

# 2009 East Alaska Lake Aquatic Plant Survey Results

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East Alaska Lake, Kewaunee County, Waterbody ID Code 94200.

## Introduction:

In an effort to assess the overall aquatic plant community, aquatic macrophyte (plant) surveys were conducted on East Alaska Lake (E. Alaska) in Kewaunee County in 1999 and 2009. The 1999 survey was conducted by NES Ecological Services, a Division of Robert E. Lee (NES). NES followed a transect protocol where a quantitative vegetation survey was conducted by sampling eight transects that were set along the shoreline and the interior island of E. Alaska (NES' survey). Detailed descriptions of the methodology can be found in the 1999 Lake Management Plan generated by NES (NES' report). The 2009 survey was conducted on August 19 and 24 by Mary Gansberg, Jim Reyburn, and Joe Henry of the Department of Natural Resources (Department) and followed Point/Intercept (PI) protocols (Department's survey). Details of this methodology may be found at <http://dnr.wi.gov/lakes/nls/plants.htm>. Please be aware that due to the difference in methods employed for the two surveys, direct comparisons of the data should be avoided.

In order to more objectively compare the two types of sampling methods, NES' survey data was entered into the same spreadsheet format as the Department's survey. This allowed the most logical comparison in terms of which species were observed in each of the surveys. The table below illustrates the percentage of sites that a given plant was found when compared to all sites that had any vegetation present (Table 1). Please note that NES' survey incorporated a total of 32 sample sites, while the Department's survey incorporated a total of 129 sites. Each and every site sampled in NES' survey contained vegetation, while the Department's survey recorded vegetation at 85 of the 129 sample sites; the remaining sites in the Department's survey were either inaccessible or were too deep to harbor vegetation.

## Survey Results:

NES reported that the species with the highest frequency of occurrence were Northern Watermilfoil, Sago Pondweed, Coontail, and Curlyleaf Pondweed (CLP). With the exception of CLP, those results continue to hold true. Species richness (number of species found) had a net increase of 2: from 9 species in 1999, to 11 species in 2009. While Elodea was not found during the Department' survey, four additional species were noted: Flat Stem Pondweed, Pickerel Weed, Water Stargrass, and White Stem Pondweed. This is not to say that these species were not present during 1999, only that they were not observed during the survey (Table 1, Figure 1).

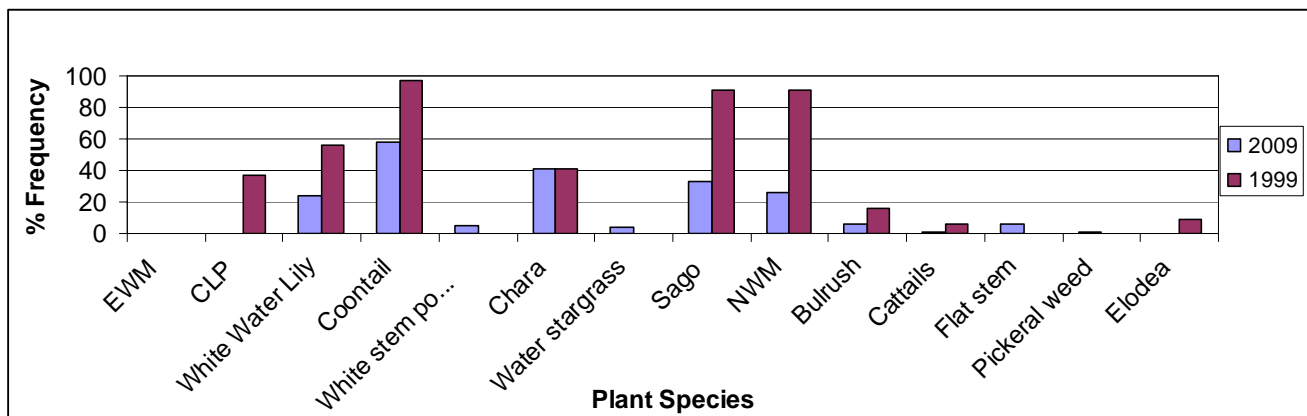


Figure 1. Comparison of frequency of observed species between 1999 and 2009.

**Table 1. Frequency of Occurrence Within Vegetated Areas (%) and the Coefficient of Conservatism (C) value.**

| Species  | 2009  | 1999  | (C) |
|--|-------|-------|-----|
| Eurasian Watermilfoil (EWM) ( <i>Myriophyllum spicatum</i> ) | 0.00  | 0.00  | 0   |
| Curlyleaf pondweed (CLP) ( <i>Potamogeton crispus</i> )      | 0.00  | 37.50 | 0   |
| White Water Lily ( <i>Nymphaea odorata</i> )                 | 23.53 | 56.25 | 6   |
| Coontail ( <i>Ceratophyllum demersum</i> )                   | 57.65 | 96.88 | 3   |
| White Stem Pondweed ( <i>Potamogeton praelongus</i> )        | 4.71  | 0.00  | 8   |
| Chara  | 41.18 | 40.63 | 7   |
| Water Stargrass ( <i>Heteranthera dubia</i> )                | 3.53  | 0.00  | 6   |

| Species   | 2009  | 1999  | (C) |
|---|-------|-------|-----|
| Sago Pondweed ( <i>Stuckenia pectinata</i> (L.) Börner) | 32.94 | 90.63 | 3   |
| NWM ( <i>Myriophyllum sibiricum</i> (=M. exalbescons))  | 25.88 | 90.63 | 6   |
| Bulrush ( <i>Schoenoplectus acutus</i> )                | 5.88  | 15.63 | 6   |
| Cattail ( <i>Typha latifolia</i> )                      | 1.18  | 6.25  | 1   |
| Flat Stem Pondweed ( <i>Potamogeton zosteriformis</i> ) | 5.88  | 0.00  | 6   |
| Pickereel weed ( <i>Pontederia cordata</i> )            | 1.18  | 0.00  | 8   |
| Canadian water weed/Elodea ( <i>Elodea canadensis</i> ) | 0.00* | 9.38  | 3   |

**Maximum Depth Results:**

The maximum depth of plant growth in 2009 was 15.8 feet and the percentage of the littoral zone with plants was 78.7 percent. Lakes in this ecoregion typically have plants in 60-80% of the littoral zone, meaning that E. Alaska falls in the high range of average. Due to the methodology of NES’ survey, a maximum depth of 10.0 feet (as per the 1999 data sheets) was obtained and the percentage of the littoral zone with plants cannot be adequately calculated because of the likelihood that macrophytes were growing at depths greater than 10 feet. NES’ report states that in general, the maximum rooting depth for submergent plants was 13.0 feet. Plants at this depth may have been observed but not sampled.

**Floristic Quality Index (FQI):**

The floristic quality index (FQI) uses a predetermined Coefficient of Conservatism (C) that has been assigned to each native plant species in Wisconsin, based on that species’ tolerance for disturbance. Conservatism coefficients range from 1 to 10; non-native plants are not assigned a conservatism coefficient value. The aggregate conservatism of all the plants inhabiting a site determines its floristic quality. The mean C value for a given lake is the arithmetic mean of the coefficients of all native vascular plant species occurring on the entire site, without regard to dominance or frequency. The FQI value is the mean of C, times the square root of the total number of native species. This formula combines the conservatism of the species present with a measure of the species richness of the site. The C values used to calculate E. Alaska’s FQI are available in Table 1.

\* *Elodea Canadensis* was not observed in 2009 and was not used in the FQI calculation. The C value is for informational purposes only.

Higher FQI numbers indicate higher floristic quality and biological integrity and a lower level of disturbance impacts. FQI varies around the State of Wisconsin and ranges from 3.0 to 44.6 with an average FQI of 22.2 (WDNR, 2005). The FQI calculated from the Department's survey was 18.1, suggesting that E. Alaska's plant community is characteristic of disturbed conditions and relatively low floristic quality. NES' report determined the FQI to be 10.58, but due to the differences in sampling methods, direct comparisons should be avoided.

### **Chemical Treatment Results:**

Eurasian Watermilfoil (EWM) was documented only one time visually during the Department's survey despite being first discovered in the Lake in 1993. EWM was observed during a post-treatment survey conducted by Bonestroo (formerly Northern) in 2008. During a pre-treatment survey on May 11, 2009, Bonestroo mapped 0.75 acres of EWM on E. Alaska and on June 1, 2009 the entire mapped area was treated. A post-treatment survey on July 23, 2009 showed that approximately 0.36 acres of EWM remained. During the Department's survey, EWM was only observed at one sample location: that observation was only visual and a specimen was sent to the University of Wisconsin Stevens Point (UWSP) for verification. The Department is waiting for the UWSP Herbarium's determination.

During a plant survey in May 2007, Bonestroo observed CLP in E. Alaska and subsequently treated 0.25 acres in 2008. During a pre-treatment survey on May 11, 2009, Bonestroo did not document any CLP on E. Alaska. Although well past the growing season, CLP was not evident by Bonestroo's July 23, 2009 post-treatment survey, or the Department's survey.

### **Recommendations/Conclusions:**

The Department strongly recommends continued participation in aquatic invasive species (AIS) monitoring, and Clean Boats, Clean Waters (CBCW) and suggests that volunteers attend periodic refresher training sessions to not only become more comfortable with the identification of aquatic invasive species, but also to become aware of new invasive species that may become a concern for the State's waters. The Department would also recommend that an additional plant survey be completed in the next five to ten years; this plant survey should follow the PI protocol that was used during the Department's survey. Following this protocol would not only ensure that the entire lake is sampled, but allow a direct comparison to the Department's survey results.

In conclusion, based on the observations by Bonestroo and the Department, it appears as though the Tri-Lakes Association has developed an effective control strategy for EWM and CLP. Please be advised that failure to observe an invasive species in a given year does not mean that the water body is free from the threat of continued or even new infestations. The Tri-Lakes Association has taken an aggressive stance on invasive species control and must continue to do so to maintain and/or improve the health of E. Alaska, West Alaska, and Krohns Lake.

If you ever require assistance with your plant survey needs, please do not hesitate to contact Water Resources Management Specialist Ms. Mary Gansberg at 920-662-5489. If you ever require assistance with CBCW, or Citizen Lake Monitoring (CLMN) AIS monitoring, please contact either AIS Coordinator Ms. Brenda Nordin at 920-662-5435, or Water Resources Management Specialist Mr. Jay Schiefelbein at 920-662-5175. We thank you for your time and effort in protecting Wisconsin's lakes.