES DIVERSITY AND ABUNDANCE INDICES

"Information content" of biological samples is being used commonly by biologists as a measure of diversity. Diversity in this connection means the degree of uncertainty attached to the specific identity of any randomly selected individual. The greater the number of taxa and the more equal their proportions, the greater the uncertainty, and hence, the diversity (Pielou 1966). There are several methods of measuring diversity, e.g., the formulas given by Brillouin (1962) and Shannon and Weaver (1963). The method which is appropriate depends on the type of biological sample on hand.

Pielou (1966) classifies the types of biological samples and gives the measure of diversity appropriate for each type. The Survey phytoplankton samples are what she classifies as larger samples (collections in Pielou's terminology) from which random subsamples can be drawn. According to Pielou, the average diversity per individual for these types of samples can be estimated from the Shannon-Wiener formula (Shannon and Weaver 1963):

$$H = -\sum_{i=1}^S P_i \log_x P_i$$

Where P is the proportion of the i th taxon in the sample, which is calculated from n_i/N ; n_i is the number of individuals per milliliter of the i th taxon; N is the total number of individuals per ml; and S is the total number of taxa.

However, Basharin (1959) and Pielou (1966) have pointed out that H calculated from the subsample is a biased estimator of the sample H , and if this bias is to be accounted for, we must know the total number of taxa present in the sample since the magnitude of this bias depends on it.

Pielou (1966) suggests that if the number of taxa in the subsample falls only slightly short of the number in the larger sample, no appreciable error will result in considering S , estimated

from the subsample, as being equal to the sample value. Even though considerable effort was made to find and identify all taxa, the Survey samples undoubtedly contain a fair number of rare phytoplankton taxa which were not encountered.

In the Shannon-Wiener formula, an increase in the number of taxa and/or an increase in the evenness of the distribution of individuals among taxa will increase the average diversity per individual from its minimal value of zero. Sager and Hasler (1969) found that the richness of taxa was of minor importance in determination of average diversity per individual for phytoplankton and they concluded that phytoplankton taxa in excess of the 10 to 15 most abundant ones have little effect on H , which was verified by our own calculations. Our counts are in number per milliliter and since logarithms to the base 2 were used in our calculations, H is expressed in units of bits per individual. When individuals of a taxon were so rare that they were not counted, a value of 1/130 per milliliter or 0.008 per milliliter was used in the calculations since at least one individual of the taxon must have been present in the collection.

A Survey sample for a given lake represents a composite of all phytoplankton collected at different sampling sites on a lake during a given sampling period. Since the number of samples (M) making up a composite is a function of both the complexity of the lake sampled and its size, it should affect the richness-of-taxa component of the diversity of our phytoplankton collections. The maximum diversity ($\text{Max}H$) (i.e., when the individuals are distributed among the taxa as evenly as possible) was estimated from $\log_2 S$, the total diversity (D) was calculated from HN , and the evenness component of diversity (J) was estimated from $H/\text{Max}H$ (Pielou 1966). Also given in the Appendix are L (the mean number of individuals per taxa per milliliter) and K (the number of individuals per milliliter of the most abundant taxon in the sample).

Zand (1976) suggests that diversity indices be expressed in units of "sits", i.e., in logarithms to base S (where S is the total number of taxa in the sample) instead of in "bits", i.e., in logarithms to base 2. Zand points out that the diversity index in sits per individual is a normalized number ranging from 1 for the most evenly distributed samples to 0 for the least evenly distributed samples. Also, it can be used to compare different samples, independent of the number of taxa in each. The diversity in bits per individual should not be used in direct comparisons involving various samples which have different numbers of species. Since $\text{Max}H$ equals $\log_2 S$, the expression in sits is equal to $\log_S S$, or 1. Therefore diversity in sits per individual is numerically equivalent to J , the evenness component for the Shannon-Wiener formula.

SPECIES OCCURRENCE AND ABUNDANCE

The alphabetic phytoplankton species list for each lake, presented in the Appendix, gives the concentrations of individual species by sampling date. Concentrations are in cells, colonies, or filaments (CEL, COL, FIL) per milliliter. An "X" after a species name indicates the presence of the species on that date in such a low concentration that it did not show up in the count. A blank space indicates that the organism was not found in the sample collected on that date. Column S is used to designate the examiner's subjective opinion of the five dominant taxa in a sample, based upon relative size and concentration of the organism. The percent column (%C) presents, by abundance, the percentage composition of each taxon.

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APPENDIX. SUMMARY OF PHYTOPLANKTON DATA

This appendix was generated by computer. Because it was only possible to use upper case letters in the printout, all scientific names are printed in upper case and are not italicized.

The alphabetic phytoplankton lists include taxa without species names (e.g., EUNOTIA, EUNOTIA #1, EUNOTIA ?, FLAGELLATE, FLAGELLATES, MICROSYSTIS INCERTA ?, CHLOROPHYTAN COCCOID CELLED COLONY). When species determinations were not possible, symbols or descriptive phrases were used to separate taxa for enumeration purposes. Each name on a list, however, represents a unique species different from any other name on the same list, unless otherwise noted, for counting purposes.

Numbers were used to separate unidentified species of the same genus. A generic name listed alone is also a unique species. A question mark (?) is placed immediately after the portion of a name which was assigned with uncertainty. Numbered, questioned, or otherwise designated taxa were established on a lake-by-lake basis; therefore NAVICULA #2 from lake A cannot be compared to NAVICULA #2 from lake B. Pluralized categories (e.g., FLAGELLATES, CENTRIC DIATOMS, SPP.) were used for counting purposes when taxa could not be properly differentiated on the counting chamber.

LAKE NAME: BANKHEAD LAKE
 STORET NUMBER: 0101

NYGAARD TROPHIC STATE INDICES

DATE	06 08 73	08 25 73	10 30 73
MYXOPHYCEAN	2.50 E	05/0 E	0.50 E
CHLOROPHYCEAN	3.00 E	07/0 E	3.00 E
EUGLENOPHYTE	0.27 E	0.25 E	0.29 E
DIATOM	0.57 E	0.55 E	0.50 E
COMPOUND	9.00 E	21/0 E	6.00 E

PALMER'S ORGANIC POLLUTION INDICES

DATE	06 08 73	08 25 73	10 30 73
GENUS	04	08	05
SPECIES	00	00	04

SPECIES DIVERSITY AND ABUNDANCE INDICES

DATE	06 08 73	08 25 73	10 30 73
AVERAGE DIVERSITY H	2.94	3.19	3.24
NUMBER OF TAXA S	30.00	38.00	30.00
NUMBER OF SAMPLES COMPOSITED M	4.00	4.00	4.00
MAXIMUM DIVERSITY MAXH	4.91	5.25	4.91
TOTAL DIVERSITY D	4154.22	3690.83	3123.36
TOTAL NUMBER OF INDIVIDUALS/ML N	1413.00	1157.00	964.00
EVENNESS COMPONENT J	0.60	0.61	0.66
MEAN NUMBER OF INDIVIDUALS/TAXA L	47.10	30.45	32.13
NUMBER/ML OF MOST ABUNDANT TAXON K	554.00	476.00	397.00

LAKE NAME: BANKHEAD LAKE
STCNET NUMBER: 0101

CONTINUED

TAXA	FORM	06 08 73			08 25 73			10 30 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
ACTINASTRUM	COL	1	39.2	554						
ACTINASTRUM HANTZSCHII										
V. FLUVIATILE	COL			X						
ANABAENA	FIL		1.1	16						
ANKISTRODESMUS ?	CEL		6.2	88						
ANKISTRODESMUS FALCATUS	CEL							0.9		9
ASTERIONELLA ?	CEL		0.6	8						
ATTHEYA	CEL						X	0.9		9
CENTRIC DIATOM	CEL			X						
COELASTRUM	COL				0.7		8			
COELASTRUM SPHAERICUM	COL						X			
CORONASTRUM	COL				0.7		8			
COCCINOCISCUS	CEL							0.9		9
CCSMARIUM	CEL							0.9		9
CRYPTOMONAS	CEL							2	4.7	45
CYCLOTELLA	CEL			X						
CYCLOTELLA MENEGHINIANA	CEL				1.4		16			
CYCLOTELLA STELLIGERA	CEL	3	7.4	105	1.4		16			
DACTYLOCOCCOPSIS	CEL		2.8	40						
DINOBRYON	CEL			X	2.0		23	0.9		9
DINOFLAGELLATE #1	CEL							1.6		15
DINOFLAGELLATE #2	CEL							1.6		15
DINOFLAGELLATE #3	CEL							1.6		15
DINOFLAGELLATE #4	CEL		0.6	8	0.7		8			
DINOFLAGELLATE #5	CEL				1.4		16			
EUGLENA	CEL	5	1.7	24	2.0		23	3	2.4	23
EUGLENA ACUS	CEL						X			
EUNOTIA #1	CEL						X			
EUNOTIA #2	CEL						X			
FLAGELLATE #1	CEL							4	18.0	174
FLAGELLATE #2	CEL							1	40.1	387
FLAGELLATE #3	CEL				1.4		16			

LAKE NAME: BANKHEAD LAKE
STOREY NUMBER: 0101

CONTINUED

TAXA	FORM	06 08 73			08 25 73			10 30 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
FLAGELLATES	CEL	2	19.9	281	1	41.1	476			
GYROSIGMA OBTUSATUM	CEL			X			X			X
KIRCHNERIELLA	CEL		2.8	40						
LUNATE CELL	CEL							0.9		9
LYNGBYA LIMNETICA	FIL					2.8	32	1.6		15
MELOSIRA #2	CEL				5	2.0	23			
MELOSIRA DISTANS	CEL	4	7.4	105	4	4.8	55	5	6.3	61
MERISMOPEDIA	COL			X						
MERISMOPEDIA MARSSONII	COL						X			
MICROCYSTIS INCERTA ?	COL					0.7	8			
NAVICULA	CEL					1.4	16			
NITZSCHIA	CEL									X
NITZSCHIA #1	CEL						X			
NITZSCHIA #2	CEL						X			
CPHIOCYTIUM #2	COL							0.9		9
OSCILLATORIA	FIL			X						
OSCILLATORIA ANGUSTA	FIL		2.8	40	2	10.3	119			
PANDORINA MORUM	COL						X	0.9		9
PEDIASTRUM BIRADIATUM										
V. LONGECORNUTUM ?	COL									X
PEDIASTRUM TETRAS										
V. TETRAODON	COL			X						
PENNATE DIATOM	CEL						X			
PENNATE DIATOM #1	CEL			X				0.9		9
PENNATE DIATOM #2	CEL			X				1.6		15
PENNATE DIATOM #3	CEL		2.3	32		0.7	8			
PENNATE DIATOM #4	CEL					2.8	32			
PHACUS	CEL						X	0.9		9
RAPHIDIOPSIS	FIL					6.8	79			
RHIZOSOLENIA	CEL						X			
SCENEDESMUS	COL					0.7	8			
SCENEDESMUS #1	COL							1.6		15

LAKE NAME: BANKHEAD LAKE
STORET NUMBER: 0101

CONTINUED

TAXA	FORM	06 08 73			08 25 73			10 30 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
SCENEDESMUS DENTICULATUS	COL					2.8	32		0.9	9
SCENEDESMUS OPOLIENSIS	COL		1.1	16			X			
SCENEDESMUS QUADRICAUDA	COL								5.5	53
STAUSTRUM	CEL		0.6	8						X
STAUSTRUM #1	CEL			X						
STAUSTRUM ANCEPS										
V. GRACILIS	CEL						X			
SYNEDRA	CEL		2.3	32	3	11.7	135		2.4	23
TABELLARIA	CEL			X					0.9	9
TETRAEDRON TRIGONUM										
V. GRACILE	CEL						X			
TETRASTRUM HETERACANTHUM	COL									X
TRACHELOMONAS ? #2	CEL		0.6	8						
TRACHELOMONAS #1	CEL		0.6	8						
TOTAL				1413			1157			964

LAKE NAME: GANTT RES.
STORET NUMBER: 0103

NYGAARD TROPHIC STATE INDICES

DATE	06 19 73	08 30 73	11 03 73
MYXOPHYCEAN	1.33 E	4.00 E	1.50 E
CHLOROPHYCEAN	1.33 E	0/01 0	1.50 E
EUGLENOPHYTE	0.25 E	0.75 E	0.17 ?
DIATOM	0.80 E	0.17 ?	0.60 E
COMPOUND	4.67 E	8.00 E	5.00 E

PALMER'S ORGANIC POLLUTION INDICES

DATE	05 19 73	08 30 73	11 03 73
GENUS	00	00	00
SPECIES	00	00	00

SPECIES DIVERSITY AND ABUNDANCE INDICES

DATE	06 19 73	08 30 73	11 03 73
AVERAGE DIVERSITY H	2.99	3.64	3.20
NUMBER OF TAXA S	26.00	20.00	24.00
NUMBER OF SAMPLES COMPOSITED M	3.00	3.00	3.00
MAXIMUM DIVERSITY MAXH	4.70	4.32	4.58
TOTAL DIVERSITY D	1178.06	848.12	2176.00
TOTAL NUMBER OF INDIVIDUALS/ML N	394.00	233.00	680.00
EVENESS COMPONENT J	0.64	0.84	0.70
MEAN NUMBER OF INDIVIDUALS/TAXA L	15.15	11.65	28.33
NUMBER/ML OF MOST ABUNDANT TAXON K	170.00	41.00	156.00

LAKE NAME: GANTT RES.
STRET NUMBER: 0103

CONTINUED

TAXA	FORM	06 19 73			08 30 73			11 03 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
ANABAENA	FIL			X			X			
ANKISTRODESMUS	CEL		4.3	17						
CENTRIC DIATOM #1	CEL		4.3	17				3	6.8	46
CENTRIC DIATOM #2	CEL		2.0	8		6.9	16			
CHLAMYDOMONAS	CEL					3.4	8			
CHROCOCCUS	COL			X						
CLCSTERIUM	CEL			X						X
CCSMARIUM	CEL		2.0	8					1.3	9
CRUCIGENIA TETRAPEDIA	COL		2.0	8						
CYMBELLA	CEL			X						
EACTYLOCOCCOPSIS	CEL		2.0	8		10.3	24	2	16.2	110
DINOBYRON	CEL								1.3	9
DINOFLAGELLATE #1	CEL		2.0	8	2	3.4	8		1.3	9
DINOFLAGELLATE #2	CEL	2	12.7	50						
DINOFLAGELLATE #3	CEL								2.6	18
EUGLENA #1	CEL			X		3.4	8		1.3	9
EUGLENA #2	CEL			X						
EUGLENA #3	CEL						X			
FLAGELLATE	CEL	1	43.1	170						
FLAGELLATE #1	CEL					3.4	8		17.6	120
FLAGELLATE #2	CEL					6.9	16		10.9	74
FLAGELLATE #3	CEL							1	22.9	156
FLAGELLATE #4	CEL				5	10.3	24			
FRUSTULIA RHOMBOIDES	CEL						X			
LYNGBYA LIMNETICA	FIL				3	17.6	41			
MELOSIRA	CEL									X
MELOSIRA ?	CEL	3	6.3	25						
MERISMOPEDIA PUNCTATA	COL								4.1	28
NAVICULA	CEL								1.3	9
NAVICULA ?	CEL			X						
NITZSCHIA	CEL		4.3	17		6.9	16		6.8	46
OPHIOCYTIUM CAPITATUM ?	CEL		2.0	8						

LAKE NAME: GANTT RES.
STORET NUMBER: 0103

CONTINUED

TAXA	FORM	06 19 73			08 30 73			11 03 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
OSCILLATORIA	FIL	4	4.3	17						
OSCILLATORIA LIMNETICA	FIL				4	13.7	32	5	5.4	37
PANDORINA MORUM	COL									X
PENNATE DIATOM #1	CEL	5	6.3	25						X
PENNATE DIATOM #2	CEL			X						
PENNATE DIATOM #3	CEL					3.4	8			
PENNATE DIATOM #4	CEL						X			X
PHACUS PYRUM	CEL				1	3.4	8			
RHIZOSOLENIA	CEL		2.0	8						X
SCENEDESMUS	COL			X						
SCENEDESMUS #1	COL									X
SCENEDESMUS #2	COL									X
STAUSTRUM	CEL			X		3.4	8			
SYNEDRA ?	CEL									X
SYNEDRA #1	CEL						X			
SYNEDRA #2	CEL					3.4	8			
TETRAEDRON	CEL			X						X
TOTAL				394			233			680

LAKE NAME: GUNTERSVILLE RES.
SECRET NUMBER: 0104

NYGAARD TROPHIC STATE INDICES

DATE	06 08 73	08 16 73	10 22 73
MYXOPHYCEAN	6.00 E	4.00 E	6.00 E
CHLOROPHYCEAN	11.0 E	3.67 E	5.50 E
EUGLENOPHYTE	0.12 ?	0.13 ?	0.09 ?
DIATOM	0.57 E	1.00 E	0.87 E
COMPOUND	23.0 E	10.3 E	10.0 E

PALMER'S ORGANIC POLLUTION INDICES

DATE	06 08 73	08 16 73	10 22 73
GENUS	04	21	22
SPECIES	03	04	00

SPECIES DIVERSITY AND ABUNDANCE INDICES

DATE	06 08 73	08 16 73	10 22 73
AVERAGE DIVERSITY H	3.56	4.09	3.51
NUMBER OF TAXA S	40.00	47.00	48.00
NUMBER OF SAMPLES COMPOSITED M	8.00	6.00	4.00
MAXIMUM DIVERSITY MAXH	5.32	5.55	5.58
TOTAL DIVERSITY D	13303.72	39382.61	107406.00
TOTAL NUMBER OF INDIVIDUALS/ML N	3737.00	9629.00	30600.00
EVENESS COMPONENT J	7.67	0.74	0.63
MEAN NUMBER OF INDIVIDUALS/TAXA L	93.43	204.87	637.50
NUMBER/ML OF MOST ABUNDANT TAXON K	845.00	2114.00	9029.00

LAKE NAME: GUNTERSVILLE RES.
STORET NUMBER: 0104

CONTINUED

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TAXA	FORM	05 08 73			08 16 73			10 22 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
ACTINASTRUM HANTZSCHII										
V. FLUVIATILE	COL		0.7	26						
ANABAENA #1	FIL		2.7	102		1.9	180			
ANABAENA #2	FIL			X						
ANABAENA #3	FIL									X
ANABAENA #4	FIL									X
ANABAENOPSIS	FIL					6.1	585			
ANABAENOPSIS #1	FIL							3	11.1	3404
ANABAENOPSIS #2	FIL								0.4	108
ANKISTRODESMUS FALCATUS	CEL									X
ASTERICNELLA	CEL		2.7	102						
CARTERIA	CEL		1.4	51					1.4	430
CENTRIC DIATOMS	CEL								1.4	430
CHLAMYDOMONAS	CEL					1.4	135			
CHLOROGONIUM	CEL		1.4	51			X			
CHROOCOCCLUS	COL					1.4	135		1.8	537
CLCSTERIUM	CEL						X			
COELASTRUM SPHAERICUM	COL			X			X			
CCSMARIUM	CEL					0.5	45			
CCSMARIUM #1	CEL									X
COSMARIUM #2	CEL								0.4	108
CRUCIGENIA CRUCIFERA	COL						X			
CRYPTOMCNAS	CEL						X			
CRYPTOMONAS #1	CEL	2	6.2	230	2	6.5	630	1	9.8	3009
CRYPTOMCNAS #2	CEL	3	3.4	128						
CYCLOTELLA #1	CEL		2.1	77		0.9	90		1.8	537
DACTYLOCOCCOPSIS	CEL					3.7	360		8.8	2687
DACTYLOCOCCOPSIS ? #2	CEL			X						
DACTYLOCOCCOPSIS #1	CEL		2.7	102						
DICTYOSPHAERIUM	COL						X			
DINOFLAGELLATE #1	CEL			X		0.9	90			X
DINOFLAGELLATE #2	CEL			X		2.3	225		0.4	108

LAKE NAME: GUNTERSVILLE RES.
STCRET NUMBER: 0104

CCNTINUED

TAXA	FORM	06 08 73			08 16 73			10 22 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
EUGLENA	CEL						X		1.8	537
EUGLENA #1	CEL		0.7	26						
EUGLENA #2	CEL			X						
FLAGELLATE	CEL							2	29.5	9029
FLAGELLATE #1	CEL		4.8	179						
FLAGELLATES	CEL		4.1	154	5	8.4	810			
GOLENKINIA	CEL		0.7	26		1.4	135			X
GYROSIGMA SPENCERII	CEL									X
KIRCHNERIELLA LUNARIS										
V. IRREGULARIS	CEL									X
LYNGBYA	FIL			X						
LYNGBYA #1	FIL					0.5	45			
LYNGBYA LIMNETICA	FIL					8.9	855		2.1	645
MELOSIRA #2	CEL	1	13.7	512	3	4.7	450	4	3.2	968
MELOSIRA #4	CEL	4	22.6	845			X			X
MELOSIRA DISTANS	CEL	5	19.2	717		3.3	315		1.8	537
MERISMOEDIA MINIMA	COL								0.4	108
MERISMOEDIA PUNCTATA	COL					0.5	45			
MERISMOEDIA TENUISSIMA	COL						X			
MERISMOEDIA TROLLERI	COL									X
MICROCYSTIS	COL				4	3.3	315			
MICROCYSTIS INCERTA	COL									X
NAVICULA #1	CEL			X						
NAVICULA CAPITATA	CEL			X						X
NAVICULA MENISCULUS										
V. UPSALIENSIS	CEL									X
NITZSCHIA #1	CEL					3.3	315			
NITZSCHIA #2	CEL						X			
NITZSCHIA #3	CEL							5	11.2	3440
OOCYSTIS SUBMARINA	CEL			X						
OSCILLATORIA	FIL			X						
CSCILLATORIA LIMNETICA	FIL					1.9	180		3.9	1182

LAKE NAME: GUNTERSVILLE RES.
SECRET NUMBER: 0104

CONTINUED

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TAXA	FORM	06 08 73			08 16 73			10 22 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
PANDORINA MORUM	COL			X			X			X
PEDIASTRUM BORYANUM	COL			X						
PEDIASTRUM DUPLEX	COL			X						
PEDIASTRUM DUPLEX										
V. GPACILIMUM	COL									X
PECIASTRUM SIMPLEX	COL		0.7	26			X		0.4	108
PENNATE DIATOM	CEL								0.4	108
PENNATE DIATOM #1	CEL			X						
PENNATE DIATOM #2	CEL		1.4	51						
PENNATE DIATOM #3	CEL					0.9	90			
PENNATE DIATOM #4	CEL					0.9	90			X
PHACUS	CEL						X			
PHACUS PYRUM	CEL						X			X
RAPHIDIOPSIS	FIL					8.9	855		1.8	537
RAPHIDIOPSIS MEDITERRANEA	FIL						X			
RHIZOSCLERIA ERIENSIS	CEL									X
SCENEDESMUS	COL									X
SCENEDESMUS #1	COL			X		0.9	90			
SCENEDESMUS #2	COL								0.4	108
SCENEDESMUS ABUNDANS	COL			X		0.9	90		0.4	108
SCENEDESMUS ACUMINATUS	COL					0.5	45		0.7	215
SCENEDESMUS QUADRICAUDA	COL			X		1.9	180			
STAUSTRUM	CEL			X						
STAUSTRUM #2	CEL						X			
STEPHANODISCUS	CEL						X			X
SURIELLA	CEL									X
SYNEDRA #1	CEL		6.2	230	1	22.0	2114		5.3	1612
SYNEDRA ULNA	CEL		1.4	51						
TETRAEDRON CAUDATUM										
V. LONGISPINUM	CEL									X
TETRAEDRON MINIMUM	CEL		1.4	51		1.4	135			X
TETRAEDRON MUTICUM	CEL						X			
TOTAL				3737			9629			30600

LAKE NAME: HOLT LOCK AND DAM
STORET NUMBER: 0105

NYGAARD TROPHIC STATE INDICES

DATE	06 07 73	08 29 73	10 31 73
MYXOPHYCEAN	0/0 0	6.00 E	1.00 E
CHLOROPHYCEAN	01/0 E	4.00 E	4.00 E
EUGLENOPHYTE	0/01 ?	0.10 ?	0/05 ?
DIATOM	0.60 E	0.80 E	0.33 E
COMPOUND	04/0 E	15.0 E	6.00 E

PALMER'S ORGANIC POLLUTION INDICES

DATE	06 07 73	08 29 73	10 31 73
GENUS	00	07	00
SPECIES	00	00	00

SPECIES DIVERSITY AND ABUNDANCE INDICES

DATE	06 07 73	08 29 73	10 31 73
AVERAGE DIVERSITY H	1.99	3.83	1.81
NUMBER OF TAXA S	14.00	30.00	11.00
NUMBER OF SAMPLES COMPOSITED M	4.00	4.00	4.00
MAXIMUM DIVERSITY MAXH	3.81	4.91	3.46
TOTAL DIVERSITY D	3237.73	5909.69	280.55
TOTAL NUMBER OF INDIVIDUALS/ML N	1627.00	1543.00	155.00
EVENESS COMPONENT J	0.52	0.78	0.52
MEAN NUMBER OF INDIVIDUALS/TAXA L	116.21	51.43	14.09
NUMBER/ML OF MOST ABUNDANT TAXON K	664.00	281.00	89.00

LAKE NAME: HOLT LOCK AND DAM
STORET NUMBER: 0105

CONTINUED

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TAXA	FORM	06 07 73			08 29 73			10 31 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
ACTINASTRUM HANTZSCHII	CEL	4	14.4	234						
AMPHIPLEURA PELLUCIDA	CEL									X
ANKISTRODESMUS FALCATUS	CEL									X
ATTHEYA	CEL						X			
CENTRIC DIATOMS	CEL			X						
CHLOROGONIUM	CEL					0.7	11			
CLCSTERIUM	CEL									X
COELASTRUM	COL					2.9	45			X
CRUCIGENIA TETRAPEDIA	COL					0.7	11			
CRYPTOMCNAS #1	CEL	1	32.0	521	1	14.6	225			
CRYPTOMCNAS #2	CEL					3.6	56			
CYCLOTELLA #1	CEL	5	2.4	39	3	7.3	113			
CYCLCTELLA #2	CEL			X		5.1	79			
DACTYLOCOCCOPSIS #1	CEL					11.7	180			
DACTYLOCOCCOPSIS #2	CEL						X			
DINCBRYON	CEL			X			X			
DINOFLAGELLATE	CEL					4.4	68			
DINOFLAGELLATE SPP.	CEL	3	8.8	143		0.7	11			
EUGLENA	CEL	2	40.8	664			X	1	57.4	89
FLAGELLATE #1	CEL					2.2	00034			
FLAGELLATE #2	CEL						X			
FLAGELLATE #3	CEL				4	18.2	281			
FLAGELLATES	CEL							3	14.2	22
KIRCHNERIELLA	CEL									
LYNGBYA LIMNETICA	FIL				5	5.1	79			
MELCSIRA VARIANS	CEL									X
MERISMOPEDIA MINIMA	COL							4	7.1	11
MICROCYSTIS MINIMA	COL						X			
NAVICULA	CEL			X						X
NAVICULA MINIMA	CEL			X						
NAVICULA MUTICA	CEL									
V. TROPICA	CEL			X						

LAKE NAME: HOLT LOCK AND DAM
STORET NUMBER: 0105

CONTINUED

		06 07 73			08 29 73			10 31 73		
TAXA	FORM	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
NITZSCHIA	CEL							5	7.1	11
OSCILLATORIA	FIL					0.7	11			
OSCILLATORIA ANGUSTA	FIL					0.7	11			
PANDORINA MORUM	COL			X						
PENNATE DIATOM #1	CEL						X			
PENNATE DIATOM #4	CEL			X		2.2	34			
RHIZOSOLENIA	CEL						X			
SCENEDESMUS ABUNDANS	COL					1.5	23			
SCENEDESMUS QUADRICAUDA	COL					2.2	34	2	14.2	22
STAUSTRUM	CEL					1.5	23			
SYNEDRA #1	CEL		1.6	26						
SYNEDRA #2	CEL				2	8.7	135			
SYNEDRA #3	CEL					2.2	34			
SYNEDRA FASCICULATA V. TRUNCATA	CEL					2.9	45			
TOTAL				1627			1543			155

LAKE NAME: LAY LAKE
STORET NUMBER: 0106

NYGAARD TROPHIC STATE INDICES

DATE	06 06 73	08 29 73	10 31 73
MYXOPHYCEAN	5.00 E	4.00 E	4.00 E
CHLOROPHYCEAN	13.0 E	9.50 E	15.0 E
EUGLENOPHYTE	0.06 ?	0.04 ?	0.05 ?
DIATOM	2.00 E	0.67 E	1.17 E
COMPOUND	27.0 E	17.0 E	27.0 E

PALMER'S ORGANIC POLLUTION INDICES

DATE	06 06 73	08 29 73	10 31 73
GENUS	08	09	15
SPECIES	04	06	06

SPECIES DIVERSITY AND ABUNDANCE INDICES

DATE	06 06 73	08 29 73	10 31 73
AVERAGE DIVERSITY H	2.91	3.59	3.39
NUMBER OF TAXA S	40.00	53.00	41.00
NUMBER OF SAMPLES COMPOSITED M	3.00	3.00	3.00
MAXIMUM DIVERSITY MAXH	5.32	5.73	5.36
TOTAL DIVERSITY D	27223.05	45718.65	12126.03
TOTAL NUMBER OF INDIVIDUALS/ML N	9355.00	12735.00	3577.00
EVENESS COMPONENT J	0.55	0.63	0.63
MEAN NUMBER OF INDIVIDUALS/TAXA L	233.88	240.28	87.24
NUMBER/ML OF MOST ABUNDANT TAXON K	3109.00	4049.00	910.00

LAKE NAME: LAY LAKE
STORET NUMBER: 0106

CONTINUED

TAXA	FORM	06 06 73			08 29 73			10 31 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
EUGLENA	CEL		0.3	31			X		0.6	20
FLAGELLATE #1	CEL					0.3	42			
FLAGELLATE #2	CEL			X		1.0	127			
FLAGELLATES	CEL	3	21.3	1990	5	9.6	1223	2	25.4	910
FRANCEIA	CEL					0.3	42			
FRANCEIA DROESCHERI	CEL									X
GOLENKINIA	CEL								0.6	20
GYROSIGMA	CEL						X			
KIRCHNERIELLA CCNTORTA	CEL								0.6	20
LUNATE CELL	CEL		0.7	62		1.3	169			X
LYNGBYA #1	FIL					1.0	127			
LYNGBYA LIMNETICA	FIL					2.6	337			
MELOSIRA ?	CEL		0.3	31						
MELOSIRA #2	CEL	1	33.2	3109	1	7.3	928		2.3	81
MELOSIRA #3	CEL							5	4.0	142
MELOSIRA #4	CEL	5	8.3	777		5.0	633			X
MELOSIRA CISTANS	CEL	4	16.6	1555	2	31.8	4049	3	19.8	708
MELOSIRA GRANULATA	CEL			X						
MERISMOEDIA MINIMA	COL		1.0	93						
MERISMOEDIA TENUISSIMA	COL						X		0.6	20
MICRACTINIUM	COL			X						
NAVICULA	CEL		0.3	31		0.3	42			
NAVICULA #1	CEL						X			X
NEPHROCYTIUM	COL					0.3	42			
NITZSCHIA	CEL						X			X
NITZSCHIA ?	CEL		0.7	62						
NITZSCHIA #1	CEL					0.7	84			
OSCILLATORIA	FIL			X			X		2.8	101
PEDIASTRUM BIRADIATUM										
V. LONGECORNUTUM	COL					0.3	42		0.6	20
PEDIASTRUM BIRADIATUM										
V. LONGECORNUTUM ?	COL		0.3	31						

LAKE NAME: LAY LAKE
STORET NUMBER: 0106

CONTINUED

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TAXA	FORM	06 06 73			08 29 73			10 31 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
PEDIASTRUM DUPLEX										
V. ?	COL			X						
PEDIASTRUM DUPLEX										
V. RETICULATUM	COL				0.3		42			
PEDIASTRUM SIMPLEX	COL						X			
PEDIASTRUM TETRAS										
V. TETRAODON	COL									X
PENNATE DIATOM	CEL		0.7	62						
PENNATE DIATOM #1	CEL							0.6		20
PENNATE DIATOM #2	CEL				0.7		84			
PENNATE DIATOM #3	CEL						X			
PENNATE DIATOM #5	CEL						X			X
PENNATE DIATOM #6	CEL									X
SCENEDESMUS	COL		0.3	31			X			
SCENEDESMUS ABUNDANS	COL				0.3		42	1.7		61
SCENEDESMUS ACUMINATUS	COL		0.3	31			X			X
SCENEDESMUS ARCUATUS	COL		0.3	31						
SCENEDESMUS BICAUDATUS	COL						X			
SCENEDESMUS BIJUGA	COL				0.3		42			
SCENEDESMUS ECORNIS										
V. DISCIFORMIS	COL		0.7	62						
SCENEDESMUS GRANULATUS										
F. DISCIFORMIS	COL									X
SCENEDESMUS QUADRICAUDA	COL		1.0	93	2.6		337	2.8		101
SCHROEDERIA	CEL				0.3		42			
SCHROEDERIA SETIGERA	CEL		0.7	62			X			
STEPHANODISCUS	CEL		1.7	155	4.0		506	5.6		202
SYNEDRA	CEL		0.3	31			X			
TETRAEDRON MINIMUM	CEL		0.3	31	0.3		42			
TETRASTRUM	COL			X			X			
TREUBARIA	CEL				0.3		42			
TOTAL				9355			12735			3577

LAKE NAME: MARTIN LAKE
 STCRET NUMBER: 0107

NYGAARD TROPHIC STATE INDICES

DATE	03 18 73	06 16 73	08 25 73	11 01 73
MYXOPHYCEAN	01/0 E	2.00 E	0.80 E	2.67 E
CHLOROPHYCEAN	04/0 E	1.00 E	1.20 E	2.33 E
EUGLENOPHYTE	0.20 ?	0/06 ?	0/10 ?	0.07 ?
DIATOM	0.43 E	1.00 E	0.86 E	1.00 E
COMPOUND	09/0 E	5.50 E	3.20 E	7.00 E

PALMER'S ORGANIC POLLUTION INDICES

DATE	03 18 73	06 16 73	08 25 73	11 01 73
GENUS	03	01	03	10
SPECIES	00	00	00	00

SPECIES DIVERSITY AND ABUNDANCE INDICES

DATE	03 18 73	06 16 73	08 25 73	11 01 73
AVERAGE DIVERSITY H	2.21	2.75	3.68	3.74
NUMBER OF TAXA S	21.00	23.00	35.00	37.00
NUMBER OF SAMPLES COMPOSITED M	7.00	7.00	7.00	7.00
MAXIMUM DIVERSITY MAXH	4.39	4.52	5.13	5.21
TOTAL DIVERSITY D	5063.11	2838.00	19246.40	10475.74
TOTAL NUMBER OF INDIVIDUALS/ML N	2291.00	1032.00	5230.00	2801.00
EVENNESS COMPONENT J	0.50	0.51	0.72	0.72
MEAN NUMBER OF INDIVIDUALS/TAXA L	109.10	44.87	149.43	75.70
NUMBER/ML OF MOST ABUNDANT TAXON K	1300.00	454.00	1208.00	623.00

LAKE NAME: MARTIN LAKE
STCNET NUMBER: 0107

CONTINUED

	03 18 73				06 16 73				08 25 73				11 01 73			
TAXA	FORM	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML			
ANABAENA	FIL			X												
ANABAENA #1	FIL				1	44.0	454	1	23.1	1208		4.0	113			
ANABAENA #2	FIL					0.6	6						X			
ANABAENA #3	FIL												X			
ANKISTRUCOESMUS	CEL											4.0	113			
ANKISTRUCOESMUS ?	CEL		13.5	310												
ASTERIONELLA FORMOSA	CEL	4		X												
ATTHEYA	CEL											1.0	28			
CHLAMYDOMONAS	CEL					0.6	6					1.0	28			
CHLOSTERIUM	CEL												X			
COELASTRUM	COL									X						
CCSMARIUM	CEL					1.2	12		3.8	197						
CRUCIGENIA TETRAPELIA	COL			X								2.0	57			
CRYPTOMONAS	CEL	3	5.1	117												
CRYPTOMONAS #1	CEL										1	20.2	556			
CYCLOTELLA	CEL		1.1	25						X		3.0	95			
CYCLOTELLA STELLIGERA	CEL					5.6	58									
CYMBELLA	CEL						X									
DACTYLOCOCCOCCOPSIS	CEL					0.6	6									
DACTYLOCOCCOCCOPSIS #1	CEL								1.4	74		4.0	113			
DACTYLOCOCCOCCOPSIS #2	CEL								18.9	986		3.0	95			
DINOBRYON	CEL		1.8	42					0.5	25			X			
DINOFLAGELLATE #1	CEL	5	3.3	76					0.9	49			X			
DINOFLAGELLATE #2	CEL								0.5	25	3	4.0	113			
DINOFLAGELLATE #3	CEL								0.5	25						
EUGLENA	CEL												X			
FILAMENT	FIL				4	11.1	115									
FLAGELLATE	CEL								3.3	173						
FLAGELLATE #1	CEL										5	5.1	170			
FLAGELLATES	CEL	1	56.7	1300	3	14.9	154				4	8.1	227			
FRANCEIA	CEL								0.5	25						
FRANCEIA CRUCESCHERII	CEL												X			

LAKE NAME: MARTIN LAKE
STCNET NUMBER: 0107

CONTINUED

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TAXA	FORM	03 18 73			06 16 73			08 25 73			11 01 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
GOLENKINIA	CEL							0.5		25			
LYNGBYA	FIL										1.0		28
LYNGBYA LIMNETICA	FIL							15.1		789			
MELCSIRA	CEL				1.8		19						
MELCSIRA #2	CEL	2	6.9	159			X	0.9		49			X
MELCSIRA #3	CEL							1.9		99			
MELOSIPA DISTANS	CEL		4.8	109			X	3.3		173	2	22.2	623
FRISMOEDIA MARSSONII	CCL										1.0		28
MICRACTINIUM	COL		0.4	9									
NAVICULA	CEL						X			X			
NAVICULA #1	CEL			X									
NAVICULA #2	CEL			X									
NAVICULA #3	CEL			X									
NITZSCHIA	CEL			X									
OSCILLATORIA	FIL				1.2		12						
OSCILLATORIA LIMNETICA	FIL												X
PEDIASTRUM TETRAS													
V. TETRAODON	COL												X
PENNATE DIATOM	CEL		5.5	126		1.2	12						
PENNATE DIATOM #1	CEL							1.9		99			
PENNATE DIATOM #2	CEL							1.4		74	3.0		85
PENNATE DIATOM #3	CEL									X			X
PENNATE DIATOM #4	CEL							1.4		74	1.0		28
PERIDINIUM	CEL		0.4	9							1.0		28
PERIDINIUM #1	CEL				5	5.6	58						
PERIDINIUM WISCONSINENSE	CEL				2	7.4	76	2	4.2	222			
RHIZOLENIA	CEL						X			X	2.0		57
SCENEDESMUS	COL		0.4	9		0.6	6		0.5	25			
SCENEDESMUS ACUMINATUS	COL										1.0		28
SCENEDESMUS QUACRICAUDA	COL										1.0		28
STAUSTRUM	CEL									X			
STAUSTRUM #1	CEL							2.8		148			

LAKE NAME: MARTIN LAKE
STCRET NUMBER: 0107

CONTINUED

TAXA	03 18 73				06 16 73				08 25 73				11 01 73			
	FORM	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
STAURASTRUM #2	CEL					0.6	6	3	5.2	271		1.0	28			
STAURASTRUM #3	CEL								0.9	49			X			
STEPHANODISCUS	CEL								2.8	148						
STICHODCCCUS ?	FIL									X						
SYNECPA	CEL					0.5	5									
SYNECPA #1	CEL								1.4	74			X			
SYNECPA #2	CEL								1.9	99		5.1	142			
TABELLARIA	CEL			X		2.5	25									
TETRAEDRON MINIMUM	CEL								0.5	25			X			
TETRAEDRON TRIGNUM	CEL									X						
TRACHELCYNAS	CEL			X												
TREUBARIA	CEL						X									
TOTAL				2291			1032			5230			2801			

LAKE NAME: MITCHELL LAKE
 STCRET NUMBER: 0108

NYGAARD TROPHIC STATE INDICES

DATE	06 06 73	08 29 73	10 31 73
MYXOPHYCEAN	2.00 E	9.00 E	4.00 E
CHLOROPHYCEAN	3.50 E	10.0 E	13.0 E
EUGLENOPHYTE	0/11 ?	0.05 ?	0.18 ?
DIATOM	1.40 E	0.86 E	0.57 E
COMPCUND	9.00 E	26.0 E	24.0 E

PALMER'S ORGANIC POLLUTION INDICES

DATE	06 06 73	08 29 73	10 31 73
GENUS	01	09	09
SPECIES	00	04	06

SPECIES DIVERSITY AND ABUNDANCE INDICES

DATE	06 06 73	08 29 73	10 31 73
AVERAGE DIVERSITY H	3.42	3.55	3.19
NUMBER OF TAXA S	33.00	39.00	39.00
NUMBER OF SAMPLES COMPOSITED M	3.00	3.00	3.00
MAXIMUM DIVERSITY MAXH	5.04	5.29	5.29
TOTAL DIVERSITY D	11887.92	17008.05	8638.52
TOTAL NUMBER OF INDIVIDUALS/ML N	3476.00	4791.00	2708.00
EVENESS COMPONENT J	0.68	0.67	0.60
MEAN NUMBER OF INDIVIDUALS/TAXA L	105.33	122.85	69.44
NUMBER/ML OF MOST ABUNDANT TAXON K	782.00	1459.00	948.00

LAKE NAME: MITCHELL LAKE
STORET NUMBER: 0108

CONTINUED

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TAXA	FORM	06 06 73			08 29 73			10 31 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
ACHNANTHES LANCEOLATA										
V. DUBIA	CEL						X			
ACTINASTRUM HANTZSCHII	COL							0.4		12
ANABAENA ?	FIL		0.8	29						
ANABAENA #1	FIL				2	13.8	661			
ANABAENA #2	FIL						X			
ANABAENA #3	FIL						X			
CENTRIC DIATOM	CEL		1.7	58						
CHLAMYDOMONAS	CEL			X				0.9		25
CHLOROGONIUM	CEL						X			
CHLOROPHYTAN COLONY	COL									X
CHLOROPHYTAN FILAMENT	CEL							4	7.9	214
CHLOROPHYTAN LUNATE CELL	CEL									X
CHROOCOCCLUS	COL			X				0.4		12
CLOSTERIUM #2	CEL			X						
CLOSTERIUM #3	CEL			X						
COELASTRUM	COL			X		0.5	23			
CRUCIGENIA	COL							0.4		12
CRUCIGENIA TETRAPEDIA	COL			X		2.4	114			X
CRYPTOMONAS	CEL		1.7	58				5	7.0	189
CYCLOTELLA	CEL				3	6.7	319			
CYCLOTELLA MENECHINIANA	CEL			X			X		7.0	189
CYMBELLA	CEL									X
DACTYLOCCOCCOPSIS	CEL		5.0	174		4.3	205			
DICTYOSPHAERIUM	COL					1.0	46			
DINOCYCLID	CEL									X
DINOCYCLID #1	CEL		5.0	174			X			
DINOCYCLID #2	CEL		0.8	29			X			
EUASTRUM	CEL						X			
EUASTRUM DENTICULATUM	CEL									X
EUGLENA	CEL					1.0	46			X
FLAGELLATE #1	CEL		6.7	232						

LAKE NAME: MITCHELL LAKE
STORE NUMBER: 0108

CONTINUED

06 06 73

08 29 73

10 31 73

TAXA	FORM	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
FLAGELLATES	CEL	5	15.0	521		9.0	433	2	35.0	948
LUNATE CELL	CEL		1.7	58						
LYNGBYA	FIL								0.4	12
LYNGBYA CIRCUMCRETA	FIL					0.5	23			
LYNGBYA LIMNETICA	FIL					1.9	91			
MELOSIRA #2	CEL	1	15.0	521		2.9	137	1	13.1	354
MELOSIRA #3	CEL	4	10.8	376						
MELOSIRA #4	CEL		4.2	145		4.3	205			
MELOSIRA #5	CEL	3	5.8	203						
MELOSIRA DISTANS	CEL	2	22.5	782	1	30.5	1459	3	13.1	354
MERISMOPEDIA MARSSONII	COL					1.9	91			
MERISMOPEDIA MINIMA	COL								1.4	38
MICROCYSTIS	COL						X			
NAVICULA	CEL								0.4	12
NAVICULA GASTRUM	CEL								1.4	38
NITZSCHIA #1	CEL					3.8	182			X
NITZSCHIA #2	CEL					1.5	71			X
OSCILLATORIA	FIL			X					0.4	12
OSCILLATORIA #1	FIL					0.5	23			
PANDORINA FORUM	COL			X			X			
PEDIASTRUM BIRACIATUM										
V. LONGECORNUTUM	COL						X			
PEDIASTRUM DUPLEX										
V. RETICULATUM	COL			X						
PEDIASTRUM SIMPLEX	COL						X			X
PENNATE DIATOM	CEL						X		0.4	12
PENNATE DIATOM #2	CEL		0.8	29			X			
PENNATE DIATOM #3	CEL		0.8	29		0.5	23			
PENNATE DIATOM #4	CEL			X						
PHACUS	CEL								0.4	12
SCENEDESMUS	COL			X						X
SCENEDESMUS #1	COL					1.0	46		0.9	25

LAKE NAME: MITCHELL LAKE
STORET NUMBER: 0108

CONTINUED

TAXA	FORM	06 06 73			08 29 73			10 31 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
SCENEDESMUS ACUMINATUS	COL									X
SCENEDESMUS BIJUGA	COL							1.4		38
SCENEDESMUS GRANULATUS										
F. DISCIFORMIS	COL				0.5		23	0.4		12
SCENEDESMUS QUADRICAUDA	COL		0.8	29	4	5.2	296	2.3		63
SCHROEDERIA SETIGERA	CEL							0.4		12
STEPHANODISCUS	CEL				5	4.8	228	3.7		101
SYNEORA	CEL			X			X			X
TETRAEDRON	CEL			X						X
TETRAEDRON MINIMUM	CEL				0.5		23	0.4		12
TETRASTRUM	COL		0.9	29						
TRACHELOMONAS	COL									X
TREUBARIA	CEL				0.5		23			
TOTAL				3476			4791			2708

LAKE NAME: PICKWICK LAKE
 STCRET NUMBER: 0109

NYGAARD TROPHIC STATE INDICES

DATE	06 09 73	08 15 73	10 22 73
MYXOPHYCEAN	0/0 C	05/0 E	02/0 E
CHLOROPHYCEAN	04/0 E	05/0 E	06/0 E
EUGLENOPHYTE	0/04 ?	0/10 ?	0/08 ?
DIATOM	1.00 E	0.67 E	4.00 E
COMPOUND	09/0 E	14/0 E	12/0 E

PALMER'S ORGANIC POLLUTION INDICES

DATE	06 09 73	08 15 73	10 22 73
GENUS	01	02	01
SPECIES	00	00	00

SPECIES DIVERSITY AND ABUNDANCE INDICES

DATE	06 09 73	08 15 73	10 22 73
AVERAGE DIVERSITY H	2.16	2.85	1.35
NUMBER OF TAXA S	18.00	25.00	19.00
NUMBER OF SAMPLES COMPOSITED M	6.00	4.00	3.00
MAXIMUM DIVERSITY MAXH	4.17	4.64	4.25
TOTAL DIVERSITY D	2805.84	3129.30	3504.60
TOTAL NUMBER OF INDIVIDUALS/ML N	1299.00	1098.00	2596.00
EVENESS COMPONENT J	0.52	0.61	0.32
MEAN NUMBER OF INDIVIDUALS/TAXA L	72.17	43.92	136.63
NUMBER/ML OF MOST ABUNDANT TAXON K	457.00	335.00	1299.00

LAKE NAME: PICKWICK LAKE
STRET NUMBER: 0109

CONTINUED

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TAXA	FORM	06 09 73			08 15 73			10 22 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
ACTINASTRUM HANTZSCHII	COL									X
ANKISTRICESMUS FALCATUS	CEL			X						X
ASTERICNELLA FORMOSA										
V. ?	CEL			X						
CENTRIC DIATOMS	CEL			X						
CERATIUM	CEL						X			X
CHLAMYDOMONAS	CEL					1.2	13			X
COELASTRUM SPHAERICUM	COL			X						
CRYPTOMONAS #1	CEL									X
CYANOPHYTAN FILAMENT	FIL						X			
CYCLOTELLA #1	CEL				3	12.9	142			
CYCLOTELLA #2	CEL				4	7.0	77			
CYCLOTELLA MENEGHINIANA	CEL			X						X
DACTYLOCCOCCOPSIS	CEL						X			
DINOFLAGELLATE #1	CEL			X		1.2	13			X
FLAGELLATE #1	CEL						X			X
FLAGELLATE #4	CEL	5	9.2	120						
FLAGELLATES	CEL	2	25.9	337	1	30.5	335	2	50.0	1299
FRANCEIA	CEL									X
GYROSIGMA	CEL			X						
LYNGBYA	FIL								0.5	12
MELOSIRA #2	CEL	3	11.1	144			X			X
MELOSIRA #4	CEL	1	35.2	457	2	27.0	297	1	44.3	1149
MELOSIRA DISTANS	CEL	4	18.5	241				4	2.4	62
MERISMOPEDIA MINIMA	COL				5	4.7	52	5	2.4	62
MICROCYSTIS INCERTA	COL					2.4	26			
NAVICULA #1	CEL			X						
NAVICULA #2	CEL						X			
NAVICULA SALINARIUM										
V. INTERMEDIA	CEL						X			
NITZSCHIA #1	CEL			X		2.4	26			
CSCILLATORIA LIMNETICA	FIL					1.2	13			

LAKE NAME: PICKWICK LAKE
STORET NUMBER: 0109

CONTINUED

TAXA	FORM	06 09 73			08 15 73			10 22 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
PANDORINA MORUM	COL			X						
PEDIASTRUM BIRADIATUM										
V. ?	COL									X
PEDIASTRUM SIMPLEX										
V. DUODENARIUM	COL						X	3	0.5	12
PENNATE DIATOM	CEL						X			
SCENEDESMUS	COL				3.6		39			
SCENEDESMUS BREVISPIA	COL									X
SCENEDESMUS QUADRICAUDA	COL			X			X			
SCHROEDERIA	CEL			X			X			
SYNEDRA #1	CEL				2.4		26			
SYNEDRA #2	CEL			X			X			
SYNEDRA RUMPENS										
V. ?	CEL									X
TETRAECRON #1	CEL				3.6		39			
TCTAL				1299			1098			2596

LAKE NAME: WEISS LAKE
STORET NUMBER: 0112

NYGAARD TROPHIC STATE INDICES

DATE	08 25 73	10 30 73
MYXOPHYCEAN	2.67 E	2.67 E
CHLOROPHYCEAN	4.67 E	4.67 E
EUGLENOPHYTE	0.09 ?	0.09 ?
DIATOM	1.14 E	0.71 E
COMPOUND	10.6 E	9.67 E

PALMER'S ORGANIC POLLUTION INDICES

DATE	08 25 73	10 30 73
GENUS	17	20
SPECIES	05	03

SPECIES DIVERSITY AND ABUNDANCE INDICES

DATE	08 25 73	10 30 73
AVERAGE DIVERSITY	H 3.75	3.25
NUMBER OF TAXA	S 48.00	46.00
NUMBER OF SAMPLES COMPOSITED	M 6.00	5.00
MAXIMUM DIVERSITY	MAXH 5.58	5.52
TOTAL DIVERSITY	D 45547.50	40462.50
TOTAL NUMBER OF INDIVIDUALS/ML	N 12146.00	12450.00
EVENESS COMPONENT	J 0.67	0.59
MEAN NUMBER OF INDIVIDUALS/TAXA	L 253.04	270.65
NUMBER/ML OF MOST ABUNDANT TAXON	K 3103.00	5275.00

LAKE NAME: WEISS LAKE
STCRET NUMBER: 0112

CONTINUED

08 25 73

10 30 73

TAXA	FORM	08 25 73			10 30 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
ACHNANTHES	CEL						X
ANABAENA	FIL						X
ANABAENA #1	FIL			X			
ANABAENA #2	FIL			X			
ANKISTRODESMUS FALCATUS	CEL		1.1	132		3.7	455
CERATIUM	CEL					0.3	38
CHLAMYDOMONAS	CEL			X			
CLCSTERIUM	CEL		0.5	66			X
COCCONEIS PLACENTULA							
V. EUGLYPTA	CEL			X			
CELASTRUM	COL		0.5	66			
COSMARIUM	CEL			X		0.3	38
CCSMARIUM #1	CEL		1.1	132			
CRUCIGENIA APICULATA	COL		0.5	66		0.6	76
CRUCIGENIA TETRAPEDIA	COL					0.3	38
CRYPTOMONAS	CEL					1.8	228
CYCLCTELLA	CEL			X			
CYCLOTELLA #1	CEL	4	7.1	858	3	7.6	949
CYCLOTELLA MENEGHINIANA	CEL		0.5	66			
CYCLCTELLA STELLIGERA	CEL					2.7	342
DACTYLOCOCCOPSIS	CEL		1.6	198	4	10.1	1252
DICTYOSPHAERIUM PULCHELLUM	COL					0.3	38
DINOFLAGELLATE	CEL		1.1	132			
EUASTRUM	CEL						X
FUGLENA	CEL			X		0.9	114
FLAGELLATE #1	CEL		2.7	330		1.8	228
FLAGELLATE #2	CEL					0.3	38
FLAGELLATES	CEL	3	10.9	1320	2	8.2	1025
KIRCHNERIELLA	CEL		1.1	132			
KIRCHNERIELLA SUBSOLITARIA	CEL						X
LYNGBYA	FIL			X			X
LYNGBYA LIMNETICA	FIL		6.5	792		1.8	228

LAKE NAME: WEISS LAKE
STCRET NUMBER: 0112

CONTINUED

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TAXA	FORM	08 25 73			10 30 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
MELOSIRA	CEL	15	4.9	594			
MELOSIRA #2	CEL		1.1	132		1.2	152
MELOSIRA #4	CEL				5	5.2	645
MELOSIRA #5	CEL			X			
MELOSIRA DISTANS	CEL	2	25.5	3103	1	42.4	5275
MERISMOPEDIA TENUISSIMA	COL		2.7	330		0.6	76
MICROCYSTIS AERUGINOSA	CCL						X
MICROCYSTIS INCERTA	COL						X
NAVICULA #1	CEL			X			X
NAVICULA #2	CEL						X
NITZSCHIA	CEL		6.0	726			
NITZSCHIA #1	CEL			X		0.3	38
OSCILLATORIA #1	FIL	1	13.0	1585			
OSCILLATORIA LIMNETICA	FIL					0.6	76
PANDORINA MORUM	COL			X		0.3	38
PEDIASTRUM DUPLEX							
V. RETICULATUM	COL						X
PENNATE DIATOM #1	CEL		1.6	198			
PENNATE DIATOM #4	CEL			X			
PHACUS	CEL					0.3	38
PINNULARIA VIRIDIS	CEL						X
PLATYDORINA CAUDATUM	COL			X			
PTEROMONAS	CEL					0.3	38
RAPHIDICPSIS	FIL		4.3	528			
SCENEDESMUS	COL			X			
SCENEDESMUS #1	COL		2.2	264		0.6	76
SCENEDESMUS #2	COL		0.5	56		0.6	76
SCENEDESMUS #3	COL					0.3	38
SCENEDESMUS ABUNDANS	COL		1.1	132		0.9	114
SCENEDESMUS ACUMINATUS	COL			X			X
SCENEDESMUS DENTICULATUS							
V. FENESTRATA	COL			X			

LAKE NAME: WEISS LAKE
STORET NUMBER: 0112

CONTINUED

	09 25 73			10 30 73			
TAXA	FORM	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
SCENEDESMUS GRANULATUS							
F. DISCIFORMIS	COL			X			
SCHROEDERIA SETIGERA	CEL			X			
STEPHANODISCUS	CEL		1.1	132			
SURIRELLA	CEL			X			
SYNECRA	CEL					0.3	38
SYNEDRA #1	CEL					4.6	569
TETRAEDRON #1	CEL					0.3	38
TETRAEDRON MINIMUM	CEL			X			
TETRAEDRON MINIMUM							
V. SCROBICULATUM	CEL					0.3	38
TETRASTRUM HETERACANTHUM	COL		0.5	56			X
TRACHELCMONAS	CEL			X			
TOTAL				12146			12450

LAKE NAME: WILSON LAKE
STORET NUMBER: 0114

NYGAARD TROPHIC STATE INDICES

DATE	06 09 73	08 16 73	10 22 73
MYXOPHYCEAN	01/0 E	08/0 E	03/0 E
CHLOROPHYCEAN	02/0 E	16/0 E	03/0 E
EUGLENOPHYTE	0/03 ?	0/24 ?	0.17 ?
DIATOM	1.75 E	1.60 E	1.75 E
COMPOUND	10/0 E	32/0 E	14/0 E

PALMER'S ORGANIC POLLUTION INDICES

DATE	06 09 73	08 16 73	10 22 73
GENUS	02	13	02
SPECIES	00	02	00

SPECIES DIVERSITY AND ABUNDANCE INDICES

DATE	06 09 73	08 16 73	10 22 73
AVERAGE DIVERSITY H	1.96	3.36	2.95
NUMBER OF TAXA S	21.00	47.00	25.00
NUMBER OF SAMPLES COMPOSITED M	3.00	2.00	2.00
MAXIMUM DIVERSITY MAXH	4.39	5.55	4.64
TOTAL DIVERSITY D	6569.92	28882.56	4873.40
TOTAL NUMBER OF INDIVIDUALS/ML N	3352.00	8596.00	1652.00
EVENESS COMPONENT J	0.45	0.61	0.64
MEAN NUMBER OF INDIVIDUALS/TAXA L	159.62	182.89	66.08
NUMBER/ML OF MOST ABUNDANT TAXON K	2076.00	3056.00	467.00

LAKE NAME: WILSON LAKE
STORET NUMBER: 0114

CONTINUED

TAXA	FORM	06 09 73			08 16 73			10 22 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
ANABAENA ?	FIL						X			
ANKISTRODESMUS ?	CEL						X			
ANKISTRODESMUS FALCATUS	CEL		0.7	24						
CARTERIA	CEL						X			
CENTRIC DIATOM #1	CEL		0.7	24						X
CHLAMYDOMONAS	CEL							1.2		19
CHLOROPHYTAN LUNATE CELL	CEL					0.7	63			
CHROCOCCUS	COL					2.2	189			
COCCONEIS PLACENTULA										
V. EUGLYPTA	CEL			X						
CRUCIGENIA	COL						X			
CRYPTOMONAS	CEL						X			
CRYPTOMONAS #1	CEL	3	4.2	142				3	15.3	253
CRYPTOMONAS #2	CEL			X						X
CYCLOTELLA #1	CEL		1.4	47						
CYCLOTELLA #2	CEL	4	4.2	142					8.2	136
CYCLOTELLA #4	CEL				4	6.6	567			
CYCLOTELLA MENEGHINIANA	CEL					1.5	126			
DACTYLOCOCCOPSIS	CEL								2.4	39
DICHOCTMCOCCUS	COL						X			
DINOFLAGELLATE	CEL			X						
DINOFLAGELLATE #1	CEL					0.7	63	4	4.7	78
DINOFLAGELLATE #2	CEL						X			
EUGLENA	CEL									X
FLAGELLATE #1	CEL	5	8.4	283		7.0	598	2	24.8	409
FLAGELLATE #2	CEL			X						
FLAGELLATES	CEL	2	14.1	472	3	11.4	976		3.5	58
FRANCEIA	CEL						X			
GOLENKINIA	CEL						X			
LAGERHEIMIA CILIATA	CEL						X			
LYNGBYA LIMNETICA	FIL						X			
MELOSIRA #2	CEL			X		0.7	63	5	2.4	39

LAKE NAME: WILSON LAKE
STORET NUMBER: 0114

CONTINUED

TAXA	FORM	06 09 73			08 16 73			10 22 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
MELOSIRA #3	CEL								2.4	39
MELOSIRA #4	CEL	1	61.9	2076	1	35.6	3056	1	28.3	467
MELOSIRA DISTANS	CEL			X		5.1	441			X
MELOSIRA GRANULATA	CEL					1.5	126			
MERISMOPEDIA MARSSONII	COL						X			
MERISMOPEDIA MINIMA	COL					5.5	472			
MICROCYSTIS INCERTA	COL						X			X
NITZSCHIA #1	CEL									X
NITZSCHIA #2	CEL		1.4	47						
NITZSCHIA #3	CEL			X	2	9.9	850			
NITZSCHIA #4	CEL					0.4	31			
OSCILLATORIA ANGUSTA	FIL			X	5	2.9	252			X
PANDORINA MORUM	COL			X		0.4	31		1.2	19
PEDIASTRUM SIMPLEX	COL						X			
PEDIASTRUM SIMPLEX V. CUODENARIUM	COL								1.2	19
PENNATE DIATOM #1	CEL						X			X
PENNATE DIATOM #2	CEL									X
PENNATE DIATOM #3	CEL									X
RAPHIDIOPSIS	FIL					0.7	63			
SCENEDESMUS #1	COL					0.4	31		1.2	19
SCENEDESMUS ABUNDANS	COL						X			
SCENEDESMUS ACUMINATUS	COL									X
SCENEDESMUS BIJUGA	COL						X			
SCENEDESMUS DENTICULATUS	COL						X			
SCENEDESMUS OPOLIENSIS	COL						X			
SCENEDESMUS QUADRICAUDA V. LONGISPINA	COL		0.7	24						
SCHROEDERIA #1	CEL						X			
SPHAERELLOPSIS	CEL						X			
STEPHANODISCUS	CEL		2.1	71		2.2	189		3.5	58
SYNEORA #1	CEL			X			X			

LAKE NAME: WILSON LAKE
STCRET NUMBER: 0114

CONTINUED

TAXA

SYNEDRA #2
TETRAEDRCN
TETRAEDRCN MINIMUM
V. SCROBICULATUM
TETRAEDRCN PUTICUM
TREUBARIA

TOTAL

			06 09 73			08 16 73			10 22 73		
FORM	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML	S	%C
CEL					1.5	126					
CEL					0.4	31					
CEL						X					
CEL						X					
CEL					1.5	126					
TOTAL			3352				8596				1652

LAKE NAME: LAKE PURDY
 STCRET NUMBER: 0115

NYGAARD TROPHIC STATE INDICES

DATE	08 30 73	11 02 73
MYXOPHYCEAN	4.00 E	3.00 E
CHLOROPHYCEAN	2.67 E	3.33 E
EUGLENOPHYTE	0.05 ?	0.05 ?
DIATOM	1.00 E	0.50 E
CCMPCUND	8.00 E	7.67 E

PALMER'S ORGANIC POLLUTION INDICES

DATE	08 30 73	11 02 73
GENUS	10	11
SPECIES	03	00

SPECIES DIVERSITY AND ABUNDANCE INDICES

DATE	08 30 73	11 02 73
AVERAGE DIVERSITY H	3.52	3.23
NUMBER OF TAXA S	35.00	39.00
NUMBER OF SAMPLES COMPOSITED M	3.00	3.00
MAXIMUM DIVERSITY MAXH	5.13	5.29
TOTAL DIVERSITY D	14280.64	16437.47
TCTAL NUMBER OF INDIVIDUALS/ML N	4057.00	5089.00
EVENESS COMPONENT J	0.69	0.61
MEAN NUMBER OF INDIVIDUALS/TAXA L	115.91	130.49
NUMBER/ML OF MOST ABUNDANT TAXON K	1077.00	1890.00

LAKE NAME: LAKE PURDY
STORET NUMBER: 0115

CONTINUED

50

TAXA	FORM	08 30 73			11 02 73		
		S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
ANABAENA #1	FIL		7.9	321	4	6.2	318
ANABAENA #2	FIL		1.4	57			
ANABAENA #3	FIL			X		4.2	212
ANABAENA #4	FIL					2.8	141
ANKISTRODESMUS FALCATUS	CEL					0.4	18
ARTHROSPIRA	CEL		0.9	38			
BCTRYOCOCCLUS BRAUNII	COL		0.5	19		0.4	18
CARTERIA	CEL						X
CENTRIC DIATOM	CEL						X
CENTRIC DIATOM #2	CEL			X			
CERATIUM HIRUNDINELLA	CEL		0.9	38			
CHLAMYDOMONAS	CEL						X
CHROCOCCUS	COL			X			
CHRYSOCCUS	COL		0.9	38			
CLCSTERIUM	CEL			X			
CLCSTERIUM #1	CEL					0.4	18
CLCSTERIUM #2	CEL					0.4	18
COELASTRUM MICROPORUM	COL					0.7	35
COELOSPHAERIUM NAEGELIANUM	COL		4.4	180	1	14.2	724
CRUCIGENIA APICULATA	COL			X			X
CRYPTOMONAS	CEL					3.8	194
CYCLOTELLA	CEL		1.9	76			
CYCLOTELLA STELLIGERA	CEL					1.7	89
CYMBELLA TURGIDA	CEL						X
DACTYLOCOCCOPSIS	CEL		1.4	57			
DINOFLAGELLATE	CEL		0.5	19		1.4	71
EUDORINA ELEGANS	COL			X		0.4	18
EUGLENA	CEL						X
EUGLENA CXYURIS ?	CEL			X			
FLAGELLATE #1	CEL				3	12.1	618
FLAGELLATES	CEL	4	9.3	377	5	5.2	265
GYROSIGMA	CEL						X

LAKE NAME: LAKE PURDY
STORET NUMBER: 0115

CONTINUED

08 30 73

11 02 73

TAXA

FORM	08 30 73			11 02 73		
	S	%C	ALGAL UNITS PER ML	S	%C	ALGAL UNITS PER ML
LAGERHEIMIA SUBSALSA	CEL					X
MELOSIRA #2	CEL	1 9.8	397	2 37.1		1890
MERISMOPEDIA PUNCTATA	COL	3 26.5	1077		0.4	18
MERISMOPEDIA TENUISSIMA	COL	5 10.7	435			X
MICROCYSTIS INCERTA	COL	1.4	57		0.7	35
NAVICULA	CEL		X			
NAVICULA #1	CEL					X
NAVICULA #2	CEL					X
NAVICULA #3	CEL					X
CCCYSTIS	CEL	1.9	76		2.1	106
OSCILLATORIA #1	FIL	2 13.0	529		2.1	106
OSCILLATORIA #2	FIL	1.9	76		0.4	18
PEDIASTRUM SIMPLEX						
V. DUODENARIUM	COL		X			X
SCENEDESMUS	COL	0.5	19		1.0	53
SCHROEDERIA	CEL				0.4	18
STAUSTRUM #1	CEL	0.5	19			
STAUSTRUM #2	CEL	0.5	19			
STAUSTRUM PINQUE	CEL				0.4	18
SYNEDRA	CEL		X			
SYNEDRA ULNA						
V. SUBAEQUALIS	CEL	1.4	57		0.4	18
TETRAEDRON #1	CEL	1.9	76			
TETRAEDRON GRACILE	CEL		X			
TETRAEDRON MINIMUM	CEL		X		1.0	53
TOTAL			4057			5089

TECHNICAL REPORT DATA
(Please read instructions on the reverse before completing)

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16. ABSTRACT This is a data report presenting the species and abundance of phytoplankton in the 11 lakes sampled by the National Eutrophication Survey in the State of Alabama. Results from the calculation of several water quality indices are also included (Nygaard's Trophic State Index, Palmer's Organic Pollution Index, and species diversity and abundance indices).				
17. KEY WORDS AND DOCUMENT ANALYSIS				
a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS		c. COSATI Field/Group
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