

# **2018 Beaver Lake Aquatic Weed Control Program**

---

Prepared for

**Beaver Lake LMD #4  
Skagit County Public Works  
Mount Vernon, Washington**

Prepared by

Northwest Aquatic Eco-Systems, Inc.  
855 Trospen Road SW #108-313  
Tumwater, Washington 98512  
Pondweeds@comcast.net  
Telephone: (360) 357-3285

December 2018

## **Project Overview**

This was Northwest Aquatic Eco-Systems' (NWAE) seventh year of providing aquatic weed control services for the Beaver Lake LMD #4. During 2018 and 2017, public opinion and budgetary line items influenced the full implementation of the Beaver Lake noxious weed control program. The Beaver Lake NPDES permit was updated by the Washington State Department of Ecology in 2017. The new permit required that a wetland biologist survey the lake shoreline for a recently suspected sensitive species *Carex comosa* (bristly sedge) at the beginning of any treatment year. The bristly sedge is an emergent shoreline species that could possibly reside lake-wide. Like most sedges, identification is best undertaken during the flowering seed stage of the plant. In years past, our staff, under the old permit, would have been authorized to perform this required wetland sensitive plant survey. The new permit format however, requires a certified wetland biologist not associated with the project to complete the task. Wetland surveys associated with the wetland encompassing Beaver Lake typically can cost up to \$5,000.00; sometimes exceeding the cost of treatment. No survey was authorized for the 2018 treatment season so no associated chemical control was undertaken.

Beaver Lake has been actively involved with a program to eradicate noxious aquatic macrophytes from the system for over ten years. Targeted species include Eurasian watermilfoil and *Nymphaea odorata*. Native plant growth extends outward beyond the 15 foot contour line but plant density and range has decreased considerably over the last three years. There are no immediate shoreline residential homes. A vast majority of the shoreline is comprised of commercial use as pasture for grazing livestock and wetlands. The lake supports limited swimming and recreational boating but does support a very healthy recreational fishery. Most all the lake use is associated with fishing activities. Macrophyte decline was first observed during 2014 and continued through 2017. This reduction in macrophyte growth was noted by both the Washington State Department of Ecology and Northwest Aquatic Ecosystems. No apparent reason for the decline has been identified but the reduction is generally thought to have resulted from poor water clarity.

Some of the information provided in the 2018 report was included in our 2017 report. Current and past information is provided to give the reader the ability to understand the history of the program without requiring the review of all prior years' reports.

Beaver Lake is approximately 73 acres in size and is located outside of Mount Vernon just south of Clear Lake, one mile east of highway SR-9. The lake is open year round for fishing supporting a largemouth bass, black crappie, yellow perch, coho and cutthroat species fisheries.



Beaver Lake & Associated Wetlands  
National Wetland Inventory

## Survey Protocol

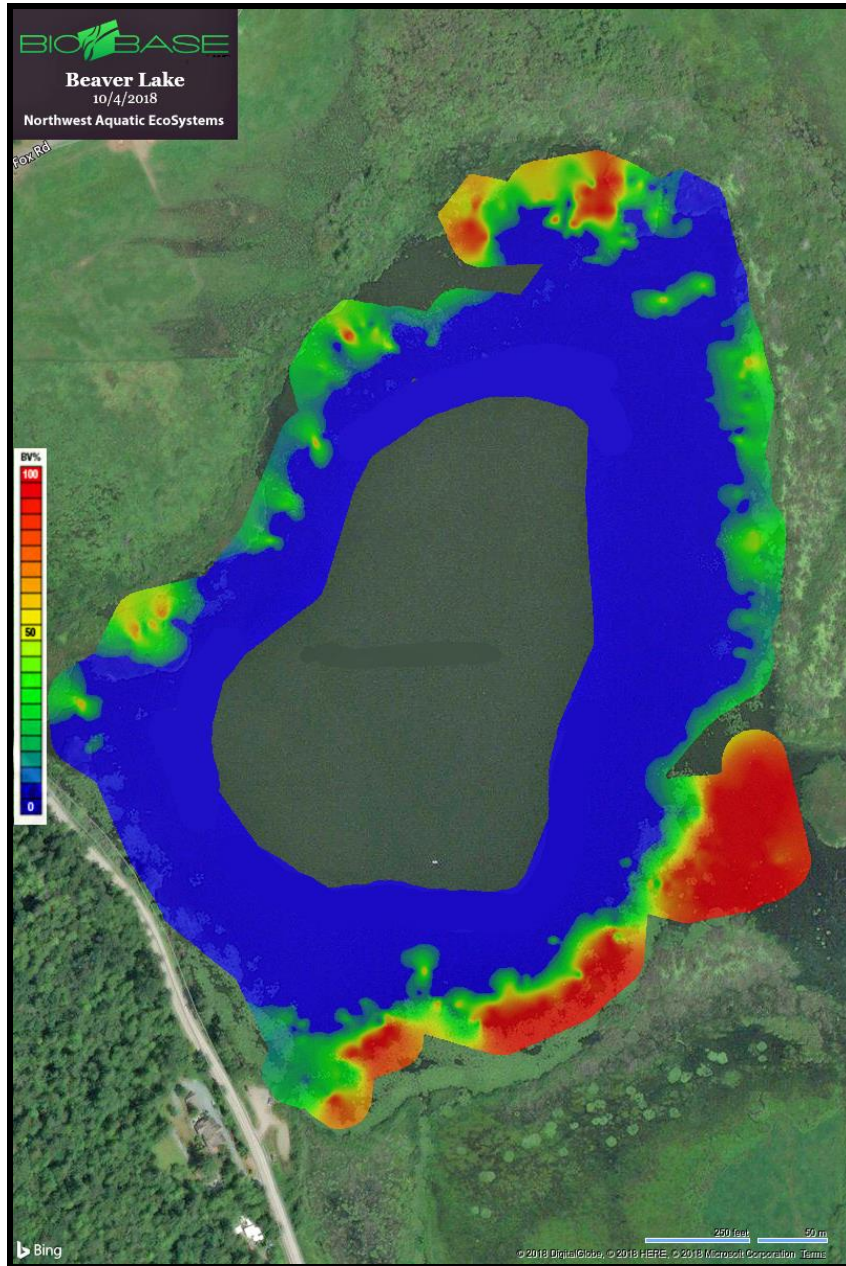
At the onset of 2013 and continued annually, sonar data was collected utilizing specific transducers and bottom scanning equipment. Upon completion, the SD card is uploaded via cloud based technology and the processing of the data is completed. The resulting product is a color-coded map of the lake bottom identifying weed growth areas and plant densities. Not only is a well-defined map produced but a sonar log of the survey is saved allowing a complete review and evaluation of the survey to occur in-house. When nonnative milfoil species were identified, a milfoil specific data point was added to the transect line.

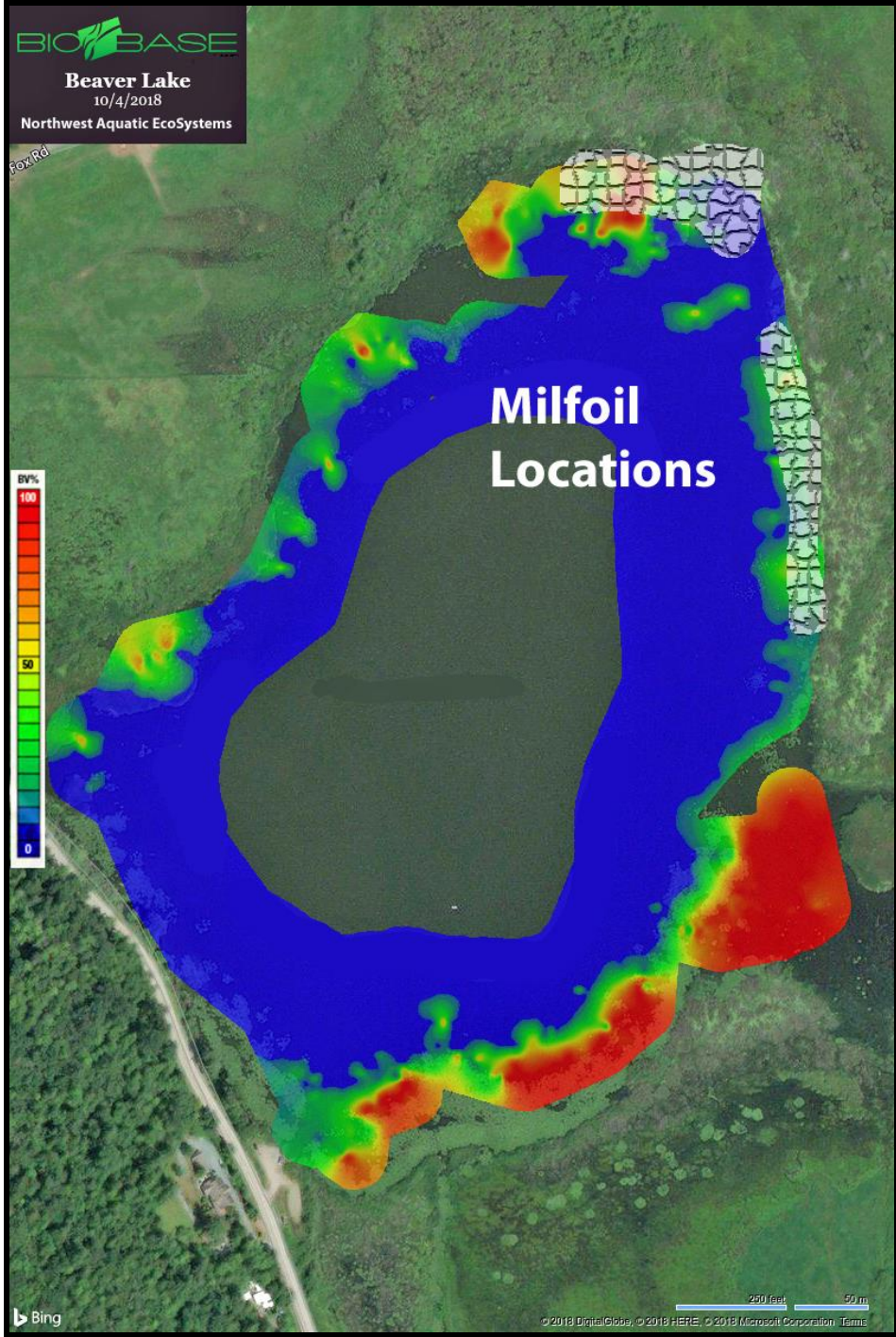
The survey boat started collecting data circling the immediate shore. Once the initial shoreline pass was completed, the boat moved outward approximately 50 to 100 feet for each successive pass. The survey was completed once the entire 73 acre lake basin was transected. Before leaving the site, boat survey “tracks” were reviewed to ensure that the entire lake basin was surveyed and the integrity of the survey was recorded.

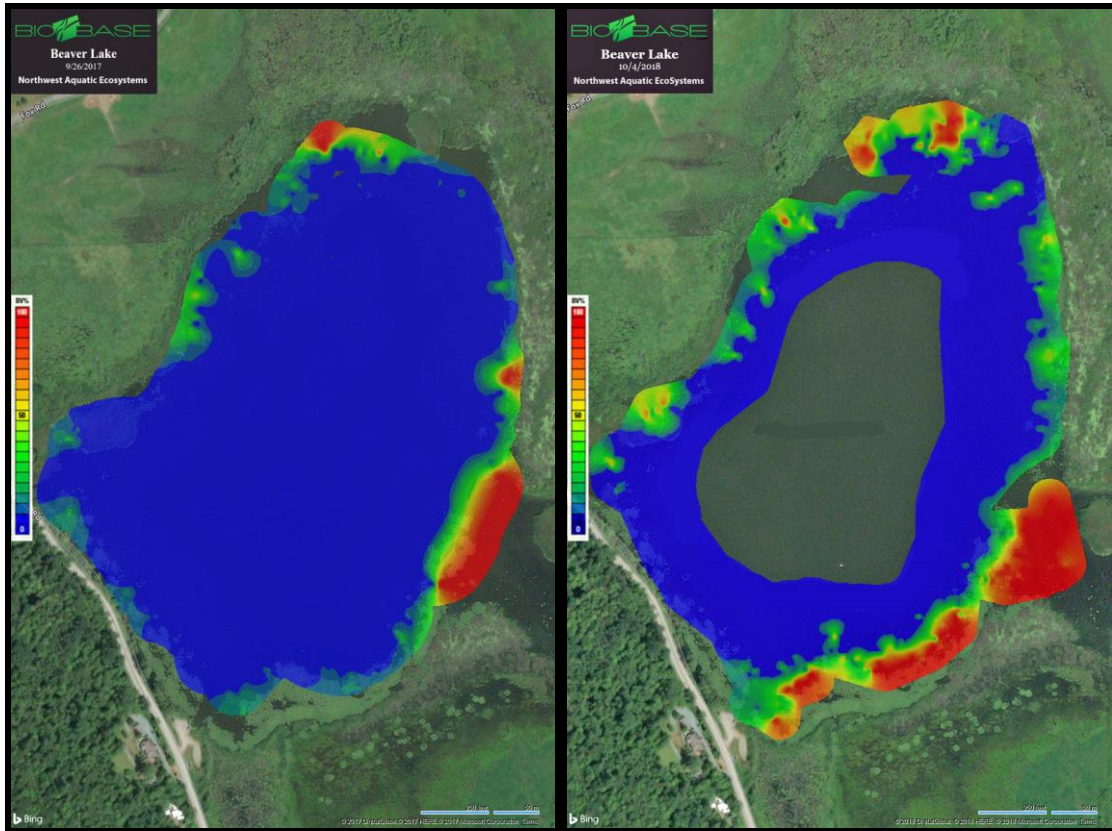
## Beaver Lake Survey Results 10-04-2018

Since no wetland survey was conducted during 2018 because of the associated expense, only one macrophyte survey was necessary for the 2018 season. Macrophyte growth had once again increased slightly from the fall 2017 survey. This increase in range continues to be an encouraging sign since macrophyte growth over the past few years had been in decline. The elevated water level allowed for boat access to areas of the lake that typically at this time of the year had not been possible. Milfoil growth was elevated over what had been noted in years, possibly as a result of not providing control during the summer of 2018. Lack of control and heavy boat use associated with fishing activities likely was the cause this increase. Fragrant water lily infestation also appears to be

elevated. All of the patches noted were small and sporadic. Native pondweeds dominated the survey throughout the littoral zone with elodea, najas, pondweeds and ceratophyllum species exhibiting dominance in specific locations lake-wide.







Fall 2017

Fall 2018

## Recommendations

1. Permit guidelines that mandate leaving 50% of the shoreline untreated for native vegetation control should never pose a problem simply because no residential homes exist on the lake and the lake is mainly used for fishing purposes. Good fisheries often consist of lake waters that maintain a wide distribution and variety of macrophytes. All of the noxious species present in Beaver Lake can be targeted with materials that are specific only to those species. Any concern directed at dense native weed growth noted in prior years should no longer be a concern since natural occurrences over the past two years has substantially reduced such growth. The local fisherman and the Department of Fish and Wildlife could probably best evaluate native weed growth concerns as they may be raised by lake users. The LMD should avoid control alternatives targeting these species.
2. There remains a need to continue the efforts to eradicate noxious species from the lake. Current milfoil growth has increased from 2017 densities as a result of non-treatment during 2018. The shallow nature of the lake and boat use provides excellent habitat and opportunity for milfoil to rapidly increase lake-wide. If high

water levels prevent early season treatment then a late season application would appear to be in order. The amounts of material required to control the current infestations still remains relatively small. Materials selected for use do not restrict grazing livestock from utilizing the lake water as a water supply during treatment.

3. Property owners and the LMD need to work together in an effort to ensure treatments occur and livestock is protected. Property owners need not simply adopt a “no treatment” philosophy without first considering the long term health of the lake. Property owners should coordinate pasture use with potential treatment schedules. At the very least, those shoreline areas where no livestock access is possible should be available for treatment.
4. Non treatment during 2018 has resulted in milfoil expansion.
5. Continue to evaluate property owners concerns and provide information that supports the position and the program format of the LMD. If research suggests that the LMD needs to reevaluate the program then such data should be reviewed.
6. Coordinate an early wetland survey for the presence of *Carex comosa*. Once the survey is completed, Ecology will need approximately 45 days to review the survey and comment. A consultant needs to be retained that is not associated with the project. Such a survey could cost between \$2,000.00 and \$5,000.00.



## **Carex comosa**

7. If the decision is to not authorize the wetland survey then only one macrophyte survey will be required. Without the wetland survey, no chemical use is permitted

and the only option would be to manually remove the milfoil. This approach is expensive and may not be an affordable option for this group.

8. Manual harvesting would need to be conducted twice during the year. Costs associated with manual harvesting would run approximately \$2,000.00 per day. Days required for harvesting would need to be determined after the first survey; likely not more than three days.
9. *No wetland survey is required for manual removal. If the cost of the survey is in the \$5,000.00 range, then manual expense would likely be less costly than the chemical approach. Once the milfoil is initially removed, expenses would decrease the following year.*