

Lake Chetac, Sawyer County 2014 Curly Leaf Pondweed Herbicide Treatment & Fish Survey Results



This fact sheet provides an overview of the 2014 herbicide treatment conducted by the Big Chetac and Birch Lake Association to control the aquatic invasive species, curly leaf pondweed. Full reports and fact sheets are available on [Wisconsin Department of Natural Resources Lake Chetac](#) and [Big Chetac and Birch Lake Association's \(BCABLA\)](#) websites. Please contact the individuals listed below if you have questions.

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Project Purpose and Background:

- Big Chetac and Birch Lake Association developed a [comprehensive lake management plan for Big Chetac](#) with an overarching goal of improving lake health. One of the management objectives identified in the plan is to control the aquatic invasive species curly leaf pondweed through herbicide treatments. The goal is to reduce the weed's abundance in order to increase native plant diversity and abundance, thus improving habitat for fish and other aquatic organisms. A study conducted by the lake association consultant has also shown that curly leaf pondweed biomass is a significant source of phosphorus (15 percent) to the lake system. The elevated phosphorus levels on are contributing to the [toxic blue-green algae blooms](#) that occur annually on Lake Chetac. By reducing the source of phosphorus to the lake, it is anticipated toxic blue-green algae blooms will decrease, resulting in healthier lake conditions for recreational use.
- The lake association received a DNR aquatic invasive species control grant in 2013 to control curly leaf pondweed as outlined the association's DNR approved lake management plan. As a part of the lake association's grant project, herbicide treatments were conducted in 2013 and 2014, with another treatment planned for 2015.
- The lake association applied for, and was granted, an aquatic plant management permit from DNR to control the non-native aquatic invasive plant curly leaf pondweed in 2013, 2014 and 2015. All permit and treatment notification requirements were met by Big Chetac and Birch Lakes Association as outlined in Wisconsin law. The lake association hired a licensed applicator to conduct the herbicide treatments.
- A DNR lakes biologist reviewed the following reports to evaluate and prepare the 2014 herbicide treatment results summary below: (1) a pre- and post-treatment aquatic plant survey report developed by the lake association's consultant, Endangered Resource Services; (2) a curly leaf pondweed turion or reproductive structure monitoring report developed by the lake association's consultant; and (3) a herbicide residual monitoring report developed by DNR's consultant. Final reports are available at the websites listed above.

2014 Treatment Results Summary (please reference pages 3 and 4 for more detailed results)

The herbicide, [Aquathol K](#), was applied by the lake association's applicator at a concentration of 1.0 parts per million (ppm) active ingredient to 90 acres of North Bay on May 20th, 2014. The **herbicide treatment was significantly effective in controlling the weed within the north bay** treatment area. Curly leaf pondweed was found at 205 points pre-treatment and 37 points post-treatment, resulting in an **82 percent reduction of the aquatic invasive species**.

- **Following herbicide treatment, the post treatment plant surveys of the north bay documented an increase in native plants:** three additional native species were present after treatment. Five native aquatic plants species were found prior to treatment in the north bay treatment area and eight native aquatic plants species (not including filamentous algae) were found after treatment.

Fisheries Evaluation Results

The Lake Chetac fishery has been surveyed several times by DNR Fisheries staff both before and after the 2013 and 2014 herbicide treatments. These surveys were conducted to address questions received by the public. Below is a summary of the findings.

- **Panfish abundance (crappie and bluegill primarily) has been increasing** over the last decade or so. This appears to be completely unrelated to the herbicide treatment.
- Because panfish abundance has been increasing, **size of panfish has been decreasing**. This is a very common pattern that has been observed in many lakes throughout the area over the same time span.
- **There is no indication that fish of any species are avoiding the treatment area.** Catch rates in fishery surveys are as high or higher in the area treated with herbicide.
- There is **no indication that the herbicide treatment has hurt natural reproduction** of panfish. Young panfish have been found throughout the lake.
- There is **no indication** based on the fish condition and length/weight ratio **that the herbicide treatment has caused fish to be limited by food availability**.
- There is **no indication that the herbicide treatment has caused die-offs of fish**. However, die-offs from naturally occurring bacteria called "[columnaris](#)" are common in the spring.



Young-of-year panfish from a mini-fyke net set in the herbicide treatment area in Lake Chetac during August 2014.

Walleye recruitment continues to be poor but is similar to other area lakes. The DNR plans to continue stocking walleye. **2014 Treatment Results and Report Information**

- The herbicide Aquathol K was applied to 90 acres of the north bay of Lake Chetac on May 20, 2014 to control the aquatic invasive plant curly leaf pondweed. The herbicide was applied at a concentration of 1.0 ppm by the lake association's contractor, Midwest Aquacare with DNR onsite for supervision. The 2014 approved herbicide concentration was reduced by two-thirds following the results of the 2013 treatment.

- Aquathol K is a dipotassium salt formulation of endothall and is commonly used for curly leaf pondweed control on many lakes throughout Wisconsin. Aquathol K is approved by the EPA for aquatic plant control and the fact sheets are available online at: <http://dnr.wi.gov/lakes/plants/factsheets/EndothallFactsheet.pdf> and <http://dnr.wi.gov/lakes/plants/factsheets/GeneralherbicideFAQ.pdf>.
- Two bays were used as control areas to assess curly leaf pondweed and native plants under non-treatment conditions: the bay adjacent to the DNR boat launch and the bay adjacent to Fred Thomas Resort. No herbicide was applied to these bays.
- On the day of treatment, the wind was reported as 4-9 mph from the SW and the water temperature was 57.4°F.
- As a part of DNR research efforts to better understand herbicide movement, herbicide concentration monitoring occurred at three sites within the treatment area and six additional sites outside the treatment area for seven days after treatment. A final report is available at the websites listed below.
- As expected, low levels of herbicide were detected at the herbicide monitoring sites outside the treatment area. Herbicide dissipation within lakes is expected and has been demonstrated on many aquatic invasive species control projects throughout the state. Requiring treatments to occur in early spring before native plants are actively growing and during relatively calm weather conditions minimizes impacts to non-target plants.
- Aquatic plant monitoring (pre- and post-treatment) was conducted by scientists from the lake association's consulting firm, Endangered Resource Services using the point-intercept method per DNR guidance. The pre-treatment aquatic plant survey occurred on May 17-18, 2014 and the post-treatment aquatic plant survey occurred on June 14-15, 2014. The plant survey report is available at the websites listed below.
- Monitoring of curly leaf pondweed turions occurred on November 1-2, 2014 by the lake association consultants from Endangered Resource Services. Turions are curly leaf pondweed reproductive structures in the lake sediment. The turion report is available at the websites listed below.

Full reports and fact sheets are available on [DNR's Lake Chetac](#) and [Big Chetac and Birch Lake Association's \(BCABLA\)](#) websites.

North Bay Treatment Area Results

- The herbicide treatment was effective at controlling the aquatic invasive plant, curly leaf pondweed within the 90 acre treatment area. The aquatic invasive species was found at 205 points pre-treatment and 37 points post-treatment. Mean rake densities were reduced from 1.49 pre-treatment to 1.02 post treatment. The plants that were present after treatment were small plants that likely germinated after the treatment.
(Rake density is based on a 1-3 scale with 3 being most dense; i.e. a rake full of the plant.)
- Five native aquatic plants species were found prior to treatment in the North Bay and eight native aquatic plants species (not including filamentous algae) were found after treatment. Forked duckweed was the only native plant species that declined after treatment in the treatment area. Forked duckweed is not rooted but rather floats around on the surface of the lake and thus is subject to movement due to wind and wave action. Any reductions or increases in duckweed are likely influenced by natural movement; thus it is difficult to draw any conclusions about herbicide effects on duckweed.
- Herbicide concentration monitoring results indicate that herbicide concentrations within the treatment area dissipated to less than the target concentration (1.0 ppm) by six hours after treatment.
- The 2014 turion monitoring data demonstrate a significant decline in turion densities within the north bay treatment area when compared with the fall 2013 data. The 2014 turion density increased in the non-treatment bays compared with fall 2013 data.

Fred Thomas Bay Results (Non Treatment Bay)

- Herbicide concentration monitoring results indicate that herbicide was detected at very low concentrations beginning three days after treatment.
- During the pre-treatment plant survey, curly leaf pondweed was documented at 46 sites with a mean rake density of 1.60. After treatment, it declined significantly to 28 sites with a mean rake density of 2.00. As noted in the report, the curly leaf pondweed on the east side of this bay seemed to have orange margins, likely as a result of the herbicide.
- The same three plant species were found before and after treatment. One native plant species, white stem pondweed, increased significantly after treatment.

Boat Landing Bay Results (Non Treatment Bay)

- During the pre-treatment plant survey, curly leaf pondweed was documented at 19 sites with a mean rake density of 1.42. After treatment, it was documented at 19 sites with a mean rake density of 2.26.
- One native aquatic plant species was found pre-treatment. Three native aquatic plant species were found after treatment (not including filamentous algae).