AMENDMENT
Aquatic Plant Management Plan, Fish, Crystal and Indian Lakes, Lower Wisconsin Basin, Dane County Wisconsin

Approved by the Dane County Lakes and Watershed Commission on April 10, 2014 and by the Wisconsin Department of Natural Resources on March 27, 2014

Prepared by Sue Jones, Dane County Office of Lakes and Watersheds, with assistance from Jim Leverance, Darren Marsh, and Pat Sheahan. Mapping by Michelle Richardson, Dane County Land and Water Resources Department, Administration Division.

Plant surveys conducted by James Scharl of Stantec Consulting Services Inc. (2012) for the Dane County Office of Lakes and Watersheds. Funding to support this plan amendment was provided by a Wisconsin Department of Natural Resources grant to the Dane County Office of Lakes and Watersheds.

Introduction

This is an update to the Aquatic Plant Management Plan for Fish, Crystal and Indian Lakes in the Lower Wisconsin River Basin, Dane County Wisconsin, published in January 2007 and amended in November 2007 by the Dane County Office of Lakes and Watersheds. The 2007 plan was approved by the Wisconsin Department of Natural Resources on November 20, 2007 and by the Dane County Lakes and Watershed Commission on November 8, 2007. Aquatic Plant Management Plans are required under NR 109.04(d), Wisconsin Administrative Code, to guide mechanical harvesting activities and the effective management of aquatic plants in water bodies.

This plan is prepared in support of Dane County's permit for its mechanical aquatic plant harvesting program, operated in accordance with NR 109 Wisconsin Administrative Code. Individuals and groups that propose herbicide treatments of aquatic plants in Dane County waters would need to go through a separate planning and permitting process with the Wisconsin Department of Natural Resources.

Recent Plant Survey Methods and Results

Dane County contracted with Stantec Consulting Services Inc. to conduct surveys of the aquatic plant community of Fish Lake on July 11-12, 2012, Crystal Lake on July 10-11, 2012, and Indian Lake on July 17, 2012. Stantec followed state protocols and used the point intercept method.

Table 1, 2 and 3 below indicate species present during the 2012 survey for Fish, Crystal, and Indian Lakes, respectively. Figures 1, 2 and 3 indicate species richness from 2006 through 2012 for each lake.

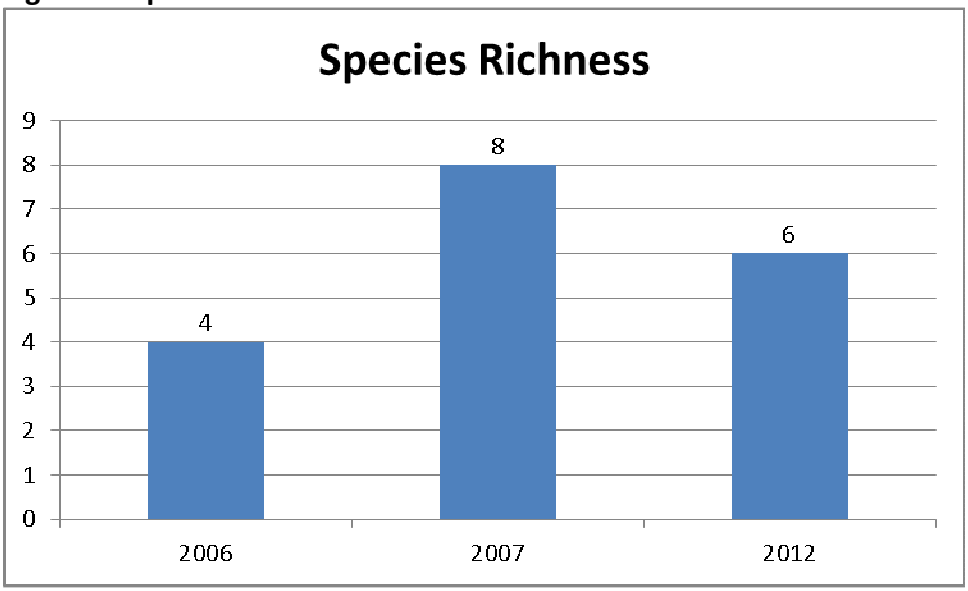
Appendix A includes Fish Lake plant statistics from the 2012 Stantec survey. Appendix B includes mapped plant distributions for Fish Lake from 2012. Appendix C includes Crystal Lake plant statistics from the 2012 Stantec survey. Appendix D includes mapped plant distributions for Crystal Lake from 2012.

Table 1. Species present during 2012 aquatic plant survey – Fish Lake

Genus	Species	Common Name	Category
Brasenia	*scherberi*	Watershield	Floating-leaf
Ceratophyllum	*demersum*	Coontail	Submersed
Myriophyllum	*spicatum*	Eurasian watermilfoil	Submersed - Invasive
Nymphaea	*odorata*	White water lily	Floating-leaf
Potamogeton	*crispus*	Curly-leaf pondweed	Submersed- Invasive
Potamogeton	*natans*	Floating-leaf pondweed	Submersed

Native species richness was 4.

Figure 1. Species richness – Fish Lake 2006 - 2012



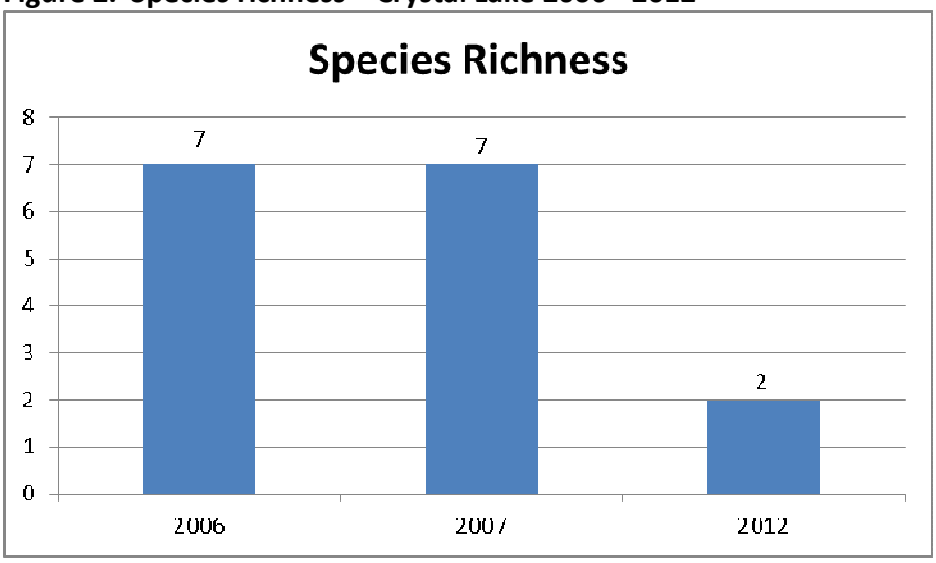
This figure indicates total species richness. The 2007 plan indicated native species richness in a similar figure.

Table 2. Species present during 2012 aquatic plant survey – Crystal Lake

Genus	Species	Common Name	Category
Myriophyllum	*spicatum*	Eurasian watermilfoil	Submersed- Invasive
Nyphaea	*odorata*	White water lily	Floating-leaf

Native species richness was 1.

Figure 2. Species richness – Crystal Lake 2006 - 2012

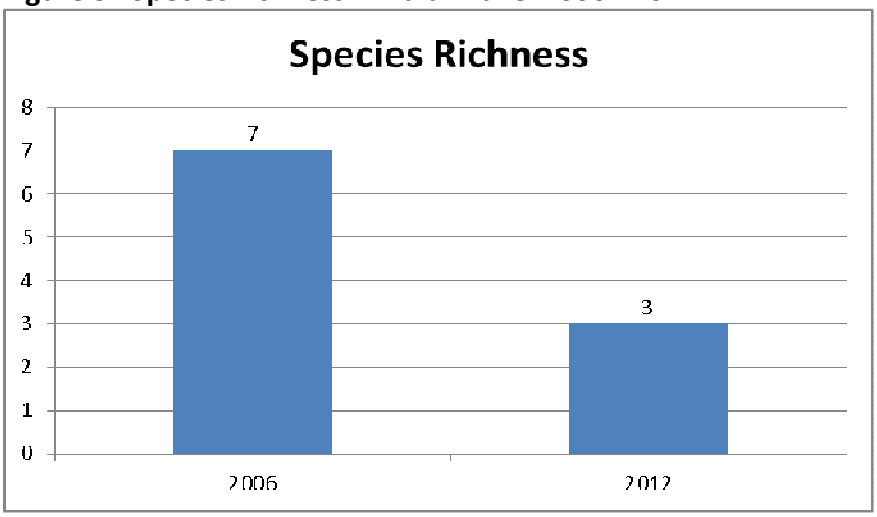


This figure indicates total species richness. The 2007 plan indicated native species richness in a similar figure.

Table 3. Species present during 2012 aquatic plant survey – Indian Lake

Genus	Species	Common Name	Category
Ceratophyllum	*demersum*	Coontail	Submersed
Myriophyllum	*spicatum*	Eurasian watermilfoil	Submersed-Invasive
Sparganium	*eurycarpum*	Common bur-reed	Emergent

Figure 3. Species richness – Indian Lake 2006 - 2012



This figure indicates total species richness. The 2007 plan indicated native species richness in a similar figure.

Discussion of historical plant community changes

Definition of terms used in this section

Statistical and limnological terms (e.g. Floristic Quality Index, Coefficient of Conservatism) used in this section are more fully described in the 2007 aquatic plant management plan. Please refer to that plan for additional background.

Maximum depth of plant growth is the deepest depth at which plants were found in the lake. This is a function of water clarity. The clearer the water, the better the light penetration and presumably the deeper plants are able to grow. Not all plants grow in deep water. Some may prefer the shallower parts of the lake, but with clearer water the opportunity to grow deeper is available. Oligotrophic lakes (very clear water lakes) will have some plants growing in waters deeper than 20 feet. Hypereutrophic lakes (the opposite of oligotrophic) are characterized by excessive algal blooms and turbid, poor water quality and clarity. Rooted plants are few, and restricted to either unusual weather conditions or very shallow water where light can penetrate. Plant diversity is usually restricted to species that can tolerate poor water clarities.

Frequency of occurrence is calculated by taking the total number of times a species is sampled divided by the total number of points at which depth was less than or equal to the maximum depth of plant growth.

The photic zone is the area where light penetrates enough to support plant growth.

The Floristic Quality Index (FQI) is a metric that evaluates the closeness of the flora in a lake to that of an undisturbed condition. The higher a FQI value, the closer that plant community is to an undisturbed ecosystem. Just for reference, compare a lake's numbers to the statewide average (24) or ecoregion average (20)(lakes also within the Southeast Glacial Plans ecoregion - see map here http://dnr.wi.gov/topic/landscapes/documents/StateMaps/Map_S1_ELs.pdf), calculated from a subset of approximately 250 lakes across Wisconsin.

Coefficients of conservatism (C) range from 0 to 10 and represent an estimated probability that a plant is likely to occur in a landscape relatively unaltered from what is believed to be a pre-settlement condition (see the end of Table 3 in Appendix A). The lower numbers indicate more of a disturbed ecosystem, while the higher numbers indicate a community more like one that would have been found before human settlement.

Species richness is a count of the total number of different plant species found in a lake. The higher the species richness value the better, and generally better quality results in higher species richness values.

Fish Lake

Similar to Crystal Lake, Fish Lake has experienced a tremendous flux in water levels over the past two decades while Eurasian watermilfoil (EWM) has dominated the littoral zone for over the past 20 years. This creates a stressful habitat for aquatic plants and limits their establishment within the lake. Aquatic plant surveys were previously completed in Fish Lake in 2006 and 2007. These surveys showed limited aquatic plant growth and communities, which was also shown in 2012 survey.

The aquatic plant community of Fish Lake was re-surveyed on July 11-12, 2012. Earlier surveys found only four and eight aquatic plant species in 2006 and 2007, respectively. These surveys were dominated by EWM and coontail. Similarly, in 2012 the species abundance remained at six while coontail and EWM were still the two most abundant species during this survey. Over the two most recent sampling periods, the FQI decreased while the average coefficient of conservatism (C) remained the same. During 2006 and 2007, the FQI and average C increased, but were relatively low, with the FQI varying from 6.36 to 13.23 and an average C from 4.5 to 5.00. These values can be used to gauge the health of the lake, and though the FQI fell during 2012 to 10, the average C remained at 5.00 and shows a stable plant community with limited diversity.

Using the two most recent surveys, eight and six species were identified, respectively. Though maximum depth increased from 8.5 feet to 13.0 feet, the amount of photic zone inhabited by plants decreased from 95.42% to 45.38% in 2012. Coontail saw the biggest increase in abundance from 16.2% relative frequency to 26.9%, while EWM decreased slightly but was still dominant within the littoral zone. Curly-leaf pondweed was a new invasive species found during the 2012 survey. Water smartweed and large-leaf pondweed were surveyed visually only while sago pondweed was present at only two sample locations in 2007, but none were identified in 2012. These species were likely present during each survey, but due to the heavy growth of EWM and constant change in water levels their abundance may have changed slightly between the two surveys. Changing water levels in Fish Lake will alter the aquatic plant community annually, as evidenced by this survey. Presence and/or absence of some species between surveys is to be expected and should not cause concern.

Crystal Lake

Crystal Lake has experienced a tremendous flux in water levels over the past two decades. This can create a stressful habitat for aquatic plants and limits their establishment within the littoral zone of a lake. Aquatic plant surveys were previously completed in Crystal Lake in 2006 and 2007. These surveys showed limited aquatic plant growth and communities, which dropped off further during the 2012 survey.

The aquatic plant community of Crystal Lake was surveyed on July 10-11, 2012. A 2006 survey indicated seven total species to a maximum depth of 13 feet. This survey was dominated by elodea with filamentous algae and coontail being the next most abundant. A survey in 2007 showed a decreased plant depth to five feet while diversity stayed at seven total species. Elodea, coontail, and filamentous algae remained the most common. The 2012 survey showed

decreasing community statistics with less species richness and maximum depth of plants than found in 2006 and 2007. Only two species were directly sampled during the 2012 survey; Eurasian watermilfoil and white water lily. Over these sampling periods, the FQI and average coefficient of conservatism (C) both decreased. From 2006-2007, the FQI and average C rose from 7.5 to 9.39 and 3.75 to 4.2, respectively. In 2012, the FQI fell to 6.0. Though the average C rose to 6.0 it is based on a single species and therefore is not credible. Only two species were sampled during 2012; one being EWM an invasive plant without an assigned coefficient. These values can be used to gauge the health of the lake and potentially show an increasingly disturbed aquatic plant community on the lake.

Only two aquatic plant species were found during the 2012 survey within an extremely limited littoral zone. Because of fluctuating water levels and poor water quality/clarity, the set of survey points used in 2012 and created in 2007 are not adequately spaced for the current conditions, which limit the littoral zone to extreme near-shore only. The current point-intercept grid is spaced for lower water levels and, even with the lake down one foot from 2011, poorly represented the near-shore aquatic plant communities with limited sample locations less than four feet. Visual observations throughout much of the lake indicated plants growing only 10-15 feet away from shore around a majority of the lake and were dominated by EWM with small patches of white water-lily. This same situation occurred during the 2006 and 2007 surveys and was also noted in the 2007 aquatic plant management plan. It is likely species observed during the 2006 and 2007 surveys are still present, but due to the relatively low frequency of occurrence and the dynamic nature of Crystal Lake's aquatic ecosystems their abundance may have changed enough to limit their presence and ability to be directly sampled on the current grid. Given this, the presence or absence of these species should not be a cause for concern, but should be monitored on future surveys. To prevent this from happening on future surveys, a new WDNR point-intercept grid should be created based on the normal high water elevational boundary around the lake, rather than the low water elevational boundary (as is currently generated by WDNR), which in high water years can skew the data and survey results.

Indian Lake

Indian Lake was last sampled in 2006. Since then, the aquatic plant community has changed dramatically. During the 2006 survey, seven species were found with 100% of the littoral zone vegetated and coontail being the most prevalent species. There are major changes observed in the aquatic plant community and single species abundance.

The aquatic plant community of Indian Lake was surveyed on July 17, 2012 with water levels down 1-1.5 feet from the last survey. For the 2012 plant community, maximum depth of plants decreased to 6.0 feet from 8.5 feet found during the 2006 survey; a direct correlation to the drop in water level from 2006. All aquatic plant community data decreased significantly from 2006 to 2012. Over these sampling periods, frequency of occurrence within the littoral zone decreased from 100% to 10.05%, species richness fell from seven to three, and FQI decreased. During 2006, the FQI and average C was 7.5 and 3.75, respectively. In 2012, the FQI fell to 4.00 while the average coefficient rose to and 5.66. However, the average coefficient was only based on two species in 2012, limiting the data pool and does not accurately reflect the change in

Indian Lake's aquatic plant community. These values can be used to gauge the health of the lake and potentially show a decrease in the health of the aquatic plant community on the lake.

Dramatically different aquatic plant communities were present during each survey. Coontail and Eurasian watermilfoil dominated the 2006 survey but both were found in only limited amounts in 2012, especially EWM which was only present at three sample locations. Curly-leaf pondweed, filamentous algae, small duckweed, sago pondweed, and common watermeal were all present during the 2006 survey but were absent in 2012. Conversely, common bur-reed was present in 2012 but not in 2006. 2012 experienced historically hot and dry climatic conditions which likely impacted the aquatic plant community on this very shallow lake. Though a return to normal climatic conditions should allow for a rebound in the aquatic plant community, Indian Lake should be closely monitored.

Recent Chemical and Harvesting Aquatic Plant Management Records

Figure 4 summarizes Dane County's mechanical harvesting operations in Fish Lake from 2007 through 2012. Figure 5 summarizes mechanical harvesting in Indian Lake from 2007 through 2012. Crystal Lake has never been harvested by Dane County.

Please note that, starting in 2006, Dane County changed the way it records total harvested plant weight. In the 2007 aquatic plant management plan for these waters, one truck load of harvested plants was equated with one ton. Beginning in 2006, Dane County uses a formula to more precisely estimate the wet weight of one truck load, expressed in U.S. tons. What may seem to be a dramatic increase in harvested plant amounts compared to 2005 and earlier is likely mostly due to this change in estimating harvested weights.

Figure 4: Summary of Fish Lake Aquatic Plant Harvesting Records, 2007-2012

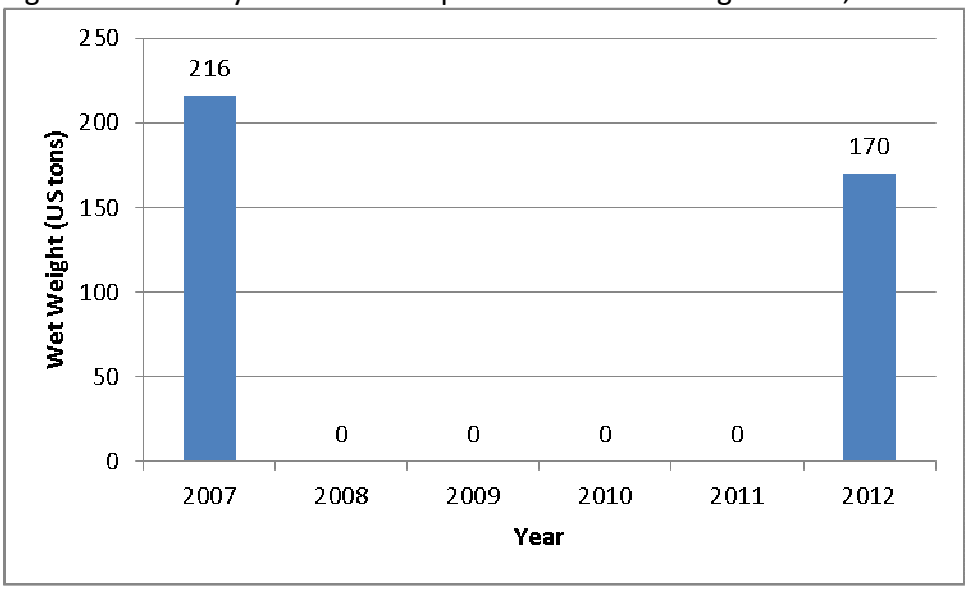
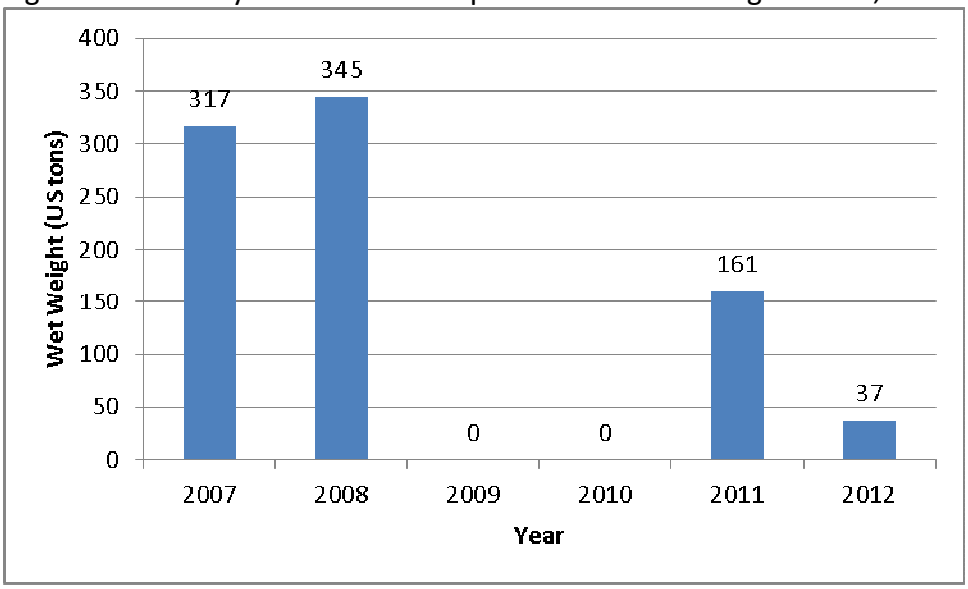


Figure 5: Summary of Indian Lake Aquatic Plant Harvesting Records, 2007-2012



Public input opportunities

Dane County Land and Water Resources Department staff held a public information and input meeting on March 20, 2013, at the Middleton City Hall, with approximately five area residents present. The focus of the meeting was lakes Mendota and Monona; Fish, Indian and Crystal Lakes; Tenney, Warner and Vilas Lagoons. Attendees represented the Yahara Lakes Association and Lake Mendota and Monona residents who enjoy these lakes for recreation and aesthetics.

At this meeting, Dane County and DNR staff presented current plant data from Fish, Crystal and Indian Lakes, following an overview of the ecological importance of aquatic plants and the current harvesting operation. Dane County staff invited comments on suggested revisions to the plan goals, recommendations, and harvesting operations.

No specific suggestions were made about updating the 2007 Fish, Crystal and Indian lakes plan goals and recommendations.

A draft plan amendment was posted on the www.danewaters.com website in November 2013, and comments requested via email and other direct outreach to parties interested in this waterbody. No comments were received on this plan amendment. The final draft plan amendment was posted for comment in spring 2014, and no comments were received.

Aquatic Plant Management in Dane County

The overall goal of Dane County's mechanical harvesting program is to cut and harvest Eurasian watermilfoil and other invasives to help provide for reasonable use of the lakes for boating, fishing and swimming, while preserving the health and balance of the lake ecosystem. During

periods of high water, harvesting of plants in the Yahara River between lakes Waubesa and Kegonsa becomes the highest priority.

Aquatic plant growth varies from lake to lake and year to year. Dane County employs a Plant Scout to evaluate plant growth conditions and recommend appropriate harvesting in response, within the limits of the plan harvesting priority areas and DNR permit. In times of heavy plant growth, local residents often advocate for additional harvesting in their areas, harvesting longer into the season (into the fall), or dedicating a harvester for a particular waterbody. County managers need to balance staff and harvesting equipment resources and priorities with needs and ecological conditions countywide. Local groups or individuals always have the option of contracting with the county for additional harvesting and special event harvesting, within the boundaries of the permit. Additional information about contract harvesting is available here: www.countyofdane.com/lwrd/parks/aquatic_plant_harvesting2.aspx#garden.

Dane County, Wisconsin Department of Natural Resources, and the U.S. Army Corps of Engineers completed a research project in 2013 that evaluated the response of selective early-season herbicide application and cutting of aquatic plants on Turville Bay, the southwest area of Lake Monona, on Eurasian watermilfoil (EWM, an invasive aquatic exotic plant) and on native plant communities. The complete project report and a summary fact sheet are available at www.danewaters.com.

Eurasian watermilfoil begins growing early in the year, and creates a dense growth canopy which shades out native plant species. Cooperating scientists and managers wondered if controlling EWM early in the season would give an advantage to native plants. The research project found that both herbicide and harvested early-season treatment resulted in significant decreases in EWM. Mechanical harvesting produced more variable results, but better protected native coontail plants. The herbicide treatment resulted in longer control of EWM than mechanical harvesting.

One outcome of this research is that Dane County staff may identify small areas in larger lake systems for early-season mechanical harvesting to provide nuisance control of EWM, as resources and priorities permit.

Dane County holds annual training sessions for new and returning harvester operators before the harvesting season begins. In that training, permanent and seasonal staff receive instruction on many topics including aquatic invasive species prevention protocols, plant identification, and communications. The Lakes Management Supervisor directs the day-to-day operations of the staff, guided by the Parks Director who is informed of plant conditions and harvesting needs by the Plant Scout. Particular concerns with a water body; deep versus shallow harvesting; collection of plant fragments from harvesters, plant senesces, and boat propellers etc. are all addressed in the supervision.

Working closely with the Wisconsin Department of Natural Resources, the Dane County Land and Water Resources Department has developed harvesting priority maps that are included in many of the aquatic plant management plans and referred to in DNR harvesting permits issued

to Dane County. Not every area that is identified for potential harvesting on the map will be harvested in any given harvesting season if there is little to no plant growth, because attention to higher priority areas does not permit it, or due to budget constraints. Harvester operators are instructed not to cut and remove plants outside of harvesting priority areas identified on these maps, unless authorized by their Supervisor in consultation with the Wisconsin Department of Natural Resources.

Harvesting machines are designed to collect and remove plant fragments. Dane County also helps clean up plant materials at beaches and other public access points, even when the plant material is not associated with harvesting operations.

Limits of the equipment, staff, and budget mean that plant harvesting for aesthetics, collection of wind-blown plant fragments due to boat propeller action, and the removal of plants that release from the sediment and float free in the fall cannot generally be accomplished. However, program managers do their best to accommodate requests for collection of naturally-occurring windblown and boat motor chopped plant fragments near shorelines, as time and budget permit. The Dane County Lake Management Operations Manual provides instructions to harvesting machine operators about plant fragment collection.

There is a common misperception that excessive external nutrients carried into lakes in runoff from the watershed causes macrophyte (large aquatic plant) problems. In fact, external nutrient loading usually produces algal blooms that shade and reduce macrophyte biomass. Attempts to control biomass by controlling nutrients in the water column are unproductive, according to G. Dennis Cooke and others in the third edition of Restoration and Management of Lakes and Reservoirs (2005). This is because rooted macrophytes, such as the nuisance Eurasian watermilfoil, usually get their phosphorus and nitrogen directly from sediments. In the short-term, reduced phosphorus in the water column resulting from watershed controls may actually result in more macrophyte growth, because clearer water permits more light penetration that fosters plant growth.

It could take many years to reduce the historical nutrient additions to lake sediments especially in agricultural areas. Much important work is underway in the Yahara River watershed to reduce watershed phosphorus loadings. Long-term, scientists and managers hope that community efforts can reduce sediment phosphorus, thereby more directly affecting plant growth.

Recommended management

Based on review of the plant survey data and public input, Dane County staff recommend the updated management elements found in this section.

These overarching aquatic plant management goals and recommendations below are coupled with the more specific goals of Dane County's mechanical harvesting program: to cut and harvest Eurasian watermilfoil and other invasives to help provide for reasonable use of the

lakes for boating, fishing and swimming, while preserving the health and balance of the lake ecosystem.

Fish Lake Goals

Recognizing that Eurasian watermilfoil has dominated the littoral zone for over two decades, the goals for managing Fish Lake aquatic plants are to: (1) improve recreational access in the lake, (2) improve bluegill (*Lepomis macrochirus*) and largemouth bass (*Micropterus salmoides*) interactions within monotypic stands of Eurasian watermilfoil, (3) protect proposed Critical Habitat Areas defined under Wisconsin Administrative Codes, and (4) reverse the documented declines of high value species [NR 107.08(4)] in Fish Lake including large-leaf pondweed (*Potamogeton amplifolius*) clasping-leaf pondweed (*P. richardsonii*), sago pondweed (*Struckenia pectinatus*) and watershield (*Brasenia schreberi*). Other important native plants that declined in Fish Lake and also require protection include floating-leaf pondweed (*P. natans*), variable pondweed (*P. gramineus*), flat-stem pondweed (*P. zosteriformis*), smartweed (*Polygonium amphibian*), water marigold (*Bidens beckii*), yellow water lily (*Nuphar variegatum*), white water lily (*Nymphaea tuberosa*), and American lotus (*Nelumbo lutea*).

Fish Lake Recommendations

1. Conduct mechanical harvesting as needed at important access points to improve navigation and fish habitat.
2. Consider longer term efforts to sustain boating lanes and improved fish habitat using methods such as deep cutting - harvesting. Methods could include modified large scale harvesting or manual cutting involving SCUBA.
3. Protect important habitat features including floating-leaf plant beds and coarse woody habitat. Residents should be discouraged from manually removing high value species such as watershield, floating-leaf pondweed and water lilies.
4. Recommend Critical Habitat Areas Designations to WDNR based on criteria established in Wisconsin Administrative Code NR 107 and other important ecological features. Critical Habitat Areas include plant beds with high value native species including watershield, floating-leaf pondweed and water lilies. Use of herbicides and large-scale mechanical harvesting is prohibited in these areas. (Designation of Critical Habitat Areas is a Wisconsin Department of Natural Resources decision.)
5. Encourage local land use planning and management to reduce nutrient runoff into the lake. (Watershed runoff contributed to littoral zone sediments rich in nutrients, a factor contributing to high Eurasian watermilfoil growth in the lake. Potential sources of polluted runoff should be re-evaluated given reductions linked to surrounding park land acquisitions.)
6. Sample nearshore fish populations, including blackchin shiner, blacknose shiner and banded killifish. These species may be affected by rapid habitat changes including rising water levels.
7. Update the comprehensive lake management plan.

8. The Dane County Plant Scout should document occurrences of high value native plants in regular scouting reports, including shoreline reference and GPS location. Dane County staff should make an annual summary report of these occurrences available to the public.
9. Dane County mechanical harvesting crews should continue to take steps to prevent the spread of exotic invaders across Dane County lakes and streams. These steps include removing any visible plants, mud, debris, water, fish or animals from the machinery and thoroughly washing the equipment.

Crystal Lake Recommendations

1. Mechanical harvesting should be conducted during periods when Eurasian watermilfoil densities are high to improve boating access.
2. Modest levels of native macrophytes (aquatic plants) provide important fish habitat and should not be eradicated. These conditions may change and Eurasian watermilfoil could expand under different water level conditions, warranting management.
3. Recommend Critical Habitat Area designations to WDNR including bays supporting white water lily beds. (Designation of Critical Habitat Areas is a Wisconsin Department of Natural Resources decision.)
4. Protect coarse woody habitat around the lake for fish and herptile populations.
5. Encourage local land use planning and management to reduce nutrient loading into the lake. (Reducing blue-green algae blooms could ultimately improve native plant growth in the lake.)
6. Consider coordinating the preparation of a comprehensive lake management plan with Columbia County.
7. The Dane County Plant Scout should document occurrences of high value native plants in regular scouting reports, including shoreline reference and GPS location. Dane County staff should make an annual summary report of these occurrences available to the public.
8. Dane County mechanical harvesting crews should continue to take steps to prevent the spread of exotic invaders across Dane County lakes and streams. These steps include removing any visible plants, mud, debris, water, fish or animals from the machinery and thoroughly washing the equipment.

Indian Lake Recommendations

1. Continue harvesting channels when coontail or Eurasian watermilfoil impede navigation within the lake.
2. Avoid management activities that would shift productivity from submersed macrophytes to blue-green algae blooms. For example, massive primary productivity shift from rooted plants to blue-green algae blooms would likely result from whole-lake herbicide(s) treatment.
3. Consider planting floating leaf plants such as white water lily, yellow water lily or American lotus to improve fish habitat and aesthetics.

4. Recommend Critical Habitat Area designations to WDNR. (Designation of Critical Habitat Areas is a Wisconsin Department of Natural Resources decision.)
5. The Dane County Plant Scout should document occurrences of high value native plants in regular scouting reports, including shoreline reference and GPS location. Dane County staff should make an annual summary report of these occurrences available to the public.
6. Dane County mechanical harvesting crews should continue to take steps to prevent the spread of exotic invaders across Dane County lakes and streams. These steps include removing any visible plants, mud, debris, water, fish or animals from the machinery and thoroughly washing the equipment.

Proposed Critical Habitat Areas

Wisconsin DNR's website describes the importance of the DNR's designation of Critical Habitat Areas as follows: "Every waterbody has critical habitat - those areas that are most important to the overall health of the aquatic plants and animals. Remarkably, eighty percent of the plants and animals on the state's endangered and threatened species list spend all or part of their life cycle within the near shore zone. As many as ninety percent of the living things in lakes and rivers are found along the shallow margins and shores. Wisconsin law mandates special protections for these critical habitats. Critical Habitat Designation is a program that recognizes those areas and maps them so that everyone knows which areas are most vulnerable to impacts from human activity. A critical habitat designation assists waterfront owners by identifying these areas up front, so they can design their waterfront projects to protect habitat and ensure the long-term health of the lake they where they live.

Fish Lake

No changes are recommended to the Critical Habitat (called "Sensitive" in the 2007 plan) Areas proposed in the 2007 aquatic plant management plan. The previous plan protected undeveloped areas on both the east and northwest portions of the lake that contained the most diverse plant growth and is subject to more disturbances. Areas of dense EWM growth should not be included to allow for proper management within them.

Crystal Lake

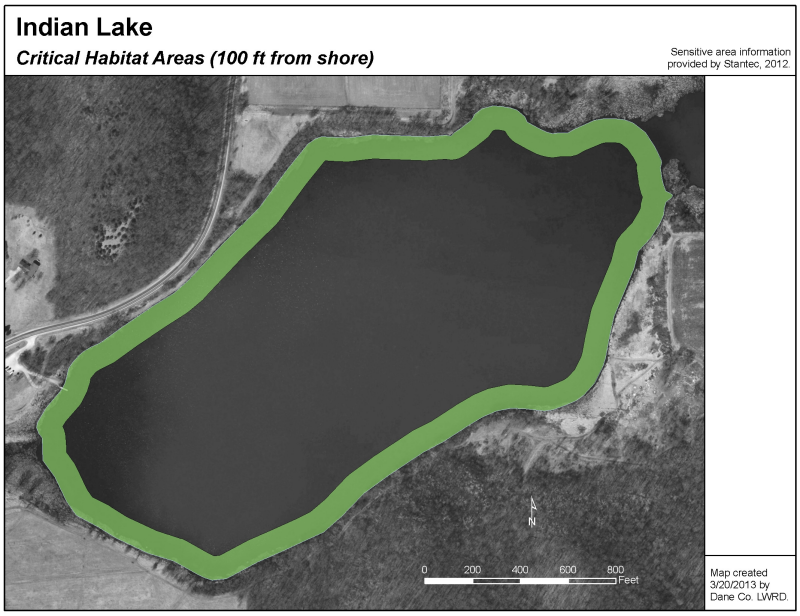
No changes are recommended to the Critical Habitat (formerly called "Sensitive") Areas proposed in the 2007 aquatic plant management plan. Locations of floating-leaf and emergent vegetation along with submerged woody habitat on the lake are already designated areas and should continue to be designated into the future. Areas of emergent and floating-leaf vegetation are similar to those found in 2006 and should continue to be protected.

Indian Lake

Currently there are no Critical Habitat (formerly called "Sensitive") Areas proposed within Indian Lake. A vast majority of the land surrounding Indian Lake is owned by Dane County and there is no lakeshore development. Past management activities have focused on mechanical harvesting to create lanes for fish habitat. With this in mind, Dane County recommends that

DNR designate near-shore areas (within 100 feet of shore) as critical habitat areas to protect the coarse woody debris in the lake and the limited aquatic plant communities found during the 2012 survey. This will allow for the current mechanical harvesting, if necessary, to continue without affecting the current, limited habitat.

Figure 6. Proposed Critical Habitat Areas for Indian Lake



Harvesting Priorities

Dane County holds annual training sessions for new and returning harvester operators before the harvesting season begins. In that training, permanent and seasonal staff receive instruction on many topics including aquatic invasive species prevention protocols, plant identification, and communications. The Lakes Management Supervisor directs the day-to-day operations of the staff, guided by the Parks Director who is informed of plant conditions and needs by the Plant Scout. Particular concerns with a water body, deep v. shallow harvesting, collection of plant fragments from harvesters, plant senesces, boat propellers etc. are all addressed in the supervision.

Dane County staff have eliminated the harvesting priorities map for Indian Lake that was included in the 2007 plan.