WISCONSIN LAKE PLANT DATABASE

STANLEY A. NICHOLS
Wisconsin Geological and Natural History Survey

RONALD MARTIN
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WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY
INFORMATION CIRCULAR 69 ◆ 1990

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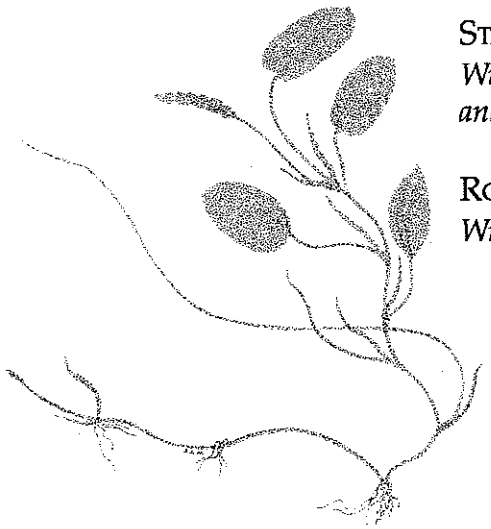

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Wisconsin Lake Plant Database

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Historical lake plant surveys

Historical surveys are a valuable aid for studying the aquatic plant resources of the state because they provide information that can never be duplicated and is not likely to be replicated.

Macrophyte distribution was first studied on Lake Mendota during the summer of 1912 (Denniston, 1921). Biomass distribution was described in early studies of Lake Mendota and Big Green Lake (Rickett, 1921, 1924). Surveys conducted in the 1930s and early 1940s described plant communities, distribution, productivity, and succession in a variety of northern Wisconsin lakes (Wilson, 1934, 1935, 1941; Fassett, 1930; Potzger and Van Engel, 1942). In some cases, the important lakes of an entire county were surveyed as part of county land economic inventories (Bordner and others, 1932, 1933, and 1935; Bordner, 1935[?]). A report of investigations during the summers of 1952 and 1953 by Swindale and Curtis (1957) described the species associations of large, submerged aquatic plants and related these associations to environmental gradients within and between lakes.

More recently, studies have been used to aid management (Wisconsin Department of Natural Resources Office of Inland Lake Renewal [DNR OILR] and others), to describe regional or statewide conditions for planning or baseline scientific studies (Wisconsin Department of Natural Resources Benchmark Lake Program [DNR Bench]; Modlin, 1970; Belonger, 1969; Smith, 1978), or to describe changes that occurred in lakes surveyed at an earlier time (Bumby, 1977; Lind and Cottam, 1969; Vander Zouwen, 1982).

Objectives

Because much of the historical plant information is scattered in journal articles or buried in agency reports and file drawers, it is difficult to use for research and management purposes. Our objective is to make macrophyte information available by consolidating it into a central database that can be easily used for retrieving and adding information.

Description of the database

Lake plant information is integrated into the Surface Water Inventory database at the Wisconsin Department of Natural Resources. The database contains 612 entries that represent aquatic plant information for 448 separate lakes (table 1; fig. 1); the remaining entries represent different sampling times at a lake or the sampling of different basins of a large lake such as the Chippewa Flowage in Sawyer County.

At least one lake from 50 of Wisconsin's 72 counties is represented in the database (fig. 1). Using a chi-square test, the area, pH, and total alkalinity in the surveyed lakes were compared to similar values taken from a data set of randomly selected lakes (a subset of the database used in Lillie and Mason, 1983). There are more large and high alkalinity lakes in the macrophyte data set than would be expected in a random selection of Wisconsin lakes. There are also more high and low pH lakes but fewer lakes near neutral than expected from a random data set (table 2).

Because surveys varied, the information available for any given lake differs. By far the most common information is a species list accompanied by a qualitative estimate of abundance. Some information is quite detailed and contains quantitative estimates of abundance. Although not included in the database, quadrat by quadrat data is available for some lakes at the sources indicated in table 1. Habitat information may be included with quadrat information.

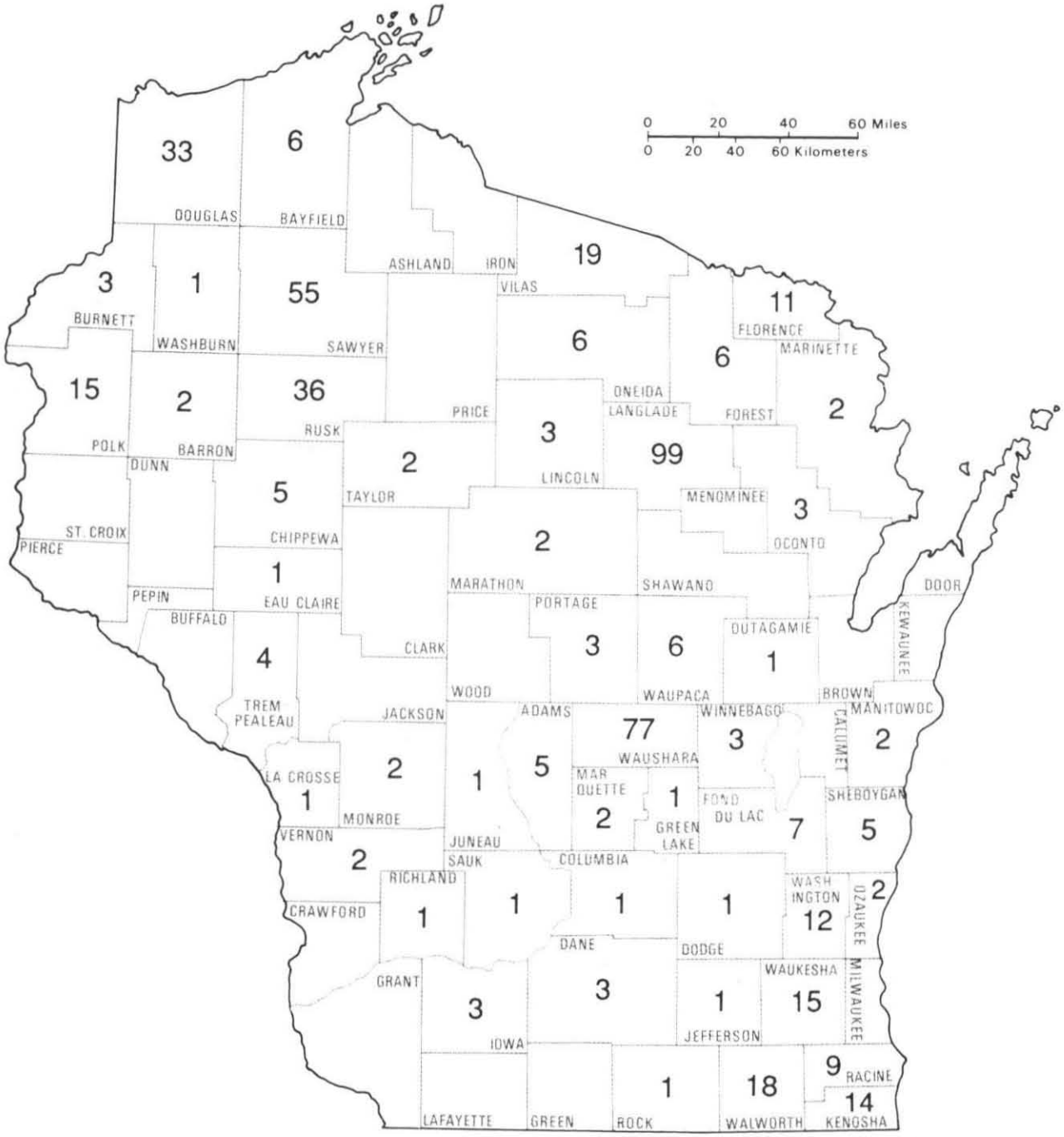

Figure 1. Number of surveyed lakes by county.

Information from some lakes was not entered because of uncertainty about lake name, location, or physical description. Some surveys were omitted because they covered large areas that were not designated by an identification number in the Surface Waters Inventory datafile (for

example, pools on the Mississippi River) (Sohmer, 1975; Sefton, 1977). Important files from Natelson's Ph.D. thesis (Swindale and Curtis, 1957) were never located in the plant ecology laboratory or the herbarium of the University of Wisconsin-Madison Botany Department.

Information from recent and current studies, such as studies of Devils Lake in Sauk County and Rice (Glenton) Lake in Polk County, and lakes in the Department of Natural Resources long-term trend lakes-monitoring and the shallow-lakes-initiative (Engel, 1988) programs have yet to be entered into the database. The database is designed to accommodate new entries or entries that have been missed in this initial effort. *Users are invited to submit additional information as it becomes available.*

Advantages and limitations of the database

The advantages of this database include its wide geographical coverage of Wisconsin lakes, the historical and time-series value of the entries, the ability to study plant communities in lakes versus independent collections of specimens, and the ability to correlate vegetation with other physical and chemical parameters.

Limitations are inherent in databases that contain data collected by many investigators over a long period of time. In most cases we had no influence or knowledge about the quality control used in the original surveys. Presently, the database is not a random representation of Wisconsin lakes.

Input and output of data

As curator of the data, the Department of Natural Resources developed the form and instructions for data submission (appendix A). The form can accommodate data from a variety of sources and types. New information should be entered on the form according to instructions in appendix A.

The criteria for entering a study into the lake plant database are flexible. The study should be in a published form or at least in a file report; it should contain at least a species list; and there should be an indication that the whole lake or defined part of a lake was reasonably investigated. It is useful if the survey was done for a scientific or management purpose and the person doing the survey has an affiliation with an organization such as a university, resource-management agency, or consulting firm that is familiar with conducting aquatic plant surveys.

Plant data are available in hard copy form (table 3) or electronically. Data are stored on the Hillfarms Regional Computer System and are accessible with SAS software programs (SAS Institute, Cary, North Carolina). Information about a single lake or groups of lakes by county can be provided. The information can be sorted to identify all lakes with a given species or it can be combined with surface-water inventory information. For example, plant data from lakes with a pH between 6.5 and 7.0 can be provided.

Using the database to describe Wisconsin's lake flora

We used the Lake Plants Database to describe Wisconsin's lake flora (table 4). The practical definition for plants included in this list are those species found by people doing lake surveys. They are probably plants that could be sampled or collected from a boat. To this list were added submersed, floating-leaf, and free-floating species that were found by Read (n.d.; indicated by 0% in table 4); deleted from the list were emergent species that were found in less than 2 percent of the 448 lakes (table 5).

The lake flora contains 147 taxa. The percent occurrence in table 4 is the number of times a plant species occurred in the 448 lakes of the database. Even if a species occurred in a lake more than once on different sampling dates or in different basins of the lake, it was counted as a single occurrence in that lake.

Ceratophyllum demersum, Chara spp., *Elodea canadensis, Nymphaea tuberosa, Potamogeton amplifolius, P. natans, P. pectinatus,* and *P. zosteriformis* are the most commonly occurring plants; they were found in more than 40 percent of the lakes surveyed. However, it should be noted that this is a nonrandom database.

Summary

Over the years of studying Wisconsin lakes, a database of macrophyte surveys has been accumulated. These surveys are a valuable resource for further study and management of Wisconsin's lake plants.

The Lake Plant Database project consolidated historical surveys into one location for ease of use by researchers and managers. It is also flexible, to allow entry of new data. The bibliography provides the location of original sources of information if more detail is needed.

The database was first used to develop a listing of Wisconsin lake plants. Species occurrences are presented, but they are not a random representation of Wisconsin lakes.

Researchers, managers, and plant surveyors are encouraged to submit new information. New data entries and requests for data retrieval should be submitted to Ronald Martin, Bureau of Water Resources Management, Wisconsin Department of Natural Resources, Madison, Wisconsin.

Table 1. List of lakes with macrophyte data

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
County 01:	**Adams**					
0007	Easton Lake	08	-	81	DNR OILR	1343600
0016	Patrick Lake	06	12	83	DNR OILR	0106600
0016	Patrick Lake	08	15	83	DNR OILR	0106600
0041	Big Spring Pond	07	07	71	Nichols, n.d.	0176600
0047	Sherwood Lake (Deer Lodge)	-	-	77	Kreuger, n.d.	1377900
0048	Camelot Lake	-	-	77	Kreuger, n.d.	1378100
County 03:	**Barron**					
0089	Rice Lake	06	05	79	DNR OILR	2103900
0089	Rice Lake	08	13	79	DNR OILR	2103900
0099	Staples Lake	-	-	77	DNR OILR	2631200
County 04:	**Bayfield**					
0003	Anodanta Lake (Bass L #4)	08	-	78	DNR Bench	2898200
0003	Anodanta Lake (Bass L #4)	08	-	79	DNR Bench	2898200
0003	Anodanta Lake (Bass L #4)	08	-	81	DNR Bench	2898200
0092	Eightmile Lake, East	-	-	83	Garrison, n.d.	2462200
0096	Ellison Lake	06	25	31	Bordner and others, 1933	2463300
0116	Half Moon Lake T47N R08W S17	06	25	79	DNR OILR	2762700
0116	Half Moon Lake T47N R08W S17	08	05	79	DNR OILR	2762700
0210	Perch Lake T45N R07W S05	08	-	78	DNR Bench	2770700
0210	Perch Lake T45N R07W S05	08	-	79	DNR Bench	2770700
0278	Tahkodah Lake (East)	06	19	78	DNR OILR	2473500
County 07:	**Burnette**					
0127	Clam Lake, Lower	08	-	76	DNR OILR	2655300
0145	Mud Hen Lake	06	26	79	DNR OILR	2649500
0145	Mud Hen Lake	08	14	79	DNR OILR	2469500
0208	Clam Lake, Upper	08	-	76	DNR OILR	2656200
County 09:	**Chippewa**					
0027	Cadotte Lake	-	-	34	Bordner and others, 1935	1838400
0035	Chain Lake	-	-	34	Bordner and others, 1935	2350500
0035	Chain Lake	06	-	78	DNR OILR	2350500
0035	Chain Lake	08	-	78	DNR OILR	2350500
0098	Long Lake T32N R08W S08	06	-	77	DNR OILR	2351400
0098	Long Lake T32N R08W S08	08	-	77	DNR OILR	2351400
0135	Pine Lake	08	04	78	DNR Bench	2092900
0135	Pine Lake	08	21	79	DNR Bench	2092900
0135	Pine Lake	08	23	80	DNR Bench	2092900
0135	Pine Lake	08	23	80	DNR Bench	2092900
0135	Pine Lake	07	25	81	DNR Bench	2092900
0176	Town Line Lake	07	26	78	DNR Bench	2172600
0176	Town Line Lake	07	15	79	DNR Bench	2172600
0176	Town Line Lake	07	23	80	DNR Bench	2172600

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
County 11:	**Columbia**					
0009	Lazy Lake (Fall R. Millpond)	06	-	78	DNR OILR	0843400
County 13:	**Dane**					
0006	Fish Lake	-	-	54	Natelson, 1954	0985100
0013	Mendota Lake	08	-	12	Denniston, 1921	0805400
0013	Mendota Lake	-	-	21	Rickett, 1921	0805400
0013	Mendota Lake	-	-	66	Lind and Cottam, 1969	0805400
0013	Mendota Lake	-	-	70	Cottam and Nichols, 1970	0805400
0013	Mendota Lake	-	-	78	Andrews, 1980	0805400
0013	Mendota Lake	-	-	79	Andrews, 1980	0805400
0013	Mendota Lake	-	-	80	Vander Zouwen, 1982	0805400
0027	Wingra Lake	-	-	69	Nichols and Mori, 1971	0805000
County 14:	**Dodge**					
0008	Fox Lake	-	-	82	DNR OILR	0835800
County 16:	**Douglas**					
0001	Alexander Lake	07	24	31	Bordner and others, 1933	2449300
0002	Amnicon Lake	07	27	31	Bordner and others, 1933	2858100
0002	Amnicon Lake	06	26	79	DNR OILR	2858100
0002	Amnicon Lake	08	04	79	DNR OILR	2858100
0005	Whitefish Lake (Bardon)	06	28	31	Bordner and others, 1933	2694000
0006	Bass Lake T43N R12W S10	07	01	31	Bordner and others, 1933	2451700
0021	Bond Lake	07	09	31	Bordner and others, 1933	2693700
0032	Clyde Lake	07	23	31	Bordner and others, 1933	2458100
0040	Crystal Lake	07	02	31	Bordner and others, 1933	2459700
0045	Dowling Lake	07	27	31	Bordner and others, 1933	2858300
0045	Dowling Lake	06	26	79	DNR OILR	2858300
0045	Dowling Lake	08	05	79	DNR OILR	2858300
0056	Haugen Lake (Pagan)	07	24	31	Bordner and others, 1933	2468300
0063	Island Lake	07	15	31	Bordner and others, 1933	2470900
0066	Leader Lake	07	10	31	Bordner and others, 1933	2693800
0074	Loon Lake T45N R10W S13	06	13	31	Bordner and others, 1933	2479000
0075	Eau Claire, Lower	07	16	31	Bordner and others, 1933	2741600
0076	Ox Lake, Lower	07	17	31	Bordner and others, 1933	2744300
0080	Lyman Lake	10	31	31	Bordner and others, 1933	2856400
0082	McDougal Springs	07	21	31	Bordner and others, 1933	2869400
0085	Minnesuing Lake	07	29	31	Bordner and others, 1933	2866200
0095	Mulligan Lake	06	22	31	Bordner and others, 1933	2700200
0096	Murray Lake	06	24	31	Bordner and others, 1933	2485000
0098	Nebagamon Lake	07	28	31	Bordner and others, 1933	2865000
0104	Person Lake	07	10	31	Bordner and others, 1933	2488600
0112	Red Lake	06	23	31	Bordner and others, 1933	2492100
0115	Round Lake T43N R13W S12	06	30	31	Bordner and others, 1933	2493900
0118	St. Croix Flowage (Gordon)	06	27	31	Bordner and others, 1933	2740300
0121	Sauntrys Pocket	07	10	31	Bordner and others, 1933	2495600
0127	Simms Lake	07	22	31	Bordner and others, 1933	2497100
0129	Snake Lake	07	23	31	Bordner and others, 1933	2700300
0131	Spider Lake	07	14	31	Bordner and others, 1933	2498300
0133	Steele Lake	10	24	31	Bordner and others, 1933	2866000
0136	Swenson Lake	07	15	31	Bordner and others, 1933	2500600
0145	Kreide Lake (Two Mile)	06	28	31	Bordner and others, 1933	2472700
0146	Ox Lake, Upper	07	14	31	Bordner and others, 1933	2744700
0153	Wilson Lake	06	30	31	Bordner and others, 1933	2600800
County 18:	**Eau Claire**					
0007	Fall Creek Pond	07	-	80	DNR OILR	2130100

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
County 19: Florence						
0008	Bessie Babbet Lake (Grass)	-	-	67	Smith, 1978	0673100
0020	Emily Lake	-	-	67	Smith, 1978	0651600
0021	Fay Lake	-	-	67	Smith, 1978	0677100
0029	Halls Lake	-	-	67	Smith, 1978	0652100
0037	Keyes Lake	-	-	67	Smith, 1978	0672900
0045	Long Lake T40N R19E S33	-	-	67	Smith, 1978	0702500
0053	Morgan Lake	-	-	67	Smith, 1978	0589400
0069	Pine River Flowage	-	-	67	Smith, 1978	0651300
0075	Sand Lake T38N 18E S21	-	-	79	DNR Bench	0591600
0080	Seidel Lake	-	-	67	Smith, 1978	0672000
0092	Bass Lake, West	-	-	67	Smith, 1978	0652200
County 20: Fond Du Lac						
0001	Auburn Lake (Lake Fifteen)	08	02	68	Modlin, 1970	0042400
0005	Campbellsport Millpond	08	03	81	DNR OILR	0043300
0010	Forest Lake	07	03	68	Modlin, 1970	0008900
0012	Kettle Moraine Lake (Round)	08	01	68	Modlin, 1970	0043900
0013	Long Lake	07	01	68	Modlin, 1970	0038700
0013	Long Lake	08	23	68	Modlin, 1970	0038700
0015	Mauthe Lake (Moon)	06	20	68	Modlin, 1970	0038200
0015	Mauthe Lake (Moon)	08	20	68	Modlin, 1970	0038200
0018	Mud Lake	07	22	68	Modlin, 1970	0043700
County 21: Forest						
0020	Butternut Lake	-	-	67	Smith, 1978	0692400
0034	Crystal Lake	06	20	32	Bordner, 1935(?)	0184200
0050	Forest Lake (Mud)	-	-	67	Smith, 1978	0659200
0131	Pickerel Lake	08	19	32	Bordner, 1935(?)	0388100
0133	Pine Lake	06	-	77	DNR OILR	0406900
0133	Pine Lake	08	04	77	DNR OILR	0406900
0186	Windfall Lake	07	28	71	Nichols, n.d.	0373500
County 24: Green Lake						
0003	Green Lake (Big Green)	-	-	21	Rickett, 1924	0146100
0003	Green Lake (Big Green)	-	-	71	Bumby, 1977	0146100
County 25: Iowa						
0003	Cox Hollow Lake	-	-	73	Richardson, 1974	1246500
0003	Cox Hollow Lake	-	-	74	Nichols, n.d.	1246500
0003	Cox Hollow Lake	-	-	84	Engel, 1984	1246500
0010	Twin Valley Lake	-	-	74	Richardson, 1974	1245800
0016	Halverson Lake	-	-	81	Engel, 1981	1246300
County 28: Jefferson						
0016	Ripley Lake	-	-	53	Swindale and Curtis, 1957	0809600
County 29: Juneau						
0044	Decorah Lake	07	10	76	DNR OILR	1304600
0044	Decorah Lake	08	27	76	DNR OILR	1304600
County 30: Kenosha						
0002	Lake Benedict	08	03	67	Belonger, 1969	0743900
0003	L. Shangrila Benet (Paschen)	08	02	67	Belonger, 1969	0734700
0004	Camp Lake	06	12	67	Belonger, 1969	0747100
0005	Center Lake	08	14	67	Belonger, 1969	0747300
0006	Cross Lake	08	02	67	Belonger, 1969	0746500

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
0007	Dyer Lake	-	-	67	Belonger, 1969	0751100
0008	Lake Elizabeth (South Twin)	08	07	67	Belonger, 1969	0742800
0010	George Lake	06	-	77	DNR OILR	0735100
0010	George Lake	08	-	77	DNR OILR	0735100
0014	Lilly Lake (Leaone)	07	26	67	Belonger, 1969	0740900
0014	Lilly Lake (Leaone)	-	-	76	Nichols, n.d.	0740900
0014	Lilly Lake (Leaone)	-	-	77	Nichols, n.d.	0740900
0014	Lilly Lake (Leaone)	-	-	78	Nichols, n.d.	0740900
0014	Lilly Lake (Leaone)	-	-	80	Nichols, n.d.	0740900
0014	Lilly Lake (Leaone)	-	-	81	Nichols, n.d.	0740900
0014	Lilly Lake (Leaone)	07	-	82	Nichols, n.d.	0740900
0015	Lake Mary (Marie Lake)	08	07	67	Belonger, 1969	0743000
0019	Paddock Lake	06	-	77	DNR OILR	0737900
0021	Powers Lake	07	19	67	Belonger, 1969	0744200
0022	Rock Lake	06	08	67	Belonger, 1969	0746000
0023	Silver Lake	07	18	67	Belonger, 1969	0747900
County 32: LaCrosse						
0016	Lake Onalaska	-	-	76	DNR OILR	0728100
County 34: Langlade						
0001	Ada Lake	08	11	32	Bordner, 1935(?)	0417300
0002	Agnes Lake	08	12	32	Bordner, 1935(?)	0390000
0003	Airhole Lake	06	20	32	Bordner, 1935(?)	0967200
0006	Anderson Lake	08	05	32	Bordner, 1935(?)	0968400
0007	Aninnan Lake	06	30	32	Bordner, 1935(?)	0181300
0009	Bear Lake	07	25	32	Bordner, 1935(?)	0970200
0012	Berendsen Lake	08	12	32	Bordner, 1935(?)	0389900
0013	Big Twin Lake	08	09	32	Bordner, 1935(?)	0182200
0014	Birch Lake	07	20	32	Bordner, 1935(?)	0971800
0015	Black Oak Lake	07	08	32	Bordner, 1935(?)	1447200
0017	Bog Lake	06	29	32	Bordner, 1935(?)	0972800
0019	Borth Lake	07	14	32	Bordner, 1935(?)	0973100
0021	Camp Lake	06	29	32	Bordner, 1935(?)	0975300
0022	Clear Lake	07	02	32	Bordner, 1935(?)	0977000
0023	Clubhouse Springpond	07	28	32	Bordner, 1935(?)	0360100
0026	Deadman Lake	08	19	32	Bordner, 1935(?)	0184400
0027	Deep Wood Lake	06	21	32	Bordner, 1935(?)	1445100
0029	Duck Lake	06	20	32	Bordner, 1935(?)	0981500
0031	Dynamite Lake	06	20	32	Bordner, 1935(?)	1451700
0038	Elton Springpond	07	28	32	Bordner, 1935(?)	0360500
0040	Enterprise Lake	06	24	32	Bordner, 1935(?)	1579700
0040	Enterprise Lake	06	27	78	DNR OILR	1579700
0040	Enterprise Lake	08	03	78	DNR OILR	1579700
0047	Florence Lake	07	27	32	Bordner, 1935(?)	0352400
0055	Goto Lake	07	28	32	Bordner, 1935(?)	0348700
0056	Greater Bass Lake	06	22	32	Bordner, 1935(?)	1445500
0056	Greater Bass Lake	-	-	80	DNR OILR	1445500
0058	Harper Lake	07	19	32	Bordner, 1935(?)	0187200
0064	High Lake T33N R11E S27	08	15	32	Bordner, 1935(?)	1444600
0066	Hilger Lake	08	10	32	Bordner, 1935(?)	0187700
0067	Hillson Lake	06	30	32	Bordner, 1935(?)	0990400
0072	Hollister Lake	08	21	32	Bordner, 1935(?)	0188000
0074	Horseshoe Lake T33N R10E S17	06	30	32	Bordner, 1935(?)	1448600
0077	Indian Lake	07	13	32	Bordner, 1935(?)	0991900
0078	Jack Lake	07	07	32	Bordner, 1935(?)	0992400
0080	Jordan Lake	06	30	32	Bordner, 1935(?)	0993100

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
0081	Joyce Lake	07	29	32	Bordner, 1935(?)	0189000
0083	Antigo Lake (Kellog Pond)	08	13	75	Nichols, n.d.	1441100
0084	Kennedy Lake	07	26	32	Bordner, 1935(?)	0337500
0085	Kimball Lake	07	12	32	Bordner, 1935(?)	0993800
0088	Lady Lake	07	15	32	Bordner, 1935(?)	0996600
0091	Lawrence Lake	08	02	32	Bordner, 1935(?)	0997300
0094	Little Bass Lake	06	29	32	Bordner, 1935(?)	0998200
0099	Long Lake T33N R10E S35	07	08	32	Bordner, 1935(?)	1000900
0099	Long Lake T33N R10E S35	07	28	71	Nichols, n.d.	1000900
0100	Loon Lake	08	05	32	Bordner, 1935(?)	0191400
0101	Lost Lake	08	20	32	Bordner, 1935(?)	0391100
0104	Lower Bass Lake	06	08	32	Bordner, 1935(?)	1002300
0105	Clear Lake, Lower	06	14	32	Bordner, 1935(?)	1002400
0106	Demlow Lake, Lower	07	26	32	Bordner, 1935(?)	0337300
0107	First Lake, Lower	06	29	32	Bordner, 1935(?)	1002500
0109	Little Twin Lake, Lower	08	09	32	Bordner, 1935(?)	0191800
0111	Post Lake, Lower	06	23	32	Bordner, 1935(?)	0397100
0111	Post Lake, Lower	08	06	76	DNR OILR	0397100
0112	Ventor Lake (Lower Ventor)	08	05	32	Bordner, 1935(?)	1176600
0117	Mary Lake	08	18	32	Bordner, 1935(?)	0496300
0120	McDonald Lake	07	13	32	Bordner, 1935(?)	1003600
0121	McGee Lake	07	27	32	Bordner, 1935(?)	0353200
0122	Meyer Lake	08	12	32	Bordner, 1935(?)	0192500
0125	Miniwakan Lake	07	30	32	Bordner, 1935(?)	0398600
0127	Moccasin Lake	06	27	32	Bordner, 1935(?)	1005600
0129	Moose Lake	07	26	32	Bordner, 1935(?)	0337600
0133	Mueller Lake	07	28	32	Bordner, 1935(?)	0194000
0136	Niobe Lake (Deadmans)	07	27	32	Bordner, 1935(?)	0194500
0138	Noboken Lake	07	12	32	Bordner, 1935(?)	1008000
0139	Little Twin Lake, North	08	08	32	Bordner, 1935(?)	0194200
0140	Neva Lake, North	07	18	32	Bordner, 1935(?)	1007200
0145	Otter Lake T34N R09E S07	06	29	32	Bordner, 1935(?)	1009200
0146	Otter Lake T34N R10E S12	06	28	32	Bordner, 1935(?)	0387200
0148	Partridge Lake	06	30	32	Bordner, 1935(?)	1009500
0150	Pence Lake	07	18	32	Bordner, 1935(?)	1010100
0152	Perch Lake T32N R11E S06	07	12	32	Bordner, 1935(?)	1010200
0153	Perch Lake T33N R10E S10	08	11	32	Bordner, 1935(?)	1010300
0154	Perch Lake T33N R10E S22	06	15	32	Bordner, 1935(?)	1010400
0155	Perch Lake T33N R09E S07	06	19	32	Bordner, 1935(?)	1010500
0160	Phlox Pond	07	26	32	Bordner, 1935(?)	0336400
0166	Punchout Springs	07	27	32	Bordner, 1935(?)	0352800
0170	Rolling Stone Lake	06	19	32	Bordner, 1935(?)	0389300
0170	Rolling Stone Lake	07	19	77	DNR OILR	0389300
0171	Rose Lake (Bear)	08	14	32	Bordner, 1935(?)	0494200
0172	Round Lake	06	29	32	Bordner, 1935(?)	1014400
0173	Saddlebag Lake	06	30	32	Bordner, 1935(?)	1448400
0176	Sawyer Lake (Edith)	08	04	32	Bordner, 1935(?)	0198100
0177	Schmuhl Lake	07	29	32	Bordner, 1935(?)	0198200
0181	Shanty Bottom Lake	07	13	32	Bordner, 1935(?)	1016900
0184	Snag Lake	07	13	32	Bordner, 1935(?)	1018400
0185	Little Twin Lake, South	08	08	32	Bordner, 1935(?)	0197800
0188	Spring Lake T33N R12E S02	07	10	32	Bordner, 1935(?)	0388000
0190	Squaw Lake	07	14	32	Bordner, 1935(?)	1019700
0196	Summit Lake	06	21	32	Bordner, 1935(?)	1445600
0197	Sunfish Lake	07	16	32	Bordner, 1935(?)	1020700
0202	Thompson Lake	07	29	32	Bordner, 1935(?)	0338700
0204	Town Line Lake T33N R10E S06	06	21	32	Bordner, 1935(?)	1023000

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
0206	Turtle Lake	08	10	32	Bordner, 1935(?)	0379300
0208	Two Island Lake	06	29	32	Bordner, 1935(?)	1491000
0209	Typner Lake	07	26	32	Bordner, 1935(?)	1023700
0214	Little Twin Lake, Upper	08	09	32	Bordner, 1935(?)	0240000
0216	Post Lake, Upper	06	21	77	DNR OILR	0399200
0216	Post Lake, Upper	08	09	77	DNR OILR	0399200
0217	Ventor Lake, Upper	08	05	32	Bordner, 1935(?)	1176300
0220	Water Power Lake	06	22	32	Bordner, 1935(?)	1445400
0224	White Lake	08	04	32	Bordner, 1935(?)	0365500
0448	Unnamed T33N R10E S05-06	07	07	32	Bordner, 1935(?)	1065400
0471	Kettle Lake	07	15	32	Bordner, 1935(?)	1445200
0761	Unnamed T34N R10E S34-04	06	21	32	Bordner, 1935(?)	1097100
0842	Sunken Lake	08	08	32	Bordner, 1935(?)	0199600
County 35:	**Lincoln**					
0079	Larson Lake	07	07	71	Nichols, n.d.	1483200
0102	Muskellunge Lake	06	20	79	DNR OILR	1555500
0102	Muskellunge Lake	08	03	79	DNR OILR	1555500
0111	Pickerel Lake T34N R08E S16	-	-	83	DNR OILR	1558400
County 36:	**Manitowoc**					
0014	Horseshoe Lake	07	29	71	Nichols, n.d.	0064200
0037	Silver Lake	-	-	81	DNR OILR	0067400
County 37:	**Marathon**					
0017	Lilly Lake	08	23	76	DNR OILR	0286400
0024	Mayflower Lake (Sunflower)	07	21	77	DNR OILR	0310500
County 38:	**Marinette**					
0148	Moon Lake	-	-	78	DNR OILR	0633100
0148	Moon Lake	07	25	79	DNR OILR	0633100
0148	Moon Lake	08	05	81	DNR OILR	0633100
0163	Noquebay Lake	-	-	31	DNR OILR	0525900
0163	Noquebay Lake	-	-	42	DNR OILR	0525900
0163	Noquebay Lake	-	-	68	DNR OILR	0525900
County 39:	**Marquette**					
0004	Buffalo Lake	-	-	82	Sabol, 1983	0168000
0031	Ennis Lake (Muir)	08	02	78	DNR Bench	0171000
0031	Ennis Lake (Muir)	08	-	79	DNR Bench	0171000
0031	Ennis Lake (Muir)	08	-	80	DNR Bench	0171000
0031	Ennis Lake (Muir)	08	-	81	DNR Bench	0171000
County 42:	**Monroe**					
0007	Tomah Lake	08	23	76	DNR OILR	1342100
0010	Perch Lake	08	17	76	DNR OILR	1659900
County 43:	**Oconto**					
0010	Bear Paw Lake	07	25	78	DNR Bench	0418000
0010	Bear Paw Lake	07	23	79	DNR Bench	0418000
0010	Bear Paw Lake	08	04	81	DNR Bench	0418000
0018	Boulder Lake	08	17	32	Bordner, 1935(?)	0491800
0171	Townsend Flowage (Wheeler)	07	06	72	Thompson, n.d.	0465000
County 44:	**Oneida**					
0020	Bear Lake	06	-	77	DNR OILR	1527800
0020	Bear Lake	08	-	77	DNR OILR	1527800

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
0032	Blue Lake (Rusk)	06	03	78	DNR OILR	1538600
0032	Blue Lake (Rusk)	08	14	78	DNR OILR	1538600
0064	Clear Lake T39N R07E S16	-	-	30	Fassett, 1930	0977500
0064	Clear Lake T39N R07E S16	07	26	78	DNR Bench	0977500
0064	Clear Lake T39N R07E S16	07	-	79	DNR Bench	0977500
0064	Clear Lake T39N R07E S16	07	-	80	DNR Bench	0977500
0064	Clear Lake T39N R07E S16	-	-	81	DNR Bench	0977500
0151	Horsehead Lake (Leta)	07	26	73	Nichols, n.d.	1588000
0151	Horsehead Lake (Leta)	07	26	76	DNR OILR	1588000
0232	Mid Lake (Nawaii)	06	-	79	DNR OILR	1542600
0232	Mid Lake (Nawaii)	08	-	79	DNR OILR	1542600
0359	Sweeney Lake	-	-	34	Wilson, 1934	1589600
County 45: Outagamie						
0002	Black Otter Lake (Hortonville)	06	22	78	DNR OILR	0315600
County 46: Ozaukee						
0017	Mud Lake (Long)	08	16	70	Modlin, 1970	0022100
0020	Spring Lake (Random)	07	29	70	Modlin, 1970	0030500
County 49: Polk						
0006	Apple River Flowage	06	17	77	DNR OILR	2624200
0006	Apple River Flowage	08	10	77	DNR OILR	2624200
0015	Balsam Lake	06	24	77	DNR OILR	2620600
0015	Balsam Lake	08	04	77	DNR OILR	2620600
0026	Big Butternut Lake	06	20	83	DNR OILR	2641000
0026	Big Butternut Lake	08	27	83	DNR OILR	2641000
0035	Big Blake Lake (Blake)	06	10	79	DNR OILR	2627000
0035	Big Blake Lake (Blake)	08	12	79	DNR OILR	2627000
0037	Bone Lake T35N R16W S06	06	12	78	DNR OILR	2628100
0070	Cedar Lake	06	17	77	DNR OILR	2615100
0070	Cedar Lake	08	10	77	DNR OILR	2615100
0070	Cedar Lake	07	18	84	DNR OILR	2615100
0187	Half Moon Lake	06	17	77	DNR OILR	2621100
0187	Half Moon Lake	08	04	77	DNR OILR	2621100
0264	Long Lake T34N R17W S06	-	-	79	DNR OILR	2478200
0339	White Ash Lake, North	06	22	78	DNR OILR	2628800
0339	White Ash Lake, North	08	10	78	DNR OILR	2628800
0341	Twin Lake, North	06	26	80	DNR OILR	2623900
0341	Twin Lake, North	08	11	80	DNR OILR	2623900
0350	Pike Lake	06	30	80	DNR OILR	2624000
0350	Pike Lake	08	14	80	DNR OILR	2624000
0356	Rice Lake T32N R18W S11	08	20	87	Nichols, n.d.	2615400
0358	Big Round Lake	06	15	78	DNR OILR	2627400
0358	Big Round Lake	08	23	78	DNR OILR	2627400
0372	Twin Lake, South	06	24	80	DNR OILR	2623800
0372	Twin Lake, South	08	05	80	DNR OILR	2623800
0425	White Ash Lake	06	22	78	DNR OILR	2628600
0425	White Ash Lake	08	10	78	DNR OILR	2628600
County 50: Portage						
0018	Glisezinski Lake (Jaqueline)	-	-	81	DNR OILR	0987100
0020	Helen Lake	06	07	77	DNR OILR	0287200
0020	Helen Lake	08	10	77	DNR OILR	0287200
0045	Pickerel Lake (Asbury)	-	-	71	Nichols, n.d.	0195900
County 52: Racine						
0002	Bohner Lake	07	26	67	Belonger, 1969	0750800

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
0004	Browns Lake	07	12	67	Belonger, 1969	0750300
0005	Buena Lake	07	21	67	Belonger, 1969	0763500
0007	Eagle Lake	06	12	67	Belonger, 1969	0759800
0010	Kec Nong Go Mong Lake (Long)	08	15	67	Belonger, 1969	0761100
0011	Long Lake	07	25	67	Belonger, 1969	0759000
0016	Tichigan Lake	07	16	67	Belonger, 1969	0763600
0016	Tichigan Lake	06	19	79	DNR OILR	0763600
0016	Tichigan Lake	09	06	79	DNR OILR	0763600
0017	Waubeesee Lake (Minister)	06	27	67	Belonger, 1969	0760900
0018	Wind Lake	06	13	67	Belonger, 1969	0761700
County 53: Richland						
0007	Richland Center Millpond	08	06	81	DNR OILR	1226100
County 54: Rock						
0010	Leota Lake	06	12	77	DNR OILR	0884700
0010	Leota Lake	08	28	77	DNR OILR	0884700
County 55: Rusk						
0001	Amacoy Lake	-	-	34	Bordner and others, 1935	2359700
0002	Atwood Lake	-	-	34	Bordner and others, 1935	1832300
0004	Bass Lake T34N R07W S28	-	-	34	Bordner and others, 1935	2359500
0005	Bass Lake T34N R09W S16	-	-	34	Bordner and others, 1935	2090900
0006	Bass Lake T35N R07W S12	-	-	34	Bordner and others, 1935	1833000
0009	Big Falls Flowage	-	-	34	Bordner and others, 1935	2230100
0010	Bog Lake	-	-	34	Bordner and others, 1935	2356800
0012	Boot Lake	-	-	34	Bordner and others, 1935	1836700
0015	Bucks Lake	-	-	34	Bordner and others, 1935	2111700
0018	Clear Lake	-	-	34	Bordner and others, 1935	2350600
0018	Clear Lake	06	-	78	DNR Bench	2350600
0018	Clear Lake	08	-	78	DNR Bench	2350600
0025	Fireside Lake (Rice & Mud)	-	-	34	Bordner and others, 1935	2349500
0026	Fish Lake	-	-	34	Bordner and others, 1935	1849100
0027	Lake Four	-	-	34	Bordner and others, 1935	2356200
0029	Goose Lake	-	-	34	Bordner and others, 1935	2353500
0032	Horseshoe Lake	-	-	34	Bordner and others, 1935	1854500
0034	Island Lake	-	-	34	Bordner and others, 1935	2350200
0034	Island Lake	08	-	76	DNR OILR	2350200
0034	Island Lake	06	-	78	DNR OILR	2350200
0034	Island Lake	08	-	78	DNR OILR	2350200
0043	McCann Lake	-	-	34	Bordner and others, 1935	2350400
0043	McCann Lake	06	-	78	DNR Bench	2350400
0043	McCann Lake	08	-	78	DNR Bench	2350400
0045	Murphy Flowage	08	-	67	Beard, 1973	2110900
0045	Murphy Flowage	08	-	68	Beard, 1973	2110900
0045	Murphy Flowage	08	-	69	Beard, 1973	2110900
0047	North Lake	-	-	34	Bordner and others, 1935	1871000
0051	Pickerel Lake #1 T34N R9W S1	-	-	34	Bordner and others, 1935	2091100
0052	Pickerel Lake #2 T34N R9W S1	-	-	34	Bordner and others, 1935	2091200
0053	Pickerel Lake #3 T34N R9W S1	-	-	34	Bordner and others, 1935	2091300
0054	Pine Lake	-	-	34	Bordner and others, 1935	1874700
0056	Potato Lake	-	-	34	Bordner and others, 1935	2355300
0057	Pulski Lake	-	-	34	Bordner and others, 1935	1875900
0058	Round Lake	-	-	34	Bordner and others, 1935	1878200
0059	Rusk Lake	-	-	34	Bordner and others, 1935	1878800
0060	Sand Lake	-	-	34	Bordner and others, 1935	2353600
0061	Saxton Lake	-	-	34	Bordner and others, 1935	2359200
0066	Star Lake T36N R08W S19	-	-	34	Bordner and others, 1935	2375300

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
0067	Styles Lake	-	-	34	Bordner and others, 1935	1884300
0068	Sugar Lake	-	-	34	Bordner and others, 1935	2356000
0069	Sunfish Lake	-	-	34	Bordner and others, 1935	1884500
0074	Two Bear Lake	-	-	34	Bordner and others, 1935	1887300
0142	Lake Three	-	-	34	Bordner and others, 1935	2356300
0143	Lake Two	-	-	34	Bordner and others, 1935	2356400
County 57: Sauk						
0006	Devils Lake	-	-	74	Baker, 1975	0980900
0006	Devils Lake	08	01	78	DNR Bench	0980900
0006	Devils Lake	08	-	79	DNR Bench	0980900
0006	Devils Lake	08	-	80	DNR Bench	0980900
0006	Devils Lake	08	-	81	DNR Bench	0980900
0006	Devils Lake	08	-	83	DNR Bench	0980900
County 58: Sawyer						
0002	Ashegon Lake (Bass)	08	13	31	Bordner and others, 1932	2448800
0003	Barber Lake	10	02	31	Bordner and others, 1932	2382300
0012	Beverly Lake	09	22	31	Bordner and others, 1932	2387200
0016	Black Dan Lake (McDonald)	09	09	31	Bordner and others, 1932	2381900
0017	Blaisdell Lake	09	08	31	Bordner and others, 1932	2402200
0019	Blueberry Lake	08	28	31	Bordner and others, 1932	1835700
0019	Blueberry Lake	08	-	71	Nichols, 1972	1835700
0033	Callahan Lake	08	26	31	Bordner and others, 1932	2434700
0041	Chetac Lake	09	16	31	Bordner and others, 1932	2113300
0043	Chippewa Fl. (Chippewa Lake)	09	12	31	Bordner and others, 1932	2399700
0043	Chippewa Fl. (Chippewa Lake)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Cranberry Lake)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Cranberry Lake)	07	09	31	Bordner and others, 1932	2399700
0043	Chippewa Fl. (Crane Lake)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Crystal Lake)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Dam Area)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Milwaukee Bay)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Moonshine, Desire)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Moores Bay)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Musky Bay)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Pokegama)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Rice Lake)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Scott Lake)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Sliver Bay)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Tyner Lake)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Hay Creek)	08	-	71	Nichols, 1972	2399700
0043	Chippewa Fl. (Chicago Bay)	08	-	71	Nichols, 1972	2399700
0045	Christy Lake	08	22	31	Bordner and others, 1932	2425700
0048	Connors Lake	10	05	31	Bordner and others, 1932	2275100
0055	Deer Lake	09	21	31	Bordner and others, 1932	2374600
0057	Devils Lake	09	23	31	Bordner and others, 1932	2387600
0058	Durphee Lake	09	26	31	Bordner and others, 1932	2396800
0064	Evergreen Lake	10	08	31	Bordner and others, 1932	2277600
0068	Fishtrap Lake	10	01	31	Bordner and others, 1932	2401100
0073	Ghost Lake	08	19	31	Bordner and others, 1932	2423000
0083	Grindstone Lake	09	24	31	Bordner and others, 1932	2391200
0087	Ham Lake	09	25	31	Bordner and others, 1932	1852300
0105	Island Lake T39N R05W S02	10	03	31	Bordner and others, 1932	2381800
0109	Johnson Lake T40N R09W S36	09	26	31	Bordner and others, 1932	1856700
0112	Knuteson Lake (Knudson)	09	21	31	Bordner and others, 1932	2114300
0114	Lac Courte Oreilles	09	06	31	Bordner and others, 1932	2390800
0116	Little Lac Courte Oreilles	09	28	31	Bordner and others, 1932	2390500

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
0119	Pelican Lake (Little Pelican)	10	08	31	Bordner and others, 1932	1873100
0120	Little Round L T41N R08W S36	08	06	31	Bordner and others, 1932	2395500
0122	Little Sand Lake	09	22	31	Bordner and others, 1932	1862200
0123	Little Sissabagama Lake	09	15	31	Bordner and others, 1932	2394100
0127	Lost Land Lake	08	17	31	Bordner and others, 1932	2418600
0137	Mason Lake	10	08	31	Bordner and others, 1932	2277200
0145	Moose Lake	09	29	31	Bordner and others, 1932	2420600
0158	Nelson Lake (Totagatic Fl.)	08	-	71	Nichols, 1972	2704200
0160	North Lake	05	12	32	Bordner and others, 1932	2436000
0164	Pacwawong Lake	08	08	31	Bordner and others, 1932	2728700
0176	Pickerel Lake	10	06	31	Bordner and others,, 1932	2115400
0177	Pike Lake	09	23	31	Bordner and others, 1932	2438200
0184	Red Ike Lake	08	22	31	Bordner and others, 1932	2426300
0185	Reed Lake	08	24	31	Bordner and others, 1932	2433800
0185	Reed Lake	09	10	71	Nichols, n.d.	2433800
0188	Round Lake (Big Round)	08	09	31	Bordner and others, 1932	2395600
0193	Sand Lake	09	01	31	Bordner and others, 1932	2393200
0194	Schoolhouse Lake (School)	09	26	31	Bordner and others, 1932	2396900
0197	Sissabagama Lake	09	09	31	Bordner and others, 1932	2393500
0198	Smith Lake	08	05	31	Bordner and others, 1932	2726100
0203	Spider Lake	09	12	31	Bordner and others,, 1932	2435700
0205	Spring Lake T41N R07W S14	08	14	31	Bordner and others, 1932	2433100
0206	Spring Lake T40N R09W S12	-	-	53	Natelson, 1954	2724900
0208	Squaw Lake	08	24	31	Bordner and others, 1932	2395100
0211	Summit Lake	09	23	31	Bordner and others, 1932	2389400
0215	Teal Lake	08	08	31	Bordner and others, 1932	2417000
0219	Tiger Cat Flowage (Twin)	08	20	31	Bordner and others, 1932	2435000
0230	Holly Lake, Upper (Holly)	09	05	31	Bordner and others, 1932	2394600
0238	White Birch Lake (Birch)	09	23	31	Bordner and others, 1932	2378200
0239	Whitefish Lake	09	02	31	Bordner and others, 1932	2392000
0242	Windfall Lake	09	23	31	Bordner and others, 1932	2046500
0243	Windigo Lake (Bass)	08	21	31	Bordner and others, 1932	2046600
County 60: Sheboygan						
0007	Crooked Lake	07	05	70	Modlin, 1970	0037900
0011	Ellen Lake	-	-	57	Swindale and Curtis, 1957	0032500
0011	Ellen Lake	07	01	70	Modlin, 1970	0032500
0011	Ellen Lake	08	27	70	Modlin, 1970	0032500
0025	Little Elkhart Lake	06	11	77	DNR OILR	0046000
0025	Little Elkhart Lake	08	27	77	DNR OILR	0046000
0034	Random Lake	07	09	70	Modlin, 1970	0030300
0034	Random Lake	08	27	70	Modlin, 1970	0030300
0035	Seven Lake	06	13	70	Modlin, 1970	0037800
0035	Seven Lake	08	20	70	Modlin, 1970	0037800
County 61: Taylor						
0048	Mondeaux Flowage	08	-	71	Nichols, 1974	2193300
0048	Mondeaux Flowage	-	-	72	Nichols, 1974	2193300
0048	Mondeaux Flowage	08	-	73	Nichols, 1974	2193300
0048	Mondeaux Flowage	08	-	74	Nichols, 1974	2193300
0069	Rib Lake	06	20	78	DNR OILR	1469100
0069	Rib Lake	08	24	78	DNR OILR	1469100
County 62: Trempeleau						
0008	Marinuka Lake	08	16	76	DNR OILR	1678200
0011	Round Lake	08	04	75	DNR OILR	0728500
0013	Strum Lake (Crystal)	07	22	80	DNR OILR	1825100
0014	Third Lake	08	05	75	DNR OILR	0728700

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
County 63: Vernon						
0003	Jersey Vally Lake	-	-	74	Richardson, 1974	1191600
0005	Sidie Hollow Lake	-	-	74	Richardson, 1974	1641400
County 64: Vilas						
0007	Allequash Lake	07	28	78	DNR Bench	2332400
0007	Allequash Lake	08	-	79	DNR Bench	2332400
0007	Allequash Lake	08	-	80	DNR Bench	2332400
0007	Allequash Lake	08	28	81	DNR Bench	2332400
0020	Little Arbor Vitae Lake	06	-	77	DNR OILR	1545300
0020	Little Arbor Vitae Lake	08	-	77	DNR OILR	1545300
0126	Crystal Lake T41N R07E S27	-	-	30	Fassett, 1930	1842400
0126	Crystal Lake T41N R07E S27	-	-	81	Boston, n.d.	1842400
0199	Frank Lake (Bear)	08	19	80	DNR Bench	0985900
0199	Frank Lake (Bear)	-	-	81	DNR Bench	0985900
0202	Gateway Lake	07	07	71	Nichols, n.d.	0986700
0262	Little John Lake	-	-	35	Wilson, 1935	2332300
0341	Muskellunge Lake	-	-	30	Fassett, 1930	1596600
0341	Muskellunge Lake	-	-	35	Wilson, 1935	1596600
0341	Muskellunge Lake	-	-	81	Boston, n.d.	1596600
0342	Big Muskellunge Lake	07	-	82	Carpenter and Titus, 1984	1835300
0342	Big Muskellunge Lake	07	-	82	Carpenter and Titus, 1984	1835300
0346	Mystery Lake	07	08	71	Nichols, n.d.	2340000
0401	Prong Lake	07	-	79	DNR Bench	1013200
0401	Prong Lake	09	-	80	DNR Bench	1013200
0401	Prong Lake	-	-	81	DNR Bench	1013200
0433	Little St Germain Lake	-	-	83	DNR OILR	1596300
0064	White Sand Lake N41N R05E S2	-	-	54	Natelson, 1954	2321100
0451	Snake Lake	07	26	72	Nichols, n.d.	1541700
0456	Sparkling Lake (Silver)	-	-	35	Wilson, 1935	1881900
0456	Sparkling Lake (Silver)	-	-	81	Boston, n.d.	1881900
0456	Sparkling Lake (Silver)	-	-	81	Boston, n.d.	1881900
0490	Sugarbush Lake, Upper	-	-	54	Natelson, 1954	2318000
0512	Trout Lake	-	-	30	Fassett, 1930	2331600
0512	Trout Lake	-	-	41	Wilson, 1941	2331600
0531	Weber Lake	-	-	30	Fassett, 1930	1624700
0531	Weber Lake	-	-	42	Potzger and Van Engel, 1942	1624700
0531	Weber Lake	-	-	81	Boston, n.d.	1624700
0536	Wildcat Lake	-	-	30	Fassett, 1930	2336800
0544	Wolf Lake T43N R07E S31	-	-	30	Fassett, 1930	2336100
County 65: Walworth						
0001	Army Lake (East Troy)	08	28	67	Belonger, 1969	0740200
0002	Beulah Lake	06	20	67	Belonger, 1969	0766600
0003	Booth Lake	07	21	67	Belonger, 1969	0740400
0005	Como Lake	07	22	67	Belonger, 1969	0757900
0005	Como Lake	-	-	77	DNR OILR	0757900
0005	Como Lake	06	-	78	DNR OILR	0757900
0005	Como Lake	08	-	78	DNR OILR	0757900
0007	Cravath Lake	-	-	73	Smith, 1973	0815200
0010	Geneva Lake	07	06	67	Belonger, 1969	0758300
0013	Honey Lake (Vienna)	06	05	78	DNR OILR	0752300
0014	Ivanhoe Lake (Ryan)	06	29	67	Belonger, 1969	0756700
0018	Lulu Lake	08	08	67	Belonger, 1969	0768800
0020	Middle Lake (Lauderdale Lakes)	08	10	67	Belonger, 1969	0755700
0023	North Lake (Holden)	07	31	67	Belonger, 1969	0741200
0025	Pell Lake	07	14	67	Belonger, 1969	0743600

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
0026	Peters Lake	07	31	67	Belonger, 1969	0741400
0028	Pleasant Lake	07	06	67	Belonger, 1969	0741500
0028	Pleasant Lake	06	07	82	DNR OILR	0741500
0029	Potter Lake	06	30	69	Belonger, 1969	0753800
0030	Silver Lake	07	14	67	Belonger, 1969	0741700
0033	Tripp Lake (Trapp)	-	-	73	Smith, 1973	0816000
0035	Wandawega Lake (Otter)	07	14	67	Belonger, 1969	0740700
County 66: Washburn						
0197	Shell Lake	08	-	80	DNR OILR	2496300
County 67: Washington						
0003	Barton Pond	08	15	68	Modlin, 1970	0035400
0005	Big Cedar Lake	08	12	68	Modlin, 1970	0025300
0009	Erler Lake	06	17	68	Modlin, 1970	0027500
0012	Gilbert Lake	08	12	68	Modlin, 1970	0025600
0013	Green Lake	07	16	68	Modlin, 1970	0028100
0013	Green Lake	09	04	68	Modlin, 1970	0028100
0015	Hartford Millpond	08	12	76	DNR OILR	0857900
0026	Little Cedar Lake	08	09	68	Modlin, 1970	0025100
0031	Lucas Lake	08	06	68	Modlin, 1970	0035900
0048	Smith Lake (Dickens)	07	25	68	Modlin, 1970	0036700
0050	Twelve Lake	07	19	68	Modlin, 1970	0029700
0051	Wallace Lake	06	28	68	Modlin, 1970	0028300
0053	West Bend Pond	07	30	68	Modlin, 1970	0035200
County 68: Waukesha						
0001	Ashippun Lake	06	-	77	DNR OILR	0854300
0001	Ashippun Lake	08	-	77	DNR OILR	0854300
0005	Big Muskego Lake	08	04	67	Belonger, 1969	0762400
0010	Denoon Lake	07	27	67	Belonger, 1969	0761300
0013	Eagle Spring Lake (Eagle L)	07	10	67	Belonger, 1969	0768600
0032	Little Muskego Lake	06	27	67	Belonger, 1969	0762700
0032	Little Muskego Lake	10	17	74	Nichols, n.d.	0762700
0037	Phantom Lake, Lower (Howitt)	06	23	67	Belonger, 1969	0765800
0049	Okauchee Lake	06	-	77	DNR OILR	0850300
0049	Okauchee Lake	08	-	77	DNR OILR	0850300
0050	Ottawa Lake (Silver, Lean)	07	28	78	DNR Bench	0822200
0050	Ottawa Lake (Silver, Lean)	07	16	79	DNR Bench	0822200
0050	Ottawa Lake (Silver, Lean)	07	31	80	DNR Bench	0822200
0050	Ottawa Lake (Silver, Lean)	08	18	81	DNR Bench	0822200
0051	Pewaukee Lake	06	14	67	Belonger, 1969	0772000
0052	Pine Lake	07	27	78	DNR Bench	0779200
0052	Pine Lake	07	17	79	DNR Bench	0779200
0052	Pine Lake	07	29	80	DNR Bench	0779200
0052	Pine Lake	08	19	81	DNR Bench	0779200
0053	Pretty Lake	08	05	80	DNR OILR	0779300
0059	School Section Lake	08	27	80	DNR OILR	0825000
0063	Spring Lake T05N R18E S04	07	13	67	Belonger, 1969	0770600
0072	Oconomowoc Lake, Upper	06	-	77	DNR OILR	0850100
0072	Oconomowoc Lake, Upper	08	-	77	DNR OILR	0850100
0073	Phantom Lake, Upper	08	28	67	Belonger, 1969	0766000
0073	Phantom Lake, Upper	08	07	80	DNR OILR	0766000
County 69: Waupaca						
0012	Cary Pond	06	-	78	DNR OILR	0258400
0012	Cary Pond	08	-	78	DNR OILR	0258400

Table 1 *continued*

Lake number	Lake name	Observation date Month	Day	Year	Reference	Master waterbody number
0080	Marion Millpond	08	-	71	Nichols, n.d.	0294500
0087	Mirror Lake	07	15	71	Nichols, n.d.	0258700
0087	Mirror Lake	-	-	78	Garrison and Knauer, 1983	0258700
0109	Pigeon Lake	06	16	77	DNR OILR	0293300
0109	Pigeon Lake	08	08	77	DNR OILR	0293300
0123	Shadow Lake	07	15	71	Nichols, n.d.	0258600
0123	Shadow Lake	-	-	78	Garrison and Knauer, 1983	0258600
0127	Silver Lake (Anderson)	06	13	79	DNR OILR	0198900
0127	Silver Lake (Anderson)	08	23	79	DNR OILR	0198900
County 70: Waushara						
0017	Deer Lake	07	27	79	DNR OILR	0102900
0022	Irogami Lake (Fish)	08	04	81	DNR OILR	0103900
0026	Gilbert Lake	-	-	54	Natelson, 1954	0186400
0027	Big Hills Lake (Hills)	06	06	79	DNR OILR	0182100
0027	Big Hills Lake (Hills)	08	28	79	DNR OILR	0182100
0035	Kusel Lake (Koosel)	08	18	76	DNR OILR	0189600
0038	Long Lake T20N R09E S17	07	14	80	DNR OILR	1000800
0047	Morris Lake (Mt Morris)	06	-	77	DNR OILR	0246500
0047	Morris Lake (Mt Morris)	08	-	77	DNR OILR	0246500
0053	Pearl Lake	06	-	77	DNR OILR	0195400
0053	Pearl Lake	08	-	77	DNR OILR	0195400
0067	Round Lake T20N R11E S35	08	20	76	DNR OILR	0197300
0089	Wilson Lake	08	18	76	DNR OILR	0250000
0090	Witters Lake	-	-	54	Natelson, 1954	0117400
County 71: Winnebago						
0001	Butter Des Morts Lake	08	-	69	Harriman, 1968 and 1970	0139900
0005	Poygan Lake	08	-	69	Harriman, 1970	0242800
0008	Winneconne Lake	08	-	69	Harriman, 1970	0241600

Table 2. Comparison of lake plant database with a random dataset

Total alkalinity (mg/L)	Observed[1]	Expected[1]
<15	110	148
15 - 29	46	68
30 - 59	86	96
60 - 89	40	39
90 - 149	73	59
150 - 199	53	20
>199	38	16
		Chi-square = 105
Area (acres)		
<25	89	0[2]
25 - 49	62	167
50 - 99	90	122
100 - 499	140	123
500 - 999	28	19
>999	38	15
		Chi-square = 116.3
pH		
<6	44	34
6 - 6.9	101	12
7 - 7.9	165	229
8 - 8.9	126	44
>8.9	10	12
		Chi-square = 834

[1] Observed number of lakes in the database versus the expected number of lakes based on a random distribution of 448 lakes.

[2] Lakes less than 25 acres not sampled in random set.

Table 3. Example of lake data printout (coding instructions in appendix A)

SAS - HILL FARMS REGIONAL CENTER

COUNTY: 04 WATER NUMBER: 0278

LAKE OR STREAM NAME: TAHKODAH LAKE (EAST)

WATER TYPE: 1 UNIQUE NO: 2473500

DATE: 06 19 78 OBSERVER: DNR OILR

STATION TYPE: STATION NUMBER:

MAXIMUM PLANT DEPTH: 1.2

TRS DESCRIPTOR:

EXTENT OF SURVEY: 1

ID CODE	SPECIES	ABUN MEAS	VIS ABUN	FREQ	AVER DEN	BIOMASS	GROW STAT	VOUCHER
NUPVA	NUPHAR VARIEGATUM	2		22.2	0.4	.		
UTRVU	UTRICULARIA VULGARIS	2	1	.	.	.		
BRASC	BRASENIA SCHREBERI	2		55.6	2.7	.		
ERISE	ERIOCAULON SEPTANGULARE	2		22.2	0.9	.		
NYMOD	NYMPHAEA ODORATA	2		33.3	0.8	.		
SPAANG	SPARGANIUM ANGUSTIFOLIUM	2		33.3	1.1	.		
ELAMI	ELATINE MINIMA	2	1	.	.	.		
ELESP	ELEOCHARIS SP.	2	1	.	.	.		
JUNPE	JUNCUS PELOCARPUS	2	1	.	.	.		
CARSP	CAREX SP.	2	1	.	.	.		
DULAR	DULICHIUM ARUNDINACEUM	2	1	.	.	.		

Table 4. Wisconsin lake flora

Scientific name	Common name	Species code	Occurrence[1]	Percent
Acorus calamus	sweet flag	ACOCA	9	2.0
Armoracia aquatica	lake cress	ARMAQ	-	0.0
Brasenia schreberi	water shield	BRASC	117	26.1
Calla palustris	water arum	CALPA	40	8.9
Callitriche sp. or spp.	—	CALSP	2	0.4
Callitriche deflexa	water-starwort	CALDE	-	0.0
Callitriche hermaphroditica	water-starwort	CALHER	-	0.0
Callitriche heterophylla	large water-starwort	CALHET	-	0.0
Callitriche verna	common water-starwort	CALVE	4	0.9
Carex sp. or spp.	—	CARSP	59	13.2
Carex comosa	bristly sedge	CARCO	33	7.4
Ceratophyllum demersum	hornwort	CERDE	208	46.4
Ceratophyllum echinatum	spiny hornwort	CEREC	2	0.4
Chara sp. or spp.	muskgrass	CHASP	212	47.3
Cyperus sp. or spp.	—	CYPSP	15	3.3
Decodon verticillatus	swamp loosestrife	DECVE	43	9.6
Dulichium arundinaceum	pond sedge	DULAR	86	19.2
Elatine sp. or spp.	—	ELASP	1	0.2
Elatine minima	waterwort	ELAMI	56	12.5
Elatine triandra	matted waterwort	ELATR	-	0.0
Eleocharis sp. or spp.	—	ELESP	40	8.9
Eleocharis acicularis	needle spike-rush	ELEAC	102	22.8
Eleocharis palustris	creeping spike-rush	ELEPAL	126	28.1
Eleocharis robbinsii	—	ELEROB	10	2.2
Elodea sp. or spp.	—	ELOSP	4	0.9
Elodea canadensis	common waterweed	ELOCA	201	44.9
Elodea nuttallii	slender waterweed	ELONU	8	1.8
Equisetum fluviatile	water horsetail	EQUFL	34	7.6
Eriocaulon septangulare	pipewort	ERISE	85	19.0
Gratiola aurea	goldenpert	GRAAU	9	2.0
Heteranthera dubia	water star grass	HETDU	79	17.6
Isoetes sp. or spp.	—	ISOSP	87	19.4
Isoetes echinospora	spiny-spore quillwort	ISOEC	5	1.1
Isoetes macrospora	lake quillwort	ISOMA	17	3.8
Juncus pelocarpus	brown-fruited rush	JUNPE	70	15.6
Lemna sp. or spp.	—	LEMSP	20	4.4
Lemna minor	small duckweed	LEMMI	61	13.6
Lemna perpusilla	least duckweed	LEMPE	11	2.5
Lemna trisulca	forked duckweed	LEMTR	46	10.3
Lemna valdiviana	pale duckweed	LEMVA	-	0.0
Littorella americana	plantain shoreweed	LITAM	14	3.1
Lobelia dortmanna	water lobelia	LOBDO	41	9.1
Megalodonta beckii	water marigold	MEGBE	57	12.7
Myriophyllum sp. or spp.	—	MYRSPE	72	16.1
Myriophyllum alterniflorum	alternate flowered water milfoil	MYRAL	17	3.8
Myriophyllum exalbescens	spiked water milfoil	MYREX	100	22.3
Myriophyllum farwellii	Farwells water milfoil	MYRFA	1	0.2
Myriophyllum heterophyllum	various leaved water milfoil	MYRHE	10	2.2
Myriophyllum humile	—	MYRHU	5	1.1
Myriophyllum spicatum	Eurasian water milfoil	MYRSPI	23	5.1
Myriophyllum tenellum	dwarf water milfoil	MYRTE	53	11.8
Myriophyllum verticillatum	whorled water milfoil	MYRVE	32	7.1
Najas sp. or spp.	—	NAJSP	30	6.7
Najas flexilis	slender naiad	NAJFL	175	39.1
Najas gracillima	—	NAJGR	4	0.9
Najas guadalupensis	southern naiad	NAJGU	2	0.4

Table 4 *continued*

Scientific name	Common name	Species code	Occurrence[1]	Percent
Najas marina	spiny naiad	NAJMA	9	2.0
Nelumbo lutea	American lotus	NELLU	6	1.3
Nitella sp. or spp.	nitella	NITSP	45	10.0
Nuphar sp. or spp.	—	NUPSP	72	16.1
Nuphar advena	yellow pond lily	NUPAD	122	27.2
Nuphar microphyllum	yellow pond lily	NUPMI	16	3.6
Nuphar rubrodiscum	yellow pond lily	NUPRU	19	4.2
Nuphar variegatum	bull-head pond lily	NUPVA	166	37.1
Nymphaea sp. or spp.	—	NYMSP	51	11.4
Nymphaea odorata	fragrant water lily	NYMOD	49	10.9
Nymphaea tetragona	—	NYMTE	-	0.0
Nymphaea tuberosa	white water lily	NYMTU	194	43.3
Phragmites australis	common reed	PHRAU	20	4.5
Polygonum sp. or spp.	—	POLSP	26	5.8
Polygonum amphibium	water knotweed	POLAM	49	10.9
Polygonum coccineum	water heartsease	POLCO	11	2.5
Pontederia cordata	pickerel-weed	PONCO	96	21.4
Potamogeton sp. or spp.	—	POTSPE	86	19.2
Potamogeton alpinus	alpine pondweed	POTAL	9	2.0
Potamogeton amplifolius	large-leaf pondweed	POTAM	189	42.2
Potamogeton berchtoldii	—	POTBE	14	3.1
Potamogeton capillaceus	—	POTCA	2	0.4
Potamogeton confervoides	—	POTCO	5	1.1
Potamogeton crispus	curly-leaf pondweed	POTCR	70	15.6
Potamogeton diversifolius	water-thread pondweed	POTDI	6	1.3
Potamogeton epihydrus	ribbon-leaf pondweed	POTEP	94	21.0
Potamogeton filiformis	thread-leaf pondweed	POTFI	10	2.2
Potamogeton foliosus	leafy pondweed	POTFO	33	7.4
Potamogeton friesii	Fries pondweed	POTFR	26	5.8
Potamogeton gramineus	variable-leaf pondweed	POTGR	130	29.0
Potamogeton illinoensis	Illinois pondweed	POTIL	63	14.1
Potamogeton natans	floating-leaf pondweed	POTNA	179	40.0
Potamogeton nodosus	long-leaf pondweed	POTNO	57	12.7
Potamogeton oakesianus	—	POTOA	10	2.2
Potamogeton obtusifolius	—	POTOB	9	2.0
Potamogeton pectinatus	sago pondweed	POTPE	180	40.2
Potamogeton praelongus	white-stem pondweed	POTPR	115	25.7
Potamogeton pulcher	spotted pondweed	POTPUL	-	0.0
Potamogeton pusillus	small pondweed	POTPUS	78	17.4
Potamogeton richardsonii	clasping-leaf pondweed	POTRI	122	27.2
Potamogeton robbinsii	fern pondweed	POTRO	90	20.1
Potamogeton spirillus	spiral-fruited pondweed	POTSPI	17	3.8
Potamogeton strictifolius	stiff pondweed	POTST	13	2.9
Potamogeton vaginatus	swift-water pondweed	POTVAG	2	0.4
Potamogeton vaseyi	Vasey's pondweed	POTVAS	6	1.3
Potamogeton zosteriformis	flat-stem pondweed	POTZO	180	40.2
Potentilla palustris	marsh cinquefoil	POTPA	88	19.6
Ranunculus sp. or spp.	—	RANSP	12	2.7
Ranunculus aquatilis	white water crowfoot	RANAQ	6	1.3
Ranunculus flabellaris	yellow water crowfoot	RANFL	-	0.0
Ranunculus gmelinnii	small yellow water crowfoot	RANGM	-	0.0
Ranunculus longirostris	stiff water crowfoot	RANLO	46	10.3
Ranunculus reptans	spearwort	RANRE	7	1.6
Ranunculus trichophyllus	white water crowfoot	RANTR	10	2.2
Riccia fluitans	—	RICFL	1	0.2
Ruppia maritima	ditch grass	RUPMA	5	1.1

Table 4 *continued*

Scientific name	Common name	Species code	Occurrence[1]	Percent
Sagittaria sp. or spp.	—	SAGSP	46	10.3
Sagittaria cuneata	arum-leaved arrowhead	SAGCU	25	5.6
Sagittaria graminea	grassy arrowhead	SAGGR	66	14.7
Sagittaria latifolia	common arrowhead	SAGLA	172	38.4
Sagittaria rigida	stiff arrowhead	SAGRI	47	10.5
Scirpus sp. or spp.	—	SCISP	17	3.8
Scirpus acutus	hard-stem bulrush	SCIAC	73	16.3
Scirpus americanus	chairmakers's rush	SCIAM	25	5.6
Scirpus fluviatilis	river bulrush	SCIFL	9	2.0
Scirpus subterminalis	—	SCISU	18	4.0
Scirpus validus	great bulrush	SCIVA	146	32.6
Sparganium sp. or spp.	—	SPASP	47	10.5
Sparganium angustifolium	narrowleaf bur-reed	SPAANG	59	13.2
Sparganium chlorocarpum	—	SPACH	19	4.2
Sparganium eurycarpum	common bur-reed	SPAEU	37	8.3
Sparganium fluctuans	small-leaf bur-reed	SPAFL	43	9.6
Spirodela polyrhiza	great duckweed	SPIPO	45	10.0
Typha sp. or spp.	—	TYPSP	60	13.4
Typha angustifolia	narrow-leaf cat-tail	TYPAN	14	3.1
Typha latifolia	broad-leaf cat-tail	TYPLA	135	30.1
Utricularia sp. or spp.	—	UTRSP	46	10.3
Utricularia cornuta	horned bladderwort	UTRCO	-	0.0
Utricularia geminiscapa	—	UTRGE	3	0.7
Utricularia gibba	humped bladderwort	UTRGI	4	0.9
Utricularia intermedia	flat-leaf bladderwort	UTRIN	6	1.3
Utricularia minor	small bladderwort	UTRMI	5	1.1
Utricularia purpurea	purple bladderwort	UTRPU	5	1.1
Utricularia resupinata	small purple bladderwort	UTRRE	2	0.4
Utricularia vulgaris	great bladderwort	UTRVU	113	25.2
Vallisneria americana	eel grass	VALAM	167	37.3
Wolffia sp. or spp.	—	WOLSP	4	0.9
Wolffia columbiana	common water-meal	WOLCO	13	2.9
Wolffia punctata	dotted water-meal	WOLPU	6	1.3
Zanichellia palustris	horned pondweed	ZANPA	10	2.2
Zizania aquatica	wild-rice	ZIZAQ	54	12.1

Total = 448 lakes
[1]Number of lakes

Table 5. Deleted emergent species

Scientific name	Common name	Species code
Alisma plantago-aquatica	water plantain	ALIPL
Carex aquatilis	water sedge	CARAQ
Carex lacustris	--	CARLAC
Eleocharis erythropoda	--	ELEER
Eleocharis intermedia	matted spike-rush	ELEIN
Eleocharis quadrangulata	angled spike-rush	ELEQU
Eleocharis smallii	--	ELESM
Equisetum sp.	--	EQUSP
Glyceria sp.	--	GLYSP
Glyceria borealis	northern manna grass	GLYBO
Glyceria canadensis	--	GLYCA
Glyceria pallida	pale manna grass	GLYPA
Iris versicolor	blue flag	IRIVE
Juncus sp.	--	JUNSP
Juncus brachycephalus	short-headed rush	JUNBRA
Juncus effusus	common rush	JUNEF
Leersia oryzoides	rice cut grass	LEEOR
Nasturtium officinale	water cress	NASOF
Phalaris arundinacea	reed canary grass	PHAAR
Rhynchospora sp.	--	RHYSP
Rumex sp.	--	RUMSP
Sagittaria brevirostrata	shortbeak arrowhead	SAGBR
Scirpus atrovirens	dark green rush	SCIAT
Scirpus cyperinus	wool grass	SCICY
Scirpus heterochaetus	--	SCIHE
Scirpus microcarpus	panicled bulrush	SCIMI
Scirpus torreyi	--	SCITO
Sparganium americanum	American bur-reed	SPAAM
Sparganium androcladum	--	SPAAND
Sparganium minimum	small bur-reed	SPAMI
Xyris montana	bog yellow-eyed grass	XYRMO

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Appendix A
Instructions for submitting aquatic plant data

Form 3200-74

To contribute to the uniformity of records, a form (3200-74) for recording these data is provided here (after page 27) and should be copied as needed. It should be coded according to the following instructions. If you do not have the proper coding lists, fill in the county of location, the lake name, and the best legal description of location (that is, township, range, and quarter-quarter section). The coding information will be filled in after submission.

County number (2 spaces): Counties are numbered alphabetically from 1 to 72. The county where the most of the lake is located should be recorded. Refer to the publication entitled "Wisconsin Lakes," Department of Natural Resources publication 7-3600 (81), for the correct county listing for a lake.

Water number (4 spaces): Use the surface waters inventory (SWI) number for the lake. For most waters, the inventory numbers have been established and are listed in a computer printout entitled "Master List of Wisconsin Lakes and Streams" (available from Ronald Martin). If a water body is not listed, leave this space blank. A new number will be established by the file manager.

Lake name (29 spaces): The name should be taken from the "Master Waterbody of Lake Names" (available from Ronald Martin) list developed by the Department of Natural Resource's common coding committee. This list should not be confused with the SWI "Master List of Wisconsin Lakes and Streams." Accepted abbreviations should be used for the common descriptive terms such as north, lake, spring, and so forth.

Water type (1 space): The water type should be coded as **1** for lakes or **3** for impoundments. An impoundment is a lake with a dam causing at least one-half of its maximum depth.

Waterbody ID code (7 spaces): The waterbody ID code is located in the master list of numbers developed by the common coding committee. Each body of water is identified by a unique seven digit number. If a lake does not have a number, a new number is established by the file manager.

Date (6 spaces): A month, day, and year sequence for the date of collection.

Observer (10 spaces): The name of the observer is entered in the space provided. The coding allows entry of ten letters of an individual's last name or the primary name of the journal.

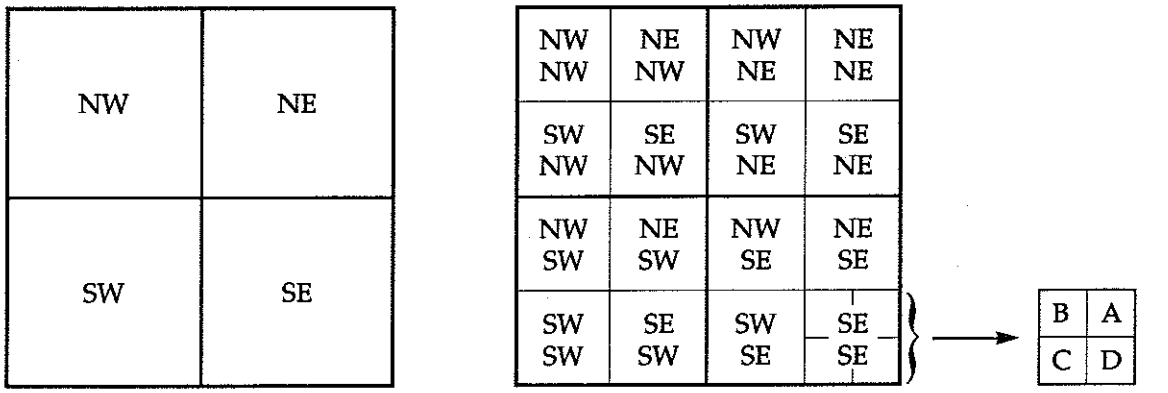
Station type (1 space): The station type refers to the manner of locating stations. Enter **1** for a drainage lake with an outlet. Locate the station by the mile point beginning at the outlet and proceeding clockwise around the entire shore. Enter **2** for a landlocked or seepage lakes. The station is located by a mile point starting with the northernmost point on the lake and proceeding clockwise. Enter **3** for lake stations located by TRS and describe them to the quarter/quarter/quarter section (10-acre parcel). Enter **4** for lake station located by identifiable features such as bays, lighthouses, points, and so forth. Enter **5** for station locations different than those mentioned above.

Station number (10 spaces): If the station type is coded as 1 or 2, the station number should be recorded to the nearest 0.1 mile point. Record the beginning and ending mile point locations for the station if applicable. Note that a space is allocated for the decimal point.

Township/range/section (TRS) descriptor (16 spaces): If the station type is 3, use the TRS descriptor of the sample location. The TRS field will contain the township (4 digits), range (4 digits), section (3 digits),

1/16 section (2 alphabetical characters: NW, NE, SW, SE), 1/4 section (2 alphabetical characters: NW, NE, SW, SE), and 1/64 section (1 alphabetical character: A, B, C, D).

A section is broken down as follows:



1/4 section 1/16 section 1/64 section

The location will be indicated in the format:

T ___ ___ N R ___ ___ ___ S ___ ___ - ___ ___ - ___ ___ - ___
1/16 1/4 1/64

The location of a waterbody in the SW 1/64 of the NE 1/16 of the SW 1/4 of section 21, Township 10 North and Range 27 East, would be as follows:

T10N R27E S21 - NE - SW - C

Maximum plant depth (3 spaces): Record the maximum depth of plant growth to the nearest 0.1 m. Note that a space is allocated for the decimal point.

Extent of survey (1 space): Circle **1** for whole lake, **2** for bay or reach, **3** for lake station, and **4** for other.

Identification code (6 spaces): A five to six character letter abbreviation should be recorded for each species. For the most common species, the identification code is provided on the front of the form. For those species where a code is not listed, record the species code from table 4. If a species is not listed in table 4, enter the scientific species name in the species name blank. The identification code will be added by the file manager.

The identification code (that is, species code) was established as follows:

The first three letters are the first three letters of the genus name; the fourth and fifth letters are the first two letters of the species name. The sixth letter is used only when the first five letters of two or more species are the same for example, (*Acer saccharum* and *Acer saccharinum* are both ACESA). The sixth letter is the first letter found in the species name that is different from that of the other species (for example, *Acer saccharum* is ACESAU; *Acer saccharinum* is ACESAI). The sixth letter is used *only* under these circumstances; in most cases, species have a five-letter designation (for example, CERDE for *Ceratophyllum demersum*, UTRVU for *Utricularia vulgaris*, POTPE for *Potamogeton pectinatus*).

Species name: Names for more common species are written out in an alphabetical sequence on the front of the form. Other species must have their scientific name and species identification code recorded on the back of the form. In cases where it is not possible to identify a plant to species, record the genus name on the back of the data form.

Abundance measure (1 space): For a qualitative survey, enter **1** for visual. For a quantitative survey enter **2** for the method of Jessen and Lound (1962), **3** for frequency, and **4** for biomass.

Visual abundance (1 space): For a visual survey (that is, coded as 1 under abundance measure) provide some appreciation of the status of the plant. Enter **1** when abundance was not recorded. *Present* is coded as **2** and means the plant was found occasionally. *Common* means that the plant was often encountered but did not occur in dense beds; enter **3**. *Abundant* means that significant beds of the plant were found in scattered suitable habitats; enter **4**. *Very abundant* means dense plant beds were generally distributed throughout the basin; enter **5**.

Quantitative abundance (13 spaces): Thirteen spaces are provided. The first four spaces are for frequency (coded as 2 or 3 under abundance measure); record values up to 99.9. Frequency is the percent of sampling unit where the species occurred. The next 3 spaces are for average density as defined by Jessen and Lound (1962) (coded as 2 under abundance measure); record numbers up to 5.0. The last 6 spaces are for biomass (coded as 4 under abundance measure); record values up to 9999.9 g/m^2. Note that a space is allocated for the decimal point for frequency, density, and biomass.

Growth status (1 space): *Early growth* indicates the plants are mostly short and have not completed development; enter **1**. *Fruiting or flowering* indicates the plant has developed flowers or seeds and is probably at its peak growth; enter **2**. *Post maturity* indicates plants are on the decline and may be collapsing; enter a **3**. Enter **4** if only *winter buds* or *seeds* are present. If unknown, enter **5**.

Voucher collected (1 space): Indicate which individual species are vouchered. Enter **1** if a voucher is collected and **2** if no voucher is collected.

Submit completed data forms to Ronald Martin, Bureau of Water Resources Management, Wisconsin Department of Natural Resources, Box 7921, Madison, Wisconsin 53707.

Department of Natural Resources

AQUATIC PLANT SPECIES LIST
Form 3200-74 Rev. 12-89

County: __ __

Water Number (SWI Master List): __ __ __ __

Lake or Stream Name: _____

Water Type: __

Water Body ID Code: _____

Date: __ __ __ __ __ __

Observer or Source (Journal): _____

Station Type: __

Station Number: _____

Maximum Plant Depth (Meters): __ . __

TRS Descriptor: _____

Extent of Survey: (1) Whole Lake (2) Bay or Reach (3) Lake or Stream Station (4) other __

Identification Code	Species Name	Abundance Measure	Visual Abundance	Quantitative Abundance			Growth Status	Voucher Collected
				Frequency	Average Density	Biomass		
C E R D E __	Ceratophyllum demersum	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
C H A S P __	Chara sp.	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
E L O C A __	Elodea canadensis	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
H E T D U __	Heteranthera dubia	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
M Y R S P E	Myriophyllum sp.	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
M Y R E X __	Myriophyllum exalbescens	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
N A J F L __	Najas flexilis	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
N U P V A __	Nuphar variegatum	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
N Y M T U __	Nymphaea tuberosa	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
P O T S P E	Potamogeton sp.	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
P O T A M __	Potamogeton amplifolius	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
P O T C R __	Potamogeton crispus	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
P O T D I __	Potamogeton diversifolius	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
P O T G R __	Potamogeton gramineus	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
P O T N O __	Potamogeton nodosus	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
P O T P E __	Potamogeton pectinatus	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
P O T R I __	Potamogeton richardsonii	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
P O T R O __	Potamogeton robbinsii	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
S A G L A __	Sagittaria latifolia	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
U T R V U __	Utricularia vulgaris	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__
V A L A M __	Vallisneria americana	__	__	__ __ . __	__ . __	__ __ __ __ . __	__	__

Identification Code	Species Name	Abundance Measure	Visual Abundance	Quantitative Abundance			Growth Status	Voucher Collected
				Frequency	Average Density	Biomass		
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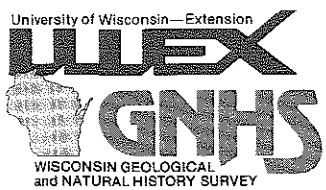

Cover illustration: Reduced version of the *Landforms of Wisconsin* map (by D.A. Woodward, 1971; originally published by WGNHS at an approximate scale of 1:2,730,000) and a silhouette of *Potamogeton natans*, a native Wisconsin plant.

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