

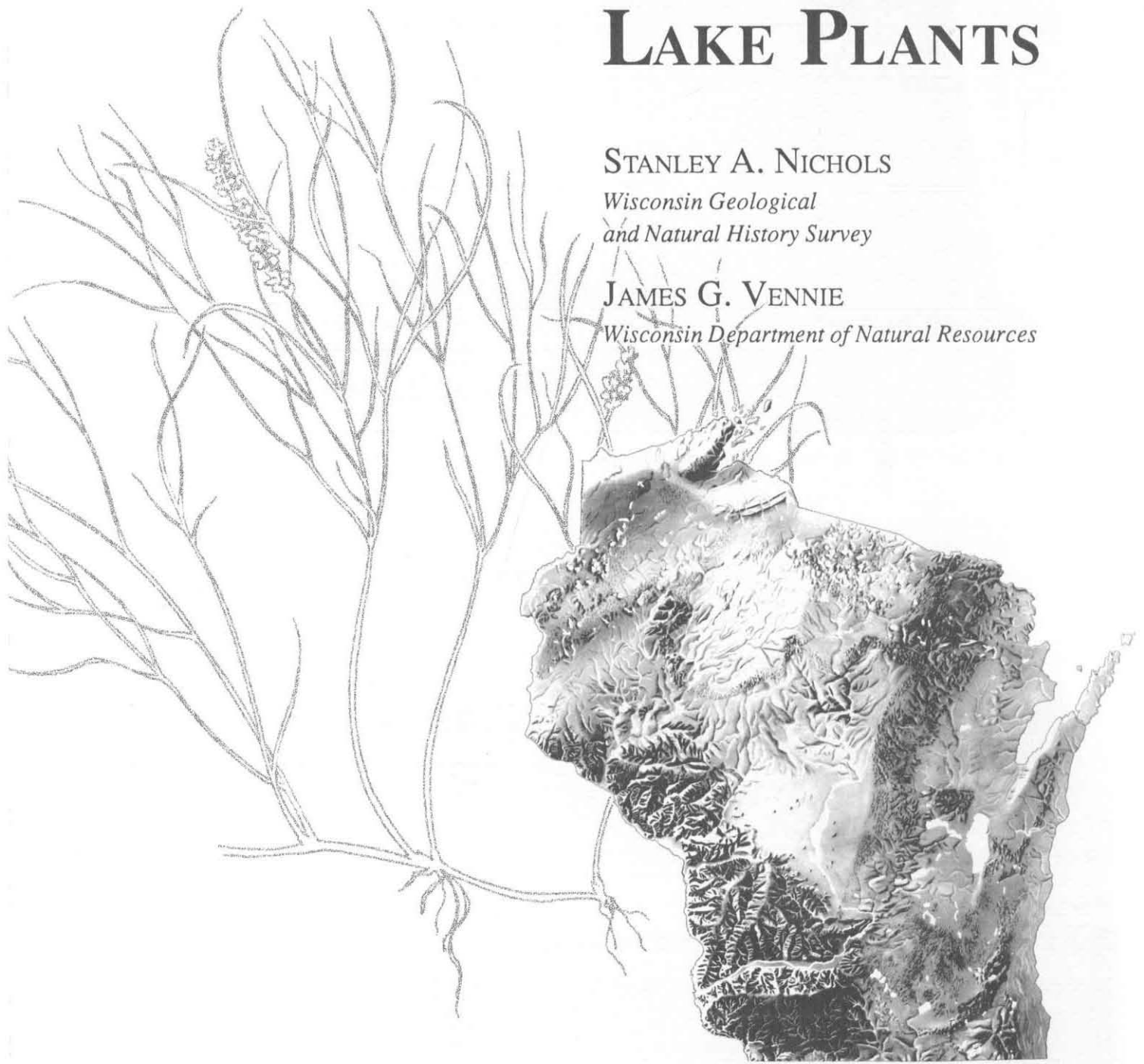
# ATTRIBUTES OF WISCONSIN LAKE PLANTS

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*Wisconsin Geological  
and Natural History Survey*

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*Wisconsin Department of Natural Resources*



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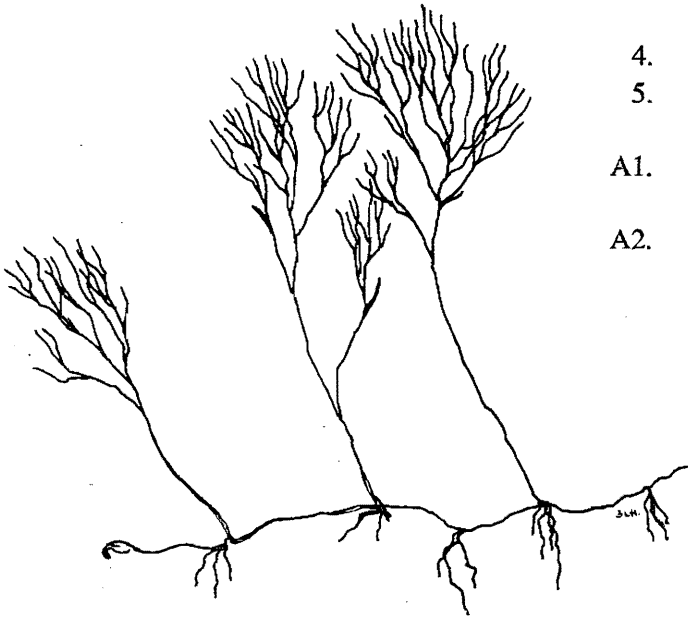
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# ATTRIBUTES OF WISCONSIN LAKE PLANTS

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## Abstract

In this report we present a compilation of the available information about plants common to Wisconsin lakes. Most aquatic plants have not been intensively studied; however, this report forms a basis for continued addition and refinement of the available data. The information presented includes scientific and common names, life form, species status, life cycle, propagation methods, wildlife and environmental values, potential nuisances, habitat preferences, and susceptibility to common aquatic herbicides.

## Introduction

Producing stable, diverse aquatic plant communities containing high percentages of desirable species is a primary management goal from an economic and environmental perspective. To achieve this goal, a manager has to know which species are desirable and how to encourage them as well as which species are likely to be nuisances and how to discourage them.

Each species differs in its usefulness, susceptibility to management techniques, and habitat requirements. The cornerstone for successful plant management is a thorough knowledge of individual plant attributes. Is the species likely to be a nuisance? Can it be controlled with herbicides or drawdown? Can it be propagated from seed, cuttings, or rootstock? Will it grow in soft bottoms or turbid water? Is it valuable for fish or wildlife food? Will it help reduce erosion or stabilize bottom sediment? Does it have an aesthetically pleasing form or flower? These questions often need to be answered before designing an effective aquatic plant management plan.

## Attribute tables

Information is presented in tabular form. The five tables list the plants, their habitat preference, wildlife and environmental value, propagation method, and herbicide susceptibility. The sources used in compiling the tables are cited at the end of each table. Except for table 1, the tables list only those plants for which attribute information is known. In cases where information is available only at the generic level, individual species in a genus are not listed.

*Table 1* is a list of 149 taxa (developed by Nichols and Martin, 1990) of plants that are likely to be found in Wisconsin lakes. Included in table 1 are the scientific and common names of the plant; life form (submergent, emergent, floating leaf, or free floating); species status (abundant to rare, endangered, or non-native); and species code (used for computer retrieval of data).

Species status indicates how frequently each plant was found by Nichols and Martin (1990). An *abundant* (A) species was found in 35 percent of the lakes surveyed, *common* (C) species in 15 to 35

percent of the lakes, *infrequent* (I) species in 2 to 14 percent of the lakes and *rare* (R) species in less than 2 percent of the lakes.

Species status also indicates whether the Wisconsin Department of Natural Resources considers the species endangered (Wisconsin Department of Natural Resources, n.d.) and in need of special protection or whether the species is non-native. Many of the worst aquatic nuisances are exotic species.

**Table 2** is a list, by species, of substrate preference, turbidity tolerance, and response to summer and winter drawdown. Where there have been conflicting opinions between authors about habitat preference, especially about turbidity association, more than one response may be listed. Information about substrate preference and turbidity tolerance is helpful for aquatic plant restoration; information about drawdown can be used to increase or decrease plant density.

**Table 3** provides a qualitative assessment of environmental value so that decisions whether to encourage or discourage a species can become part of lake planning. Some plants have environmental value as food and cover for fish and wildlife and as a substrate stabilizer; other plants are potential nuisances.

In table 3 the food value of lake plants to waterfowl, other birds, and muskrats is rated if they directly use the plant for food; the value as food to fish includes direct use (which is generally limited) and indirect use (the value as food to invertebrates or other organisms that fish in turn use for food).

The value as cover is listed if fish are known to use the plant for cover. However, fish probably relate more to the structure of the plant community rather than to an individual species. For instance, one pondweed community is probably as valuable as another for fish cover if the structure of the two communities is the same, regardless of which specific pondweed species they contain. Although waterfowl and other birds use aquatic invertebrates for food during part of their life cycle, the value of plants as invertebrate habitat is not captured in this table.

The value for substrate stabilization is based partly on life form. Strongly rooted emergent species reduce shoreline erosion.

Aquatic plants have the ability to have an impact upon nutrient recycling in a lake. This environmental value is not reported in table 3 because it is partly related to the biomass of plants present. However, some species recycle nutrients more quickly than others. Not enough is known about the various species at this time to rate their nutrient recycling abilities.

Any species with overabundant growth has the potential to become a local nuisance. The species that cause at least local problems in the northeastern United States are indicated as potential nuisance species. Those that are documented as being aggressive nuisances in Wisconsin are much more limited in number.

**Table 4** provides information that is valuable for revegetation. Where more than one propagation method is available, the technique selected will likely be based on the amount of area to be revegetated, budget, and the time needed to produce a stand of plants. Seed, for example, can be planted quickly over large areas, but it takes a longer time to establish plants than does planting transplants. Given enough time, equipment, and money, most species can be transplanted, but this may not be practical in many situations.

**Table 5** provides general information about herbicide susceptibility. Question marks indicate that results are highly dependent upon specific chemical formulation or environmental conditions. Therefore, more skill in application may be needed for successful treatment of some plants than for others. With careful

planning, it may be possible to use herbicides selectively to change the species composition of established communities from less desirable to more desirable species.

### Summary sheets

All known attribute information is available in summary sheets for the 117 individual taxa found in tables 2 through 5 (Nichols and Vennie, 1991). This format is useful for preparing lake reports: the attributes and management potential of a limited number of species can be quickly assessed by assembling the appropriate summary sheets.

See Appendix A for a list of the taxa included in the summary sheets, a sample summary sheet, and ordering information.

### Data retrieval

The tables presented in this report and the summary sheets are available in computer-retrievable files from the Lake Management Program Office (attn: James Vennie), Wisconsin Department of Natural Resources, Box 7921, WR/2, Madison, Wisconsin, telephone (608) 266-2212. The information is available for MS-DOS computers as Lotus worksheets or R:BASE files. The advantage of the electronic format is that information can be readily updated and customized to individual users needs. It can also be easily sorted to answer a variety of questions. Contact the Lake Management Office for questions about current use.

**Table 1. List of Wisconsin lake plants**

Scientific name	Common name	Species code	Life form <sup>1</sup>	Species status <sup>2</sup>
<i>Acorus calamus</i>	sweetflag	ACOCA	E	I
<i>Armoracia aquatica</i>	lake cress	ARMAQ	S, E	R, EN
<i>Brasenia schreberi</i>	watershield	BRASC	FL	C
<i>Calla palustris</i>	water arum	CALPA	E	I
<i>Callitriche</i> sp. or spp.	—	CALSP	S	—
<i>Callitriche deflexa</i>	water-starwort	CALDE	S	R
<i>Callitriche hermaphroditica</i>	water-starwort	CALHER	S	R
<i>Callitriche heterophylla</i>	large water-starwort	CALHET	S	R
<i>Callitriche verna</i>	common water-starwort	CALVE	S	R
<i>Carex</i> sp. or spp.	—	CARSP	E	—
<i>Carex comosa</i>	bristly sedge	CARCO	E	I
<i>Ceratophyllum demersum</i>	hornwort	CERDE	S	A
<i>Ceratophyllum echinatum</i>	spiny hornwort	CEREC	S	R
<i>Chara</i> sp. or spp.	muskgrass	CHASP	S	A
<i>Cyperus</i> sp. or spp.	—	CYPSP	E	—
<i>Decodon verticillatus</i>	swamp loosestrife	DECVE	E	I
<i>Dulichium arundinaceum</i>	pond sedge	DULAR	E	C
<i>Elatine</i> sp. or spp.	—	ELASP	S	—
<i>Elatine minima</i>	waterwort	ELAMI	S	I

<sup>1</sup> E: emergent; S: submergent; FL: floating-leaved; FF: free-floating

<sup>2</sup> A: abundant; C: common; I: infrequent; R: rare; EN: endangered or threatened; N: non-native; — information unknown or unreported

Table 1. continued

Scientific name	Common name	Species code	Life form <sup>1</sup>	Species status <sup>2</sup>
<i>Elatine triandra</i>	matted waterwort	ELATR	S	R
<i>Eleocharis</i> sp. or spp.	—	ELESP	E	—
<i>Eleocharis acicularis</i>	needle spike-rush	ELEAC	S, E	C
<i>Eleocharis palustris</i>	creeping spike-rush	ELEPAL	E	C
<i>Eleocharis robbinsii</i>	—	ELEROB	E	I
<i>Elodea</i> sp. or spp.	—	ELOSP	S	—
<i>Elodea canadensis</i>	common waterweed	ELOCA	S	A
<i>Elodea nuttallii</i>	slender waterweed	ELONU	S	R
<i>Equisetum</i> sp. or spp.	—	EQUSP	E	—
<i>Equisetum fluviatile</i>	water horsetail	EQUFL	E	I
<i>Eriocaulon septangulare</i>	pipewort	ERISE	S	C
<i>Gratiola aurea</i>	goldenpert	GRAAU	S	I
<i>Heteranthera dubia</i>	water star grass	HETDU	S	C
<i>Ilsoetes</i> sp. or spp.	—	ISOSP	S	—
<i>Isoetes echinospora</i>	spiny-spore quillwort	ISOEC	S	R
<i>Ilsoetes macrospora</i>	lake quillwort	ISOMA	S	I
<i>Juncus</i> sp. or spp.	—	JUNSP	E	—
<i>Juncus pelocarpus</i>	brown-fruited rush	JUNPE	E	C
<i>Lemna</i> sp. or spp.	—	LEMSP	FF	—
<i>Lemna minor</i>	small duckweed	LEMMI	FF	I
<i>Lemna perpusilla</i>	least duckweed	LEMPE	FF	I
<i>Lemna trisulca</i>	forked duckweed	LEMTR	FF	I
<i>Lemna valdiviana</i>	pale duckweed	LEMVA	FF	R
<i>Littorella americana</i>	plantain shoreweed	LITAM	S	I
<i>Lobelia dortmanna</i>	water lobelia	LOBDO	S	I
<i>Megalodonta beckii</i>	water marigold	MEGBE	S	I
<i>Myriophyllum</i> sp. or spp.	—	MYRSPE	S	—
<i>Myriophyllum alterniflorum</i>	alternate flowered water milfoil	MYRAL	S	I
<i>Myriophyllum exalbescens</i>	spiked water milfoil	MYREX	S	C
<i>Myriophyllum farwellii</i>	Farwells water milfoil	MYRFA	S	R
<i>Myriophyllum heterophyllum</i>	various leaved water milfoil	MYRHE	S	I
<i>Myriophyllum humile</i>	—	MYRHU	S	R
<i>Myriophyllum spicatum</i>	Eurasian water milfoil	MYRSPI	S	I, N
<i>Myriophyllum tenellum</i>	dwarf water milfoil	MYRTE	S	I
<i>Myriophyllum verticillatum</i>	whorled water milfoil	MYRVE	S	I
<i>Najas</i> sp. or spp.	—	NAJSP	S	—
<i>Najas flexilis</i>	slender naiad	NAJFL	S	A
<i>Najas gracillima</i>	—	NAJGR	S	R
<i>Najas guadalupensis</i>	southern naiad	NAJGU	S	R
<i>Najas marina</i>	spiny naiad	NAJMA	S	I
<i>Nelumbo lutea</i>	American lotus	NELLU	FL	R
<i>Nitella</i> sp. or spp.	nitella	NITSP	S	I
<i>Nuphar</i> sp. or spp.	—	NUPSP	FL	—
<i>Nuphar advena</i>	yellow pond lily	NUPAD	FL	C

<sup>1</sup> E: emergent; S: submergent; FL: floating-leaved; FF: free-floating

<sup>2</sup> A: abundant; C: common; I: infrequent; R: rare; EN: endangered or threatened; N: non-native; — information unknown or unreported



Table 1. continued

Scientific name	Common name	Species code	Life form <sup>1</sup>	Species status <sup>2</sup>
<i>Nuphar microphyllum</i>	yellow pond lily	NUPMI	FL	I
<i>Nuphar rubrodiscum</i>	yellow pond lily	NUPRU	FL	I
<i>Nuphar variegatum</i>	bull-head pond lily	NUPVA	FL	A
<i>Nymphaea</i> sp. or spp.	—	NYMSP	FL	—
<i>Nymphaea odorata</i>	fragrant water lily	NYMOD	FL	I
<i>Nymphaea tetragona</i>	—	NYMTE	FL	R
<i>Nymphaea tuberosa</i>	white water lily	NYMTU	FL	A
<i>Phragmites australis</i>	common reed	PHRAU	E	I
<i>Polygonum</i> sp. or spp.	—	POLSP	FL, E	—
<i>Polygonum amphibium</i>	water knotweed	POLAM	FL	I
<i>Polygonum coccineum</i>	water heartsease	POLCO	FL	I
<i>Pontederia cordata</i>	pickerel-weed	PONCO	E	C
<i>Potamogeton</i> sp. or spp.	—	POTSPE	S	—
<i>Potamogeton alpinus</i>	alpine pondweed	POTAL	S	I
<i>Potamogeton amplifolius</i>	large-leaf pondweed	POTAM	S	A
<i>Potamogeton berchtoldii</i>	—	POTBE	S	I
<i>Potamogeton capillaceus</i>	—	POTCA	S	R
<i>Potamogeton confervoides</i>	—	POTCO	S	R, EN
<i>Potamogeton crispus</i>	curly-leaf pondweed	POTCR	S	C, N
<i>Potamogeton diversifolius</i>	water-thread pondweed	POTDI	S	R
<i>Potamogeton epihydrus</i>	ribbon-leaf pondweed	POTEP	S	C
<i>Potamogeton filiformis</i>	thread-leaf pondweed	POTFI	S	I
<i>Potamogeton foliosus</i>	leafy pondweed	POTFO	S	I
<i>Potamogeton friesii</i>	Fries pondweed	POTFR	S	I
<i>Potamogeton gramineus</i>	variable-leaf pondweed	POTGR	S	C
<i>Potamogeton illinoensis</i>	Illinois pondweed	POTIL	S	I
<i>Potamogeton natans</i>	floating-leaf pondweed	POTNA	S	A
<i>Potamogeton nodosus</i>	long-leaf pondweed	POTNO	S	I
<i>Potamogeton oakesianus</i>	—	POTOA	S	I
<i>Potamogeton obtusifolius</i>	—	POTOB	S	I
<i>Potamogeton pectinatus</i>	sago pondweed	POTPE	S	A
<i>Potamogeton praelongus</i>	white-stem pondweed	POTPR	S	C
<i>Potamogeton pulcher</i>	spotted pondweed	POTPUL	S	R, EN
<i>Potamogeton pusillus</i>	small pondweed	POTPUS	S	C
<i>Potamogeton richardsonii</i>	clasping-leaf pondweed	POTRI	S	C
<i>Potamogeton robbinsii</i>	fern pondweed	POTRO	S	C
<i>Potamogeton spirillus</i>	spiral-fruited pondweed	POTSPI	S	I
<i>Potamogeton strictifolius</i>	stiff pondweed	POTST	S	I
<i>Potamogeton vaginatus</i>	swift-water pondweed	POTVAG	S	R, EN
<i>Potamogeton vaseyi</i>	Vasey's pondweed	POTVAS	S	R
<i>Potamogeton zosteriformis</i>	flat-stem pondweed	POTZO	S	A
<i>Potentilla palustris</i>	marsh cinquefoil	POTPA	E	C
<i>Ranunculus</i> sp. or spp.	—	RANSP	S	—
<i>Ranunculus aquatilis</i>	white water crowfoot	RANAQ	S	R

<sup>1</sup> E: emergent; S: submergent; FL: floating-leaved; FF: free-floating

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Table 1. continued

Scientific name	Common name	Species code	Life form <sup>1</sup>	Species status <sup>2</sup>
<i>Ranunculus reptans</i>	spearwort	RANRE	S	R
<i>Ranunculus trichophyllus</i>	white water crowfoot	RANTR	S	I
<i>Riccia fluitans</i>	—	RICFL	FF	R
<i>Ruppia maritima</i>	ditch grass	RUPMA	S	R, N
<i>Sagittaria</i> sp. or spp.	—	SAGSP	E	—
<i>Sagittaria cuneata</i>	arum-leaved arrowhead	SAGCU	S, E	I
<i>Sagittaria graminea</i>	grassy arrowhead	SAGGR	S, E	I
<i>Sagittaria latifolia</i>	common arrowhead	SAGLA	E	A
<i>Sagittaria rigida</i>	stiff arrowhead	SAGRI	E	I
<i>Scirpus</i> sp. or spp.	—	SCISP	E	—
<i>Scirpus acutus</i>	hard-stem bulrush	SCIAC	E	C
<i>Scirpus americanus</i>	chairmakers's rush	SCIAM	E	I
<i>Scirpus fluviatilis</i>	river bulrush	SCIFL	E	I
<i>Scirpus subterminalis</i>	—	SCISU	E	I
<i>Scirpus validus</i>	great bulrush	SCIVA	E	C
<i>Sparganium</i> sp. or spp.	—	SPASP	FL, E	—
<i>Sparganium angustifolium</i>	narrowleaf bur-reed	SPAANG	FL, E	I
<i>Sparganium chlorocarpum</i>	—	SPACH	FL, E	I
<i>Sparganium eurycarpum</i>	common bur-reed	SPAEU	FL, E	I
<i>Sparganium fluctuans</i>	small-leaf bur-reed	SPAFL	FL	I
<i>Spirodela polyrhiza</i>	great duckweed	SPIPO	FF	I
<i>Typha</i> sp. or spp.	—	TYPSP	E	—
<i>Typha angustifolia</i>	narrow-leaf cat-tail	TYPAN	E	I
<i>Typha latifolia</i>	broad-leaf cat-tail	TYPLA	E	C
<i>Utricularia</i> sp. or spp.	—	UTRSP	S	—
<i>Utricularia cornuta</i>	horned bladderwort	UTRCO	S	R
<i>Utricularia geminiscapa</i>	—	UTRGE	S	R
<i>Utricularia gibba</i>	humped bladderwort	UTRGI	S	R
<i>Utricularia intermedia</i>	flat-leaf bladderwort	UTRIN	S	R
<i>Utricularia minor</i>	small bladderwort	UTRMI	S	R
<i>Utricularia purpurea</i>	purple bladderwort	UTRPU	S	R
<i>Utricularia resupinata</i>	small purple bladderwort	UTRRE	S	R
<i>Utricularia vulgaris</i>	great bladderwort	UTRVU	S	C
<i>Vallisneria americana</i>	eel grass	VALAM	S	A
<i>Wolffia</i> sp. or spp.	—	WOLSP	FF	—
<i>Wolffia columbiana</i>	common water-meal	WOLCO	FF	I
<i>Wolffia punctata</i>	dotted water-meal	WOLPU	FF	R
<i>Zannichellia palustris</i>	horned pondweed	ZANPA	S	I
<i>Zizania aquatica</i>	wild-rice	ZIZAQ	E	I

<sup>1</sup> E: emergent; S: submergent; FL: floating-leaved; FF: free-floating

<sup>2</sup> A: abundant; C: common; I: infrequent; R: rare; EN: endangered or threatened; N: non-native; — information unknown or unreported

After Wisconsin Department of Natural Resources (n.d.); Nichols and Martin (1990).

**Table 2. Habitat preference of lake plants**

Scientific name	Substrate preference <sup>1</sup>	Turbidity association <sup>2</sup>	Summer drawdown <sup>3</sup>	Winter drawdown <sup>3</sup>
<i>Brasenia schreberi</i>	O	Y	D	D
<i>Carex</i> sp. or spp.	-	-	I	-
<i>Ceratophyllum demersum</i>	S	Y	V	V
<i>Ceratophyllum echinatum</i>	S	-	-	-
<i>Chara</i> sp. or spp.	O	N	V	V
<i>Dulichium arundinaceum</i>	O	Y	-	-
<i>Eleocharis acicularis</i>	H	Y	I	D
<i>Eleocharis robbinsii</i>	S	-	-	-
<i>Elodea canadensis</i>	S	Y	V	V
<i>Equisetum fluviatile</i>	-	N	-	-
<i>Eriocaulon septangulare</i>	H	N	-	-
<i>Heteranthera dubia</i>	O	Y	-	-
<i>Isoetes echinospora</i>	O	-	-	-
<i>Isoetes macrospora</i>	H	-	-	-
<i>Lemna</i> sp. or spp.	-	-	V	V
<i>Lemna minor</i>	-	Y	-	-
<i>Lobelia dortmanna</i>	H	-	-	-
<i>Megalodonta beckii</i>	S	N	-	I
<i>Myriophyllum alterniflorum</i>	-	N	-	-
<i>Myriophyllum exalbescens</i>	S	N, Y	V	V
<i>Myriophyllum farwellii</i>	S	-	-	-
<i>Myriophyllum heterophyllum</i>	O	-	V	V
<i>Myriophyllum spicatum</i>	O	N	V	V
<i>Myriophyllum tenellum</i>	H	-	-	-
<i>Myriophyllum verticillatum</i>	O	N, Y	-	-
<i>Najas flexilis</i>	H	N	V	I
<i>Najas gracillima</i>	-	N	-	-
<i>Najas guadalupensis</i>	-	N	-	D
<i>Najas marina</i>	S	-	-	-
<i>Nelumbo lutea</i>	-	-	V	V
<i>Nitella</i> sp. or spp.	O	O	-	-
<i>Nuphar advena</i>	S	O	D	-
<i>Nuphar variegatum</i>	S	N	V	D
<i>Nymphaea odorata</i>	O	Y	V	-
<i>Nymphaea tuberosa</i>	S	O	-	D
<i>Polygonum amphibium</i>	O	Y	-	-
<i>Polygonum coccineum</i>	-	-	I	V
<i>Pontederia cordata</i>	O	N	-	-
<i>Potamogeton amplifolius</i>	S	O, N	-	V
<i>Potamogeton berchtoldii</i>	H	Y	-	-
<i>Potamogeton crispus</i>	S	Y	-	-
<i>Potamogeton diversifolius</i>	S	-	-	I

<sup>1</sup> S: prefers soft substrate; H: hard substrate; O: no preference; - information unknown or unreported

<sup>2</sup> Y: positive with turbid water; N: negative; O: no significant association; - information unknown or unreported

<sup>3</sup> I: increases with drawdown; D: decreases with drawdown; V: variable response; - information unknown or unreported

Table 2. continued

Scientific name	Substrate preference <sup>1</sup>	Turbidity association <sup>2</sup>	Summer drawdown <sup>3</sup>	Winter drawdown <sup>3</sup>
<i>Potamogeton epihydrus</i>	O	O	-	V
<i>Potamogeton filiformis</i>	O	N	-	-
<i>Potamogeton foliosus</i>	S	Y	-	-
<i>Potamogeton friesii</i>	-	N	-	-
<i>Potamogeton gramineus</i>	H	O, N	-	V
<i>Potamogeton illinoensis</i>	O	N	-	-
<i>Potamogeton natans</i>	O	O	D	I
<i>Potamogeton nodosus</i>	O	Y	-	-
<i>Potamogeton oakesianus</i>	H	-	-	-
<i>Potamogeton obtusifolius</i>	S	-	-	-
<i>Potamogeton pectinatus</i>	O	Y	-	V
<i>Potamogeton praelongus</i>	S	N	-	-
<i>Potamogeton pusillus</i>	S	Y	-	-
<i>Potamogeton richardsonii</i>	O	O, N	-	V
<i>Potamogeton robbinsii</i>	O	O	-	D
<i>Potamogeton strictifolius</i>	H	-	-	-
<i>Potamogeton vaginatus</i>	O	-	-	-
<i>Potamogeton zosteriformis</i>	S	N	-	V
<i>Ranunculus longirostris</i>	O	O	-	-
<i>Ranunculus reptans</i>	H	-	-	-
<i>Ranunculus trichophyllus</i>	O	-	-	-
<i>Riccia fluitans</i>	-	Y	-	-
<i>Sagittaria graminea</i>	O	-	-	-
<i>Sagittaria latifolia</i>	O	O, Y	-	-
<i>Sagittaria rigida</i>	S	Y, N	-	-
<i>Scirpus americanus</i>	O	N	-	I
<i>Scirpus validus</i>	O	N	I	I
<i>Sparganium chlorocarpum</i>	S	-	V	V
<i>Sparganium eurycarpum</i>	O	O, Y	-	-
<i>Spirodela polyrhiza</i>	-	Y	-	D
<i>Typha angustifolia</i>	-	Y	-	-
<i>Typha latifolia</i>	O	N, Y	V	V
<i>Utricularia geminiscapa</i>	S	-	-	-
<i>Utricularia gibba</i>	S	-	-	-
<i>Utricularia intermedia</i>	S	-	-	-
<i>Utricularia purpurea</i>	-	-	D	-
<i>Utricularia vulgaris</i>	S	Y	-	D
<i>Vallisneria americana</i>	H	Y	-	I
<i>Zannichellia palustris</i>	H	Y	-	-
<i>Zizania aquatica</i>	S	O	-	-

<sup>1</sup> S: prefers soft substrate; H: hard substrate; O: no preference; - information unknown or unreported

<sup>2</sup> Y: positive with turbid water; N: negative; O: no significant association; - information unknown or unreported

<sup>3</sup> I: increases with drawdown; D: decreases with drawdown; V: variable response; - information unknown or unreported

After Nichols (in press); Kadlec and Wentz (1974); and Cooke and others (1986).

**Table 3. Wildlife and environmental values of lake plants**

Scientific name	Waterfowl			Other birds		Muskrat food <sup>3</sup>	Substrate stabiliz. <sup>3</sup>	Nuisance potential <sup>3</sup>	Fish value <sup>4</sup>
	Food part <sup>1</sup>	Food value <sup>2</sup>	Cover <sup>3</sup>	Food part <sup>1</sup>	Cover <sup>3</sup>				
<i>Acorus calamus</i>	-	P	x	-	-	-	x	-	-
<i>Brasenia schreberi</i>	S	G	-	-	-	-	-	x	C
<i>Carex</i> sp. or spp.	S	F	x	-	-	-	x	-	S
<i>Carex comosa</i>	-	F	-	-	-	-	-	-	-
<i>Ceratophyllum demersum</i>	S, F	F	x	-	-	-	-	x	F, S
<i>Chara</i> sp. or spp.	F	G	-	-	-	-	-	x	-
<i>Cyperus</i> sp. or spp.	S	F	-	S	-	-	x	x	-
<i>Decodon verticillatus</i>	S	P	-	-	-	-	-	-	-
<i>Eleocharis</i> sp. or spp.	T	G	-	S	x	x	-	-	F, S, C
<i>Eleocharis acicularis</i>	-	F	-	-	-	-	-	x	S
<i>Eleocharis palustris</i>	-	F	x	-	-	-	-	-	F
<i>Elodea</i> sp. or spp.	-	-	-	-	-	-	-	-	F
<i>Elodea canadensis</i>	F	F	-	-	-	-	-	x	-
<i>Equisetum</i> sp. or spp.	F	P	-	-	-	x	x	x	-
<i>Heteranthera dubia</i>	S	P	-	-	-	-	-	x	F, S
<i>Juncus</i> sp. or spp.	-	-	-	-	-	-	x	x	S
<i>Lemna minor</i>	-	G	-	-	-	-	-	x	F
<i>Lemna trisulca</i>	-	G	-	-	-	-	-	-	-
<i>Myriophyllum</i> sp. or spp.	S, F	P	-	S	-	-	-	x	F, C
<i>Myriophyllum alterniflorum</i>	-	-	-	-	-	-	-	-	F, C
<i>Myriophyllum exalbescens</i>	-	F	-	-	-	-	-	x	-
<i>Myriophyllum spicatum</i>	S, F	P	-	-	-	-	-	x	F, C
<i>Myriophyllum tenellum</i>	-	-	-	-	-	-	-	-	F
<i>Najas</i> sp. or spp.	-	-	-	S	-	-	-	x	-
<i>Najas flexilis</i>	S, F	E	-	-	-	-	-	x	F, C
<i>Najas guadalupensis</i>	S, F	E	-	-	-	-	-	x	-
<i>Najas marina</i>	S, F	F	-	-	-	-	-	x	-
<i>Nelumbo lutea</i>	-	-	-	-	-	-	x	x	F, C
<i>Nuphar</i> sp. or spp.	-	-	-	-	-	-	-	x	F, C
<i>Nuphar microphyllum</i>	S	F	-	S	-	-	-	-	-
<i>Nuphar variegatum</i>	-	F	-	-	-	-	-	-	F, C
<i>Nymphaea</i> sp. or spp.	S	P	-	S, T, F	-	-	x	x	F, C
<i>Nymphaea odorata</i>	S	F	-	-	-	-	-	x	F, C
<i>Nymphaea tuberosa</i>	S	F	-	-	-	-	-	-	C
<i>Phragmites australis</i>	-	-	x	-	x	-	x	x	F
<i>Polygonum</i> sp. or spp.	-	E	-	-	-	-	x	x	-
<i>Polygonum amphibium</i>	S	E	-	-	-	-	x	x	-
<i>Polygonum coccineum</i>	S	G	-	-	-	-	x	-	-
<i>Pontederia cordata</i>	S	P	x	-	-	x	-	x	C
<i>Potamogeton</i> sp. or spp.	-	-	-	-	-	-	-	x	-
<i>Potamogeton amplifolius</i>	S	F	-	-	-	-	-	-	F
<i>Potamogeton berchtoldii</i>	-	-	-	-	-	-	-	-	F, C
<i>Potamogeton capillaceus</i>	S	F	-	-	-	-	-	-	-
<i>Potamogeton crispus</i>	S, T	P	-	-	-	-	-	x	F, C

<sup>1</sup> S: seeds or comparable structure; T: tubers or roots; F: foliage and stems; - information unknown or unreported

<sup>2</sup> E: excellent; G: good; F: fair; P: poor; - information unknown or unreported

<sup>3</sup> X: plant is functional in specified category; - information unknown or unreported

<sup>4</sup> F: direct food or supports fish food fauna; C: cover; S: spawning habitat; - information unknown or unreported

Table 3. continued

Scientific name	Waterfowl			Other birds		Muskrat food <sup>3</sup>	Substrate stabiliz. <sup>3</sup>	Nuisance potential <sup>3</sup>	Fish value <sup>4</sup>
	Food part <sup>1</sup>	Food value <sup>2</sup>	Cover <sup>3</sup>	Food part <sup>1</sup>	Cover <sup>3</sup>				
<i>Potamogeton diversifolius</i>	S	F	-	-	-	-	-	-	-
<i>Potamogeton ephedrus</i>	S, T, F	G	-	-	-	-	-	-	-
<i>Potamogeton foliosus</i>	S, T, F	G	-	-	-	-	-	-	F, C
<i>Potamogeton friesii</i>	S, F	G	-	-	-	-	-	-	-
<i>Potamogeton gramineus</i>	S, T	G	-	-	-	-	-	-	-
<i>Potamogeton illinoensis</i>	S	F	-	-	-	-	-	x	C
<i>Potamogeton natans</i>	S, T	G	-	-	-	-	x	-	-
<i>Potamogeton nodosus</i>	S	G	-	-	-	-	-	-	F, C
<i>Potamogeton obtusifolius</i>	-	-	-	-	-	-	-	-	F, C
<i>Potamogeton pectinatus</i>	-	E	-	-	-	-	-	x	F, C
<i>Potamogeton praelongus</i>	S, T, F	F	-	-	-	-	-	-	F, C
<i>Potamogeton pusillus</i>	S, T, F	G	-	-	-	-	-	-	-
<i>Potamogeton richardsonii</i>	S, T, F	G	-	-	-	-	-	-	F, C
<i>Potamogeton robbinsii</i>	-	-	-	-	-	-	-	x	F, C
<i>Potamogeton spirillus</i>	S	F	-	-	-	-	-	-	-
<i>Potamogeton strictifolius</i>	S	G	-	-	-	-	-	-	-
<i>Potamogeton zosteriformis</i>	S	F	-	-	-	-	-	-	-
<i>Ranunculus</i> sp. or spp.	S, F	P	-	-	-	-	-	-	F
<i>Ruppia maritima</i>	S, T, F	E	-	S	-	-	-	-	-
<i>Sagittaria</i> sp. or spp.	-	-	x	S	x	x	-	-	-
<i>Sagittaria cuneata</i>	S, T	F	-	-	-	-	x	-	-
<i>Sagittaria latifolia</i>	-	F	-	-	-	-	x	-	-
<i>Scirpus</i> sp. or spp.	-	-	x	S, T	x	x	x	x	F, C
<i>Scirpus acutus</i>	S	E	-	-	-	-	x	-	F, C
<i>Scirpus americanus</i>	S	G	-	-	-	-	x	-	F, C
<i>Scirpus fluviatilis</i>	S	P	-	-	-	-	x	-	-
<i>Scirpus validus</i>	-	-	-	-	-	-	x	-	F, C
<i>Sparganium chlorocarpum</i>	-	F	-	-	-	-	-	-	-
<i>Sparganium eurycarpum</i>	S	F	-	-	-	-	-	-	-
<i>Spirodela polyrhiza</i>	-	G	-	-	-	-	-	x	F
<i>Typha</i> sp. or spp.	T, F	P	x	S	x	x	x	x	F
<i>Typha angustifolia</i>	-	-	-	-	-	-	x	-	S, C
<i>Utricularia purpurea</i>	-	-	-	-	-	-	-	-	F, C
<i>Vallisneria americana</i>	-	E	-	-	-	-	-	x	F, C
<i>Wolffia columbiana</i>	-	F	-	-	-	-	-	-	-
<i>Zannichellia palustris</i>	S, F	G	-	S	-	-	x	-	F
<i>Zizania aquatica</i>	S	E	x	S	x	-	x	-	-

<sup>1</sup> S: seeds or comparable structure; T: tubers or roots; F: foliage and stems; - information unknown or unreported

<sup>2</sup> E: excellent; G: good; F: fair; P: poor; - information unknown or unreported

<sup>3</sup> X: plant is functional in specified category; - information unknown or unreported

<sup>4</sup> F: direct food or supports fish food fauna; C: cover; S: spawning habitat; - information unknown or unreported

After Kadlec and Wentz (1974); Janecek (1987); Trudeau (1982); Carlson and Moyle (1968); and U.S. Army Corps of Engineers (1978).

**Table 4. Plant propagation methods**

Scientific name	Life cycle <sup>1</sup>	Trans-plant <sup>2</sup>	Whole plant <sup>2</sup>	Roots <sup>2</sup>	Cuttings <sup>2</sup>	Tubers <sup>2</sup>	Winter buds <sup>2</sup>	Seed <sup>2</sup>
<i>Acorus calamus</i>	P	-	-	X	-	-	-	-
<i>Brasenia schreberi</i>	P	x	-	-	-	-	x	x
<i>Carex</i> sp. or spp.	B	x	-	x	-	-	-	x
<i>Ceratophyllum demersum</i>	P	-	x	-	-	-	-	-
<i>Chara</i> sp. or spp.	-	x	x	-	-	-	-	-
<i>Cyperus</i> sp. or spp.	B	x	x	x	-	x	-	x
<i>Eleocharis</i> sp. or spp.	B	x	-	x	-	x	-	x
<i>Eleocharis acicularis</i>	-	-	x	-	-	-	-	-
<i>Eleocharis palustris</i>	-	x	x	-	-	-	-	-
<i>Elodea</i> sp. or spp.	P	x	x	-	x	-	-	-
<i>Elodea canadensis</i>	P	x	x	-	x	-	-	-
<i>Equisetum</i> sp. or spp.	P	-	-	-	-	-	-	-
<i>Equisetum fluviatile</i>	P	-	-	-	-	-	-	-
<i>Heteranthera dubia</i>	P	x	-	-	-	-	-	x
<i>Juncus</i> sp. or spp.	P	-	-	-	-	-	-	-
<i>Lemna</i> sp. or spp.	-	-	x	-	-	-	-	-
<i>Lemna minor</i>	P	-	x	-	-	-	-	-
<i>Lemna trisulca</i>	P	-	x	-	-	-	-	-
<i>Myriophyllum</i> sp. or spp.	P	x	x	-	x	-	-	x
<i>Najas</i> sp. or spp.	A	x	x	-	-	-	-	x
<i>Nelumbo lutea</i>	P	-	-	-	-	x	-	x
<i>Nuphar</i> sp. or spp.	P	x	-	x	-	-	-	x
<i>Nuphar advena</i>	P	-	-	-	-	-	-	-
<i>Nuphar variegatum</i>	P	x	-	x	-	-	-	x
<i>Nymphaea</i> sp. or spp.	P	x	-	x	-	x	-	x
<i>Nymphaea tuberosa</i>	P	x	-	x	-	x	-	x
<i>Phragmites australis</i>	P	x	-	x	-	-	-	x
<i>Polygonum</i> sp. or spp.	P	-	-	-	-	-	-	-
<i>Polygonum amphibium</i>	P	x	-	x	-	-	-	x
<i>Polygonum coccineum</i>	P	x	-	x	-	-	-	x
<i>Pontederia cordata</i>	P	x	-	x	-	-	-	x
<i>Potamogeton</i> sp. or spp.	P	-	-	-	-	-	-	-
<i>Potamogeton amplifolius</i>	P	x	-	x	x	-	-	x
<i>Potamogeton foliosus</i>	P	x	-	-	-	-	x	x
<i>Potamogeton gramineus</i>	P	x	-	x	x	-	-	x
<i>Potamogeton natans</i>	P	x	-	x	-	-	-	x
<i>Potamogeton nodosus</i>	P	x	-	x	x	-	-	x
<i>Potamogeton pectinatus</i>	P	x	-	x	x	x	-	x
<i>Potamogeton pusillus</i>	P	x	-	-	-	-	x	x
<i>Potamogeton richardsonii</i>	P	-	-	x	-	-	-	-
<i>Potamogeton spirillus</i>	-	x	x	-	-	-	-	x
<i>Potamogeton zosteriformis</i>	P	x	-	-	-	-	x	x
<i>Ranunculus</i> sp. or spp.	P	x	x	-	-	-	-	x

<sup>1</sup> A: annual; P: perennial; B: both; - information unknown or unreported

<sup>2</sup> x: can be propagated by the designated method; - information unknown or unreported

Table 4. continued

Scientific name	Life cycle <sup>1</sup>	Trans-plant <sup>2</sup>	Whole plant <sup>2</sup>	Roots <sup>2</sup>	Cuttings <sup>2</sup>	Tubers <sup>2</sup>	Winter buds <sup>2</sup>	Seed <sup>2</sup>
<i>Ruppia maritima</i>	P	x	-	x	x	-	x	-
<i>Sagittaria cuneata</i>	P	-	-	-	-	-	-	-
<i>Sagittaria latifolia</i>	P	x	-	-	-	x	-	x
<i>Sagittaria rigida</i>	P	-	-	-	-	x	-	-
<i>Scirpus</i> sp. or spp.	P	x	-	x	-	x	-	x
<i>Scirpus acutus</i>	P	x	-	x	-	-	-	x
<i>Scirpus americanus</i>	P	x	-	x	-	x	-	x
<i>Scirpus fluviatilis</i>	P	x	-	x	-	x	-	x
<i>Scirpus subterminalis</i>	P	-	-	-	-	-	-	-
<i>Scirpus validus</i>	P	x	-	x	-	-	-	x
<i>Sparganium</i> sp. or spp.	P	x	-	x	-	-	-	x
<i>Sparganium eurycarpum</i>	P	x	-	x	-	-	-	x
<i>Spirodela polyrhiza</i>	P	-	x	-	-	-	x	-
<i>Typha</i> sp. or spp.	P	x	-	x	-	-	-	x
<i>Typha angustifolia</i>	P	x	-	x	-	-	-	x
<i>Typha latifolia</i>	P	x	-	x	-	-	-	x
<i>Utricularia</i> sp. or spp.	P	-	-	-	-	-	-	-
<i>Vallisneria americana</i>	P	x	-	-	-	x	-	x
<i>Wolffia</i> sp. or spp.	-	-	x	-	-	-	-	-
<i>Zannichellia palustris</i>	A	-	-	-	-	-	-	x
<i>Zizania aquatica</i>	A	-	-	-	-	-	-	x

<sup>1</sup> A: annual; P: perennial; B: both; - information unknown or unreported

<sup>2</sup> x: can be propagated by the designated method; - information unknown or unreported

After Kadlec and Wentz (1974); Lemberger (1981); Kester (1989); and U.S. Army Corps of Engineers (1978).



**Table 5. Aquatic plant herbicide susceptibility (for use only as a general guideline)**

Scientific name.	Endothall <sup>1</sup>	Diquat <sup>1</sup>	2,4-D <sup>1</sup>	Glyphosate <sup>1</sup>	Fluridone <sup>1</sup>	Simazine <sup>1</sup>
<i>Acorus calamus</i>	N	N	C	-	-	-
<i>Brasenia schreberi</i>	N	N	C	-	N	-
<i>Ceratophyllum demersum</i>	C	C	C	-	C	C
<i>Chara</i> sp. or spp. <sup>2</sup>	?	N	N	N	N	C
<i>Eleocharis acicularis</i>	-	-	-	-	?	-
<i>Eleocharis palustris</i>	-	-	-	-	?	-
<i>Elodea canadensis</i>	?	C	N	-	C	-
<i>Heteranthera dubia</i>	C	C	N	-	-	-
<i>Juncus pelocarpus</i>	-	-	-	-	C	C
<i>Lemna</i> sp. or spp.	N	C	N	-	C	C
<i>Lemna minor</i>	N	C	N	-	C	C
<i>Myriophyllum</i> sp. or spp.	?	C	C	-	-	C
<i>Myriophyllum exalbescens</i>	?	-	-	-	C	-
<i>Myriophyllum heterophyllum</i>	?	-	-	-	?	-
<i>Myriophyllum spicatum</i>	?	C	C	N	C	?
<i>Najas</i> sp. or spp.	C	C	-	-	?	C
<i>Najas flexilis</i>	?	C	N	N	C	-
<i>Najas guadalupensis</i>	C	C	N	-	C	C
<i>Nelumbo lutea</i>	?	?	C	?	-	-
<i>Nitella</i> sp. or spp. <sup>2</sup>	-	-	-	-	-	C
<i>Nuphar</i> sp. or spp.	N	N	C	C	C	-
<i>Nuphar advena</i>	?	-	C	C	?	-
<i>Nymphaea</i> sp. or spp.	?	N	C	C	C	-
<i>Nymphaea odorata</i>	?	-	C	C	C	-
<i>Phragmites australis</i>	-	-	-	C	?	-
<i>Polygonum</i> sp. or spp.	?	N	C	C	?	-
<i>Pontederia cordata</i>	-	-	?	?	N	-
<i>Potamogeton</i> sp. or spp.	C	?	-	-	?	C
<i>Potamogeton amplifolius</i>	C	?	N	-	-	-
<i>Potamogeton crispus</i>	C	C	N	-	C	C
<i>Potamogeton diversifolius</i>	C	?	N	-	C	C
<i>Potamogeton filiformis</i>	C	-	-	-	C	-
<i>Potamogeton foliosus</i>	C	C	N	-	C	C
<i>Potamogeton illinoensis</i>	-	-	-	-	?	-
<i>Potamogeton natans</i>	C	C	?	-	C	-
<i>Potamogeton nodosus</i>	C	?	N	-	?	-
<i>Potamogeton pectinatus</i>	C	C	N	-	C	C
<i>Potamogeton pusillus</i>	C	C	N	-	-	C
<i>Potamogeton richardsonii</i>	C	N	N	-	C	-
<i>Potamogeton strictifolius</i>	C	C	N	-	-	-
<i>Potamogeton zosteriformis</i>	C	N	N	-	-	-
<i>Ranunculus</i> sp. or spp.	?	C	?	-	-	-
<i>Ranunculus aquatilis</i>	?	C	-	-	-	-

<sup>1</sup> N: plant generally not controlled; C: plant generally controlled; ?: questionable control; results highly dependent on chemical formulation or environmental conditions; - information unknown or unreported

<sup>2</sup> plant usually controlled with copper compounds

Table 5. continued

Scientific name	Endothal <sup>1</sup>	Diquat <sup>1</sup>	2,4-D <sup>1</sup>	Glyphosate <sup>1</sup>	Fluridone <sup>1</sup>	Simazine <sup>1</sup>
<i>Ruppia maritima</i>	N	C	N	—	—	—
<i>Sagittaria</i> sp. or spp.	N	N	C	—	?	—
<i>Sagittaria latifolia</i>	—	—	—	—	?	—
<i>Scirpus</i> sp. or spp.	N	?	C	—	C	—
<i>Scirpus acutus</i>	—	—	—	—	?	—
<i>Scirpus americanus</i>	—	—	—	—	?	—
<i>Scirpus validus</i>	—	—	—	—	?	—
<i>Sparganium</i> sp. or spp.	C	N	N	—	—	—
<i>Spirodela polyrhiza</i>	—	C	?	—	?	C
<i>Typha</i> sp. or spp.	N	C	?	C	?	—
<i>Utricularia</i> sp. or spp.	N	C	N	—	—	—
<i>Utricularia gibba</i>	—	—	—	—	C	—
<i>Vallisneria americana</i>	?	?	—	—	N	?
<i>Wolffia columbiana</i>	—	—	—	—	?	—
<i>Wolffia</i> sp. or spp.	N	C	N	—	—	—
<i>Zannichellia palustris</i>	C	?	N	—	?	?

<sup>1</sup> N: plant generally not controlled; C: plant generally controlled; ?: questionable control; results highly dependent on chemical formulation or environmental conditions; — information unknown or unreported

After Illinois Department of Conservation (1986); Binning and others (1985); Moore and Thornton (1988); Westerdahl and Getsinger (1988); and manufacturer's literature.

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## Appendix A1. Summary sheet information

Table A1. List of taxa included in summary-sheet open-file report

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<i>Acorus calamus</i>	<i>Nitella</i> sp. or spp.	<i>Riccia fluitans</i>
<i>Brasenia schreberi</i>	<i>Nuphar</i> sp. or spp.	<i>Ruppia maritima</i>
<i>Carex</i> sp. or spp.	<i>Nuphar advena</i>	<i>Sagittaria</i> sp. or spp.
<i>Carex comosa</i>	<i>Nuphar microphyllum</i>	<i>Sagittaria cuneata</i>
<i>Ceratophyllum demersum</i>	<i>Nuphar variegatum</i>	<i>Sagittaria graminea</i>
<i>Ceratophyllum echinatum</i>	<i>Nymphaea</i> sp. or spp.	<i>Sagittaria latifolia</i>
<i>Chara</i> sp. or spp.	<i>Nymphaea odorata</i>	<i>Sagittaria rigida</i>
<i>Cyperus</i> sp. or spp.	<i>Nymphaea tuberosa</i>	<i>Scirpus</i> sp. or spp.
<i>Decodon verticillatus</i>	<i>Phragmites australis</i>	<i>Scirpus acutus</i>
<i>Dulichium arundinaceum</i>	<i>Polygonum</i> sp. or spp.	<i>Scirpus americanus</i>
<i>Eleocharis</i> sp. or spp.	<i>Polygonum amphibium</i>	<i>Scirpus fluviatilis</i>
<i>Eleocharis acicularis</i>	<i>Polygonum coccineum</i>	<i>Scirpus subterminalis</i>
<i>Eleocharis palustris</i>	<i>Pontederia cordata</i>	<i>Scirpus validus</i>
<i>Eleocharis robbinsii</i>	<i>Potamogeton</i> sp. or spp.	<i>Sparganium</i> sp. or spp.
<i>Elodea</i> sp. or spp.	<i>Potamogeton amplifolius</i>	<i>Sparganium chlorocarpum</i>
<i>Elodea canadensis</i>	<i>Potamogeton berchtoldii</i>	<i>Sparganium eurycarpum</i>
<i>Equisetum</i> sp. or spp.	<i>Potamogeton capillaceus</i>	<i>Spirodela polyrhiza</i>
<i>Equisetum fluviatile</i>	<i>Potamogeton crispus</i>	<i>Typha</i> sp. or spp.
<i>Eriocaulon septangulare</i>	<i>Potamogeton diversifolius</i>	<i>Typha angustifolia</i>
<i>Heteranthera dubia</i>	<i>Potamogeton epihydrus</i>	<i>Typha latifolia</i>
<i>Isoetes echinospora</i>	<i>Potamogeton filiformis</i>	<i>Utricularia</i> sp. or spp.
<i>Isoetes macrospora</i>	<i>Potamogeton foliosus</i>	<i>Utricularia geminiscapa</i>
<i>Juncus pelocarpus</i>	<i>Potamogeton friesii</i>	<i>Utricularia gibba</i>
<i>Juncus</i> sp. or spp.	<i>Potamogeton gramineus</i>	<i>Utricularia intermedia</i>
<i>Lemna</i> sp. or spp.	<i>Potamogeton illinoensis</i>	<i>Utricularia purpurea</i>
<i>Lemna minor</i>	<i>Potamogeton natans</i>	<i>Utricularia vulgaris</i>
<i>Lemna trisulca</i>	<i>Potamogeton nodosus</i>	<i>Vallisneria americana</i>
<i>Lobelia dortmanna</i>	<i>Potamogeton oakesianus</i>	<i>Wolffia</i> sp. or spp.
<i>Megalodonta beckii</i>	<i>Potamogeton obtusifolius</i>	<i>Wolffia columbiana</i>
<i>Myriophyllum</i> sp. or spp.	<i>Potamogeton pectinatus</i>	<i>Zannichellia palustris</i>
<i>Myriophyllum alterniflorum</i>	<i>Potamogeton praelongus</i>	<i>Zizania aquatica</i>
<i>Myriophyllum exalbescens</i>	<i>Potamogeton pusillus</i>	
<i>Myriophyllum farwellii</i>	<i>Potamogeton richardsonii</i>	
<i>Myriophyllum heterophyllum</i>	<i>Potamogeton robbinsii</i>	
<i>Myriophyllum spicatum</i>	<i>Potamogeton spirillus</i>	
<i>Myriophyllum tenellum</i>	<i>Potamogeton strictifolius</i>	
<i>Myriophyllum verticillatum</i>	<i>Potamogeton vaginatus</i>	
<i>Najas</i> sp. or spp.	<i>Potamogeton zosteriformis</i>	
<i>Najas flexilis</i>	<i>Ranunculus</i> sp. or spp.	
<i>Najas gracillima</i>	<i>Ranunculus aquatilis</i>	
<i>Najas guadalupensis</i>	<i>Ranunculus longirostris</i>	
<i>Najas marina</i>	<i>Ranunculus reptans</i>	
<i>Nelumbo lutea</i>	<i>Ranunculus trichophyllus</i>	

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**Table A2. Sample summary sheet, *Potamogeton pectinatus***

SPECIES: *Potamogeton pectinatus*

SPECIES CODE: POTPE

COMMON NAME: sago pondweed

**BASIC INFORMATION\***

Life form: S                      Life cycle: P                      Status: A

Life form: E-emergent, S-submergent, FL-floating leaved, FF-free floating

Life cycle: A-annual, P-perennial, B-both

Status: A-abundant, C-common, I-infrequent, R-rare, EN-endangered,  
N-non native

**HABITAT PREFERENCE\***

Substrate	Turbidity	Summer drawdown	Winter drawdown
-----	-----	-----	-----
O	Y	-	V

Substrate preference: S-soft, H-hard, O-no preference

Turbidity: Y-positive association with turbid water, N-negative association, O-no significant association

Drawdown: I-increases with drawdown, D-decreases, V-variable response

**WILDLIFE AND ENVIRONMENTAL VALUES\***

Water-fowl food	Water-fowl cover	Other bird food	Other bird cover	Musk-rat food	Substrate stabilization	Potential nuisance	Fish value
-----	-----	-----	-----	-----	-----	-----	-----
-	E	-	-	-	-	X	F,C

Part consumed: A-seeds, B-tubers, C-foliage and stems

Food value: E-excellent, G-good, F-fair, P-poor

Fish value: F-food or supports fish food fauna, C-cover, S-spawning habitat

**PROPAGATION METHODS\***

Transplants	Whole plants	Roots	Cuttings	Tubers	Winter buds	Seeds
-----	-----	-----	-----	-----	-----	-----
X	-	X	X	X	-	X

**HERBICIDE SUSCEPTIBILITY\***

Endothall	Diquat	2-4,D	Glyphosate	Fluridone	Simazine
-----	-----	-----	-----	-----	-----
C	C	N	-	C	C

C-controlled, ?-questionable control results dependent on chemical formulation or environmental conditions, N-not controlled

\* X-plant useful or usable method, - information unknown or unreported

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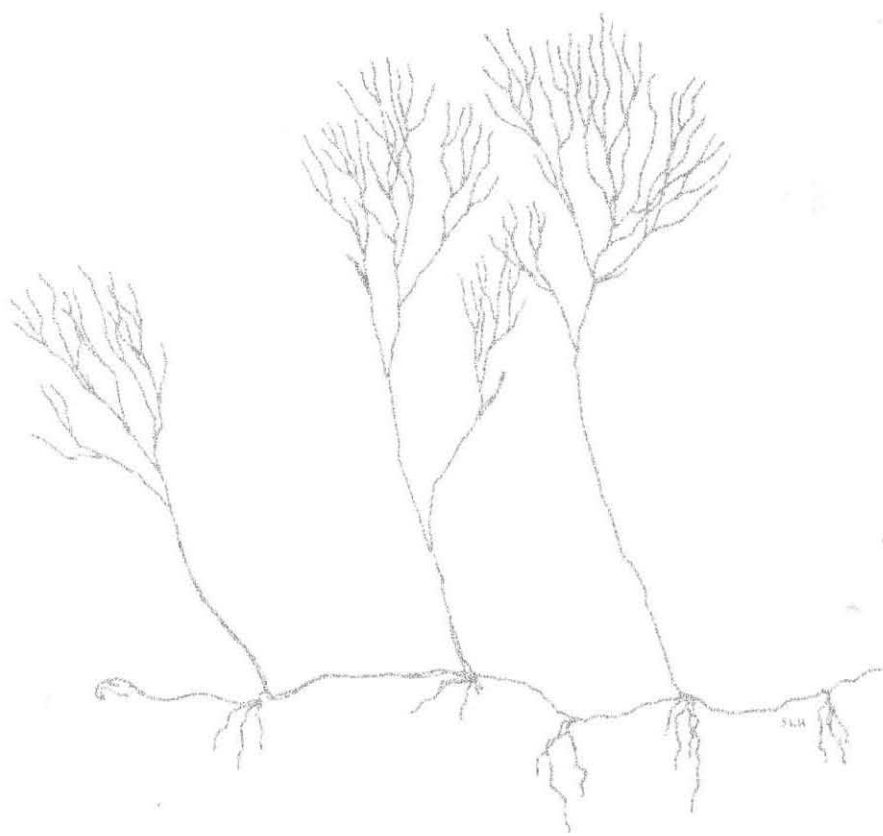
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Cover illustration: Reduced version of the *Landforms of Wisconsin* map (by D.A. Woodward, 1971; originally published by WGNHS at an approximate scale of 1:2,730,000) and drawings of *Potamogeton pectinatus* L., a native Wisconsin plant.