Crescent Lake
Aquatic Plant Management Plan

Crescent Lake Association
Rhinelander, WI

Prepared for:

Crescent Lake Association
Rhinelander, WI

August 2007, revised October 2008 and February 2009, Errata May 2009

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Aquatic Plant Management Plan

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Ayres Associates Project No. 26-0330.00
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Goals

Purpose Statement

Crescent Lake currently has a healthy population of native aquatic plants. There was no evidence of invasive species found during the survey in 2006. The purpose of the Aquatic Plant Management (APM) plan is to create a plan to maintain the current species of plants, prevent invasives from entering the system, and maintain the recreation and aquatic habitat on the lake.

Goal Statement

The goal of the APM is to maintain the native aquatic plants that are found throughout the lake. In so doing the recreation on the lake will be maintained as well as the quality of the aquatic habitat and property values.

Inventory: Lake Information

Lake Information

Crescent Lake is a 626-acre drainage lake located in Oneida County west of the City of Rhinelander, as shown on Figure 1. The lake has a maximum depth of approximately 32 feet, a mean depth of around 20 feet, and an estimated volume of 10,840 acre-feet. A bathymetric map of Crescent Lake is included as Figure 2.

Watershed Description

The total drainage area contributing to Crescent Lake is approximately 1,585 acres, or 2.5 square miles. The total surface area of Crescent Lake is 626 acres. The watershed contributing to the lake is relatively small compared to the size of the lake. Almost 2/3 of the watershed is lake surface or forest; approximately 550 acres is forested. The remaining land use is as follows:

- Residential – 165 acres
- Agricultural – 128 acres
- Wetland – 80 acres
- Public space – 25 acres

A map showing the land use throughout the watershed is included as Figure 3 and Table 1 lists the land use and area.

Management History

Crescent Lake has not had any large scale management. The lake has maintained a healthy population of plants. There is no management needed at this time.

Plant Community

On August 15 – 17, 2006 an aquatic plant survey was conducted on Crescent Lake by Ayres Associates and the Crescent Lake Association. The survey was conducted using the Point-Intercept Method. This method allows for an objective measure of plant distribution and abundance. The data collected was statistically analyzed (using WDNR worksheets) to determine community trends and effectiveness of management techniques; this is especially useful to compare data to future surveys. The sample points were determined by DNR using a variety of parameters. The points were provided to Ayres and were loaded into a GPS unit. The GPS unit was used on the lake to locate the sample points. At each point, the plant species were inventoried; the depth to the bottom of the lake and the composition of the lake bed (muck, sand, gravel, etc.) was recorded. The vegetation samples were collected with a lake rake. Of the 578 points surveyed vegetation was found at 190. A total of 1,550 points were determined for sampling but the majority of these points were in water too deep to support vegetation. Plants were not found growing much beyond the depth of 20 feet in Crescent Lake.

A total of 17 species were identified in the survey. A map showing the locations of the survey points for the survey is included as Figure 4. Following is a list of aquatic plants found in the survey in the order of abundance:

- Coontail
- Common waterweed
- Filamentous algae
- Wild celery
- Robbins pondweed
- Large-leaf pondweed
- Pickerelweed
- Dwarf water milfoil
- Flat-stem pondweed
- Illinois pondweed
- White water lily
- Spatterdock
- Bushy pondweed
- Small pondweed
- Common bladderwort
- White-stem pondweed
- Bulrush sp

The spreadsheet that was used to tabulate the data lists the plants found at each point, location of the point, sediment type and depth. This information is located in Appendix A.

A mixture of submergent and emergent plants were found. Fourteen species of submergent plants, two species of floating-leaf and one species of emergent plants were found. The submergent plants were found sporadically along the shoreline where the water was generally less than 20 feet deep. The largest beds with the densest stands were found in the coves of the lake. The substrate was generally sandy but the submergent plants were also found in the muck and gravel bottom areas. The emergent plants were found along the shorelines in the shallow water of the coves. The emergent plants were found in the areas with mucky bottom. Table 2 lists the statistics that were calculated using the collected data. Figure 4 shows the location of the emergent and submergent beds as well as the substrate composition at the sample points.

The Florist Quality Index (FQI) was used to assess the lake quality using the plants that were found in the survey. This index is commonly used by biologist to evaluate the integrity of a plant community. This value is calculated using the number of species found then giving each species a rating called the coefficient of conservatism (C). The C value indicates how typical this plant is of pristine conditions; the higher the C value the more pristine the conditions and the higher the FQI the better the lake quality. Plants found only in clear, low nutrient, undisturbed conditions have a high rating of 10; plants found in nutrient rich, disturbed waters have a lower value (0 is the lowest value). Wisconsin lakes generally have a FQI between 3.0 and 44.6 with 22.2 being the median. Lakes located in the Northern Lakes and Forests region of the state have a median FQI of 24.3 (Nichols, 1999). Crescent Lake has a FQI of 25.5, which is above both these median values. This indicates higher floristic integrity with relatively little disturbance. There were several species found in the lake that had a high C value of 10. Figure 6 shows the C value of each plant species found in the lake. All but 2 species had a value greater than 5. The most common plants, coontail and common waterweed, have a value of 3. Dwarf water-milfoil has a value of 10 and pickerelweed has a value of 9. Table 3A lists the C values and frequency of occurrence for each species.

The frequency of occurrence indicates how common or abundant the plant is. The number is calculated by dividing the number of sites with vegetation by the number of times the plant was found. As shown in Figure 7 the most abundant plant was coontail followed by common waterweed. The value of these plants is explained in Table 3. Although the most common plants have a low C value they still have value in the aquatic community and provide food and shelter for fish and other wildlife.

Fisheries & Wildlife Habitat

Crescent Lake supports a warm water fishery. According to the DNR Lake Book musky, walleye and panfish are common and northern pike, small mouth bass and large mouth bass are present. The lake provides habitat for waterfowl such as ducks and geese.

According to the resident survey the fishing on the lake is considered fair (44%) but they believe that there is too little fish habitat (52%) and keeper-size fish (60%). They believe that the fishing has declined on the lake over the years. The survey also revealed that the residents feel the diversity of birds, wildlife and loon is about right. Results of the survey can be found in Table 4.

A critical habitat designation study has not been done for Crescent Lake, but this does not mean there are no critical habitat areas in the lake. Since the area of vegetated substrate to non-vegetated substrate is small in this lake any areas with native vegetation are important to the health of the fish community. The rocky shorelines are also important areas for fish spawning and should be protected.

Water Quality

Crescent Lake is a mesotrophic spring lake. During the summer of 2006 water quality parameters were measured for this study. Water samples were collected from the lake each month May through September. The samples were taken at one location in the lake; at the deep hole on the south side of the island in the north portion of the lake. The water samples were collected from 3 feet below the surface during May, June, July, August and September. An additional sample was collected from 3 feet above the bottom of the lake during August and September. The samples were analyzed for nitrate plus nitrite, calcium, iron, potassium and sodium. The water samples were sent to the State Lab of Hygiene for analysis. Additional information was collected during the sampling process using meters. Conductivity, temperature and pH were measured on samples from near the surface and bottom of the lake and dissolved oxygen and temperature were recorded throughout the depth of the lake at 3 foot intervals. Secchi disk readings were taken each month also.

The Association has also been involved with the DNR Lakes Self Help program. The DNR website lists water quality results beginning in 1986. For two years, 1998 and 1999 no data was listed. Each year secchi disk readings were taken throughout the summer months, as well as chlorophyll a for 13 years and total phosphorous for 8 years. This data was used to interpret the water quality of Crescent Lake. Information from the EPA STORET site was also used in the water quality interpretation. Information on the water quality was collected in the 1970's and mid 1980's by EPA.

According to the information collected for this study and the data collected in the Self Help program and EPA studies the lake has good water quality. It is classified as mesotrophic which means the water is moderately clear with median levels of nutrients and may suffer from oxygen depletion in the deep areas during stratification.

Crescent is a stratified lake meaning it is deep enough so that the water temperature decreases enough throughout the water column to form a thermocline and prevent mixing. As a result the water at the bottom of the lake does not get replenished with oxygen and becomes anoxic. This was seen in the dissolved oxygen (DO) readings that were taken form 1990 to 1997 in the Self Help program. During the summer months of June through August the DO level at the bottom of the lake was near 0 mg/l. In the areas where the DO drops below 5 mg/l fish will not be found, they move to other areas of the lake that have an adequate oxygen supply.

Nutrients

The nutrients that have the greatest impact on vegetation in a lake are phosphorus and nitrogen. Total phosphorus is used to measure the lakes nutrient status. Phosphorus promotes plant growth and is the key nutrient affecting the amount of algae and weed growth. Sources of phosphorus include human and animal wastes, fertilizers, septic systems and decaying plants. Nitrogen is the second most important nutrient in a lake for plant and algae growth. Sources of nitrogen include fertilizer, human and animal waste and groundwater. Nitrogen exists in several forms in lakes. The analysis for this study included nitrate plus nitrite N. The nitrogen levels found in the lake for this study and in the EPA data indicate relatively low levels of nitrate plus nitrite.

Calcium

The calcium was measured in the lake to determine if concentrations are adequate to support zebra mussels. Zebra mussels are unlikely to establish populations in waters with calcium levels below 20 mg/l. The results of the 2006 water testing indicate an average concentration of 11 mg/l. The results of the EPA data indicate an average of 5.6 mg/l calcium. The concentration of calcium appears to be increasing in the water but it is not near the levels needed to support zebra mussels. Lake in northern Wisconsin typically have calcium concentrations of less than 10 mg/l.

Sodium, Potassium and Iron

The concentration of sodium, potassium and iron were measured to evaluate the effect of drinking water treatment system discharge into the lake. These elements are contained in the discharge water from the treatment systems and some homes on the lakes use these systems. The results from the average 2006 surface water data are as follows:

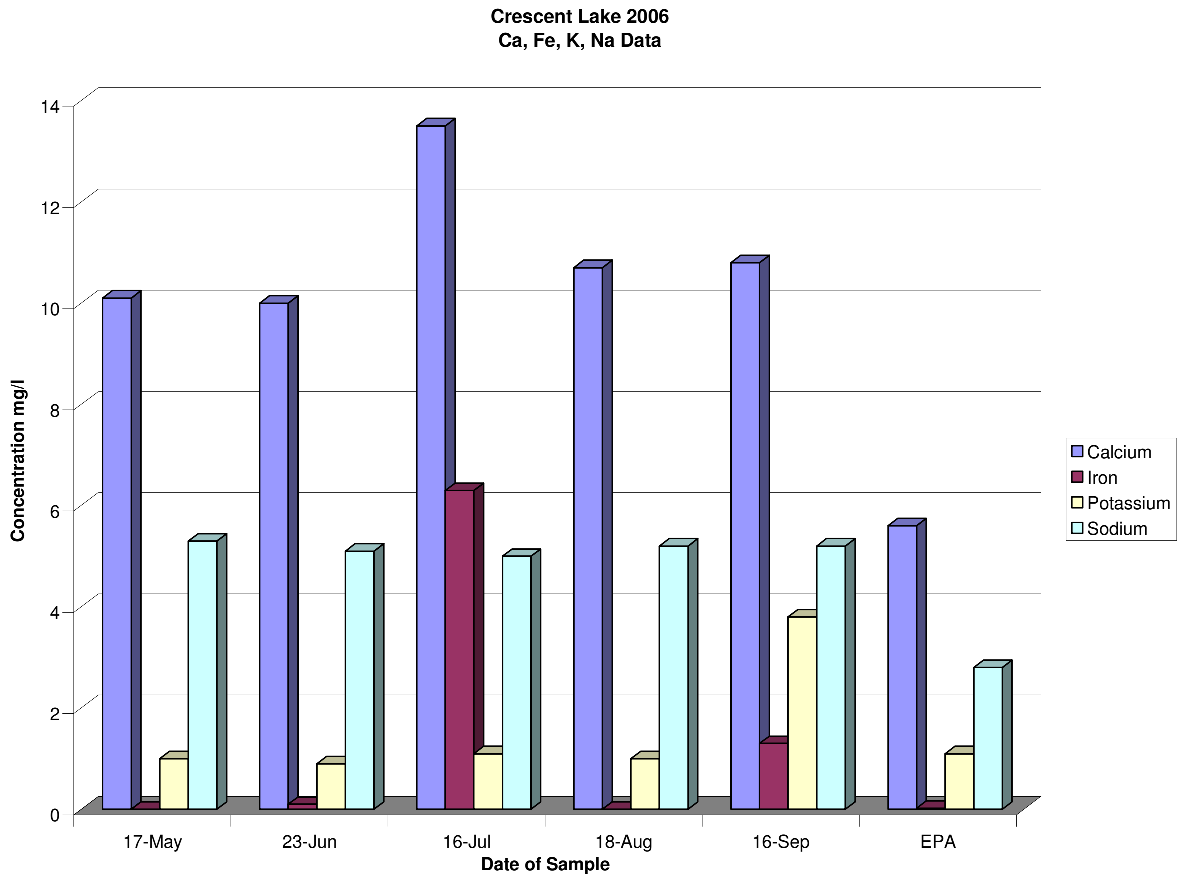
- Sodium – 5.2 mg/l
- Potassium – 1.6 mg/l
- Iron - 2.6 mg/l

According to the EPA data the averages were as follows:

- Sodium – 2.8 mg/l
- Potassium – 1.1 mg/l
- Iron - 0.02 mg/l.

An increase in each element is exhibited in the data from the 70's and 80's as compared to present. This may indicate that the discharge of water treatment systems into the lake are increasing these values. Continued testing for these parameters and further investigation into the number of systems discharging to the lake may help to determine the cause for the increase in these parameters.

The results of the calcium (Ca), iron (Fe), potassium (K) and sodium (Na) testing for the 2006 samples are shown in the graph below. The last set of columns is the average from the EPA data.



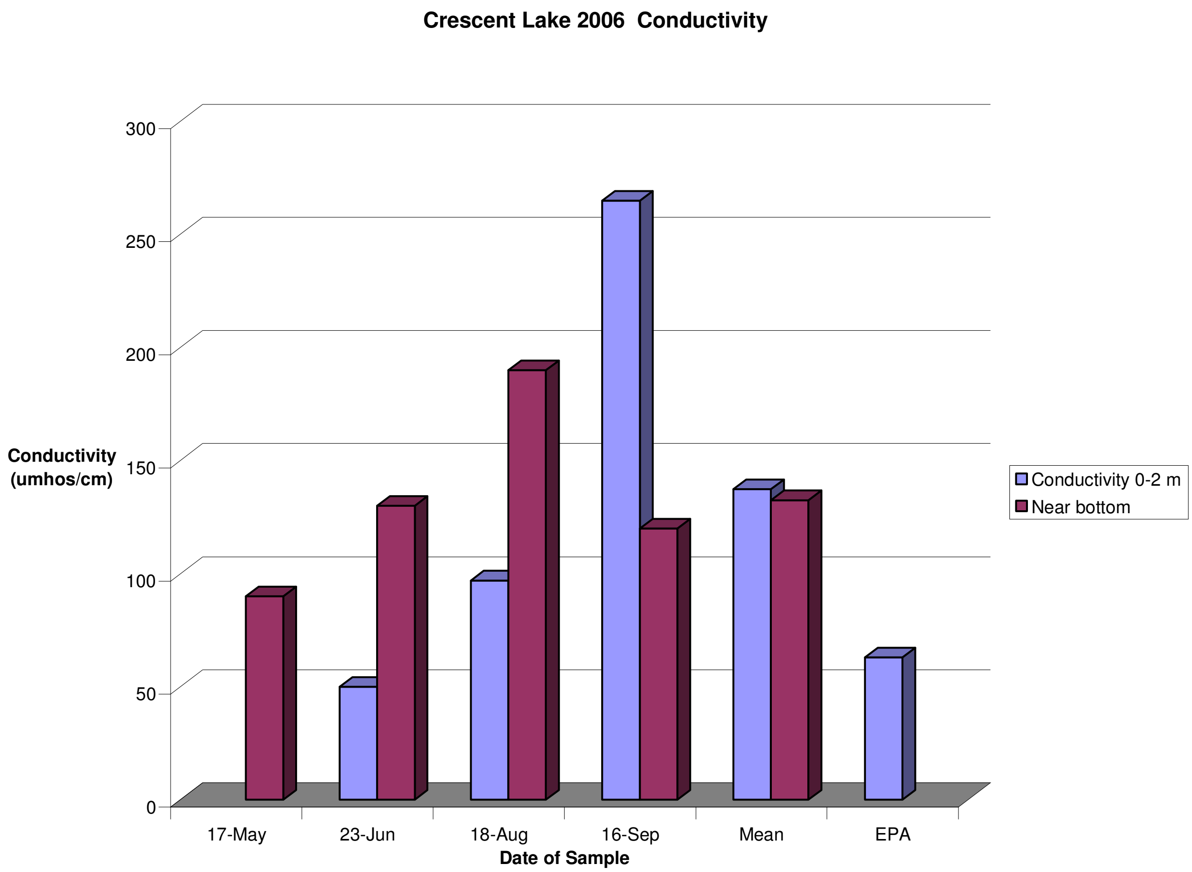
Water Clarity

Water clarity is a measure of water quality related to algal abundance and general lake productivity. The following properties can affect the clarity or transparency of water: algae, zooplankton, water color and suspended sediments with algae commonly the most dominant factor in water clarity. Water clarity is commonly measured using a Secchi disk. This black and white disk is lowered into the water until it can no longer be seen from the surface, this depth is then recorded. The average for the summer readings was 4.1meters (13.45 ft) which indicated very good water quality according to Lillie and Mason (1983) water quality indices for Wisconsin.

Buffering Capacity

pH is a measure of the concentration of hydrogen ions. A pH of 7 is considered neutral, substances with lower pH are acidic and substances with higher pH are basic. According to information from EPA the pH of the lake is near 7.2, an average reading for Wisconsin lakes. The conductivity is a measure of the water's ability to conduct an electrical current and it gives an indication of the amount of dissolved substances in the water. The geology of a lake's watershed establishes the normal ranges for conductivity in a lake. Some polluted runoff into lakes can cause changes in conductivity especially if the pollutants include inorganic dissolved solids such as ions: bicarbonate, sulfate, chloride, calcium, magnesium, sodium, potassium, and phosphate. If the conductivity is high, it may indicate the presence of one or more of these contaminants. Low conductivity values are characteristic of oligotrophic lake waters that are low in nutrients, while high conductivity values are characteristic of eutrophic lake water with high amounts of nutrient and an abundance of plants. The average values of conductivity in Crescent Lake for this study were determined to be 137 umhos/cm near the surface and 132 umhos/cm near the bottom. Based on the values from the EPA data the average conductivity in the 70's was 63 umhos/cm. The increase in the sodium, calcium, potassium and iron in the water may have affected the conductivity of the water; however other factors can not be ruled out. Conductivity is generally twice the hardness value in a lake (DNR website); since hardness was not measured for this study a comparison can not be made

The following chart shows the conductivity levels in 2006 and the EPA average.



Water Use

The lake is used for recreation such as boating, fishing and swimming. There is a public boat landing on the north end of the lake. The entire lakeshore is developed with private homes, one resort and a bible camp. There are no known uses of potable water or irrigation use from the lake. A survey of the lakeshore residents was conducted to assess their views and uses of the lake. A copy of the survey results is included as Table 4.

The residents in the survey use the lake for boating and fishing since the majority of them have fishing boats (64%) on their property. The majority of the residents have 2 cycle boats with motors of 11 to 50 HP (31%), followed by 4 cycle of same HP (20%). They use the lake year round (42%). Over half (51%) of the people thought there was too little fish habitat on the lake and that fishing has declined over the years (56%).

According to the survey the residents believe the amount of rooted vegetation near shore (60%) and floating algae and scum (64%) is about right. The residents believe shoreland plant removal has had a negative impact (40%) on the water quality.

Analysis

The objective of the APM plan is to protect the native vegetation that exists in the lake and prevent the introduction and establishment of invasive species. The native plants are important to the lake ecosystem and provide food and habitat to all the aquatic animals and waterfowl that use the lake. There has been concern expressed over the apparent decline in the density and size of the beds of aquatic vegetation. According to several people that have used the lake over the years there is far less vegetation in fewer areas than several years ago. Many believe this may be due to the population of Rusty crayfish that has invaded the lake. A second concern is the introduction of invasive plants such as Eurasian watermilfoil (EWM). There are a number of lakes in Oneida, Lincoln and Langlade counties that have EWM. Following is information on Rusty crayfish and EWM.

<u>Rusty Crayfish</u>

Rusty crayfish are present in the lake and may have had an adverse effect on the aquatic plant population in the lake. According to DNR records the crayfish have been present in the lake since the 1970s. During the aquatic plant survey several residents claimed that there are far fewer and less dense stands of aquatic vegetation on the lake than in past years. This may be a result of the rusty crayfish population in the lake. The crayfish are being harvested by trapping in several areas throughout the lake.

Rusty crayfish are a non-native invasive species of crayfish that originated in the Ohio River basin and the states of Ohio, Kentucky, Tennessee, Indiana and Illinois. It is believed that the crayfish were introduced to Wisconsin in the 1960's likely by non-resident anglers using them as bait. The crayfish have spread to several waters through anglers bait use (it is illegal to use them as bait in Wisconsin), release of aquarium crayfish into local waters, or possible release of crayfish by unscrupulous bait trappers to create a viable harvest of the species.

The rusty's inhabit lakes, ponds and streams and will live in both still and fast moving water. They prefer areas with rocks, logs and other debris that offer cover. Bottom types of clay, silt, sand, gravel or rock are suitable habitat. The rusty's are opportunistic feeders and will eat a variety of aquatic plants, benthic invertebrates such as aquatic worms, snails, leeches, clams, insects, side swimmer and water fleas, detritus, fish eggs and small fish.

Rusty crayfish may cause a number of negative environmental impacts. They are an aggressive species that displace native crayfish. They compete for the same food source, take the best daytime hiding places and increase fish depredation on the native crayfish because they will fight the fish that try to eat them where the natives do not. One of the most serious impacts is the destruction of aquatic plant beds. They reduce the abundance and diversity of plant species which can be especially damaging in the northern unproductive lakes. The rusty crayfish are more destructive to plants than native crayfish because they eat more plants due to their high metabolic rate. There has been some evidence that the rusty's may decrease fish populations by eating benthic invertebrates that fish feed on and by eating fish eggs. The warm water spawning fish such as smallmouth and largemouth bass and sunfish are at higher risk of this threat (Gunderson, 2002).

There are no proven methods of controlling rusty crayfish. There are chemicals that are available that will kill rusty crayfish but they are not selective and will kill the natives as well. Intensive harvest has been used to decrease the population but has not been proven to eradicate or control the rusty's. A recent study has suggested that smallmouth bass could reduce rusty crayfish populations as well (UW-Madison, 2006). A fishery that is managed to increase the smallmouth bass population may result in a decrease in the rusty population. A combination of harvesting and increased bass populations may prove to be a viable management method for rusty crayfish. However, the best method of control is to prevent the introduction into uninfested waters.

Rusty crayfish can be distinguished from native crayfish but identification is often difficult. The rusty's have larger, more robust claws and have dark rusty spots on each side of their carapace. See Figure 5 for a more detailed description and drawings.

Eurasian watermilfoil

Eurasian watermilfoil (EWM) is an exotic invasive aquatic plant species that can cause a variety of problems on lakes. It is an aggressive plant that out competes native vegetation thereby displacing these populations. EWM grows in dense stands that form thick mats that reduce or eliminate navigation and provide cover too heavy and thick for many fish species. EWM grows quickly in early spring and shades the slower growing native plants, thereby stunting their growth and displacing them. Small patches of EWM can quickly grow into large stands if left untreated. Once EWM is in a lake it is there to stay, it can not be eradicated. Crescent Lake may be especially susceptible to EWM infestation due to the recent decrease in plant density on the lake. Once a colony is established it will spread quickly due to lack of competition from native stands.

Once EWM is in a lake there are a number of methods that can be used to control vegetation based on the density and area of the stands. If individual plants are found they can be hand pulled and disposed of on land. If larger isolated stands are found chemical treatment can be a cost effective, viable method of control. If large areas of the lake are infested a variety of chemical treatment options may be used but can get very expensive. Other methods include harvesting, whole-lake chemical treatments, drawdown, dredging and milfoil weevils.

The best strategy in dealing with EWM is to prevent it from entering a lake. There are a number of lakes in Oneida, Lincoln and Langlade counties that are infested with EWM, Table 5 lists these lakes. The most effective method in preventing the spread of EWM is to educate lake users. All lake users should be aware of invasives and how to prevent the spread. A second method is to monitor boat landings to prevent boaters from bringing the invasives into the lake and to educate them.

Recommendations

To protect the native vegetation that is established in the lake and to prevent invasives from entering two recommendations have been made. A monitoring and education program to prevent the introduction of EWM and other invasives and management of rusty crayfish and is recommended.

Eurasian Watermilfoil

The aquatic plant survey conducted in 2006 showed no evidence of Eurasian watermilfoil in Crescent Lake. This is great and every effort should be made to keep this nasty invader out. EWM is usually spread to lakes through boat traffic. A boat that has been in infested waters retains the EWM on the trailer or boat itself and when it is launched in the next lake the plants come off of the boat and into the lake. This is why new stands of EWM are commonly found near the boat landing. This is a particularly damaging place for EWM to begin in a lake because it is easily spread from this point. EWM not only reproduces through its root system but can reproduce through fragmentation. If a boat runs through a stand of EWM and the plant is cut into pieces by the motor, these pieces can easily move to other parts of the lake and take root, thus starting a new stand.

The best strategies to prevent EWM from invading a lake are through lake user education and continued monitoring. A good way to achieve both tasks is through the Clean Boats Clean Waters (CBCW) program. This program is currently implemented at Crescent Lake through the Association. The program works by inspecting boats for vegetation and other invaders before they are launched and by educating the boaters on the spread of the invasives. This program has been proven to be very effective. It is best to have a group at the landing during the busiest times, such as on weekends and holidays. This is also the most difficult time to find volunteers to conduct the inspections. As many people as possible should be trained in the inspection process to ensure adequate staffing during these busy times.

Educational material should be posted and available at the boat landing also. A kiosk with brochures on aquatic invasives has been built at the boat landing. Signs should also be posted warning users of the invasives. A great way to educate people and get them involved in protecting the lake it through a lake fair. This can be presented by an individual association or members from several area lakes can join to conduct a large fair. Members of the Associations as well as the general public should be invited to participate. Representatives from DNR, County zoning, County land conservation, NRCS (Natural Resource Conservation Service) would likely be happy to participate and provide information on all topics of lake protection from shoreland protection/restoration to invasive species.

Monitoring of the lake for invasives, in particular EWM, is vital to preventing infestation. Monitoring of the vegetation should be done on a regular basis. Each spring the perimeter of the lake should be inspected with a visual survey, paying special attention to the area near the boat landing. EWM grows quickly and will likely be evident before the native vegetation can readily be seen. Point-intercept surveys should be redone and management plans should be updated approximately every five years. This will provide information that can be statistically analyzed to track trends in the vegetation.

If a stand of EWM is found, local DNR office lakes staff in Rhinelander should be contacted immediately, and immediate action should be taken to prevent the spread of the plant. A small stand can be removed by hand pulling or chemical treatment. This site must then be monitored very carefully and additional treatment will likely be needed to control the plant in this area. If the stand is large chemical treatment may be used but it gets very costly when used on large areas, especially since follow up treatment is required to gain control of the plant.

DNR has an Aquatic Invasive Species Program that lists the steps to take to be sure invaders do not enter your lake. They also have a number of grants that can be used to fund these projects. Appendix B contains the information on these programs, contacts, and grants.

Rusty Crayfish

The rusty crayfish may be managed by intensive harvesting and managing fish population for smallmouth bass. Harvesting of the rusty's is currently being done in certain areas of the lake. The areas where harvesting is taking place should be documented. Additional and more intensive harvesting should be encouraged. The Association should contact the harvesters to get information on the amount of crayfish that they are taking and their trapping schedule. The current harvesters may be encouraged to increase trapping or new harvesters could be found to intensify the harvest.

Additional information on the crayfish population should be gathered and population monitoring should be implemented. Along with this the aquatic plants should be monitored to look for changes in density and diversity in areas where the higher populations of crayfish are found.

The local DNR fish manager should be contacted to determine if management of the fishery on Crescent Lake may have a positive effect on reducing the rusty population. Management of the fishery to increase smallmouth bass populations may help to control the rusty crayfish. An increase in smallmouth bass, in combination with intensive harvesting, has been shown to decrease the rusty populations, since smallmouth prey on the crayfish (UW-Madison, 2006). Increased size limits and decreased bag limits may help to increase the smallmouth population. Protecting near shore habitat is very important for maintaining and increasing fish populations. Leaving fallen trees in the water, maintaining the emergent and submergent vegetation throughout the lake and especially in the near shore area, maintaining buffers at least 35 feet wide along the shoreline and keeping boat lifts, docks and rafts to a minimum will provide the habitat that fish thrive in.

An effective rusty crayfish removal plan does not exist. The most successful attempt at removal in Wisconsin is being accomplished at Sparkling Lake in Vilas County through a combination of intensive trapping and predator fish manipulation. However, this success would be hard to duplicate in a lake the size of Crescent Lake. In spite of this, steps may be taken to try to control the rusty crayfish population of Crescent Lake. The local DNR fish manager and invasive species coordinator should be contacted. They can provide information and guidance in attempting to manage the rusty crayfish population.

To stop the spread of rusty crayfish to other area lakes, boaters and anglers using Crescent Lake should be educated on this invasive species. Signs should be posted at the boat landing warning users that rusty crayfish are in the lake and how they are spread. All lake users should know that they should not transport the crayfish out of the lake and that it is illegal to introduce rusty crayfish into any water. It is important to know that one female that is carrying viable sperm is capable of beginning a new population.

Implementing this Plan

Following are the steps recommended to implement this plan.

Step 1: Form a group to be trained in EWM identification and monitoring. Monitoring should be conducted throughout the entire lake at least once each year. Hire a consultant to conduct an aquatic plant survey on the entire lake on a regular basis. This will aid in the identification of any invasive plants and the information can be used to track trends in the vegetation density and diversity. This will be especially useful if a management plan for the rusty crayfish is implemented.

Step 2: Continue and increase the CBCW program at the boat landing. Be sure there are enough people trained and willing to volunteer to keep the landing staffed during the busiest times.

Step 3: Provide information on invasives at the boat landing. Information on the rusty crayfish will help to stop the spread to other lakes. Information on other invasives such as EWM, zebra mussels and spiny waterflea will help to prevent their introduction into the lake. Signs and a kiosk with brochures are a good way to spread this information.

Step 4: Contact the local DNR invasive species and fish manager regarding the rusty crayfish population. They can offer advice on creating a plan to manage the crayfish populations in Crescent Lake. Gather as much information that is available on the current harvesting and what can be done to increase it.

Step 5: Form a group to investigate the potential for a lake fair and to take part in the planning. Be sure to include the local agencies in the planning and ask them to participate.

Step 6: Pursue grants to fund projects. Grants available from DNR include Lake Management Planning, Lake Protection and Aquatic Invasive Species.

Public Input

A presentation was given at the annual meeting in 2007. At this time the APM plan was outlined to the public and comments were taken. There were a number of questions on the data that was collected and the recommendations that were made. There was further discussion on these topics. There were no changes made to the plan as a result of the public comments.

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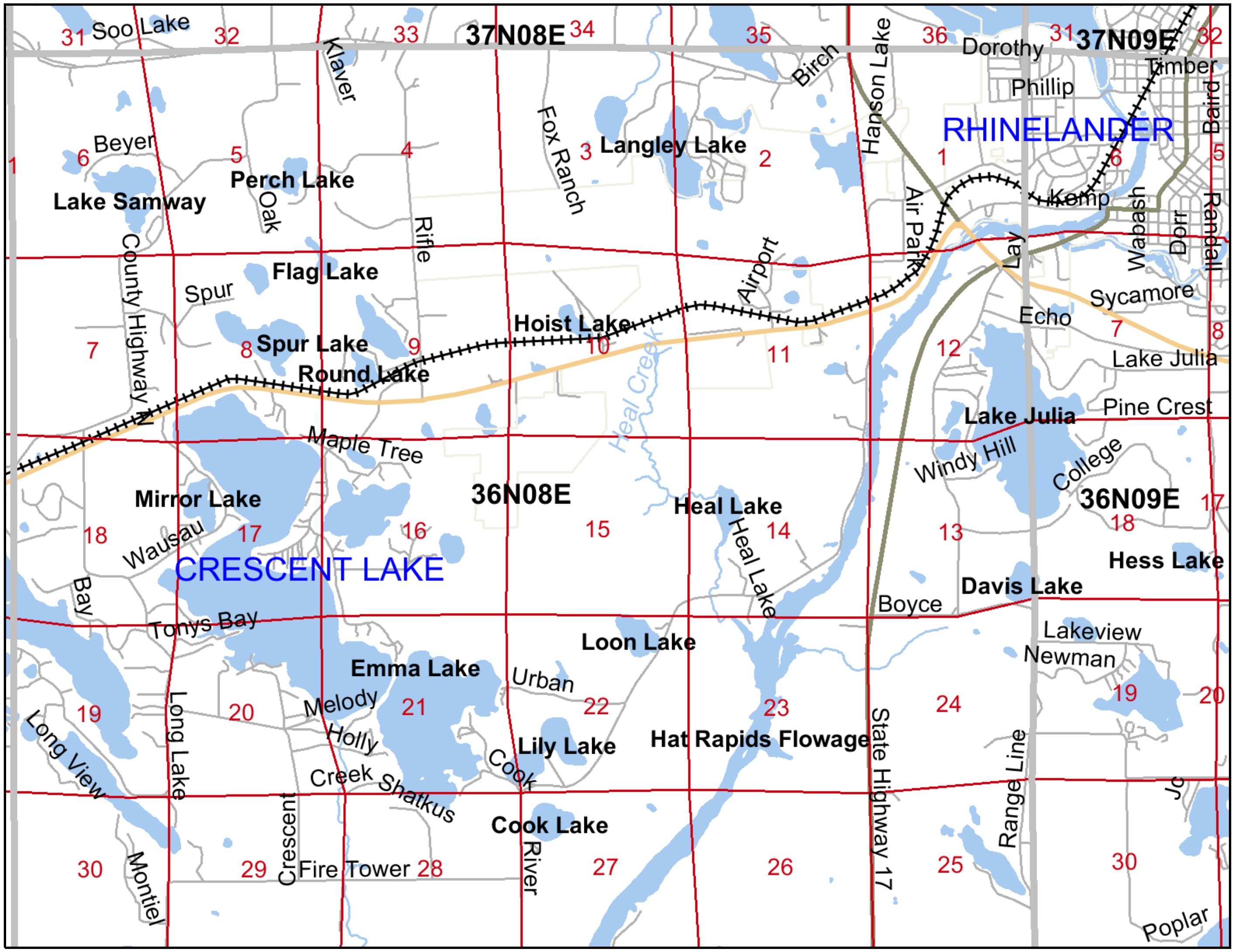
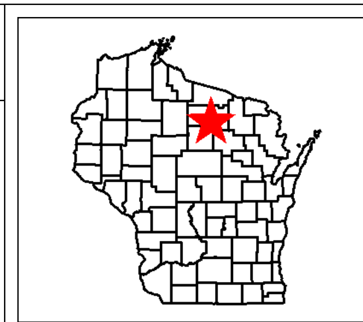
Figures

Figure 1 Location Crescent Lake





0 6000 12000 18000 ft.

Legend

- County Boundaries
- PLSS Townships
- PLSS Sections
- Railroads
- Major Highways
  - Interstate
  - US Highway
  - State Highway
- Local Roads
- Civil Towns
  - Civil Town
- 24K Open Water
- 24K Rivers and Shorelines

N

Scale: 1:60,000

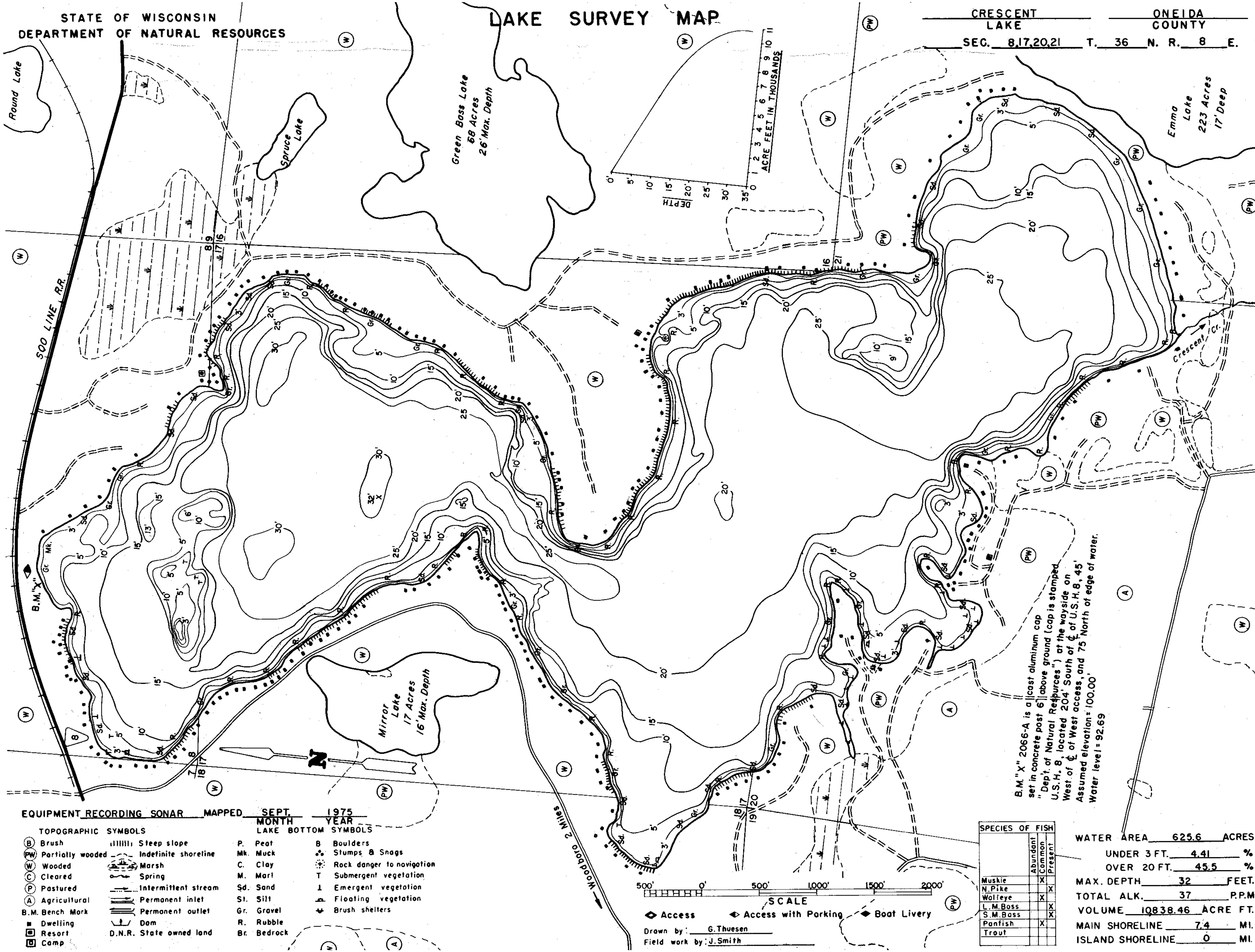
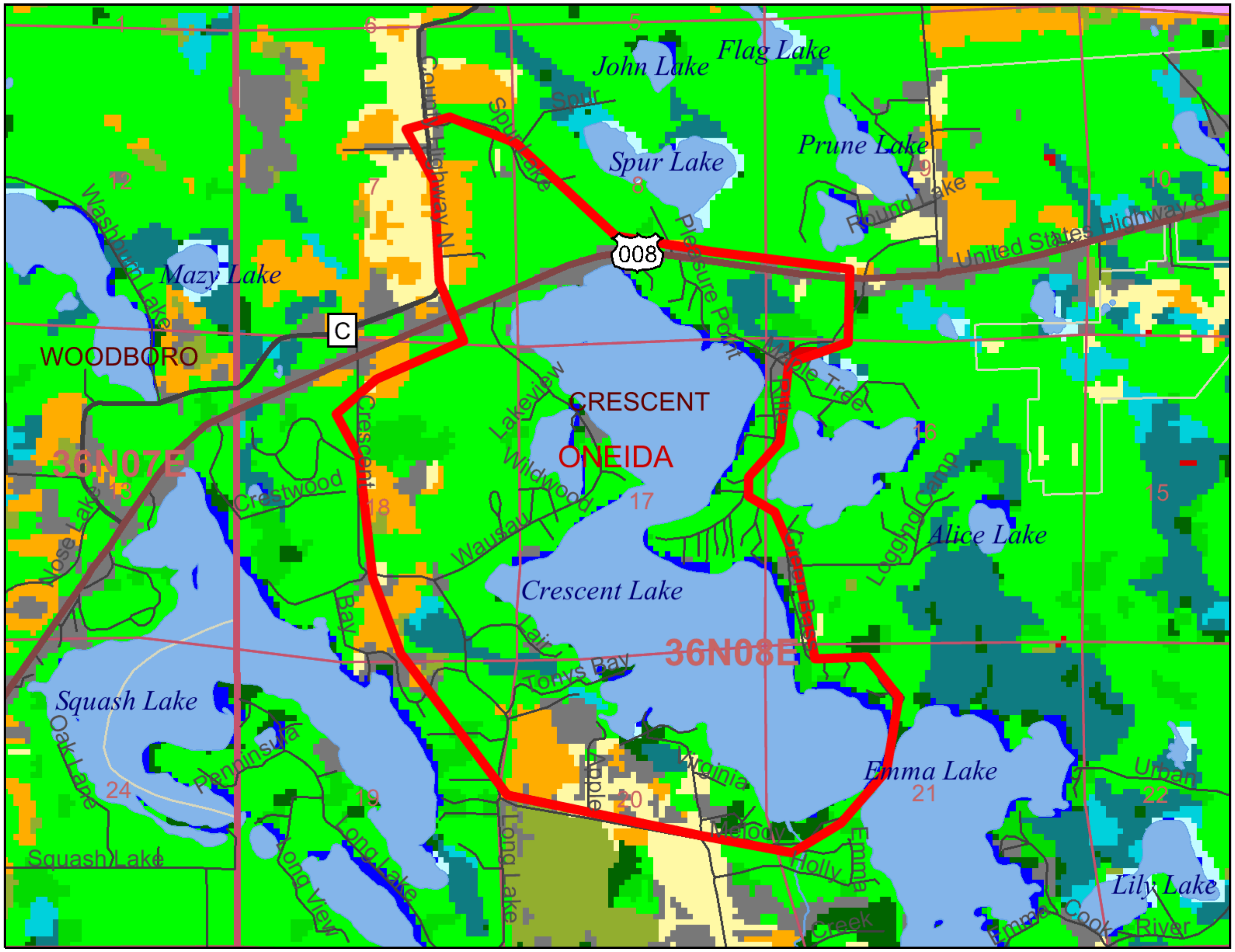


Figure 2
Crescent Lake
Bathymetric Map

Figure 2

Figure 3 Crescent Lake Land Use



0 3500 7000 10500 ft.

Legend

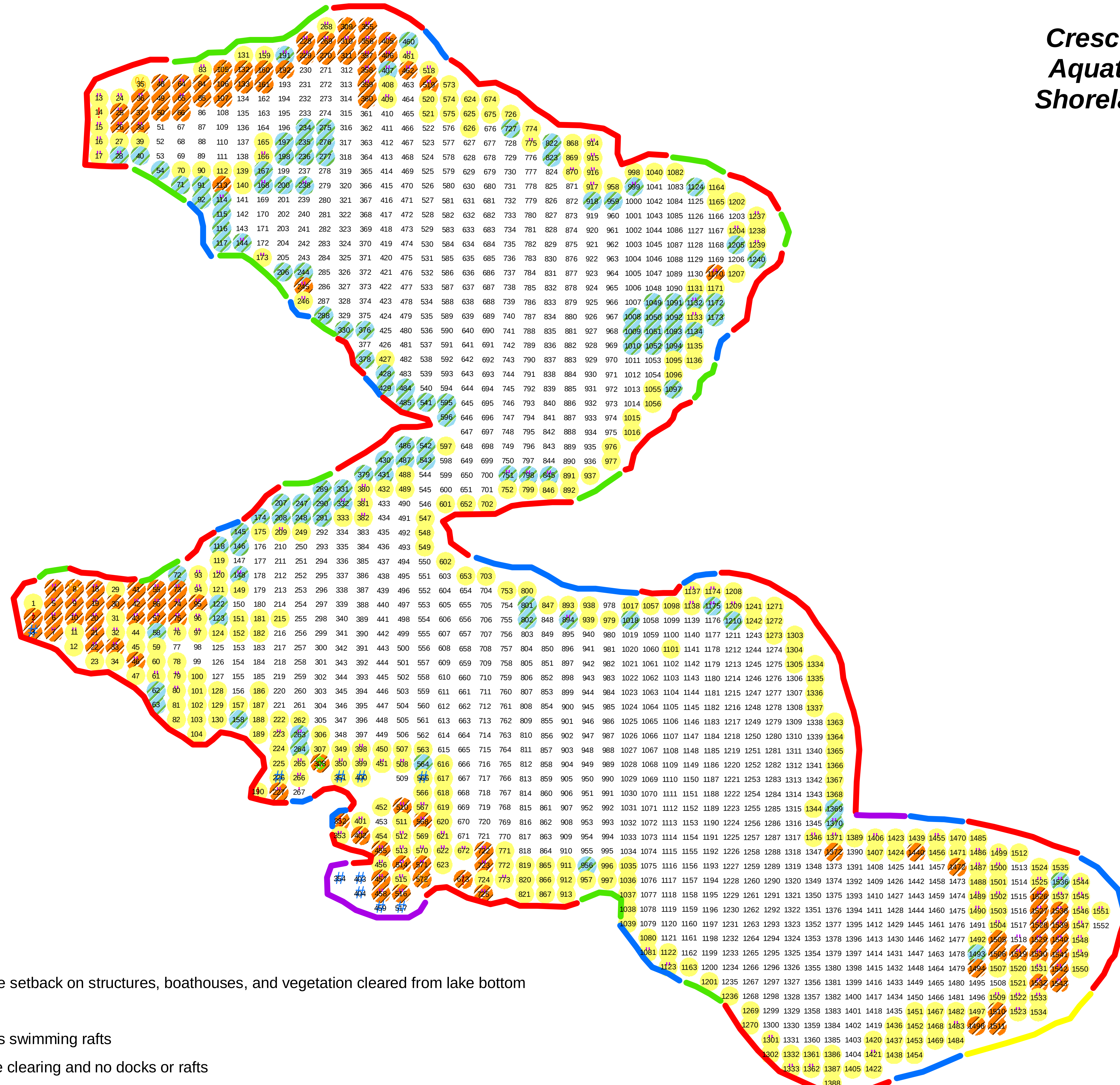
- Dams
- Major Highways
  - Interstate
  - State Highway
  - U.S. Highways
- County Roads
- Local Roads
- 24K County Boundaries
- PLSS Townships
- PLSS Sections
- Civil Towns
  - Civil Town
- DNR Wetland Points
  - Excavated Pond
  - Dammed Pond
  - Wetland Too Small to Delineate
  - Filled Excavated Pond
  - Filled Dammed Pond
  - Filled Wetland Too Small to Delineate
- DNR Wetland Areas
  - Upland
  - Filled or drained wetland
  - Wetland
- 24K Open Water
- 24K Rivers and Shorelines
  - Intermittent
  - Fluctuating
  - Perennial
- WISCLAND Landcover
  - High Intensity Urban
  - Low Intensity Urban
  - Golf Course

N

Scale: 1:34,960

Notes: Approximate watershed boundary

Crescent Lake ~ 2006
Aquatic Plant Survey
Shoreland Assessment



Legend

Vegetation type

- " Submerged
- $ Submerged and floating leaf
- # Emergent
- ' Emergent and floating leaf
- % Emergent and submerged
- ! Emergent, submerged and floating leaf

Dominant sediment type

- Muck
- Rock
- Sand

Development with:

- riprap, seawall, cleared shoreline, no or little setback on structures, boathouses, and vegetation cleared from lake bottom
- shoreline clearing and no buffer
- some shoreline clearing, some buffer, docks swimming rafts
- light development with shoreline buffer, little clearing and no docks or rafts
- no development, natural shoreline

April 2009 - Not to Scale

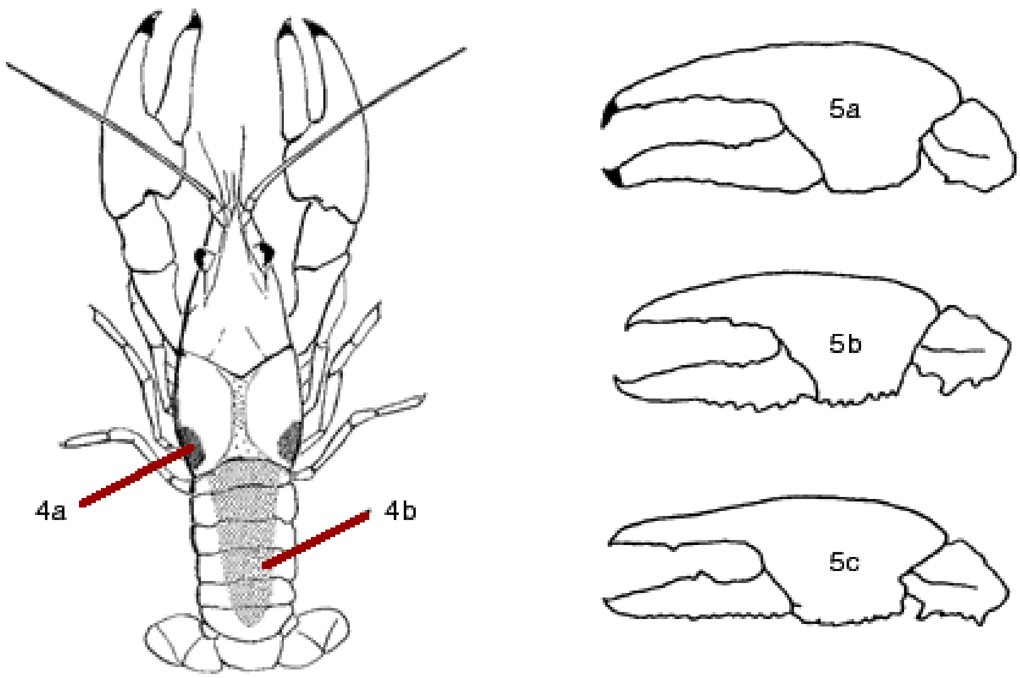
Figure 18

Figure 5
Rusty Crayfish Identification

Identification of rusty crayfish can be very difficult and requires looking at a number of characteristics and having the experience to interpret them. Here are a few things to look for to aid in identification.

- Dark, rusty spots on each side of carapace. The figure below depicts the spots in 4A that look like the crayfish was picked up with paint on your forefinger and thumb. The dark stripe in 4B is a feature of *O. propinquus,* the native crayfish that has claws of similar size to the rusty.

- More robust claws than native crayfish. The illustration below depicts the claw of the rusty and native species *O. propinquus* in 5a, and claws of two native species in 5b and 5c.



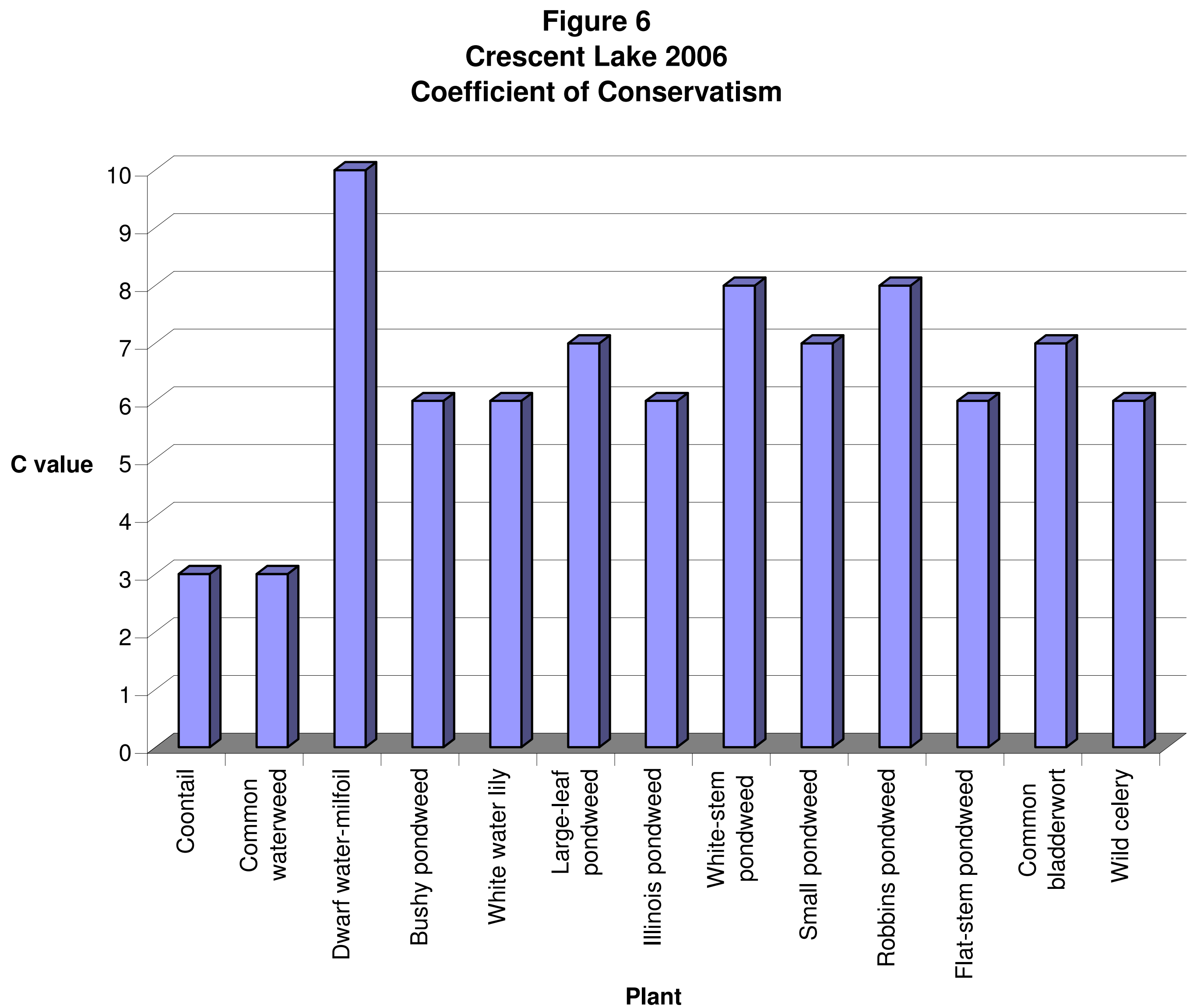
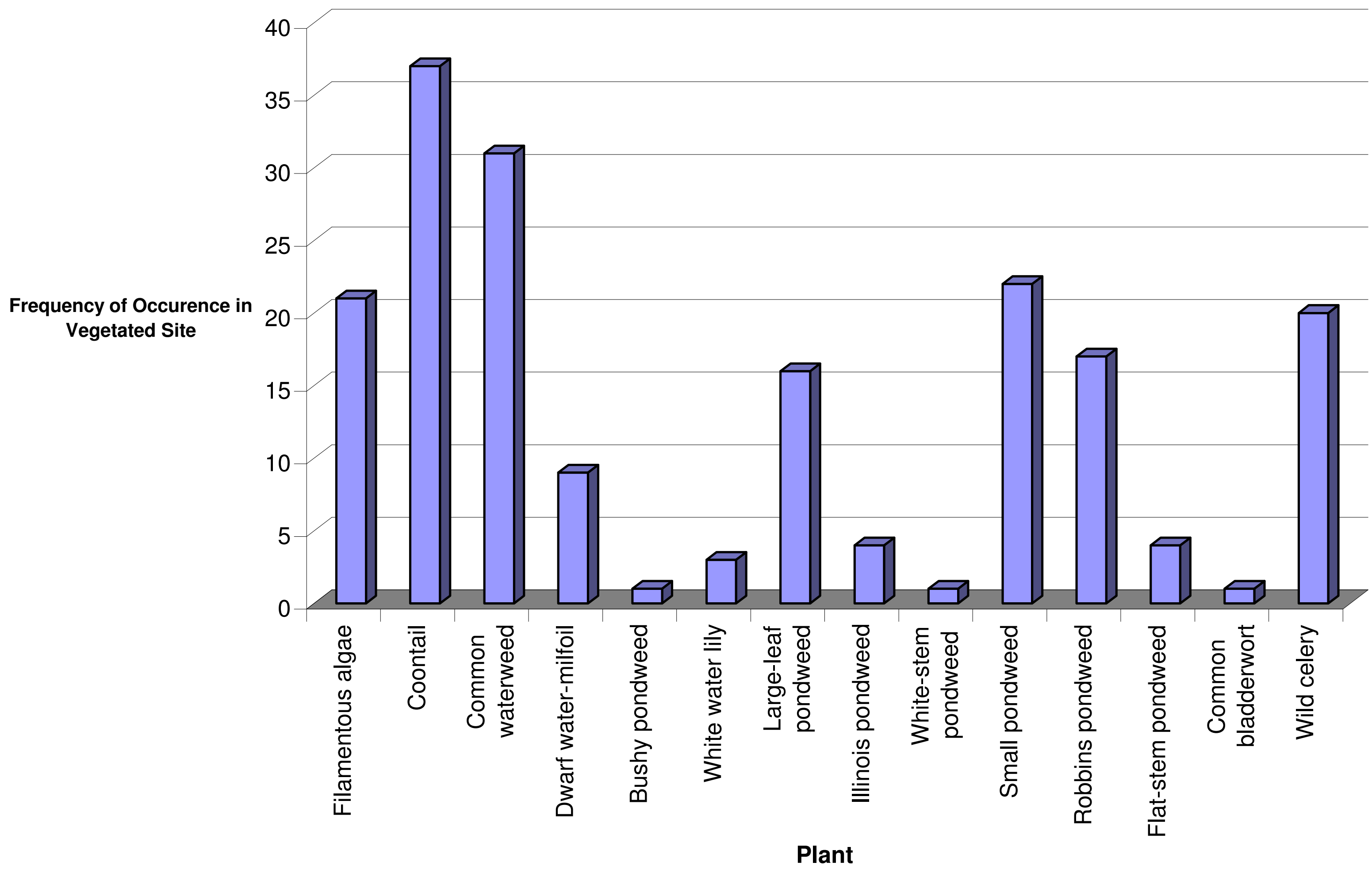


Figure 6
Crescent Lake 2006
Coefficient of Conservatism
C value
0
1
2
3
4
5
6
7
8
9
10
Coontail
Common waterweed
Dwarf water-milfoil
Bushy pondweed
White water lily
Large-leaf pondweed
Illinois pondweed
White-stem pondweed
Small pondweed
Robbins pondweed
Flat-stem pondweed
Common bladderwort
Wild celery
Plant

Figure 7
Crescent Lake 2006
Frequency of Occurence



Tables

Table 1
Crescent Lake Watershed 2006
Land Use

Land Use for Entire Watershed

Land Use	Area (ac)
Lake Surface Area	626.0
Forest	550.0
Agricultural	128.0
Wetlands	80.0
Public Space	25.0
Residential	165.0
Watershed	1574.0

Table 2

Crescent Lake Aquatic Plant Survey 2006

	STATS	Total vegetation	filamentous algae	Ceratophyllum demersum,Coontail	Elodea canadensis,Common waterweed	Myriophyllum tenellum,Dwarf water milfoil	Najas flexilis,Bushy pondweed	Nuphar variegata,Spatterdock	Nymphaea odorata,White water lily	Pontederia cordata,Pickerelweed	Potamogeton amplifolius, Large-leaf pondweed	Potamogeton illinoensis,Illinois pondweed	Potamogeton praelongis, White-stem pondweed	Potamogeton pusillus,Small pondweed	Potamogeton robbinsii,Robbins pondweed	Potamogeton zosteriformis, Flat-stem pondweed	Utricularia vulgaris,Common	Vallisneria americana,Wild celery	Schoenoplectus sp, Bulrush sp
Lake Name																			
County	**Crescent Lake**																		
WBIC	**Onieda**																		
Survey Date																			
	INDIVIDUAL SPECIES STATS:																		
	Frequency of occurrence within vegetated areas (%)		19.90	33.83	28.86	8.96	1.00		0.50		14.43	2.99	0.50	20.90	16.42	3.48	1.00	23.38	
	Frequency of occurrence at sites shallower than maximum depth of plants		7.13	12.12	10.34	3.21	0.36		0.18		5.17	1.07	0.18	7.49	5.88	1.25	0.36	8.38	
	Relative Frequency (%)		11.3	19.2	16.4	5.1	0.6		0.3		8.2	1.7	0.3	11.9	9.3	2.0	0.6	13.3	
	Relative Frequency (squared)	0.13	0.01	0.04	0.03	0.00	0.00		0.00		0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.02	
	Number of sites where species found		40	68	58	18	2		1		29	6	1	42	33	7	2	47	
	Average Rake Fullness		1	1	1	1	1		1		1	1	1	1	1	1	1	3	
	#visual sightings			2				3	4	20	3	2		8				3	1
	present (visual or collected)		present	present	present	present	present	present	present	present	present	present	present	present	present	present	present	present	present
	SUMMARY STATS:																		
	Total number of points sampled	**592**																	
	Total number of sites with vegetation	**201**																	
	Total number of sites shallower than maximum depth of plants	**561**																	
	Frequency of occurrence at sites shallower than maximum depth of plants	**35.83**																	
	Simpson Diversity Index	**0.87**																	
	Maximum depth of plants (ft)	**20.00**																	
	Number of sites sampled using rake on Rope (R)	**458**																	
	Number of sites sampled using rake on Pole (P)	**60**																	
	Average number of all species per site (shallower than max depth)	**0.63**																	
	Average number of all species per site (veg. sites only)	**1.76**																	
	Average number of native species per site (shallower than max depth)	**0.56**																	
	Average number of native species per site (veg. sites only)	**1.76**																	
	Species Richness	**14**																	
	Species Richness (including visuals)	**17**																	

Table 3
Crescent Lake Aquatic Plant Survey 2006
Aquatic Plants of Crescent Lake

Scientific Name	Common Name	Importance of Plant
Submersed Plants		
Elodea canadensis	Elodea	Some waterfowl eat the seeds. Food and habitat for fish, waterfowl, other wildlife.
Ceratophyllum demersum	Coontail	Provides prime habitat for invertebrates and shelter for fish, especially during winter due to structure. Fruit and foliage grazed by waterfowl.
	Filamentous algae	Provides habitat for invertebrates.
Myriophyllum tenellum	Dwarf water milfoil	Provides good spawning habitat for panfish and shelter for small invertebrates. Network of rhizomes stabilizes sediment.
Najas flexilis	Bushy pondweed	Important food for waterfowl, marsh birds and muskrat. Provides food and shelter for fish.
Potamogeton amplifolius	Large-leaf pondweed	Broad leaves offer shade, shelter and forage for fish. Abundant production of large nutlets makes it a valuable waterfowl food.
Potamogeton illinois	Illinois pondweed	
Potamogeton praelongus	White-stem pondweed	Fruit provides valuable waterfowl food, portions eaten by muskrat, beaver, deer. Good food producer for trout and valuable musky habitat.
Potamogeton pusillus	Small pondweed	Food source for wide variety of ducks and geese. Grazed by muskrat, deer, beaver and moose. Provides food and habitat for fish.
Potamogeton robbinsii	Robbins pondweed	Provides habitat for invertebrates that are grazed by waterfowl. Offers good cover and foraging for fish, particularly northern pike.
Potamogeton zosteriformis	Flat-stem pondweed	Important food for waterfowl, may be grazed by muskrat, beaver, dear, provides cover and food source for fish and invertebrates.
Utricularia vulgaris	Commom bladderwort	Provide food and cover for fish. Provides fish habitat in areas not readily colonized by rooted plants due to free-floating nature.
Vallisneria americana	Wild celery	Premiere source of waterfowl food. All portions of plant are consumed including rhizomes, tubers, foliage and fruit. Primary food source for canvasback ducks. Important to marsh and shorebirds such as rail, plover, sandpiper and snipe. Muskrats graze on plants. Beds are good fish habitat that provide shade, shelter and feeding opportunities.
Floating-leaf Plants		
Nuphar variegata	Spatterdock	Anchors shallow water community, provides food waterfowl, deer, muskrat, beaver. Provides shade and shelter for fish and invertebrates.

Nymphaea odorata	White water lily	Provides seeds for waterfowl. Rhizomes eaten by deer, muskrat, beaver, moose and porcupine. Leaves offer shade and shelter for fish.
Emergent Plants		
Pontederia cordata	Pickerelweed	Flowering stalk haven for insects. Seeds consumed by waterfowl and muskrats. Rhizomes and leaves offer shade and shelter for fish. Beds of plants are important shoreline stabilizer that dampen wave action.
Schoenoplectus sp	Bulrush	Provides habitat for invertebrates and shelter for young fish. Nutlets are consumed by wide variety of waterfowl, marsh and upland birds. Stems and rhizomes eaten by geese and muskrats. Provides nesting cover and material for waterfowl, marsh birds and muskrats.

Table 3A
Crescent Lake Aquatic Plant Survey 2006
Florist Quality Index (FQI)

Species	Common Name	Coefficient of conservatism	Frequency of occurence
Ceratophyllum demersum	Coontail	3	37
Elodea canadensis	Common waterweed	3	31
Myriophyllum tenellum	Dwarf water-milfoil	10	9
Najas flexilis	Bushy pondweed	6	1
Nymphaea odorata	White water lily	6	3
Potamogeton amplifolius	Large-leaf pondweed	7	16
Potamogeton illinoensis	Illinois pondweed	6	4
Potamogeton praelongis	White-stem pondweed	8	1
Potamogeton pusillus	Small pondweed	7	22
Potamogeton robbinsii	Robbins pondweed	8	17
Potamogeton zosteriformis	Flat-stem pondweed	6	4
Utricularia vulgaris	Common bladderwort	7	1
Vallisneria americana	Wild celery	6	20
Total species:	13		
Mean C	6.38		
FQI:	23.0		

FQI = Average coefficient of conservatism x square root of total species

Filamentous algae, bulrush, pickerelweed and spatterdock are not included in the FQI calculation.

Table 4

Crescent Lake Resident Survey Results 2006

Most Popular Answer for Each Question

Survey Question			Response	Number of Responses	% of Total Responses
1		Do you own or rent property?	Own	156	97.5
2		How long have you lived on or near Crescent Lake?	Over 20 years	80	50
3		When time is spent at the lake	Year round	67	41.9
4		Ages of property owners/residents	51-65	72	45
5		Number of people that regularly spend time at the lake property	Two	56	35
6		Type of recreation participated in	Boating	146	91.4
7		Watercraft owned	Fishing boat	103	64.4
8	a	Horsepower of 2 cycle boat motors operated on lake	11 to 50	50	31.3
	b	Horsepower of 4 cycle boat motors operated on lake	11 to 50	32	20
	c	Horsepower of boat motors operated on lake, no cycle listed	11 to 50	13	8.1
9		How has lake quality changed since you've lived on/near the lake?	Stayed the same	92	57.5
10		How has fishing on the lake changed in the past?	Declined	90	56.3
11		How long have you fished on the lake?	6 to 20 years	45	28.1
		Rate the current condition of the lake for each of the following:			
12		Water clarity	Good	108	67.5
13		Water quality	Good	106	66.3
14		Fishing	Fair	71	44.4
15		Condition of land area close to shoreline (0-100 feet)	Good	93	58.1
16		Condition of land area away from shoreline (100-1000 feet)	Good	101	63.1
17		Scenic quality of lake	Good	74	46.3
18		Overall condition of lake	Good	108	67.5
19		Overall condition of shoreland areas	Good	92	57.5
20		Rooted vegetation near shore	About right	96	60
21		Floating algae/scum on surface	About right	103	64.4
22		Fish habitat	Too little	83	51.9
23		Keeper-size fish	Too little	96	60
24		Diversity of birds	About right	115	71.9
25		Diversity of wildlife	About right	119	74.4
26		Loons	About right	136	85
27		Shoreland housing	About right	87	54.4
28		Motorized watercraft	About right	89	55.6
29		Natural shoreline vegetation	About right	92	57.5
		How much impact has each of the following had on the water quality of the lake?			
30		Septic system seepage	Don't know	88	55
31		Aquatic plant (weed) removal	Don't know	83	51.9
32		Shoreline vegetation removal	Negative impact	65	40.6
33		Lawn fertilizers and chemicals	Negative impact	87	54.4
34		Lake home, road, driveway runoff	Don't know	63	39.4
35		Soil erosion from home sites	Don't know	61	38.1
36		Exhaust and fuel leakage from watercraft	Negative impact	69	43.1
37		Damage to aquatic plants and lake bottom by watercraft	Don't know	66	41.3
38		Who is responsible for protecting and improving the lake?	Lakeshore residents	134	83.8
39		Do you maintain a lawn on your Crescent property?	Yes	137	85.6

Survey Question			Response	Number of Responses	% of Total Responses
40		What type of fertilizer do you use on your property?	None	93	58.1
41		What is the closest distance from the lake to the areas fertilized?	ILess than 30 feet	34	21.3
42		What best describes your property shoreline?	Undeveloped natural landscape	92	57.5
43	a	Do you maintain a shoreline buffer zone?	No	70	43.8
			Yes	66	41.3
	b	If yes, how many feet from shore do you maintain the buffer?	1 to 10 feet	27	16.9
44		Well type	Drilled	76	47.5
45		Year well installed	Don't know	64	40
46		Total well depth	Don't know	76	47.5
47		Do you have a water treatment system?	Yes	87	54.4
48		If you do have a water treatment system, where does the brine solution drain to?	Septic tank	62	38.8
49		Type of septic system on property	Septic tank	135	84.4
50		Number of persons regularly served by septic system	One to three	93	58.1
51		Number of bedrooms for septic system	Three	70	43.8
52		Date of original installation of septic system	1970-2000	85	53.1
53		How often septic tank is pumped	1 to 2 years	73	45.6
		Do you support of oppose the following actions to address problems on the lake?			
54		Stricter septic system enforcement to improve water quality	Support	80	50
55		More shoreline property owner education on impacts of water quality	Support	119	74.4
56		Stricter zoning regulations for shoreline character	Neutral	54	33.8
57		More enforcement of existing shoreline protection laws	Support	62	38.8
58		Awards program for shoreline property owners who minimize their impacts	Neutral	69	43.1
59		Allowing more aquatic plant (weed) removal	Oppose	49	30.6
60		Development of more voluntary programs for water quality protection	Support	110	68.8
61		Increased protection for fish habitat	Support	123	76.9
62		More game population management	Neutral	74	46.3
63		More management for non-game wildlife (song birds, loons)	Support	80	50
64		More erosion and runoff control assistance for property owners	Support	96	60
65		Motorboat size and speed limits to protect shoreland areas	Support	73	45.6
66		Restricted time for water skiing	Support	76	47.5
67		Restricted time for jet skiing	Support	94	58.8
68		Stricter controls for exotic species (such as Euration water milfoil)	Support	140	87.5
69		More public land purchase to protect shoreland areas	Support	67	41.9
70		Financial incentives for environmentally sound shoreland management	Support	74	46.3
71		Development of a long-term lake management plan	Support	116	72.5
72		Aeration of the lake	Neutral	57	35.6

Table 5

Wisconsin Waters with Eurasian Water-Milfoil Infestation (current as of 1/02/2007) From DNR Website

County	Waterbody Name	Year Infested
Langlade		
	Big Twin Lake	2005
	Enterprise Lake	2004
Lincoln		
	Clear Lake	2003
	Lake Nokomis	2004
	Mohawksin Lake	2001
	Seven Island Lake	2004
Oneida		
	Bridge Lake	2004
	Eagle River *	2005
	Hancock Lake	2006
	Kathan Lake	2004
	Kawaguesaga Lake	2004
	Manson Lake	1989
	Minocqua Lake	2000
	Oneida Lake	2006
	Rainbow Flowage	1994
	Sugar Camp Creek	2005
	Tomahawk Lake	2003
	Tomahawk River	2004
	Willow Flowage	2006
	Willow Lake	2005
	Wisconsin River **	2005

* 1/4 mile upstream from Burnt Rollaways Dam
** Below Rainbow Dam

Appendix A
Aquatic Plant Survey Data
August 15 – 17, 2006

Entry	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY!)		sampling point	Latitiude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
Lake Name	0			0	0		1	Crescent Lake	1	45.60235	-89.53093	3	S	P									
County	1	1	1	1	1	4	1	Onieda	2	45.60199	-89.53094	4	M	R			1				V		V
WBIC	0			0	0		1		3	45.60163	-89.53094	3	M	P									V
Date of Survey	2	2	2	2	2	5	1	August 15-17, 2006	4	45.60271	-89.53042	5	M	P									
(mm/dd/yy)	1	1	1	1	1	5	1	08/15-17/06	5	45.60235	-89.53042	5	M	P									
field workers names	1	1	1	1	1	6	1		6	45.60199	-89.53042	6	M	P									
	1	1	1	1	1	15	1		7	45.60163	-89.53043	15	M	P									
	1	1	1	1	1	3	1		8	45.60271	-89.52991	3	M	R				1					V
	2	2	2	2	2	7	1		9	45.60235	-89.52991	7	M	P				2					
	2	2	2	2	2	7	1		10	45.60199	-89.52991	7	M	R				1					
	2	2	2	2	2	6	1		11	45.60163	-89.52991	6	S	P				3					
	0			0	0		1		12	45.60127	-89.52992	2	S	P									
	0			0	0		1		13	45.61495	-89.52929	3	S		Visual								
	2	2	2	2	2	3	1		14	45.61459	-89.52929	3	S	R			1				V		V
	0			0	0		1		15	45.61423	-89.5293	5	S		Visual		V						
	1	1	1	1	0	3	1		16	45.61387	-89.5293	3	S	R		1	V						
	0			0	0		1		17	45.61351	-89.5293	3	S		Visual								
	1	1	1	1	1	6	1		18	45.60271	-89.52939	6	M	R				1					
	2	2	2	2	2	7	1		19	45.60235	-89.5294	7	M	P			1						
	2	2	2	2	2	8	1		20	45.60199	-89.5294	8	M	R				1					
	3	3	3	3	3	7	1		21	45.60163	-89.5294	7	M	P			1	1					
	1	1	1	1	0	7	1		22	45.60127	-89.52941	7	M	R		2							
	0			0	0		1		23	45.60091	-89.52941	3	S	P									
	2	2	2	2	2	4	1		24	45.61495	-89.52878	4	S	R									
	3	3	3	3	3	6	1		25	45.61459	-89.52878	6	M	R			1	2					
	3	3	3	3	3	7	1		26	45.61423	-89.52878	7	M	R			2	2					
	0			0	0		1		27	45.61387	-89.52879	12	S	R									
	1	1	1	1	0	10	1		28	45.61351	-89.52879	10	R	R		1							
	0			0	0		1		29	45.60271	-89.52888	5	S	R									
	0			0	0		1		30	45.60235	-89.52888	8	M	P									
	0			0	0		1		31	45.60199	-89.52889	10	S	R									
	1	1	1	1	1	11	1		32	45.60163	-89.52889	11	S	P				1					
	1	1	1	1	0	10	1		33	45.60127	-89.52889	10	M	R		1							
	0			0	0		1		34	45.60091	-89.5289	8	S	P									
	0			0	0		1		35	45.6153	-89.52826	3	S		Visual								V
	1	1	1	1	1	6	1		36	45.61494	-89.52826	6	M	R				1					
	0			0	0		1		37	45.61458	-89.52827	11	M	R									
	1	1	1	1	0	12	1		38	45.61422	-89.52827	12	M	R		1							
	0			0	0		1		39	45.61386	-89.52827	13	S	R									
	0			0	0		1		40	45.6135	-89.52828	10	R	R									
	0			0	0		1		41	45.6027	-89.52837	7	M	R									

Entry	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	1	1	1	1	1	6	1		42	45.60234	-89.52837	6	M	P			1						
	1	1	1	1	1	12	1		43	45.60198	-89.52837	12	M	R			1						
	0			0	0		1		44	45.60162	-89.52838	13	S	P									
	0			0	0		1		45	45.60126	-89.52838	14	S	R									
	1	1	1	1	0	11	1		46	45.6009	-89.52838	11	M	P		1							
	0			0	0		1		47	45.60054	-89.52839	4	S	P									
	2	2	2	2	2	3	1		48	45.6153	-89.52775	3	M	R				1					
	0			0	0		1		49	45.61494	-89.52775	10	M	R									
	0			0	0		1		50	45.61458	-89.52775	14	M	R									
	0			0	0		1		54	45.61314	-89.52777	3	R	R									
	4	4	4	4	4	8	1		55	45.6027	-89.52785	8	M	R			1	1					
	2	2	2	2	2	10	1		56	45.60234	-89.52786	10	M	P			1	1					
	1	1	1	1	1	10	1		57	45.60198	-89.52786	10	M	R			1						
	0			0	0		1		58	45.60162	-89.52786	15	R	R									
	0			0	0		1		59	45.60126	-89.52787	15	S	R									
	0			0	0		1		60	45.6009	-89.52787	15	S	R									
	1	1	1	1	0	8	1		61	45.60054	-89.52787	8	S	R		1							
	0			0	0		1		62	45.60018	-89.52788	4	R	P									
	0			0	0		1		63	45.59982	-89.52788	3	R	P									
	4	4	4	4	4	6	1		64	45.6153	-89.52724	6	M	R				1					
	2	2	2	2	2	10	1		65	45.61494	-89.52724	10	M	R			2	1					
	0			0	0		1		66	45.61458	-89.52724	13	M	R									
	0			0	0		1		70	45.61314	-89.52725	10	S	R									
									71	45.61278	-89.52726		R		Visual, Shallow no veg								
	0			0	0		1		72	45.60306	-89.52734	3.5	R	P									
	1	1	1	1	0	7	1		73	45.6027	-89.52734	7	M	R		1							
	1	1	1	1	1	11	1		74	45.60234	-89.52734	11	M	P			1						
	2	2	2	2	2	13	1		75	45.60198	-89.52735	13	M	R			1	2					
	1	1	1	1	1	15	1		76	45.60162	-89.52735	15	S	R			3						
	0			0	0		1		78	45.6009	-89.52736	15	S	R									
	1	1	1	1	1	15	1		79	45.60054	-89.52736	15	S	R			1						
	1	1	1	1	1	15	1		80	45.60018	-89.52736	15	S	R			1						
	0			0	0		1		81	45.59982	-89.52737	15	S	R									
	0			0	0		1		82	45.59946	-89.52737	5	S	P									
	2	2	2	2	2	6	1		83	45.61566	-89.52672	6	S	R			1						
	0			0	0		1		84	45.6153	-89.52672	12	M	R									
	0			0	0		1		85	45.61494	-89.52673	12	M	R									
	0			0	0		1		90	45.61314	-89.52674	15	S	R									
	0			0	0		1		91	45.61278	-89.52674	2	R	R									
									92	45.61242	-89.52675		R		Visual, Shallow no veg								
	1	1	1	1	0	4	1		93	45.60306	-89.52683	4	S	P		1							

Entry

Entry	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY!)		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	1	1	1	1	0	10	1		94	45.6027	-89.52683	10	S	R		1							
	2	2	2	2	2	20	1		95	45.60234	-89.52683	20	M	P			2	3					
	1	1	1	1	1	15	1		96	45.60198	-89.52683	15	S	R			1						
	1	1	1	1	1	15	1		97	45.60162	-89.52684	15	S	R			1						
	0			0	0		1		100	45.60054	-89.52685	15	S	R									
	0			0	0		1		101	45.60018	-89.52685	16	S	R									
	0			0	0		1		102	45.59982	-89.52685	16	S	R									
	0			0	0		1		103	45.59946	-89.52686	9	S	R									
	0			0	0		1		104	45.5991	-89.52686	6	S	R									
	3	3	3	3	3	5	1		105	45.61566	-89.52621	5	M	R				1					V
	0			0	0		1		106	45.6153	-89.52621	13	M	R									
	0			0	0		1		107	45.61494	-89.52621	14	M	R									
	0			0	0		1		112	45.61314	-89.52623	17	S	R									
	0								113	45.61278	-89.52623	22	M	R									
	1	1	1	1	1	10	1		114	45.61242	-89.52623	10	R	R			1						
	0			0	0		1		115	45.61206	-89.52624	5	R	R									
	0			0	0		1		116	45.6117	-89.52624	3	R	R									
	0			0	0		1		117	45.61134	-89.52624	3	R	R									
	0			0	0		1		118	45.60377	-89.52631	2	R	P									
	0			0	0		1		119	45.60341	-89.52631	5	S	R									
	5	5	5	5	4	12	1		120	45.60305	-89.52631	12	S	R		1	1	1					
	0			0	0		1		121	45.60269	-89.52632	20	S	R									
	0								122	45.60233	-89.52632	26	R	R									
	0			0	0		1		123	45.60197	-89.52632	19	R	R									
	0			0	0		1		124	45.60161	-89.52632	15	S	R									
	0			0	0		1		128	45.60017	-89.52634	17	S	R									
	0			0	0		1		129	45.59981	-89.52634	15	S	R									
	0			0	0		1		130	45.59945	-89.52634	14	S	R									
	0			0	0		1		131	45.61601	-89.52569	2	S		Visual								
	0			0	0		1		132	45.61565	-89.52569	13	M	R									
	0			0	0		1		133	45.61529	-89.5257	14	M	R									
	0			0	0		1		139	45.61313	-89.52571	18	S	R									
	0								140	45.61277	-89.52572	21	S	R									
	0								141	45.61241	-89.52572	22			Sonar reading								
	0								142	45.61205	-89.52572	22			Sonar reading								
	0			0	0		1		143	45.61169	-89.52573	20			Sonar reading								
	2	2	2	2	2	7	1		144	45.61133	-89.52573	7	R	R			2	1					
	0			0	0		1		145	45.60413	-89.52579	8	R	R									
	0			0	0		1		146	45.60377	-89.52579	7	R	R									
	1	1	1	1	0	7	1		148	45.60305	-89.5258	7	R	R		1							
	0			0	0		1		149	45.60269	-89.5258	20	S	R									

Entry	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	0			0	0		1		151	45.60197	-89.52581	20	S	R									
	0			0	0		1		152	45.60161	-89.52581	15	S	R									
	0			0	0		1		157	45.59981	-89.52583	15	S	R									
	0			0	0		1		158	45.59945	-89.52583	15	R	R									
	3	3	3	3	3	3	1		159	45.61601	-89.52518	3	S	R			1						
	0			0	0		1		160	45.61565	-89.52518	12	M	R									
	0			0	0		1		161	45.61529	-89.52518	14	M	R									
	0			0	0		1		165	45.61385	-89.5252	16	S	R									
	1	1	1	1	1	10	1		166	45.61349	-89.5252	10	S	R				2					
	0			0	0		1		167	45.61313	-89.5252	2	R	R									
	1	1	1	1	0	8	1		168	45.61277	-89.5252	8	R	R		2							
	0			0	0		1		172	45.61133	-89.52522	20			Sonar reading								
	2	2	2	2	2	5	1		173	45.61097	-89.52522	5	S	R				1					
	0			0	0		1		174	45.60449	-89.52527	6	R	R									
	0			0	0		1		175	45.60413	-89.52528	18	S	R									
	0			0	0		1		181	45.60197	-89.5253	20	S	R									
	0								182	45.60161	-89.5253	25	S	R									
	0			0	0		1		186	45.60017	-89.52531	17	S	R									
	0			0	0		1		187	45.59981	-89.52531	17	S	R									
	0			0	0		1		188	45.59945	-89.52532	20	S	R									
	0			0	0		1		189	45.59909	-89.52532	5	S	R									
	0			0	0		1		190	45.59765	-89.52533	3	S	P							V	V	V
	1	1	1	1	1	3	1		191	45.61601	-89.52466	3	R		Visual								
	0			0	0		1		192	45.61565	-89.52467	13	M	R									
	0			0	0		1		197	45.61385	-89.52468	14	R	R									
	0			0	0		1		198	45.61349	-89.52469	5	R	R									
	0			0	0		1		200	45.61277	-89.52469	17	R	R									
	0			0	0		1		205	45.61097	-89.52471	20			Sonar reading								
	0			0	0		1		206	45.61061	-89.52471	5	R	R									
	0			0	0		1		207	45.60485	-89.52476	6	R	R									
	0			0	0		1		208	45.60449	-89.52476	8	R	R									
	1	1	1	1	1	17	1		209	45.60413	-89.52476	17	S	R			1						
	0								215	45.60197	-89.52478	25	S	R									
	0			0	0		1		222	45.59945	-89.5248	17	S	R									
	1	1	1	1	1	12	1		223	45.59909	-89.52481	12	S	R				2					
	0			0	0		1		224	45.59873	-89.52481	7	S	R									
	0			0	0		1		225	45.59837	-89.52481	5	S	P									
	0			0	0		1		226	45.59801	-89.52482	4	S	P									V
	1	1	1	1	0	2	1		227	45.59765	-89.52482	2	M	P		1							
	3	3	3	3	3	4	1		228	45.61637	-89.52415	4	M	R			1						
	1	1	1	1	1	8	1		229	45.61601	-89.52415	8	M	R			1						

Entry

	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	0			0	0		1		234	45.61421	-89.52417	16	R	R									
	0			0	0		1		235	45.61385	-89.52417	13	R	R									
	0			0	0		1		236	45.61349	-89.52417	2	R	R									
	1	1	1	1	0	11	1		238	45.61277	-89.52418	11	R	R		1							
	0			0	0		1		244	45.61061	-89.5242	18	R	R									
	3	3	3	3	3	5	1		245	45.61025	-89.5242	5	M	R			3	2					
	3	3	3	3	3	5	1		246	45.60989	-89.5242	5	S	R			2	2					
	0			0	0		1		247	45.60485	-89.52425	9	R	R									
	0			0	0		1		248	45.60449	-89.52425	16	R	R									
	0			0	0		1		249	45.60413	-89.52425	17	S	R									
	0			0	0		1		262	45.59945	-89.52429	18	S	R									
	1	1	1	1	0	11	1		263	45.59909	-89.52429	11	R	R		1							
	0			0	0		1		264	45.59873	-89.5243	19	R	R									
	2	2	2	2	2	8	1		265	45.59837	-89.5243	8	S	P			2						
	4	4	4	4	4	5	1		266	45.59801	-89.5243	5	S	P			2	1					
	0								267	45.59765	-89.52431				Visual							V	V
	3	3	3	3	3	2	1		268	45.61673	-89.52363	2	S	R			1						
	1	1	1	1	1	9	1		269	45.61637	-89.52364	9	M	R			1						
	0			0	0		1		270	45.616	-89.52364	13	M	R									
	0			0	0		1		275	45.6142	-89.52365	17	R	R									
	0			0	0		1		276	45.61384	-89.52366	14	R	R									
	0			0	0		1		277	45.61348	-89.52366	2	R		Visual								
	0								286	45.61024	-89.52369	22			Sonar reading								
	0								287	45.60988	-89.52369	23			Sonar reading								
	0			0	0		1		288	45.60952	-89.52369	6	R	R									
	0			0	0		1		289	45.6052	-89.52373	2	R	R									
	0			0	0		1		290	45.60484	-89.52373	10	R	R									
	0			0	0		1		291	45.60448	-89.52374	17	R	R									
	0			0	0		1		306	45.59908	-89.52378	17	S	R									
	0			0	0		1		307	45.59872	-89.52378	20	S	R									
	4	4	4	4	4	6	1		308	45.59836	-89.52379	6	M	P				1				1	
	2	2	2	2	2	3	1		309	45.61672	-89.52312	3	M	R									V
	1	1	1	1	1	5	1		310	45.61636	-89.52312	5	M	R				1					
	0			0	0		1		311	45.616	-89.52313	11	M	R									
	0								329	45.60952	-89.52318	24			Sonar reading								
	0			0	0		1		330	45.60916	-89.52318	12	R	R									
	0			0	0		1		331	45.6052	-89.52322	5	R	R									
	1	1	1	1	0	12	1		332	45.60484	-89.52322	12	R	R		3							
	0			0	0		1		333	45.60448	-89.52322	20	S	R									
	0			0	0		1		349	45.59872	-89.52327	20	S	R									
	4	4	4	4	4	6	1		350	45.59836	-89.52327	6	S	P			2	1					

Entry

	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY!)		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis* ,Common waterweed	*Myriophyllum tenellum* ,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	0			0	0		1		351	45.598	-89.52328	3	S		Visual								V
	1	1	1	1	1	3	1		352	45.59692	-89.52329	3	M	P								V	V
	3	3	3	3	3	2	1		353	45.59656	-89.52329	2	S	P				1	1				
	0			0	0		1		354	45.59548	-89.5233	2			Visual								V
	3	3	3	3	3	3	1		355	45.61672	-89.52261	3	M	R									
	4	4	4	4	4	3	1		356	45.61636	-89.52261	3	M	R			1						
	3	3	3	3	3	6	1		357	45.616	-89.52261	6	M	R			1						
	1	1	1	1	1	13	1		358	45.61564	-89.52262	13	M	R			1						
	2	2	2	2	2	7	1		359	45.61528	-89.52262	7	M	R			2	1					
	0			0	0		1		360	45.61492	-89.52262	16	M	R									
	0			0	0		1		376	45.60916	-89.52267	14	R	R									
	0			0	0		1		378	45.60844	-89.52268	3	R	R									
	0			0	0		1		379	45.60556	-89.5227	6	R	R									
	1	1	1	1	0	10	1		380	45.6052	-89.5227	10	S	R		3							
	1	1	1	1	0	14	1		381	45.60484	-89.52271	14	S	R		3							
	1	1	1	1	0	17	1		382	45.60448	-89.52271	17	S	R		1							
	2	2	2	2	2	17	1		398	45.59872	-89.52276	17	S	R			1						
	3	3	3	3	3	6	1		399	45.59836	-89.52276	6	S	P			1						
	0			0	0		1		400	45.598	-89.52276	2	S		Visual								V
	4	4	4	4	4	6	1		401	45.59692	-89.52277	6	S	P			1	1					
	2	2	2	2	2	5	1		402	45.59656	-89.52278	5	M	P				2					
	0			0	0		1		403	45.59548	-89.52279	2			Visual								V
	0			0	0		1		404	45.59512	-89.52279	2			Visual								V
	1	1	1	1	1	4	1		405	45.61636	-89.5221	4	M	R									
	3	3	3	3	3	4	1		406	45.616	-89.5221	4	M	R				1					
	1	1	1	1	0	4	1		407	45.61564	-89.5221	4	R	P		1							
	0			0	0		1		408	45.61528	-89.52211	6	S	R									
	1	1	1	1	1	7	1		409	45.61492	-89.52211	7	S	R				1					
	0			0	0		1		426	45.6088	-89.52216	19			Sonar reading								
	0			0	0		1		427	45.60844	-89.52216	10	S	R									
	0			0	0		1		428	45.60808	-89.52217	5	R	R									
	0			0	0		1		429	45.60772	-89.52217	5	R	R									
	0			0	0		1		430	45.60592	-89.52218	5	R	R									
	0			0	0		1		431	45.60556	-89.52219	13	R	R									
	0			0	0		1		432	45.6052	-89.52219	16	S	R									
	0			0	0		1		450	45.59872	-89.52225	20	S	R									
	1	1	1	1	1	10	1		451	45.59836	-89.52225	10	S	R			1						
	0			0	0		1		452	45.59728	-89.52226	3	S		Visual								
									453	45.59692	-89.52226				Missed point in field								
	0			0	0		1		454	45.59656	-89.52226	4	S	P									
	2	2	2	2	1	5	1		455	45.5962	-89.52227	5	M	P		1							

Entry

	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY!)		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	1	1	1	1	1	2	1		456	45.59584	-89.52227	2	S	P					1				
	1	1	1	1	1	4	1		457	45.59548	-89.52227	4	M	P									
	1	1	1	1	1	3	1		458	45.59512	-89.52228	3	M	P									
	0			0	0		1		459	45.59476	-89.52228	2			Visual								V
	0			0	0		1		460	45.61636	-89.52158	1	R		Visual								
	2	2	2	2	2	3	1		461	45.616	-89.52159	3	S	R					2				
	1	1	1	1	1	5	1		462	45.61564	-89.52159	5	M	R									
	0			0	0		1		484	45.60772	-89.52166	8	R	R									
	0			0	0		1		485	45.60736	-89.52166	4	R	R									
	0			0	0		1		486	45.60628	-89.52167	5	R	R									
	0			0	0		1		487	45.60592	-89.52167	16	R	R									
	0			0	0		1		488	45.60556	-89.52167	19	S	R									
	0								489	45.6052	-89.52168	26	S	R									
	0			0	0		1		507	45.59872	-89.52173	17	S	R									
	1	1	1	1	1	9	1		508	45.59836	-89.52174	9	S	R									
									509	45.598	-89.52174				Shallow no veg								
	3	3	3	3	3	5.5	1		510	45.59728	-89.52175	5.5	M	P			1	2					
	0			0	0		1		511	45.59692	-89.52175	11	S	R									
	1	1	1	1	0	11	1		512	45.59656	-89.52175	11	S	R		1							
	1	1	1	1	0	12	1		513	45.59619	-89.52175	12	S	R		1							
	2	2	2	2	2	6	1		514	45.59583	-89.52176	6	M	P			2						
	2	2	2	2	2	4	1		515	45.59547	-89.52176	4	S	P				1					
	2	2	2	2	2	3	1		516	45.59511	-89.52176	3	M	P			1						
	0			0	0		1		517	45.59475	-89.52177	2			Visual								V
	3	3	3	3	3	3	1		518	45.61563	-89.52108	3	S	P					1				
	1	1	1	1	1	5	1		519	45.61527	-89.52108	5	M	R									
	0			0	0		1		520	45.61491	-89.52108	12	S	R									
	0			0	0		1		521	45.61455	-89.52109	15	S	R									
	0			0	0		1		540	45.60771	-89.52114	16			Sonar reading								
	0			0	0		1		541	45.60735	-89.52115	5	R	R									
	0			0	0		1		542	45.60627	-89.52116	8	R	R									
	0			0	0		1		543	45.60591	-89.52116	20	R	R									
	0								546	45.60483	-89.52117	27			Sonar reading								
	0			0	0		1		547	45.60447	-89.52117	20	S	R									
	0			0	0		1		548	45.60411	-89.52117	15	S	R									
	0			0	0		1		549	45.60375	-89.52118	7	S	R									
	0			0	0		1		550	45.60339	-89.52118	15			Sonar reading								
	0			0	0		1		563	45.59871	-89.52122	14	S	R									
	0			0	0		1		564	45.59835	-89.52122	14	R	R									
	0			0	0		1		565	45.59799	-89.52123	2	S		Visual								
	0			0	0		1		566	45.59763	-89.52123	5	S	P									

Entry

Entry	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	1	1	1	1	0	13	1		567	45.59727	-89.52123	13	S	R		1							
	2	2	2	2	1	13	1		568	45.59691	-89.52124	13	M	R		2	1						
	0			0	0		1		569	45.59655	-89.52124	11	S	R									
	1	1	1	1	0	10	1		570	45.59619	-89.52124	10	S	R		1							
	4	4	4	4	4	9	1		571	45.59583	-89.52124	9	M	R			1						
	1	1	1	1	1	5	1		572	45.59547	-89.52125	5	M	R									V
	0			0	0		1		573	45.61527	-89.52057	8	S	R									
	0			0	0		1		574	45.61491	-89.52057	15	S	R									
	0			0	0		1		575	45.61455	-89.52057	17	S	R									
	0			0	0		1		595	45.60735	-89.52063	10	R	R									
	0			0	0		1		596	45.60699	-89.52064	5	R	R									
	0			0	0		1		597	45.60627	-89.52064	6	S	R									
	0								600	45.60519	-89.52065	28			Sonar reading								
	0			0	0		1		601	45.60483	-89.52066	5	S	R									
	0			0	0		1		602	45.60339	-89.52067	5	S	R									
	0			0	0		1		603	45.60303	-89.52067	20			Sonar reading								
	0			0	0		1		616	45.59835	-89.52071	10	S	R									
	0			0	0		1		617	45.59799	-89.52071	9	S	R									
	0			0	0		1		618	45.59763	-89.52072	10	S	R									
	0			0	0		1		619	45.59727	-89.52072	14	S	R									
	0			0	0		1		620	45.59691	-89.52072	12	S	R									
	1	1	1	1	1	9	1		621	45.59655	-89.52073	9	S	R			1						
	5	5	5	5	4	8	1		622	45.59619	-89.52073	8	S	R		1	2						
	0			0	0		1		623	45.59583	-89.52073	1	S		Visual								
	0			0	0		1		624	45.61491	-89.52006	9	S	R									
	0			0	0		1		625	45.61455	-89.52006	15	S	R									
	0			0	0		1		626	45.61419	-89.52006	17	S	R									
	0			0	0		1		645	45.60735	-89.52012	18			Sonar reading								
	0			0	0		1		646	45.60699	-89.52012	16			Sonar reading								
	0								647	45.60663	-89.52013	22			Sonar reading								
	0								648	45.60627	-89.52013	23			Sonar reading								
	0			0	0		1		651	45.60519	-89.52014	20			Sonar reading								
	0			0	0		1		652	45.60483	-89.52014	10	S	R									
	0			0	0		1		653	45.60303	-89.52016	5	S	R									
	0			0	0		1		654	45.60267	-89.52016	20			Sonar reading								
	2	2	2	2	2	5	1		672	45.59619	-89.52022	5	S	R					1				
	1	1	1	1	1	5	1		673	45.59547	-89.52022	5	M	R								V	V
	0			0	0		1		674	45.61491	-89.51954	2	S	R									
	0			0	0		1		675	45.61455	-89.51955	6	S	R									
	0			0	0		1		700	45.60555	-89.51962	16			Sonar reading								
	0			0	0		1		701	45.60519	-89.51963	16			Sonar reading								

Entry	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	0			0	0		1		702	45.60483	-89.51963	8	S	R									
	0			0	0		1		703	45.60303	-89.51964	5	S	R									
	0			0	0		1		704	45.60267	-89.51965	20			Sonar reading								
	3	3	3	3	3	6	1		722	45.59619	-89.5197	6	M	R			1	2					
	2	2	2	2	2	4	1		723	45.59583	-89.51971	4	M	R				1					
	0			0	0		1		724	45.59547	-89.51971	3	S		Sonar reading								
	1	1	1	1	1	4	1		725	45.59511	-89.51971	4	M	R									
	0			0	0		1		726	45.61455	-89.51903	2	S	R									
	0			0	0		1		727	45.61419	-89.51904	3	R	R									
	1	1	1	1	0	7	1		751	45.60554	-89.51911	7	R	R		1							
	0			0	0		1		752	45.60518	-89.51911	7	S	R									
	0			0	0		1		753	45.60266	-89.51913	4	S	R									
	0			0	0		1		771	45.59618	-89.51919	10	S	R									
	0			0	0		1		772	45.59582	-89.51919	9	S	R									
	1	1	1	1	1	4	1		773	45.59546	-89.5192	4	S	R									
									774	45.61418	-89.51852		S		Shallow no veg								
	3	3	3	3	3	5	1		775	45.61382	-89.51853	5	S	R				2					
	1	1	1	1	0	7	1		798	45.60554	-89.5186	7	R	R		2							
	0			0	0		1		799	45.60518	-89.5186	8	S	R									
	0			0	0		1		800	45.60266	-89.51862	3	S	R									
	0			0	0		1		801	45.6023	-89.51863	16	R	R									
	0			0	0		1		802	45.60194	-89.51863	14	R	R									
	0			0	0		1		819	45.59582	-89.51868	9	S	R									
									820	45.59546	-89.51868		S		Shallow no veg, docks								
									821	45.5951	-89.51869		S		Shallow no veg, docks								
	0			0	0		1		822	45.61382	-89.51801	5	R	R									
	0			0	0		1		823	45.61346	-89.51802	12	R	R									
	0								825	45.61274	-89.51802	26			Sonar reading								
	1	1	1	1	0	11	1		845	45.60554	-89.51808	11	R	R		1							
	0			0	0		1		846	45.60518	-89.51809	5	S	R									
	0			0	0		1		847	45.6023	-89.51811	4	S	R									
	0			0	0		1		865	45.59582	-89.51817	5	S	R									
									866	45.59546	-89.51817		S		Shallow no veg, docks								
									867	45.5951	-89.51817		S		Shallow no veg, docks								
	0			0	0		1		868	45.61382	-89.5175	5	S	R									
	0			0	0		1		869	45.61346	-89.5175	7	S	R									
	1	1	1	1	1	14	1		870	45.6131	-89.51751	14	S	R			1						
	0			0	0		1		891	45.60554	-89.51757	14	S	R									
	0			0	0		1		892	45.60518	-89.51757	2	S	R									
	0			0	0		1		893	45.6023	-89.5176	4	S	R									
	1	1	1	1	0	12	1		894	45.60194	-89.5176	12	R	R		1							

Entry	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY!)		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	0			0	0		1		911	45.59582	-89.51765	8	S	R									
									912	45.59546	-89.51766		S		Shallow no veg, docks								
									913	45.5951	-89.51766		S		Shallow no veg, docks								
	2	2	2	2	2	6	1		914	45.61382	-89.51699	6	S	R				1					
	0			0	0		1		915	45.61346	-89.51699	3	S	R									
	1	1	1	1	1	3	1		916	45.6131	-89.51699	3	S	R									
	2	2	2	2	2	10	1		917	45.61274	-89.517	10	S	R			1						
	0			0	0		1		918	45.61238	-89.517	16	R	R									
	0			0	0		1		935	45.60626	-89.51705	20			Sonar reading								
	0			0	0		1		936	45.6059	-89.51706	20			Sonar reading								
	0			0	0		1		937	45.60554	-89.51706	9	S	R									
	0			0	0		1		938	45.6023	-89.51709	4	S	R									
	0			0	0		1		939	45.60194	-89.51709	14	S	R									
	0			0	0		1		941	45.60122	-89.5171	16			Sonar reading								
	0			0	0		1		956	45.59582	-89.51714	8	R	R									
									957	45.59546	-89.51715		S		Shallow no veg, docks								
	0			0	0		1		958	45.61273	-89.51648	9	S	R									
	0			0	0		1		959	45.61237	-89.51649	16	R	R									
	0								974	45.60697	-89.51653	21			Sonar reading								
	0			0	0		1		975	45.60661	-89.51654	20			Sonar reading								
	0			0	0		1		976	45.60625	-89.51654	6	S	R									
	0			0	0		1		977	45.60589	-89.51654	7	S	R									
									978	45.60229	-89.51657		S		Shallow, no veg								
	0			0	0		1		979	45.60193	-89.51658	4	S	R									
	0			0	0		1		979	45.60193	-89.51658	16	S	R									
	0								996	45.59581	-89.51663	22	S	R									
									997	45.59545	-89.51663		S		Shallow no veg, docks								
	0			0	0		1		998	45.61309	-89.51597	8	S	R									
	3	3	3	3	2	7	1		999	45.61273	-89.51597	7	R	R		1	1						
	0			0	0		1		1007	45.60985	-89.516	18			Sonar reading								
	0			0	0		1		1008	45.60949	-89.516	10	R	R									
	0			0	0		1		1009	45.60913	-89.516	13	R	R									
	0			0	0		1		1010	45.60877	-89.516	10	R	R									
	0			0	0		1		1014	45.60733	-89.51602	20			Sonar reading								
	0			0	0		1		1015	45.60697	-89.51602	6	S	R									
	0			0	0		1		1016	45.60661	-89.51602	3	S	R									
	0			0	0		1		1017	45.60229	-89.51606	3	S	R									
	0			0	0		1		1018	45.60193	-89.51606	13	R	R									
	0			0	0		1		1035	45.59581	-89.51612	20	S	R									
	0			0	0		1		1036	45.59545	-89.51612	2	S	R									
	0			0	0		1		1037	45.59509	-89.51612	12	S	R									

Entry	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	0			0	0		1		1038	45.59473	-89.51613	20	S	R									
	0			0	0		1		1039	45.59437	-89.51613	8	S	R									
	0			0	0		1		1040	45.61309	-89.51545	5	S	R									
	0			0	0		1		1049	45.60985	-89.51548	8	R	R									
	0			0	0		1		1050	45.60949	-89.51549	6	R	R									
	0			0	0		1		1051	45.60913	-89.51549	6	R	R									
	0			0	0		1		1052	45.60877	-89.51549	5	R	R									
	0			0	0		1		1053	45.60841	-89.5155	20			Sonar reading								
	0			0	0		1		1055	45.60769	-89.5155	6	S	R									
	0			0	0		1		1056	45.60733	-89.5155	6	S	R									
	0			0	0		1		1057	45.60229	-89.51555	15	S	R									
	0			0	0		1		1058	45.60193	-89.51555	16			Sonar reading								
	0			0	0		1		1080	45.59401	-89.51562	10	S	R									
	1	1	1	1	1	8	1		1081	45.59365	-89.51562	8	S	R									
	0			0	0		1		1082	45.61309	-89.51494	4	S	R									
	0			0	0		1		1083	45.61273	-89.51494	20			Sonar reading								
	0			0	0		1		1091	45.60985	-89.51497	7	R	R									
	0			0	0		1		1092	45.60949	-89.51497	4	R	R									
	0			0	0		1		1093	45.60913	-89.51498	3	R	R									
	0			0	0		1		1094	45.60877	-89.51498	3	R	R									
	0			0	0		1		1095	45.60841	-89.51498	8	S	R									
	0			0	0		1		1096	45.60805	-89.51499	6	S	R									
	0			0	0		1		1097	45.60769	-89.51499	6	R	R									
	0			0	0		1		1098	45.60229	-89.51503	12	S	R									
	0			0	0		1		1099	45.60193	-89.51504	18			Sonar reading								
	0			0	0		1		1101	45.60121	-89.51504	8	S	R									
	0			0	0		1		1122	45.59365	-89.51511	20	S	R									
	1	1	1	1	1	5	1		1123	45.59329	-89.51511	5	S	R									
	0			0	0		1		1124	45.61273	-89.51443	11	R	R									
	0			0	0		1		1125	45.61237	-89.51443	18			Sonar reading								
	0								1130	45.61057	-89.51445	24			Sonar reading								
	0			0	0		1		1131	45.61021	-89.51445	10	S	R									
	2	2	2	2	2	11	1		1132	45.60985	-89.51446	11	R	R			1						
	4	4	4	4	4	11	1		1133	45.60949	-89.51446	11	S	R			1	1					
	0			0	0		1		1134	45.60913	-89.51446	3	R	R									
	0			0	0		1		1135	45.60877	-89.51447	2	S	R									
	0			0	0		1		1136	45.60841	-89.51447	2	S	R									
	2	2	2	2	1	3	1		1137	45.60265	-89.51452	3	S	R		1							
	1	1	1	1	0	10	1		1138	45.60229	-89.51452	10	S	R		2							
	0			0	0		1		1139	45.60193	-89.51453	16			Sonar reading								
	0			0	0		1		1163	45.59328	-89.5146	5	S	R									

Entry	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY!)		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	0			0	0		1		1164	45.61272	-89.51392	4	S	R									
	0			0	0		1		1165	45.61236	-89.51392	9	S	R									
	2	2	2	2	2	8	1		1170	45.61056	-89.51394	8	M	R			1	2					
									1171	45.6102	-89.51394	8	S	R									
	0			0	0		1		1172	45.60984	-89.51394	4	R	R									
	0								1173	45.60948	-89.51395		R		Shallow no veg								
	1	1	1	1	1	5	1		1174	45.60264	-89.51401	5	S	R			1						
	1	1	1	1	0	9	1		1175	45.60228	-89.51401	9	R	R		2							
	0			0	0		1		1176	45.60192	-89.51401	19			Sonar reading								
	0			0	0		1		1201	45.59292	-89.51409	9	S	R									
	0			0	0		1		1202	45.61236	-89.51341	6	S	R									
	0			0	0		1		1203	45.612	-89.51341	15			Sonar reading								
	1	1	1	1	1	15	1		1204	45.61164	-89.51342	15	S	R				1					
	0			0	0		1		1205	45.61128	-89.51342	18	R	R									
	0			0	0		1		1206	45.61092	-89.51342	20			Sonar reading								
	0			0	0		1		1207	45.61056	-89.51342	7	S	R									
									1208	45.60264	-89.51349		S		Shallow no veg								
	1	1	1	1	1	2	1		1209	45.60228	-89.5135	2	S		Visual								
	0			0	0		1		1210	45.60192	-89.5135	7	R	R									
	0			0	0		1		1236	45.59256	-89.51358	8	S	R									
	1	1	1	1	1	9	1		1237	45.612	-89.5129	9	S	R									
	0			0	0		1		1238	45.61164	-89.5129	7	S	R									
	1	1	1	1	1	8	1		1239	45.61128	-89.51291	8	S	R									
	0			0	0		1		1240	45.61092	-89.51291	2	R	R									
	0			0	0		1		1241	45.60228	-89.51298	2	S	R									
	0			0	0		1		1242	45.60192	-89.51299	8	S	R									
	0			0	0		1		1243	45.60156	-89.51299	17			Sonar reading								
	0			0	0		1		1269	45.5922	-89.51307	11	S	R									
	0			0	0		1		1270	45.59184	-89.51307	9	S	R									
	0			0	0		1		1271	45.60228	-89.51247	3	S	R									
	0			0	0		1		1272	45.60192	-89.51247	7	S	R									
	0			0	0		1		1273	45.60156	-89.51248	10	S	R									
	0			0	0		1		1274	45.6012	-89.51248	18			Sonar reading								
	2	2	2	2	2	7	1		1301	45.59148	-89.51256	7	S	R			2						
	0			0	0		1		1302	45.59112	-89.51257	4	S	R									
	0			0	0		1		1303	45.60155	-89.51196	5	S	R									
	0			0	0		1		1304	45.60119	-89.51197	8	S	R									
	0			0	0		1		1305	45.60083	-89.51197	19	S	R									
	0			0	0		1		1306	45.60047	-89.51197	20			Sonar reading								
	0			0	0		1		1307	45.60011	-89.51198	20			Sonar reading								
	0								1308	45.59975	-89.51198	25			Sonar reading								

Entry	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY!)		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	0								1309	45.59939	-89.51198	26			Sonar reading								
	0			0	0		1		1332	45.59111	-89.51205	17	S	R									
	3	3	3	3	3	4	1		1333	45.59075	-89.51206	4	S	R				1	1	1			
	0			0	0		1		1334	45.60083	-89.51146	5	S	R									
	0			0	0		1		1335	45.60047	-89.51146	15	S	R									
	0			0	0		1		1336	45.60011	-89.51146	10	S	R									
	0			0	0		1		1337	45.59975	-89.51147	5	S	R									
	0			0	0		1		1338	45.59939	-89.51147	20			Sonar reading								
	0								1339	45.59903	-89.51147	22			Sonar reading								
	0								1340	45.59867	-89.51148	24			Sonar reading								
	0								1341	45.59831	-89.51148	23			Sonar reading								
	0								1342	45.59795	-89.51148	22			Sonar reading								
	0			0	0		1		1343	45.59759	-89.51149	20			Sonar reading								
	0			0	0		1		1344	45.59723	-89.51149	12	S	R									
	1	1	1	1	1	5	1		1346	45.59651	-89.51149	5	S	R									
	0			0	0		1		1361	45.59111	-89.51154	15	S	R									
	2	2	2	2	2	4	1		1362	45.59075	-89.51154	4	S	R						1			
	0			0	0		1		1363	45.59939	-89.51096	3	S	R									
	0			0	0		1		1364	45.59903	-89.51096	9	S	R									
	0			0	0		1		1365	45.59867	-89.51096	10	S	R									
	0			0	0		1		1366	45.59831	-89.51097	7	S	R									
	0			0	0		1		1367	45.59795	-89.51097	10	S	R									
	0			0	0		1		1368	45.59759	-89.51097	8	S	R									
	0			0	0		1		1369	45.59723	-89.51098	2	R		Visual								
	1	1	1	1	1	2	1		1370	45.59687	-89.51098	2	R	P					1				
	1	1	1	1	1	3	1		1371	45.59651	-89.51098	3	S	R									
	0								1372	45.59615	-89.51098	23	M	R									
	0			0	0		1		1386	45.59111	-89.51103	8	S	R									
									1387	45.59075	-89.51103		S		Shallow no veg, docks								
									1388	45.59039	-89.51103		S		Shallow no veg, docks								
	0			0	0		1		1389	45.59651	-89.51047	1	S	R									
	0			0	0		1		1405	45.59075	-89.51052	5	S	R									
	0			0	0		1		1406	45.59651	-89.50996	1	S	R									
	0								1407	45.59614	-89.50996	25	S	R									
	0			0	0		1		1420	45.59146	-89.51	13	S	R									
	1	1	1	1	1	6	1		1421	45.5911	-89.51	6	S	R									
									1422	45.59074	-89.51001		S		Shallow no veg, docks								
									1423	45.5965	-89.50944		S		Shallow no veg, docks								
	0			0	0		1		1424	45.59614	-89.50945	14	S	R									
	0			0	0		1		1436	45.59182	-89.50948	11	S	R									
	0			0	0		1		1437	45.59146	-89.50949	8	S	R									

Entry

	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
									1438	45.5911	-89.50949		S		Shallow no veg, docks								
	0			0	0		1		1439	45.5965	-89.50893	14	S	R									
	0			0	0		1		1440	45.59614	-89.50893	20	M	R									
	0			0	0		1		1451	45.59218	-89.50897	15	S	R									
	0			0	0		1		1452	45.59182	-89.50897	8	S	R									
									1453	45.59146	-89.50897		S		Shallow no veg, docks								
									1454	45.5911	-89.50898		S		Shallow no veg, docks								
	4	4	4	4	4	9	1		1455	45.5965	-89.50842	9	S	R			1	2					
	0			0	0		1		1456	45.59614	-89.50842	17	S	R									
	0			0	0		1		1467	45.59218	-89.50846	13	S	R									
	0			0	0		1		1467	45.59218	-89.50846	17	M	R									
	0			0	0		1		1468	45.59182	-89.50846	10	S	R									
									1469	45.59146	-89.50846		S		Shallow no veg, docks								
									1470	45.5965	-89.5079		S		Shallow no veg, docks								
	0			0	0		1		1471	45.59614	-89.50791	16	S	R									
	0			0	0		1		1472	45.59578	-89.50791	15	M	R									
	0			0	0		1		1482	45.59218	-89.50794	10	S	R									
	2	2	2	2	2	3	1		1483	45.59182	-89.50795	3	S	R					1				
									1484	45.59146	-89.50795		S		Shallow no veg, docks								
	0			0	0		1		1485	45.59649	-89.50739	3	S	R									
	4	4	4	4	4	3	1		1486	45.59613	-89.50739	3	S	R				1					
	1	1	1	1	0	5	1		1487	45.59577	-89.5074	5	S	R		2							
	0			0	0		1		1488	45.59541	-89.5074	6	S	R									
	1	1	1	1	1	10	1		1489	45.59505	-89.5074	10	S	R				1					
	2	2	2	2	2	12	1		1490	45.59469	-89.50741	12	S	R			2						
	0			0	0		1		1492	45.59397	-89.50741	20	S	R									
	0			0	0		1		1493	45.59361	-89.50742	15	R	R									
	0			0	0		1		1494	45.59325	-89.50742	15	M	R									
	0			0	0		1		1497	45.59217	-89.50743	6	S	R									
	0			0	0		1		1498	45.59181	-89.50743	2	M	R									
	1	1	1	1	1	2	1		1499	45.59613	-89.50688	2	S	R					1				
	1	1	1	1	1	5	1		1500	45.59577	-89.50689	5	S	P									
	0			0	0		1		1501	45.59541	-89.50689	4	S	R									
	1	1	1	1	0	5	1		1502	45.59505	-89.50689	5	S	R		1							
	0			0	0		1		1503	45.59469	-89.50689	7	S	R									
	1	1	1	1	1	7	1		1504	45.59433	-89.5069	7	S	R				1					
									1505	45.59397	-89.5069	10	M	R									
	0			0	0		1		1506	45.59361	-89.5069	11	M	R									
	0			0	0		1		1507	45.59325	-89.50691	14	S	R									
	2	2	2	2	2	7	1		1509	45.59253	-89.50691	7	S	R									
	0			0	0		1		1510	45.59217	-89.50692	2	M	R									

Entry	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY!)		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis* ,Common waterweed	*Myriophyllum tenellum* ,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	0			0	0		1		1510	45.59217	-89.50692	10	M	R									
									1511	45.59181	-89.50692		M		Shallow no veg								
	0								1512	45.59613	-89.50637		S		Shallow no veg								
									1513	45.59577	-89.50637				Missed point in field								
									1514	45.59541	-89.50638				Missed point in field								
									1515	45.59505	-89.50638				Missed point in field								
									1516	45.59469	-89.50638				Missed point in field								
									1517	45.59433	-89.50639				Missed point in field								
									1518	45.59397	-89.50639				Missed point in field								
									1519	45.59361	-89.50639	5	M	R									
									1520	45.59325	-89.50639	12	S	R									
	0			0	0		1		1521	45.59289	-89.5064	10	S	R									
	4	4	4	4	4	5	1		1522	45.59253	-89.5064	5	S	R			1						
	2	2	2	2	2	3	1		1523	45.59217	-89.5064	3	S	R					1				
									1524	45.59577	-89.50586		S		Shallow no veg, docks								
	3	3	3	3	3	3	1		1525	45.59541	-89.50586	3	S	R					2				
	2	2	2	2	2	6	1		1526	45.59505	-89.50587	6	M	R			1						
	1	1	1	1	1	7	1		1527	45.59469	-89.50587	7	M	R									
	1	1	1	1	0	7	1		1528	45.59433	-89.50587	7	M	R		2							
	1	1	1	1	0	7	1		1529	45.59397	-89.50588	7	M	R		2							
	2	2	2	2	2	7	1		1530	45.59361	-89.50588	7	M	R			1	1					
	1	1	1	1	1	10	1		1531	45.59325	-89.50588	10	S	R				1					
	3	3	3	3	3	7	1		1532	45.59289	-89.50588	7	M	R				2					
	1	1	1	1	1	2	1		1533	45.59253	-89.50589	2	S	P					1				
	0			0	0		1		1534	45.59217	-89.50589	2	S	R									
									1535	45.59577	-89.50535		S		Shallow no veg, docks								
	2	2	2	2	2	2	1		1536	45.59541	-89.50535	2	R	R					1				
	1	1	1	1	1	3	1		1537	45.59505	-89.50535	3	S	R					2				
	4	4	4	4	4	5	1		1538	45.59468	-89.50536	5	M	R			1						
	1	1	1	1	1	5	1		1539	45.59432	-89.50536	5	M	R									
	1	1	1	1	1	6	1		1540	45.59396	-89.50536	6	M	R				1					
	1	1	1	1	1	6	1		1541	45.5936	-89.50537	6	M	R				1					
	2	2	2	2	2	6	1		1542	45.59324	-89.50537	6	M	R			1	1					
	4	4	4	4	4	3	1		1543	45.59288	-89.50537	3	M	R					1				
	3	3	3	3	3	3	1		1544	45.5954	-89.50484	3	S	P					1				
	1	1	1	1	1	3	1		1545	45.59504	-89.50484	3	S	P					1				
	3	3	3	3	3	4	1		1546	45.59468	-89.50484	4	S	P									
	4	4	4	4	4	5	1		1547	45.59432	-89.50485	5	S	R				1					
	4	4	4	4	4	5	1		1548	45.59396	-89.50485	5	S	R			1	1					
	1	1	1	1	1	4	1		1549	45.5936	-89.50485	4	S	P			1						
	0			0	0		1		1550	45.59324	-89.50486	3	S	R									

Entry

	Total Number Species at Site (NO ENTRY!)	Total Number Species - veg sites only (NO ENTRY!)includes exotics	Total Number Species - veg sites only (NO ENTRY!) No exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!) includes exotics	Total Number Species at Site (shallower than max depth) (NO ENTRY!), no exotics	Depth with some plants (NO ENTRY!)	Depths within vegetated range(NO ENTRY		sampling point	Latitude(need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	filamentous algae	*Ceratophyllum demersum*,Coontail	*Elodea canadensis*,Common waterweed	*Myriophyllum tenellum*,Dwarf water milfoil	*Najas flexilis*,Bushy pondweed	*Nuphar variegata*,Spatterdock	*Nymphaea odorata*,White water lily	*Pontederia cordata*,Pickerelweed
	5	5	5	5	5	1	1		1551	45.59468	-89.50433	1	S	R					1				
	1	1	1	1	1	2	1		1575	45.59432	-89.50433	2	S	R									
	1	1	1	1	1	3	1		1553	45.59432	-89.50433	3	S	R									
	1	1	1	1	1	4	1		1554	45.59432	-89.50433	4	S	R									

sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
1											
2											
3											
4	1								1		
5	2										
6									2		
7						1					
8											
9									1		
10									1		
11	1										
12											
13				V					V		
14				V		1			V		
15				V							
16				V							
17				V					V		
18											
19									1		
20	1										
21	1										
22											
23											
24				1					1		
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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673	1										
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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sampling point	*Potamogeton amplifolius*, Large-leaf pondweed	*Potamogeton illinoensis*, Illinois pondweed	*Potamogeton praelongis*, White-stem pondweed	*Potamogeton pusillus*, Small pondweed	*Potamogeton richardsonii*, Clasping-leaf pondweed	*Potamogeton robbinsii*, Robbins pondweed	*Potamogeton zosteriformis*, Flat-stem pondweed	*Utricularia vulgaris*, Common	*Vallisneria americana*, Wild celery	Schoenoplectus sp, Bulrush sp	
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1544				2					1		
1545											
1546		2		2					1		
1547				1			1		1		
1548				1			1				
1549											
1550											

sampling point	*Potamogeton amplifolius* , Large-leaf pondweed	*Potamogeton illinoensis* ,Illinois pondweed	*Potamogeton praelongis* , White-stem pondweed	*Potamogeton pusillus* ,Small pondweed	*Potamogeton richardsonii* ,Clasping-leaf pondweed	*Potamogeton robbinsii* ,Robbins pondweed	*Potamogeton zosteriformis* , Flat-stem pondweed	*Utricularia vulgaris* ,Common	*Vallisneria americana* ,Wild celery	Schoenoplectus sp, Bulrush sp	
1551		1	1			1			1		
1575									1		
1553									2		
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Appendix B
DNR Information

DNR Aquatic Invasive Species Program

1. **Watercraft Inspection**

   http://dnr.wi.gov/lakes/CBCW/

2. **Citizen Lake Monitoring**

   http://dnr.wi.gov/lakes/CLMN/

3. **Information and Education**

   http://www.uwex.edu/erc/invasives.html

   http://www.seagrant.wisc.edu/ais/

   http://dnr.wi.gov/invasives/aquatic/

4. **Purple Loosestrife Biological Control**

   http://www.dnr.state.wi.us/org/es/science/publications/ss981_2003.htm

   Brock Woods
   UWEX/DNR Purple Loosestrife Bio-control Coordinator
   (608)-221-6349
   Brock.Woods@ces.uwex.edu

5. **Clean Boats, Clean Waters Program**

   http://www.uwsp.edu/cnr/uwexlakes/CBCW/default.asp

   Erin Henegar
   Aquatic Invasive Species Volunteer Coordinator
   (715)-346-4978
   ehenegar@uwsp.edu

Wisconsin Lakes Partnership Contacts

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info@wisconsinlakes.org
608-661-4313

UW-Extension Lakes-Contacts (Exit DNR)
uwexlakes@uwsp.edu
715-346-2116
Fax715-346-4038

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Rhinelander, WI 54501
715-365-8900 FAX 715-365-8932

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gauthk@dnr.state.wi.us

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johnf1.kubisiak@wisconsin.gov

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wickms@dnr.state.wi.us

Aquatic Plants and Lake Water Quality Expert
Susan Knight
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seknight@wisc.edu

Carolyn Scholl – Vilas County
Self Help and Shoreline
715-479-3648
cascho@co.vilas.wi.us

WAL Representative (Vilas Co.)
Sandy Gillum
715-479-6051
ssgillum@nnex.net

WAL Representative(Forest Co.)
Roland Alger
715-454-2711
alger@nnex.net

Contact information current as of February 2009

Information taken from DNR website
http://www.dnr.state.wi.us/org/water/fhp/lakes/contacts.htm#DNRNortherneast.

Oneida County Land & Water Conservation Department
Nancy Hollands
715-369-7835
http://www.co.oneida.wi.gov/county/app/public?COMMAND=gov.wi.county.view.command.ShowDepartmentDetail&selectedDepartment=20010927091313191219131021954376&countyName=Oneida.