

# Lake Whatcom Aquatic Invasive Species Program 2012 Annual Report



**Lake Whatcom Management Program**



**December 2012**

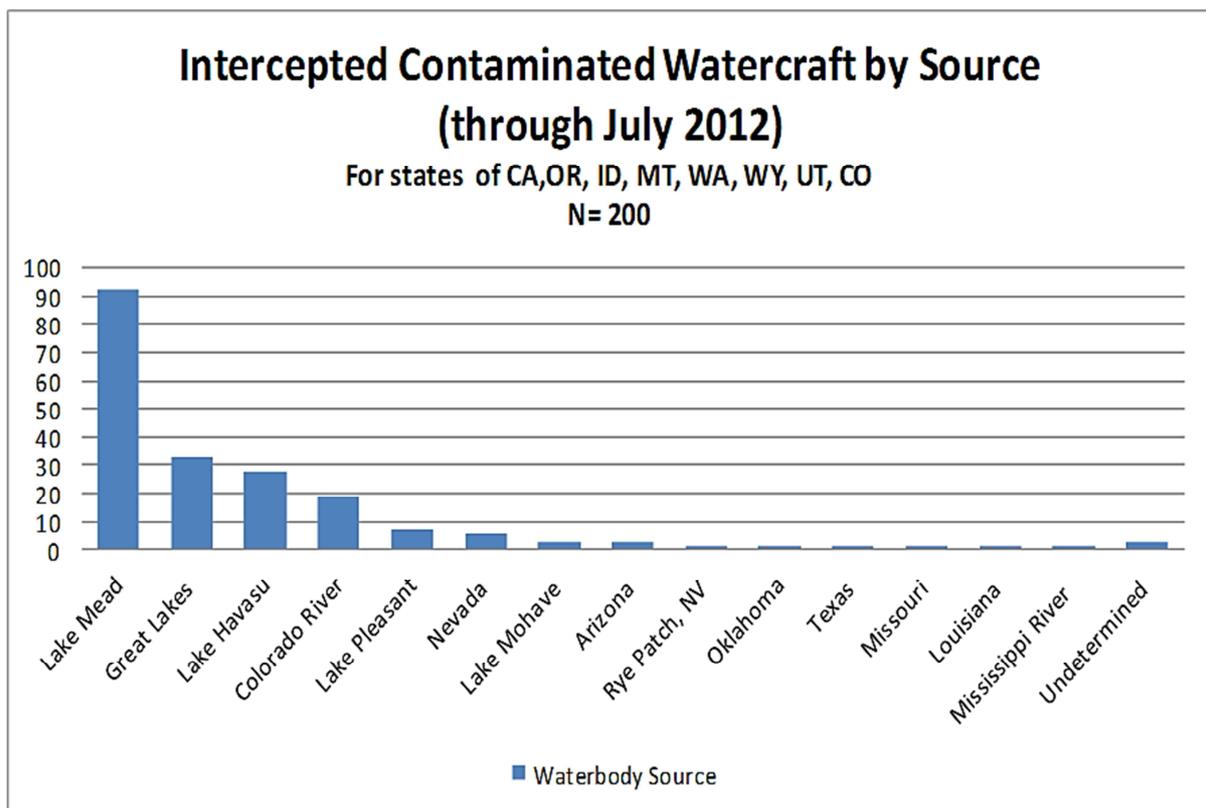
## Table of Contents

Introduction .....	2
Program Objectives .....	3
Program Development .....	4
Watercraft Inspection Program .....	5
Early Detection and Monitoring.....	10
Regulations .....	12
Education and Outreach .....	12
Regional Collaboration, Partnerships and Information Sharing .....	15
Preliminary Recommendations.....	16
Appendix A - Lake Whatcom AIS Inventory .....	19
Appendix B - Boat Survey Form .....	20
Appendix C - Map of Zip Codes .....	21
Appendix D - Map of Last Waterbody Visited.....	22
Appendix E - Map of Next Waterbody Visiting .....	23
Appendix F - Map of Waterbodies Visited in the Past.....	24
Appendix G - Influence of Temperature by Day.....	25
Appendix H - Map of Lake Whatcom Boat Launches .....	26
Appendix I - Program Budget and Funding.....	27

## Introduction

The prevention and management of aquatic invasive species remains one of the greatest challenges facing resource managers in the Pacific Northwest. State agencies have implemented exemplary prevention and management programs at the state level to intercept infested watercraft at our borders. However, the implementation of programs to protect specific waterbodies, such as Lake Whatcom, has largely become the responsibility of local governments and resource managers due in part to the allocation of limited resources to areas of the state with the highest-risk, such as the Columbia River Basin.

In January, 2007 quagga mussels were discovered in Lake Mead, Nevada/Arizona. Since that time, their population has grown into the trillions. Despite efforts to fund containment and decontamination efforts in the Lake Mead National Recreation Area, Lake Mead remains one of the major sources for new mussel infestations in the western United States (**Figure 1**). In 2012, Idaho conducted over 40,000 inspections statewide and intercepted 57 watercraft and commercially hauled equipment that were fouled with zebra/quagga mussels. The majority of the contaminated watercraft and equipment that were intercepted in Idaho were coming from Lake Mead and Lake Havasu. Of these 57, 33 were destined for Washington, 13 were destined for Idaho, and four were destined for British Columbia. Similar programs exist throughout the Pacific Northwest with Montana, Oregon, and Washington also conducting 21,000, 4,500, and 934 watercraft inspections in 2012, respectively.



**Figure 1:** Intercepted watercraft contaminated with zebra and/or quagga mussels by source through July 2012 for western states (PSMFC 2012)

In addition to these efforts occurring at the state and regional levels, the Lake Whatcom Management Program also conducted aquatic invasive species prevention and monitoring efforts in 2012.

On July 14<sup>th</sup>, 2012, the Lake Whatcom Management Program launched its aquatic invasive species prevention program at Bloedel Donovan. The 2012 goals for this program included: evaluating watercraft usage patterns at Lake Whatcom, conducting aquatic invasive species education and outreach with boaters and park users, and determining the feasibility of a comprehensive watercraft inspection/decontamination program for 2013. As of September 30<sup>th</sup>, 1,794 boater surveys and visual boat inspections were conducted at Lake Whatcom. The majority of these surveys were conducted at Bloedel Donovan with 24 surveys and visual boat inspections being conducted at the Sudden Valley Community Association Marina. These interactions provided staff with the opportunity to educate boaters while developing a better understanding of usage patterns at Lake Whatcom. The information gathered from these surveys is being used to inform the development of a more comprehensive aquatic invasive species prevention program for 2013.

Also in 2012, the City of Bellingham and Whatcom County both adopted ordinances prohibiting the transport or release of aquatic invasive species into waters within the jurisdictions of the City of Bellingham and Whatcom County. Both of these ordinances authorize local enforcement staff to conduct watercraft inspections to detect the presence and prevent the transport or release of aquatic invasive species into our waterways.

Additionally, during August and September of 2012, an aquatic invasive plant survey was conducted by the Whatcom County Noxious Weed Board and the Washington State Department of Ecology throughout the littoral zone of all three basins of Lake Whatcom. As a result of this survey, we now have a more complete list of all of the aquatic plant species that are present in the lake as well as their distributions. No new aquatic invasive species were discovered as a result of this survey. A list of aquatic invasive plant species already established in Lake Whatcom can be found in **Appendix A**.

Since the initial discovery of Asian clams in Lake Whatcom in September of 2011, the Lake Whatcom Management Program staff has continued to survey Lake Whatcom and other Whatcom County waters for new infestations. To date, no new infestations have been found. While no response efforts were implemented in 2012, staff has been compiling information on response efforts taking place at Lake George, New York and Lake Tahoe, California/Nevada to determine response options for the lake.

This report highlights prevention program achievements for 2012 and includes observations made as a result of our data analysis. Additional updates on early detection and monitoring, new regulations, as well as education and outreach are also included. This report concludes with recommendations for a comprehensive aquatic invasive species program for Lake Whatcom to be implemented in 2013.

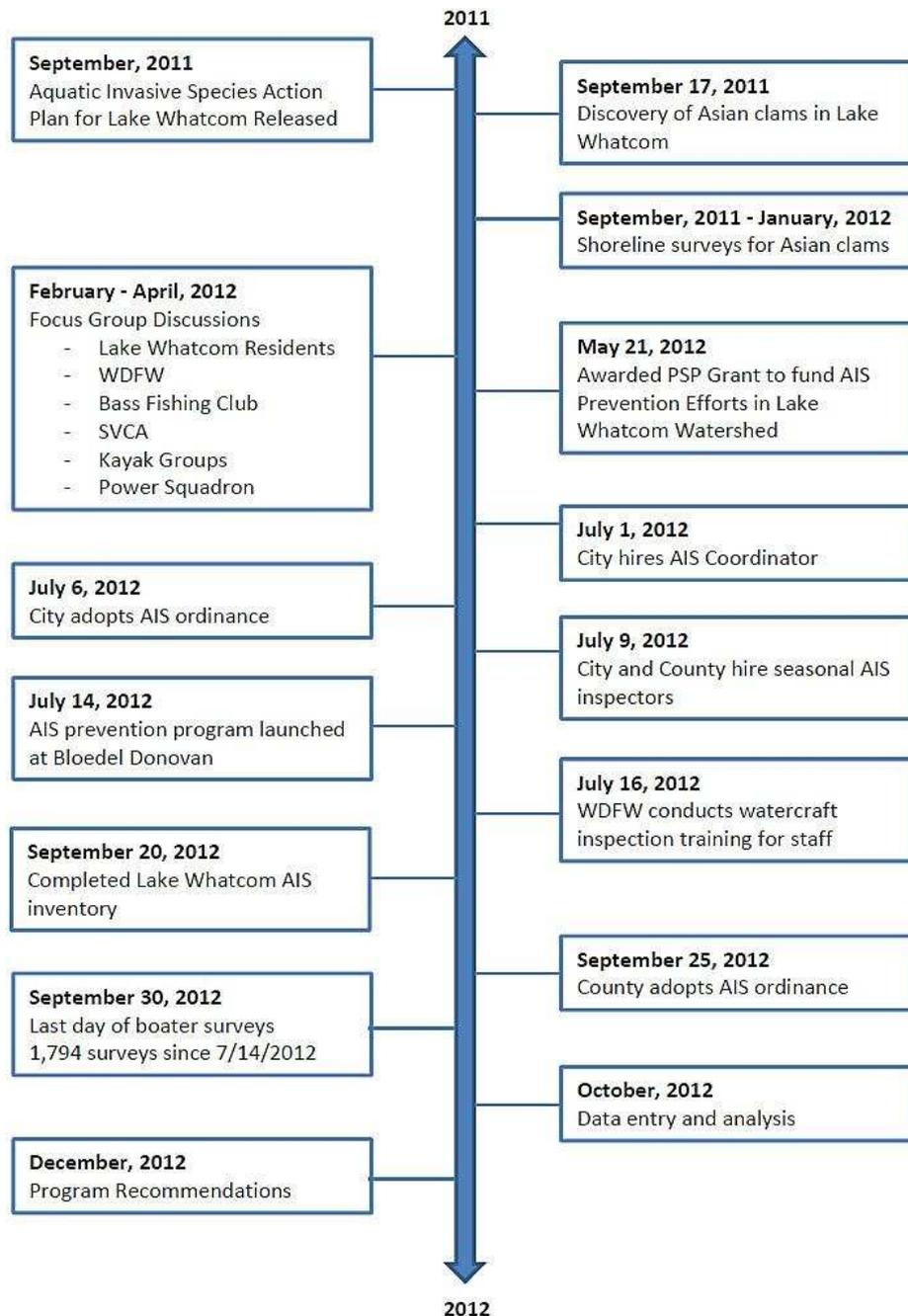
## **Program Objectives**

The goal of the Lake Whatcom Aquatic Invasive Species Prevention Program is to minimize the spread of aquatic invasive species to and from the Lake Whatcom watershed. To achieve this goal, Lake Whatcom Management Program staff are developing a comprehensive prevention strategy that includes: the use of aquatic invasive species education and outreach, the inspection and decontamination of watercraft and recreational equipment, and the adoption of more stringent regulations and enforcement. While a comprehensive program has yet to be implemented, the 2012 boating season gave Lake Whatcom Management Program staff the opportunity to develop and disseminate outreach materials, conduct boater surveys and visual boat inspections at Lake Whatcom launches, and to adopt ordinances to

increase our local enforcement authority regarding the transport and release of aquatic invasive species. These efforts have helped to gain local support for our program, and to provide us with usage pattern information for the lake, as well as the local enforcement capability necessary for the implementation of a more comprehensive aquatic invasive species prevention program for 2013.

## Program Development

A timeline of Lake Whatcom aquatic invasive species program efforts from September, 2011 through the end of 2012 is outlined in **Figure 2**.



**Figure 2:** AIS Program Development Timeline from September, 2011 through December, 2012

## Watercraft Inspection Program

The Lake Whatcom Management Program launched the first phase of its watercraft inspection program on July 14<sup>th</sup>, 2012 at Bloedel Donovan. The main goals for this program included:

- establishing watercraft usage patterns for the lake,
- conducting education and outreach with boaters and park users, and
- determining the feasibility of implementing a mandatory watercraft inspection program for Lake Whatcom in 2013.

To achieve these goals, the City and County hired four seasonal aquatic invasive species inspectors who were responsible for conducting boater surveys and disseminating outreach materials at the boat launches. Results from these interactions were then used to determine the feasibility of implementing a mandatory watercraft inspection program for the lake in 2013. Aquatic invasive species inspectors conducted these surveys with motorized and non-motorized watercraft operators from July 14<sup>th</sup> through September 30<sup>th</sup>, 2012. Surveys were conducted primarily on Fridays, Saturdays, and Sundays between 8:00am and 6:00pm with some additional shifts scheduled on Wednesday evenings, early mornings, and on public holidays. Surveys were primarily conducted at the launch with the highest use, Bloedel Donovan, with some additional surveys being conducted at the Sudden Valley Community Association Marina on September 14<sup>th</sup>, 15<sup>th</sup>, and 16<sup>th</sup>.

Aquatic invasive species inspectors were required to wear yellow safety vests with "AIS staff" written on the back while working at the boat launches. Sandwich boards were used in the Bloedel Donovan parking lot to inform watercraft operators that they needed to stop ahead at the check station. Traffic cones were also used to divide the lane into two to allow car traffic to pass boats that were stopped at the check station. While there were some concerns at the start of the program that the Aquatic Invasive Species Check Station would result in traffic delays at Bloedel Donovan, the improvements made using signage and traffic cones kept these delays to a minimum. Even on the busiest days, there were rarely more than four boats lined up at a time and our inspectors were able to get them on their way fairly quickly.



**Figure 3:** Aquatic invasive species inspectors conducting boater surveys (7/15/2012)

## Boater Surveys

Boater surveys were conducted to collect information on usage patterns, traffic flow, and to determine the level of aquatic invasive species knowledge within the Lake Whatcom boating community. Specifically, these surveys collected the following information from watercraft operators:

- State Registration Number (when available)
- Zip Code
- Vessel Type
- Last waterbody where launched and date
- Other waterbodies visited
- Next waterbody where launching (if known)
- AIS knowledge and cleaning practices
- Clean, Drain, Dry Awareness Campaign (see description on page 13)
- Lake Whatcom Only (Y/N)
- Repeat Boater (Y/N)

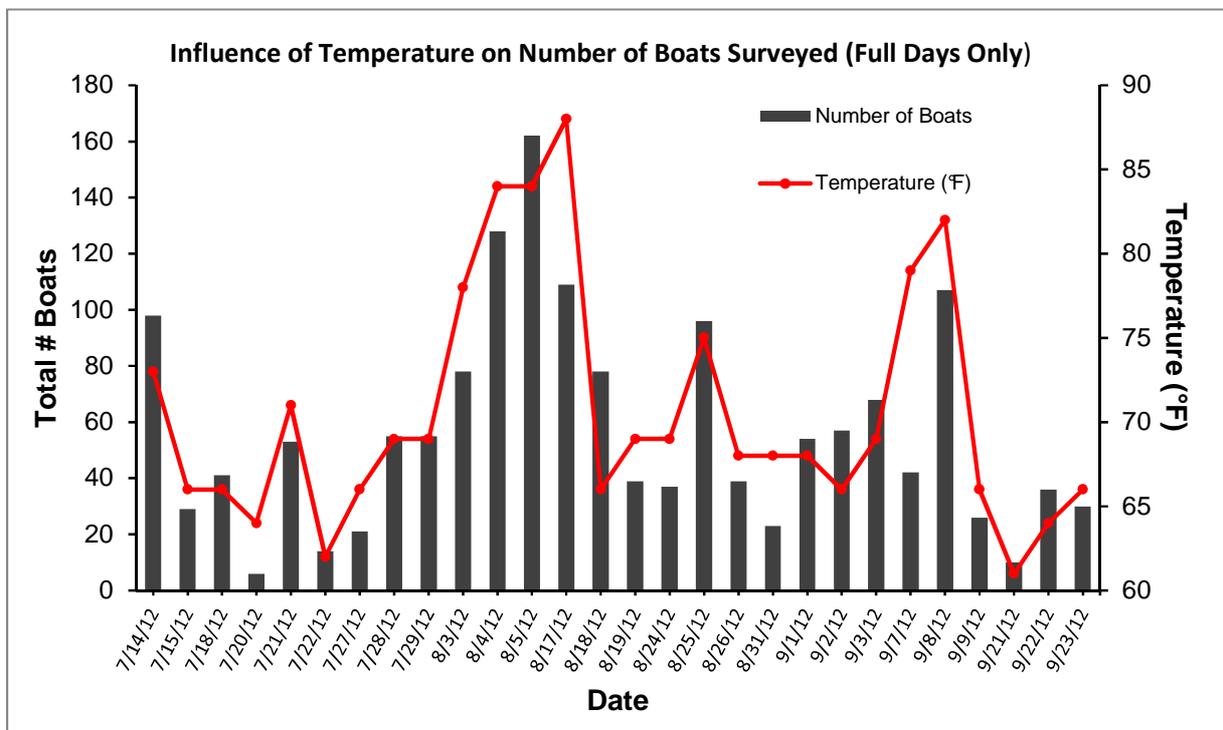
An example of the boater survey sheet can be found in **Appendix B**. Results from these boater surveys are being used to inform the development of a more comprehensive aquatic invasive species prevention program for 2013. Specifically, these surveys have improved our knowledge regarding the amount of boat traffic on Lake Whatcom, and when the highest traffic occurs, that may help to inform decisions regarding setting hours of operation and service fees to help fund the program. Additionally, these surveys have provided us with a list of waterbodies where boats had launched in the past.

A total of 1,794 boater surveys were conducted over 36 days between July 14<sup>th</sup> and September 30<sup>th</sup>, 2012. While the majority of boats surveyed had originated in Whatcom County, boats had visited 85 different waterbodies in 8 different states/provinces prior to launching in Lake Whatcom. Survey results also indicate that Lake Whatcom boaters had visited 96 different waterbodies in 11 different states/provinces at some point in the past, including Lake Mead, Arizona/Nevada. Maps depicting the zip codes of registered boats, the last waterbody where they launched, the next waterbody where they planned on launching, as well as any waterbodies visited in the past can be found in **Appendices C-F**. Of all the boats surveyed, 89 percent were registered in Washington, eight percent were registered in British Columbia, and the remaining three percent were registered in California, Idaho, Missouri, Nevada, and Vermont. Of the boats that were registered in states other than Washington, the majority of boat operators reported that they live in Washington.

Only 930 unique registered boats (excluding repeats and non-motorized watercraft) stopped at our Aquatic Invasive Species Check Station with several boats stopping at the station on more than five occasions. Of these 930 unique registered boats, 83 were registered in British Columbia, 30 were registered in states other than Washington, 817 were registered in Washington State and 561 of these were registered in Whatcom County. Despite the number of locally registered boats using Lake Whatcom, four watercraft operators reported having taken their watercraft to a waterbody infested with zebra/quagga mussels in the past. Additionally, three other watercraft operators reported having taken their watercraft to a waterbody that is in close proximity to infested waters. While none of these watercraft posed any risk to Lake Whatcom at the time they were stopped at the Aquatic Invasive Species Check Station, they demonstrate that there are Lake Whatcom users that have traveled to mussel infested waters in the past.

The most frequent freshwater bodies visited by watercraft prior to launching at Lake Whatcom were Lake Samish, Lake Chelan, Baker Lake, Lake Padden, Lake Washington, and the Columbia River. However, four boats reported having just previously launched in Shuswap Lake, British Columbia, where a boat was intercepted with dead quagga mussels in June, 2012. Other British Columbia lakes visited regularly by watercraft operators included: Alouette Lake, Lake Osoyoos, Cultus Lake, Pitt Lake, and Harrison Lake. Nine percent of all boats surveyed reported only using Lake Whatcom and inland marine waters.

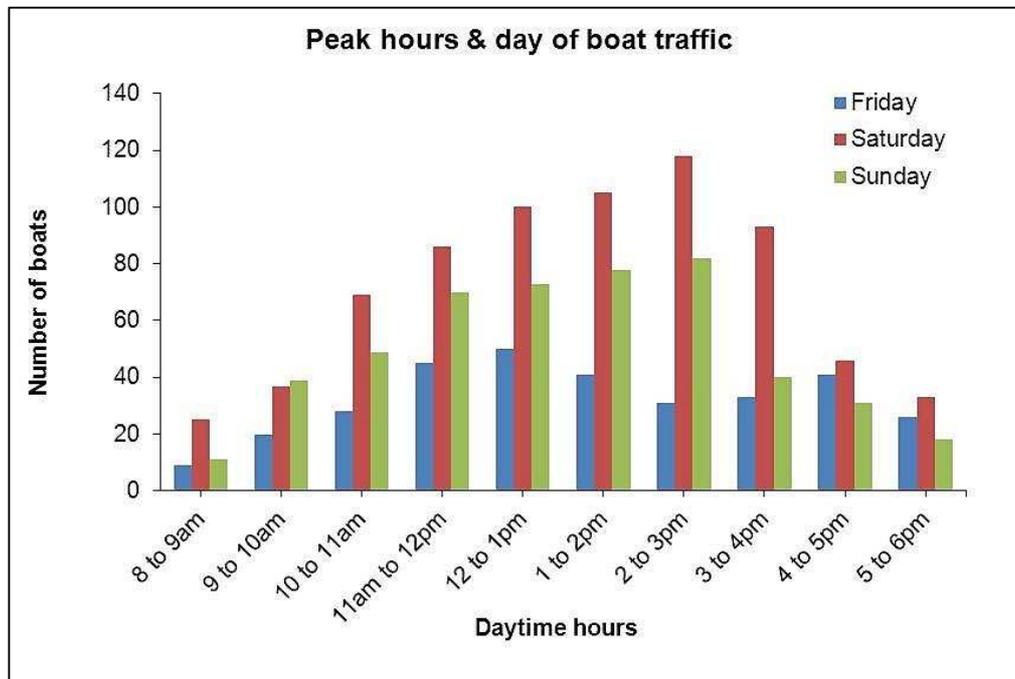
The two days with the highest number of boater surveys completed were August 4<sup>th</sup> and 5<sup>th</sup> with 128 and 162 surveys completed, respectively. These two days also corresponded with two of the hottest days at Bloedel Donovan with a maximum air temperature of 84°F on both days. To determine what influence temperature has on the number of boats launching at Lake Whatcom we plotted the number of boats surveyed per day with maximum daily temperature (Figure 4).



**Figure 4:** Influence of Temperature on Number of Boats Surveyed (Full Days Only). Date is on the x-axis and total number of boats surveyed and temperature are on the y-axes. The black columns represent the total number of boats surveyed on each date whereas the red line plots the maximum air temperature recorded on each date.

The relationship displayed in Figure 4 indicates that high boat traffic appears to be associated with high temperatures. This same trend is visible when temperature is plotted with the total number of boats surveyed by day (Fridays, Saturdays, and Sundays). However, on Saturdays it appears that there is a percentage of the boating population that will boat regardless of temperature. When time of day is taken into account, it appears that the hours of highest use are during the middle of the day; however, this may be dependent upon the type of vessels launching as anglers tend to launch early or late in the day whereas recreational watercraft operators prefer to launch in the mid-afternoon. When the total number of boats launching per hour were plotted for Fridays, Saturdays, and Sundays; Saturdays appear to receive the most traffic followed by Sundays and Fridays, respectively (Figure 5). Aquatic invasive

species inspectors were present at the launch between 8:00am and 6:00pm and were able to capture the majority of traffic between those hours; however, there were additional boats launching prior to 8:00am and after 6:00pm that were not captured in our results.



**Figure 5:** Peak hours and day of boat traffic. This figure shows the total number of boats launching between a given hour on all Fridays (blue), Saturdays (red), and Sundays (green).

Staff also conducted surveys on some Wednesdays between 12:00pm and 6:00pm. Results from surveys conducted on Wednesdays indicate that non-motorized usage is high during the evening hours but otherwise usage appears to be lower than usage reported on Fridays. While weekday usage information gathered in 2012 was limited, these results indicate that usage from Mondays through Thursdays may be lower than usage on Fridays.

The different types of boats that were recorded during the boater surveys are summarized in **Table 1**. This table includes data from all surveyed boaters whose vessel type was identified by staff and/or the boater. These numbers also include boaters who repeatedly launched into Lake Whatcom at both Sudden Valley and Bloedel Donovan from July 14<sup>th</sup> to September 30<sup>th</sup>, 2012. Approximately 12 percent of all of the boats stopped at the check station were wakeboard boats; which are considered to be high-risk boats due to the presence of internal ballast systems that can transport infested water. Of the 93 unique wakeboard boats that came through the check station, 55 were registered in Whatcom County, 22 were registered in other counties in Washington, and 16 were registered in Canada. The most common previously visited waterbodies by wakeboard boats were: Lake Whatcom, Lake Washington, Alouette Lake, and Cultus Lake.

While only 220 fishing boats were recorded during the boater surveys, it is estimated that the number of fishing boats actually launching at Lake Whatcom is much higher than was observed. Based on staff observations of trailers already in the parking lot, it appeared that many anglers had already launched their watercraft prior to the Aquatic Invasive Species Check Station opening at 8:00am.

**Table 1. Number of Boats Launching by Type**

Type of Boat	Number
Other motorized (steam boats, ski/sport boats without internal ballast, party barges, etc.)	899
Fishing	220
Wakeboard (internal ballast)	203
Non-motorized (kayaks, canoes, row boats, etc.)	169
Personal Watercraft (jet skis, etc.)	113
Sailboat	46
<b>Total</b>	<b>1,650</b>

It is also estimated that the number of non-motorized watercraft actually launching at Bloedel Donovan is much higher than was recorded in the boater survey data. This is partly due to the hours when surveys were conducted and is also due to the fact that non-motorized watercraft operators often launched from other areas in the park and did not pull through the Aquatic Invasive Species Check Station.

The majority of interactions with boaters were fairly positive with only two percent of boaters being considered rude or hostile towards staff. Many boaters shared suggestions with staff regarding the program and several boaters said that they would be willing to pay for inspection/decontamination services if it meant keeping the lake open for boating.

As part of our survey effort, we were also interested in learning whether watercraft operators clean their boats between freshwater bodies. Of the 757 boaters that answered our question regarding whether they clean their boat and trailer between launches, 157 (21 percent) said that they do not clean, drain, and dry their boats when going from one freshwater body to another. Of these 157 boats, nine had been in freshwater bodies located outside of Washington prior to coming to Lake Whatcom.

As part of our education efforts, the aquatic invasive species inspectors also took the time to educate boaters coming through the check station of the importance of cleaning, draining, and drying their boat between launches in order to prevent the spread of aquatic invasive species both to and from Lake Whatcom. While several boaters mentioned cleaning their boat when leaving saltwater, many were not aware of the need to clean their boat between freshwater bodies. Interestingly, we had several boaters mention that they had cleaned their boat prior to coming back to the launch after talking with our inspectors.

### **Visual Boat Inspections**

In addition to conducting boater surveys, aquatic invasive species inspectors were also responsible for conducting brief visual boat inspections to check for any aquatic plants, animals, or other organic material on the watercraft and trailers. All aquatic invasive species staff received watercraft inspection training from the Washington Department of Fish and Wildlife (WDFW) prior to the launch of the program. While the majority of the boats that were stopped at the Aquatic Invasive Species Check Station were clean, there were several cases of boats that were coming to flush their engines in Lake Whatcom and had transported eelgrass on their trailers from Bellingham Bay. Additionally, there were two cases where boats were found to be transporting Brazilian elodea, an invasive aquatic weed, from Lake Washington and Lake Sammamish. Staff removed the fragments prior to the boats being allowed to launch. Visual boat inspections were completed in just a few minutes and gave staff the opportunity to prevent the spread of an undocumented aquatic invasive weed into Lake Whatcom while also providing staff with the occasion to educate boaters on the importance of cleaning, draining, and drying their boats between launches. Additionally, these visual boat inspections provided us with valuable

information regarding some of the logistical constraints that will need to be overcome prior to implementing a more comprehensive inspection program at Bloedel Donovan.

### **Education/Outreach**

Aquatic invasive species inspectors were also responsible for providing educational materials to watercraft operators who had been surveyed. All watercraft operators received a copy of the Clean, Drain, Dry brochure to remind them to clean their boat between launches (**Figure 10**). Staff also disseminated Boatnotes, zebra/quagga mussel watch cards, Eurasian watermilfoil watch cards, and other invasive species education materials. Over 100 park users also stopped by the Aquatic Invasive Species Check Station to read the invasive species display, talk to aquatic invasive species staff, and to pick up outreach materials.

### **Early Detection and Monitoring**

As was witnessed with the Asian clam infestation in Lake Whatcom, it can take several years for a species to become established and for their presence to become known. However, once a species becomes established, it becomes increasingly difficult and costly to manage the population. By having an early detection and monitoring program we can ensure that new infestations are reported, confirmed, and responded to as soon as possible. In 2012, the Whatcom County Noxious Weed Board completed an aquatic invasive species inventory for Lake Whatcom to record the presence/absence, density, and distribution of aquatic invasive species in the lake. Additionally, Lake Whatcom Management Program staff continued to conduct shoreline surveys for Asian clams and to monitor existing infestations. Also, in 2012, the Washington Department of Fish and Wildlife and the Whatcom County Noxious Weed Board engaged in monitoring efforts for zebra and quagga mussels in Lake Whatcom. In 2013, the Aquatic Invasive Species Program plans to develop its capability to conduct more frequent lake monitoring events for zebra and quagga mussels and other aquatic invasive species in the lake.

### **Lake Whatcom Aquatic Invasive Species Inventory**

In September, 2012, the Whatcom County Noxious Weed Board, with assistance from the Washington State Department of Ecology and the City of Bellingham, completed an aquatic invasive species inventory of the littoral zone of Lake Whatcom. The goals of the inventory were to establish a baseline of aquatic invasive species present in the lake and to map their distributions to assist in the development of aquatic invasive species response strategies. The survey was conducted by boat over four days in August and September. Submersed species were collected using a grab sampling method that involved throwing a weighted rake attached to a rope down to depths of 30 feet. Emergent shoreline species were recorded based on visual observations of the shoreline. A GPS unit was used to record sites and survey information forms were used to record data on species presence and density of both submersed and emergent shoreline plants. GPS data was downloaded into a map of the lake showing location and occurrence of aquatic invasive species. No new aquatic invasive species or new Asian clam infestations were discovered as a result of this inventory. Of the 38 plant species that were found, 24 were native and 14 were introduced. Of the 14 introduced species found, 11 are shoreline or nearshore plants while the other three are submersed invasive species and include: fragrant water lily, Eurasian watermilfoil, and curly-leaf pondweed. A report on the results of this inventory will be submitted to the Lake Whatcom Management Program and the Puget Sound Partnership later this year. A more detailed list of the aquatic invasive plant species found in Lake Whatcom can be found in **Appendix A**.

### Asian Clam Monitoring

Asian clams were discovered in Lake Whatcom on September 17<sup>th</sup>, 2011. After their discovery, staff conducted shoreline surveys at over 30 sites throughout the lake and by the end of 2011, three established Asian clam colonies were confirmed in Lake Whatcom at Bloedel Donovan, Lakewood/WWU Facility, and at the Wildwood Resort (**Figure 6**). In early 2012, staff continued to conduct shoreline surveys for Asian clams in Lake Whatcom at Dellesta Point, at sites in Basin 1, and in Sudden Valley. While no additional Asian clam colonies were discovered at any of the survey sites, these surveys gave staff a great opportunity to engage Lake Whatcom residents in invasive species prevention efforts.



**Figure 6:** Asian clams discovered at Wildwood Resort (10/19/2011)

As of October, 2012 no new Asian clam colonies have been discovered in Lake Whatcom as a result of shoreline surveys and the Lake Whatcom AIS inventory. A year after the discovery of Asian clams, staff continues to monitor the sites where Asian clams have been confirmed. Aquatic invasive species staff also conducted more extensive surveys along the Lake Padden shoreline for the presence of any new Asian clam infestations outside of the swimming area. It was discovered that much of the shoreline substrate in Lake Padden is not ideal habitat for Asian clam establishment; however, several small Asian clam infestations were discovered along the northwest shore of the lake in October of 2012.

Additionally, in February of 2012, Lake Whatcom Management Program staff met with a dive team from the Washington Department of Fish and Wildlife (WDFW) to discuss options for conducting dive surveys to map the extent of the Asian clam infestation in Lake Whatcom. WDFW divers conducted two preliminary surveys in Basin 1 of Lake Whatcom to aid in the development of a dive survey protocol for the lake. Once a dive survey is conducted to map the extent of the Asian clam infestation in the lake, managers will be able to determine the costs associated with responding to localized infestations.

Staff continues to study Asian clam management efforts being undertaken at Lake George, New York and at Lake Tahoe, California/Nevada to determine the cost effectiveness of implementing a similar response strategy at Lake Whatcom. Since the initial infestations were discovered in 2010, Lake George has now spent over \$1.5 million on Asian clam response efforts to manage four Asian clam colonies using benthic barriers and suction harvesting. In September, 2012, lakewide shoreline surveys of Lake George uncovered four additional Asian clam colonies throughout the lake. While these initial treatments using benthic barriers have been fairly effective at suppressing the Asian clam populations, there are now concerns over whether enough funds can be pooled to pay for treating these additional sites. Recognizing the exorbitant costs associated with managing new infestations, Lake George is now considering following in Lake Tahoe's footsteps to develop a mandatory boat inspection and decontamination program to prevent the introduction of additional aquatic invasive species to the lake.

## Dreissenid Mussel Monitoring



**Figure 7:** Artificial substrate from South Bay, Lake Whatcom

In 2012, early detection and monitoring efforts for zebra and quagga mussels included checking artificial substrates for mussel attachment and conducting plankton tows for mussel veligers (larvae). The Washington Department of Fish and Wildlife (WDFW) have installed artificial substrates at two locations in the lake. The substrates are composed of four square plates made out of flat PVC that are attached to a nylon line and separated with sections of hollow, white PVC pipe (**Figure 7**). Rebar and metal washers are used to weigh down the substrates. One of the substrates was examined on four occasions in 2012, three times by WDFW staff and once by the Whatcom County Noxious Weed Board during the Lake Whatcom AIS inventory. The other substrate was examined on three occasions in 2012, twice by WDFW staff and once by the Whatcom County Noxious Weed Board. No attached mussels were discovered on any occasion. However, some native freshwater limpets were discovered on one of the substrates.

Six plankton tows were also conducted, five by WDFW staff and one by the Washington State Department of Ecology during the Lake Whatcom AIS inventory (**Figure 8**). These tows were done by boat and involved lowering a plankton net to a depth of 30 meters and then retrieving it. Samples were collected in the net and then sent to a lab for analysis. No zebra or quagga mussel veligers were detected in any of the samples.



**Figure 8:** Plankton tow net being retrieved from Lake Whatcom

## Regulations

In 2012, the City of Bellingham and Whatcom County both adopted ordinances prohibiting the transport or release of aquatic invasive species into waters within the jurisdictions of the City of Bellingham and Whatcom County. Both of these ordinances authorize local enforcement staff to conduct watercraft inspections to detect the presence and prevent the transport or release of aquatic invasive species into our waterways. Aquatic invasive species staff also developed a flyer to be distributed to boaters that included information about the ordinances, why they are important, and how boaters can help to prevent the spread of aquatic invasive species. Signs with information regarding these new local ordinances have also been designed and will be installed at the boat launches by next season. Additional updates are also being proposed for aquatic invasive species regulations in Washington and British Columbia that will result in additional protection across the region.

## Education and Outreach

Additionally in 2012, aquatic invasive species staff also launched a comprehensive aquatic invasive species education and outreach campaign to help prevent the spread of aquatic invasive species to and from Lake Whatcom. Specific education and outreach efforts included installing informational signage at boat launches, creating and disseminating outreach materials, conducting focus groups, giving presentations to community groups, talking with boaters and park users at our Aquatic Invasive Species

Check Station, and disseminating program updates to the community via websites, press releases, and the Lake Whatcom E-Newsletter. All of these efforts helped to increase the level of awareness in our community regarding aquatic invasive species issues while also fostering much needed local support for the program.

### **Clean, Drain, Dry Campaign**

In 2012, staff launched an education and outreach campaign aimed at getting boaters to clean, drain, and dry their boats and recreational equipment to help stop the spread of aquatic invasive species, such as zebra and quagga mussels. One of the main goals when developing the outreach messaging was to choose a message that was consistent with state and regional efforts. The "Clean, Drain, Dry" message is being used in Washington, Idaho, Oregon, Texas, New York, California, and British Columbia, and many other states and Canadian provinces. One of the reasons for using a message that is consistent with state, regional, and national efforts, is to make the message, and ultimately the behavior, easy for boaters and recreational users to remember because they will not have to learn a new message every time they cross state lines. Similarly, staff chose to use signage with the "Clean, Drain, Dry" message that was developed for the Idaho Invasive Species Council because it was also being used in other Pacific Northwest states. Staff used the same images on the informational signage at boat launches as well as on brochures to provide additional consistency and branding for the message. This way, every time a watercraft operator or recreational user drives by one of these signs or looks at their brochure, they will be reminded to clean, drain, and dry their boat between uses to stop the spread of invasive species.

### **Signs**

Informational signs with the Clean, Drain, Dry message were installed at the Bloedel Donovan boat launch in 2012 (**Figure 9**). These signs aim to encourage boaters to clean, drain, and dry their boats to help stop the spread of invasive species. An image of a boat propeller encrusted with zebra/quagga mussels also helps to enforce this message. So far, staff has had a very positive response from the use of these signs. Several boaters, when asked how they had heard about aquatic invasive species and the Clean, Drain, Dry campaign mentioned having read it on these signs. Additional signs have been installed at the Sudden Valley marina, and at the WDFW launch at South Bay at Lake Whatcom, and are also being installed at Lake Padden and Lake Samish. Similar signs may also be installed at other Whatcom County waters prior to the start of the boating season in 2013.



**Figure 9:** Clean, Drain, Dry Sign at Bloedel Donovan

### **Community Events/Presentations**

In 2012, staff from the City of Bellingham and the Whatcom County Noxious Weed Board gave multiple presentations on aquatic invasive species to community and neighborhood associations, lake user groups, lake residents, and other recreational user groups. These presentations gave staff the opportunity to field questions from residents and lake users interested in learning more about invasive species already established in the lake and proposed efforts for preventing additional introductions.

Several focus groups were conducted between February and April of 2012 with lake residents, representatives from neighborhood associations, bass fishing club members, representatives from kayak groups, and other lake user groups. These informal meetings provided staff with the opportunity to

discuss the threat of aquatic invasive species and to introduce user groups to the idea of having a prevention program at the lake that would include a watercraft inspection program at the boat launches. Lake users were then able to comment on the proposal while offering suggestions to staff on how this type of program could be implemented effectively and to identify potential obstacles that would need to be overcome. These focus groups gave lake users the opportunity to share their opinions, insights and observations that have been very valuable in the development of the aquatic invasive species prevention program for the lake.

Additional aquatic invasive species education and outreach occurred at the Whatcom County Fair from August 13<sup>th</sup>-18<sup>th</sup>. Aquatic invasive species staff had the opportunity to interact with close to 1,000 Whatcom County residents at the Whatcom County Noxious Weed Board Booth. The Aquatic Invasive Species Check Station also provided additional education and outreach opportunities for staff to be able to interact with over 100 park users at Bloedel Donovan and at the Sudden Valley Community Association Marina between July 14<sup>th</sup> and September 30<sup>th</sup>, 2012. Aquatic invasive species staff also attended the Salmon Row and Paddle event at Lake Samish on September 22<sup>nd</sup> to provide additional aquatic invasive species outreach to race participants. While the majority of these users were well informed regarding the threat of aquatic invasive species, it was another great opportunity to provide additional outreach to non-motorized lake users.

Also in September, staff from the City of Bellingham and the Whatcom County Noxious Weed Board participated in the Whatcom Water Weeks event sponsored by the Whatcom Watersheds Information Network. Staff had an aquatic invasive species display at the kick-off to Whatcom Water Weeks at the Bellingham Farmer's Market on September 8<sup>th</sup>, 2012. They also gave a presentation at the Sudden Valley Community Association on September 20<sup>th</sup>, 2012 to inform residents of the aquatic invasive species already present in the lake, to provide some background on zebra and quagga mussel impacts, and to give an update on prevention program efforts to date.

In addition to fostering local support for the Aquatic Invasive Species Program, these community outreach efforts and the outreach that occurred as a result of our boater survey effort have helped staff to increase awareness about aquatic invasive species and how to prevent their spread. These interactions have also provided staff with observations and suggestions from the community that will inform the development of a more comprehensive aquatic invasive species prevention program in 2013.

### **Online**

Additional aquatic invasive species education and outreach also occurred online via the Lake Whatcom E-Newsletter and the Lake Whatcom Management Program Website. Lake Whatcom aquatic invasive species efforts were highlighted in four editions of the Lake Whatcom E-Newsletter in 2012 that is distributed bimonthly to close to 200 members of our community. Additional updates on the program have also been made available on the Lake Whatcom Management Program Website that has been viewed by over 2,400 unique visitors since January, 2012. A new webpage for aquatic invasive species updates, resources, and news is also being developed and will be made available on the Lake Whatcom Management Program Website homepage early in 2013. These online resources provide staff with additional tools for disseminating information and news to interested members of our community.

## **Press Releases and Other Media**

Awareness levels regarding our aquatic invasive species efforts have also been raised as a result of news stories being published on the City's website, in the Bellingham Herald, and aired on KGMI. Some of the headlines from 2012 include:

- Lake Whatcom boaters could face inspection to deter mussel invasion | 3/9/2012
- Talk in Sudden Valley to address invasive species in Lake Whatcom | 4/16/2012
- Bellingham council may close boat launch to stop invasive species into Lake Whatcom | 4/25/2012
- County to focus on education, voluntary boat inspections at Lake Whatcom | 4/25/2012
- Bellingham council struggles with Lake Whatcom boat launch issue | 5/15/2012
- Bellingham ready to outlaw introducing invasive species into lakes | 6/19/2012
- Law outlaws invasive plants, animals in Lake Whatcom | 6/21/2012
- Stop the spread of aquatic invasive species to Lake Whatcom | 7/10/2012
- Over 1,000 boaters surveyed in effort to ward off invasive species | 9/7/2012
- Council approves fine for introducing harmful shellfish into Whatcom County Lakes | 9/27/2012

In November, Bellingham's public access channel, BTV10, started airing the Don't Move a Mussel video to over 20,000 homes in the greater Bellingham community. This video provides information on the invasion of zebra and quagga mussels in North America including their origin, life history, current distribution, vectors for transport, and potential impacts.

## **Brochures/Outreach Materials**

Brochures with the Clean, Drain, Dry message were also disseminated to all watercraft operators stopping at the Aquatic Invasive Species Check Station to act as a reminder to clean, drain, and dry their boats and recreational equipment between launches (**Figure 10**). The same image that was used on the informational signs was also used on the front of these brochures for consistency. A more detailed explanation on how to complete these steps is included on the back of the brochure as well as a website where people can learn more, and a hotline number for reporting sightings of invasive species to the Washington Invasive Species Council. "Stop the invasion" is also included at the top of the brochure to make the messaging consistent with other outreach materials being distributed by the Washington Invasive Species Council. These brochures have also been distributed at other community outreach events this season and there are plans to build upon this effort to create stickers, bill inserts, and similar brochures for other lake user groups.

Aquatic invasive species staff also distributed outreach materials from the Washington Invasive Species Council, the Washington Department of Fish and Wildlife, Oregon Sea Grant, the U.S. Fish and Wildlife Service, and the Washington State Noxious Weed Control Board to leverage resources and to help increase awareness regarding aquatic invasive species outreach efforts occurring at the state and regional levels.

## **Regional Collaboration, Partnerships and Information Sharing**

The initial success of this program could not have been possible without the support of our partners at the local, state, and regional levels. These partnerships have fostered the sharing of news, information, training and resources that have been essential to the development of this program. Additionally, these partnerships have provided local staff with the opportunity to participate in regional collaborative efforts to prevent the spread of aquatic invasive species to the Pacific Northwest. While attending regional invasive species meetings, staff from the City of Bellingham and Whatcom County have had the opportunity to learn from aquatic invasive species prevention and management efforts occurring at the state and regional scale while also being able to offer some perspective to our regional partners on

aquatic invasive species efforts and challenges occurring locally. Specifically, we would like to recognize the Puget Sound Partnership, the Washington Invasive Species Council, the Washington Department of Fish and Wildlife, the Washington State Department of Ecology, the U.S. Fish and Wildlife Service, the 100<sup>th</sup> Meridian Initiative Columbia River Basin Team, the Pacific States Marine Fisheries Commission, and the Idaho Invasive Species Council for their support with the development of this program.

**CLEAN DRAIN DRY YOUR BOAT**

HELP STOP THE SPREAD OF INVASIVE SPECIES

**STOP THE INVASION. PROTECT YOUR FISHING AND BOATING WATERS.**

**CLEAN** Remove all aquatic plants, animals, mud and thoroughly wash everything, especially in crevices and hidden areas.

**DRAIN** Drain water from your boat, trailer, tackle and gear, including wells, bilge, and engine cooling water before leaving the area.

**DRY** Allow sufficient time for your boat and equipment to completely dry before entering other waters.

Do **NOT** release pets, bait, aquatic plants, or aquarium water into the wild.  
Do **NOT** transport aquatic plants or animals between bodies of water.

**BEFORE LAUNCHING AND BEFORE LEAVING... INSPECT EVERYTHING!**

**Learn more at:**  
[www.lakewhatcom.whatcomcounty.org](http://www.lakewhatcom.whatcomcounty.org)

**Report sightings:**  
1-877-9-INFEST

Figure 10: Clean, Drain, Dry Brochure

### Preliminary Recommendations

Lake George, New York, is currently infested with four aquatic invasive species: Eurasian watermilfoil, curly-leaf pondweed, zebra mussels, and Asian clams. Since 1988, the Lake George community has spent over \$7.3 million dollars to manage these species. In September of 2012, four additional Asian clam sites were discovered in Lake George resulting in additional treatment costs that will continue year after year to keep these populations in check. The Lake George community cannot afford to manage any new infestations so are actively putting forth the case for a pro-active and mandatory boat inspection and decontamination program for Lake George to prevent any new aquatic invasive species from becoming established.

While our community has not yet been burdened with aquatic invasive species management costs of this magnitude at Lake Whatcom, our drinking water source remains at risk for new aquatic invasive species infestations and associated management costs. It is for this reason, that Lake Whatcom Management Program staff are recommending the implementation of a mandatory watercraft inspection program for 2013 to protect Lake Whatcom from additional aquatic invasive species infestations.

**Recommendation #1: Seasons and Hours of Operation**

Staff recommends that all public and quasi-public boat launches around Lake Whatcom be subject to seasons and hours of operation when staff are present to ensure that all watercraft have been inspected prior to launching into the lake. Outside of these seasons and hours of operation, launches will be gated and locked. The recommended season of operation will be from the end of April (when the fishing season begins) through the end of September, with a flexible end date depending upon weather conditions. Recommended launch hours of operation are from dawn until dusk; however, hours may be modified depending on the launch site in question. Watercraft will be allowed to launch on a by appointment basis during the off-season.

**Recommendation #2: Staffing**

Staff recommends that eight aquatic invasive species inspectors be hired to staff the launches. These staff would be responsible for conducting inspections, decontaminations, boater surveys, and re-sealing any boats that wish to re-launch at Lake Whatcom. The number of staff required will be dependent upon the hours of operation and the number of launches requiring staffing. Launches may be staffed in shifts and some additional staff may be hired on an on-call basis to assist with inspections on high traffic days. One or two staff will also be assigned to rotate to other launches to provide inspections on a by appointment basis.

**Recommendation #3: Annual Permits and Fees**

Staff recommends that inspection and decontamination services be subject to a fee that will be used to partially fund the Aquatic Invasive Species Prevention Program. Staff recommends two options for collecting fees: an Annual Permit (\$50) and a Day Pass (\$20). Annual Permits will include unlimited inspections and re-sealing services for watercraft wishing to re-launch at Lake Whatcom. Day Passes will only include one inspection and will not include any re-sealing services. Staff is not recommending a fee for the inspection of non-motorized, hand-carried watercraft at this time.

**Recommendation #4: Decontamination Services**

Staff recommends that there be several different options for decontamination services depending upon the level of decontamination required. These options will vary from onsite plant removal and minimal cleaning provided by an inspector at the launch for no fee, to watercraft being sent to the City of Bellingham Public Works Annex to be decontaminated by trained staff using a mobile decontamination station for a fee of \$25, to the decontamination of more complex watercraft (e.g. wakeboard boats) that will be sent to the marina to be decontaminated at the owner's expense.

**Recommendation #5: Pre-Season Quarantine**

Staff recommends that watercraft operators wishing to expedite the launch process at the beginning of the season pay for an annual permit and have their watercraft sealed to their trailers for a minimum of 30 days prior to launching in Lake Whatcom. If the seal is still intact when these watercraft pull up to the inspection station in April/May, they will be allowed to launch much faster using the "sealed boats only" lane. If these boats continue to only use Lake Whatcom, they will be re-sealed and will not have to go

through the longer "inspection" lane. This procedure is especially recommended for all wakeboard boats, as well as any boats using the Sudden Valley Community Association Marina, any private launches, the Wildwood Resort boat launch, and the Washington Department of Fish and Wildlife boat launch at South Bay.

**Recommendation #6: Launch Requirements**

Staff recommends that all launches be staffed by aquatic invasive species inspectors during hours of operation. All launches will also need to be gated and have set hours of operation that allow launching only when staff is present. For launches that are unable to meet this requirement, staff recommends that the owners/operators of these launches/boat ramps enter into Memorandum of Understanding (MOU) agreements with Whatcom County and/or the City of Bellingham that all watercraft shall be inspected prior to launching into Lake Whatcom from these locations.

## Appendix A - Lake Whatcom AIS Inventory

**Table 2. List of Species Found in Lake Whatcom in 2012**

Scientific Name	Common Name	Plant Type	Native or Introduced
<i>Buddleja davidii</i>	Butterflybush	Shoreline	Introduced
<i>Carex sp.</i>	Sedge	Shoreline	Native
<i>Ceratophyllum demersum</i>	Coontail	Submersed	Native
<i>Chara sp.</i>	Muskwort	Plant-like algae	Native
<i>Cytisus scoparius</i>	Scotch Broom	Shoreline	Introduced
<i>Eleocharis acicularis</i>	Needle spike-rush	Shoreline	Native
<i>Elodea canadensis</i>	Common waterweed	Submersed	Native
<i>Elodea nutallii</i>	Nuttall's waterweed	Submersed	Native
<i>Epilobium hirsutum</i>	Hairy willow-herb	Shoreline	Introduced
<i>Fontinalis antipyretica</i>	Common water moss	Submersed	Native
<i>Hedera helix</i>	English Ivy	Shoreline	Introduced
<i>Impatiens capensis</i>	Jewelweed	Shoreline	Introduced
<i>Iris pseudacorus</i>	Yellow Flag iris	Shoreline	Introduced
<i>Isoetes sp.</i>	Quillwort	Submersed	Native
<i>Lysichiton americanus</i>	Skunk cabbage	Shoreline	Native
<i>Lysimachia vulgaris</i>	Garden Loosestrife	Shoreline	Introduced
<i>Lythrum salicaria</i>	Purple Loosestrife	Shoreline	Introduced
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	Submersed	Introduced
<i>Najas flexilis</i>	Slender water-nymph	Submersed	Native
<i>Nitella sp.</i>	Nitella	Plant-like algae	Native
<i>Nuphar polysepala</i>	Spatterdock	Floating/Rooted	Native
<i>Nymphaea odorata</i>	Fragrant waterlily	Floating/Rooted	Introduced
<i>Phalaris arundinacea</i>	reed canarygrass	Shoreline	Introduced
<i>Polygonum x bohemicum</i>	Bohemian Knotweed	Shoreline	Introduced
<i>Potamogeton amplifolius</i>	Big-leaf pondweed	Submersed	Native
<i>Potamogeton crispus</i>	Curly leaf pondweed	Submersed	Introduced
<i>Potamogeton epihydrus</i>	Ribbonleaf pondweed	Submersed	Native
<i>Potamogeton gramineus</i>	Grass-leaved pondweed	Submersed	Native
<i>Potamogeton natans</i>	Floating Leaved pondweed	Submersed	Native
<i>Potamogeton richardsonii</i>	Richardson's pondweed	Submersed	Native
<i>Potamogeton robbinsii</i>	Fern-leaf pondweed	Submersed	Native
<i>Potamogeton zosteriformis</i>	Eel-grass pondweed	Submersed	Native
<i>Ranunculus aquatilis</i>	White Water-buttercup	Submersed	Native
<i>Rubus armeniacus</i>	Himalayan blackberry	Shoreline	Introduced
<i>Schoenoplectis acutus</i>	Hard-stem bulrush	Shoreline	Native
<i>Typha latifolia</i>	Common cattail	Shoreline	Native
<i>Vallisneria americana</i>	Tapegrass	Floating/Rooted	Native
<i>Zannichellia palustris</i>	Horned pondweed	Submersed	Native

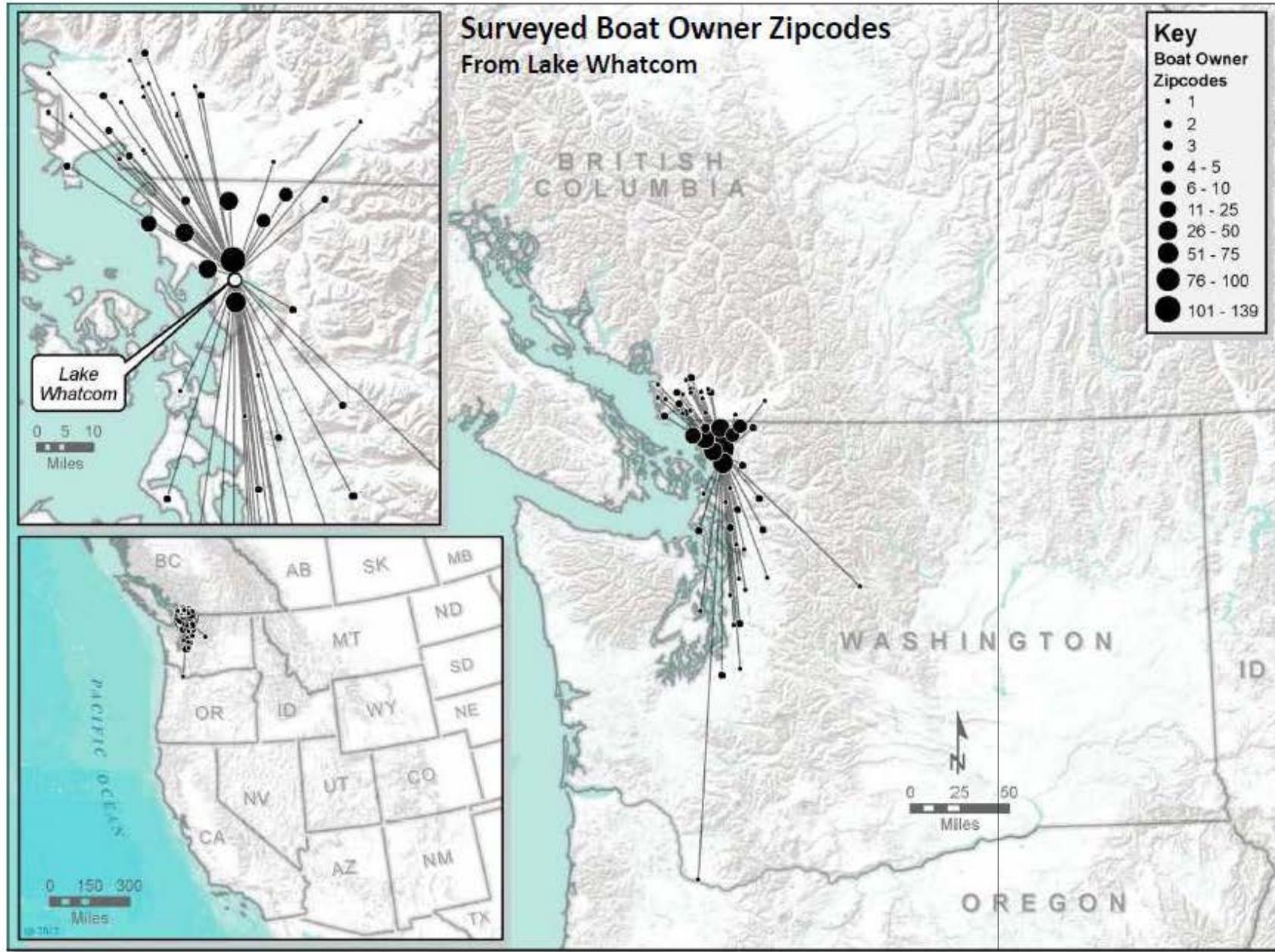
**Summary:** Found 38 species of shoreline, floating-leaved and submersed plants in Lake Whatcom. Out of 38 species, 24 (63%) are considered to be native and 14 (37%) are introduced. Species listed on the State and County Noxious Weed Lists are highlighted in orange. Of the introduced species, 3 are submersed or floating in the lake and 11 are shoreline or nearshore species. This survey should not be considered exhaustive and may not include several native shoreline or nearshore species (woody and/or herbaceous).

## Appendix B - Boat Survey Form

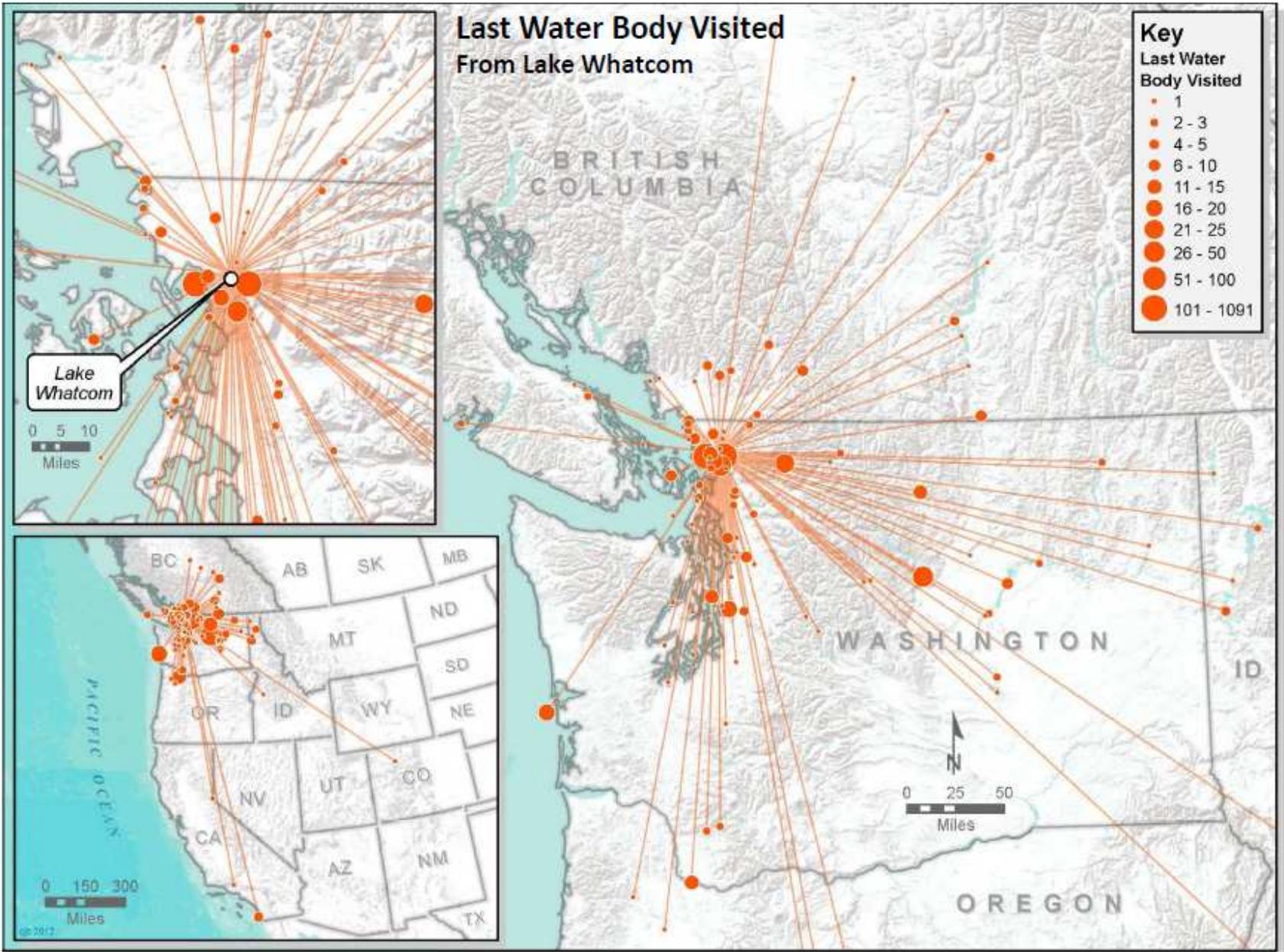
### Lake Whatcom Management Program Vessel Survey Form

<b>Data Entry Information:</b> Survey ID: _____ Date Entered: _____ Staff: _____	
<b>Date:</b> _____ <b>Time:</b> _____ <b>Surveyor:</b> _____ <b>WB:</b> <u>Lake Whatcom</u> <b>Site:</b> <u>Bloedel Donovan</u>	<b>State Registration #:</b> _____ <b>Zip Code:</b> _____ <b>License Plate:</b> _____
<b>Vessel Type:</b> Fishing <input type="checkbox"/> Wakeboard <input type="checkbox"/> Sailboat <input type="checkbox"/> Other Power <input type="checkbox"/> PWC <input type="checkbox"/> Non-motorized <input type="checkbox"/> Trailer <input type="checkbox"/>	<b>Last waterbody where launched:</b> _____ <b>Date:</b> _____
<b>Other waterbodies visited:</b> _____	
<b>Where plan on launching next (waterbody, state/province):</b> _____	
<b>Do you clean boat/trailer between uses?</b> YES <input type="checkbox"/> NO <input type="checkbox"/>	
<b>AIS Knowledge:</b> Z/Q Mussels <input type="checkbox"/> Other <input type="checkbox"/> _____ From where? _____	<b>Clean, Drain Dry Awareness:</b> YES <input type="checkbox"/> NO <input type="checkbox"/> If YES, from where? _____
<b>Repeat Boater:</b> YES <input type="checkbox"/> NO <input type="checkbox"/> <b>Lake Whatcom ONLY:</b> YES <input type="checkbox"/> NO <input type="checkbox"/>	
<b>Data Entry Information:</b> Survey ID: _____ Date Entered: _____ Staff: _____	
<b>Date:</b> _____ <b>Time:</b> _____ <b>Surveyor:</b> _____ <b>WB:</b> <u>Lake Whatcom</u> <b>Site:</b> <u>Bloedel Donovan</u>	<b>State Registration #:</b> _____ <b>Zip Code:</b> _____ <b>License Plate:</b> _____
<b>Vessel Type:</b> Fishing <input type="checkbox"/> Wakeboard <input type="checkbox"/> Sailboat <input type="checkbox"/> Other Power <input type="checkbox"/> PWC <input type="checkbox"/> Non-motorized <input type="checkbox"/> Trailer <input type="checkbox"/>	<b>Last waterbody where launched:</b> _____ <b>Date:</b> _____
<b>Other waterbodies visited:</b> _____	
<b>Where plan on launching next (waterbody, state/province):</b> _____	
<b>Do you clean boat/trailer between uses?</b> YES <input type="checkbox"/> NO <input type="checkbox"/>	
<b>AIS Knowledge:</b> Z/Q Mussels <input type="checkbox"/> Other <input type="checkbox"/> _____ From where? _____	<b>Clean, Drain Dry Awareness:</b> YES <input type="checkbox"/> NO <input type="checkbox"/> If YES, from where? _____
<b>Repeat Boater:</b> YES <input type="checkbox"/> NO <input type="checkbox"/> <b>Lake Whatcom ONLY:</b> YES <input type="checkbox"/> NO <input type="checkbox"/>	
<b>Data Entry Information:</b> Survey ID: _____ Date Entered: _____ Staff: _____	
<b>Date:</b> _____ <b>Time:</b> _____ <b>Surveyor:</b> _____ <b>WB:</b> <u>Lake Whatcom</u> <b>Site:</b> <u>Bloedel Donovan</u>	<b>State Registration #:</b> _____ <b>Zip Code:</b> _____ <b>License Plate:</b> _____
<b>Vessel Type:</b> Fishing <input type="checkbox"/> Wakeboard <input type="checkbox"/> Sailboat <input type="checkbox"/> Other Power <input type="checkbox"/> PWC <input type="checkbox"/> Non-motorized <input type="checkbox"/> Trailer <input type="checkbox"/>	<b>Last waterbody where launched:</b> _____ <b>Date:</b> _____
<b>Other waterbodies visited:</b> _____	
<b>Where plan on launching next (waterbody, state/province):</b> _____	
<b>Do you clean boat/trailer between uses?</b> YES <input type="checkbox"/> NO <input type="checkbox"/>	
<b>AIS Knowledge:</b> Z/Q Mussels <input type="checkbox"/> Other <input type="checkbox"/> _____ From where? _____	<b>Clean, Drain Dry Awareness:</b> YES <input type="checkbox"/> NO <input type="checkbox"/> If YES, from where? _____
<b>Repeat Boater:</b> YES <input type="checkbox"/> NO <input type="checkbox"/> <b>Lake Whatcom ONLY:</b> YES <input type="checkbox"/> NO <input type="checkbox"/>	

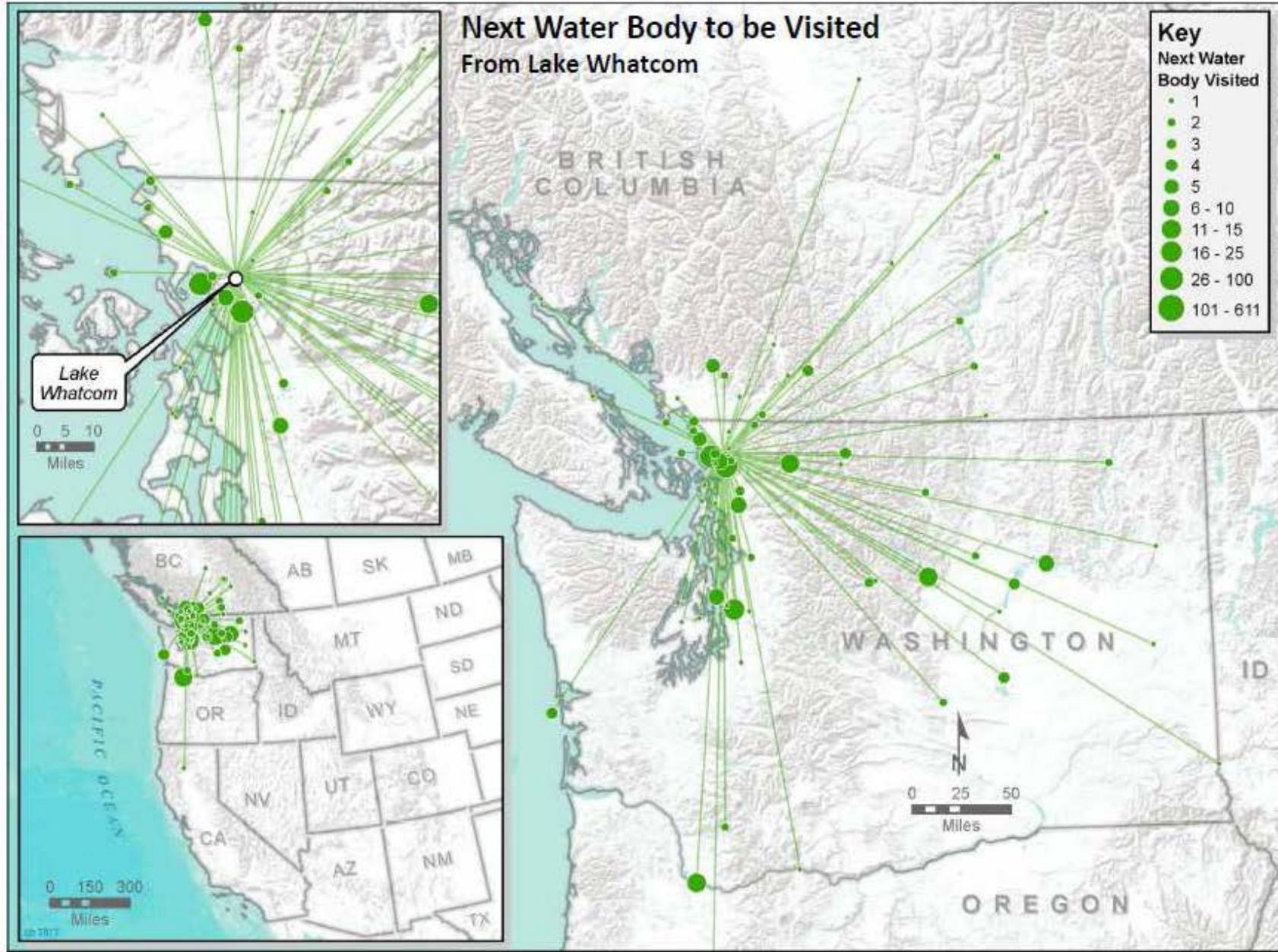
### Appendix C - Map of Zip Codes



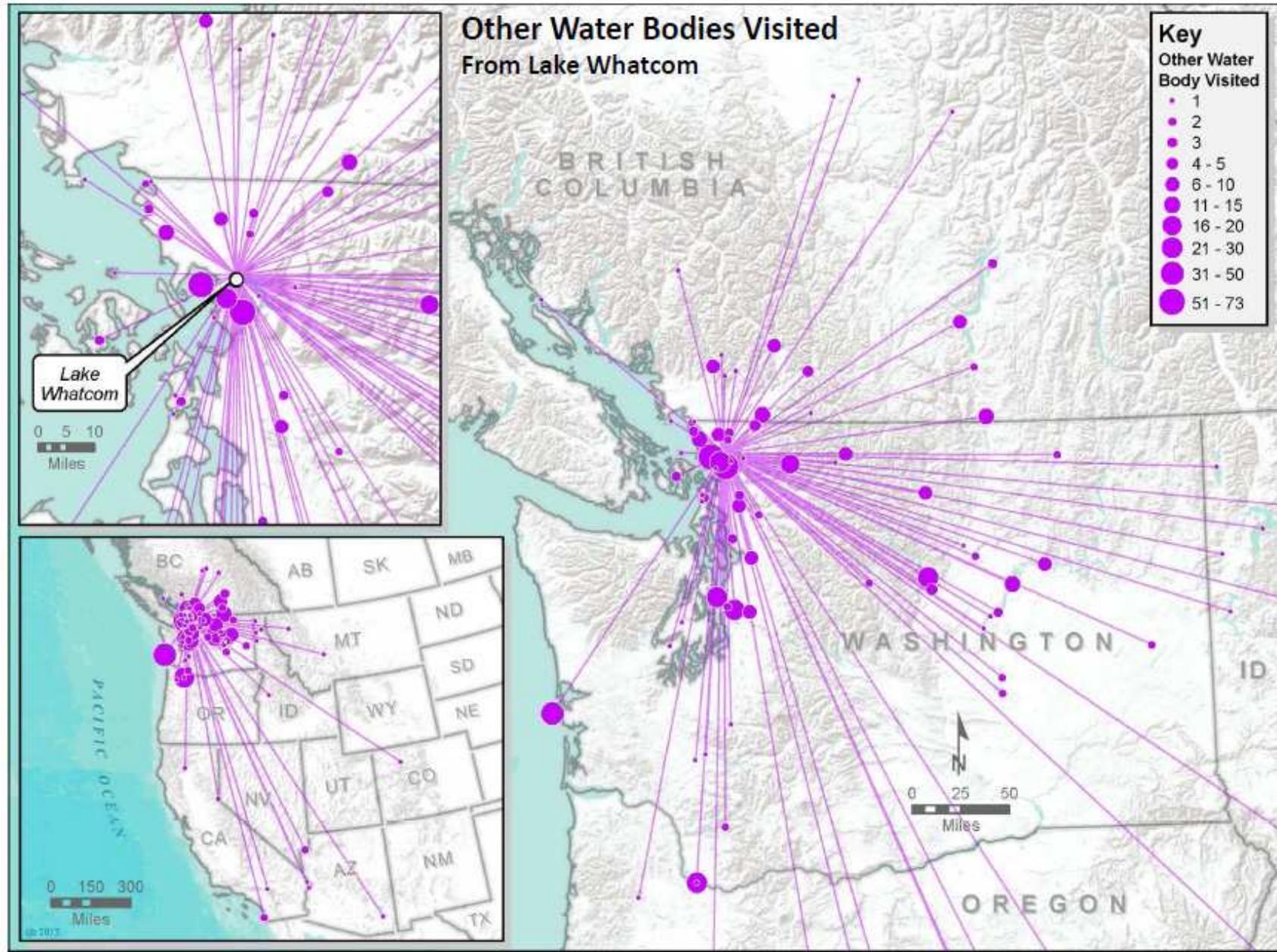
### Appendix D - Map of Last Waterbody Visited



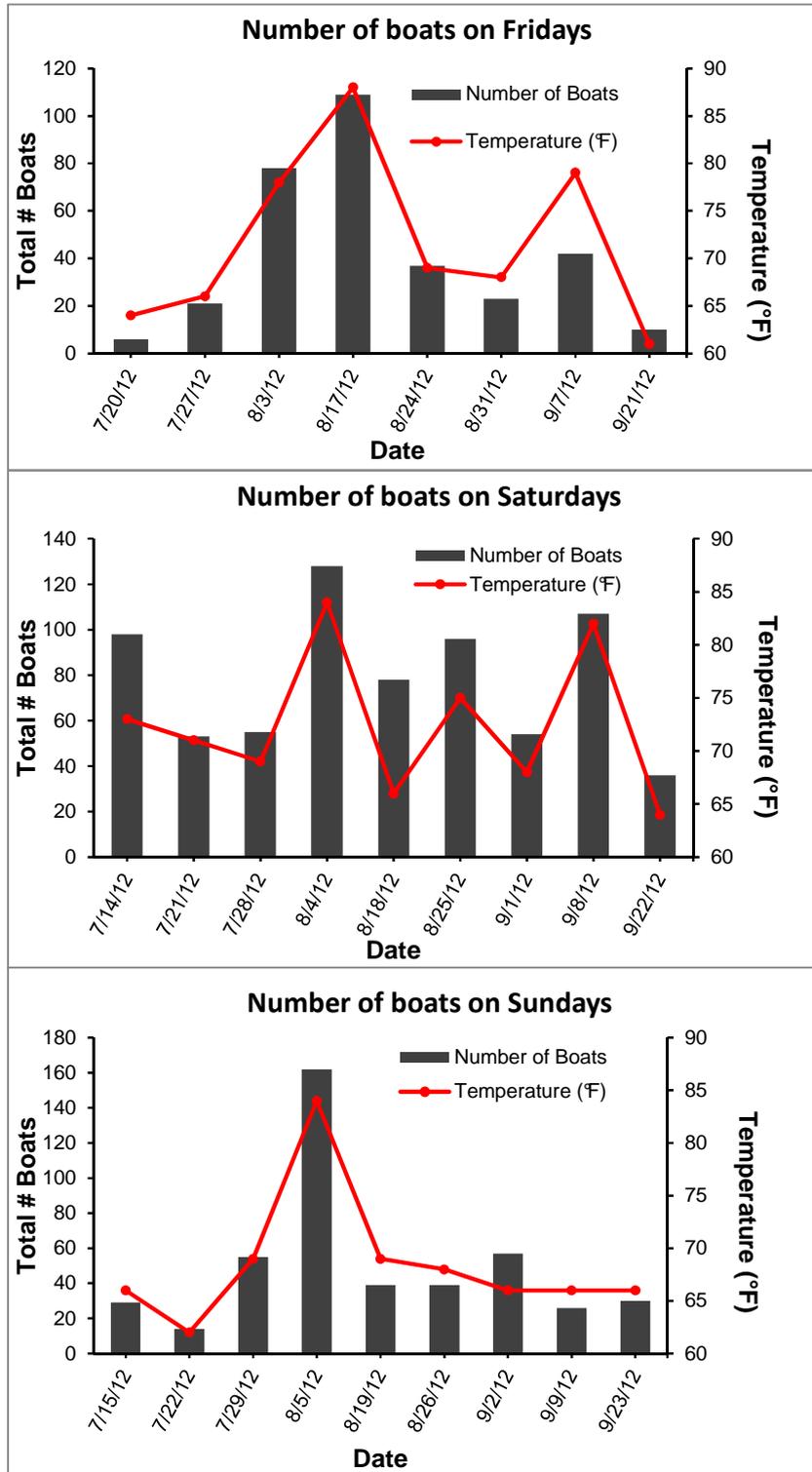
### Appendix E - Map of Next Waterbody Visiting



### Appendix F - Map of Waterbodies Visited in the Past

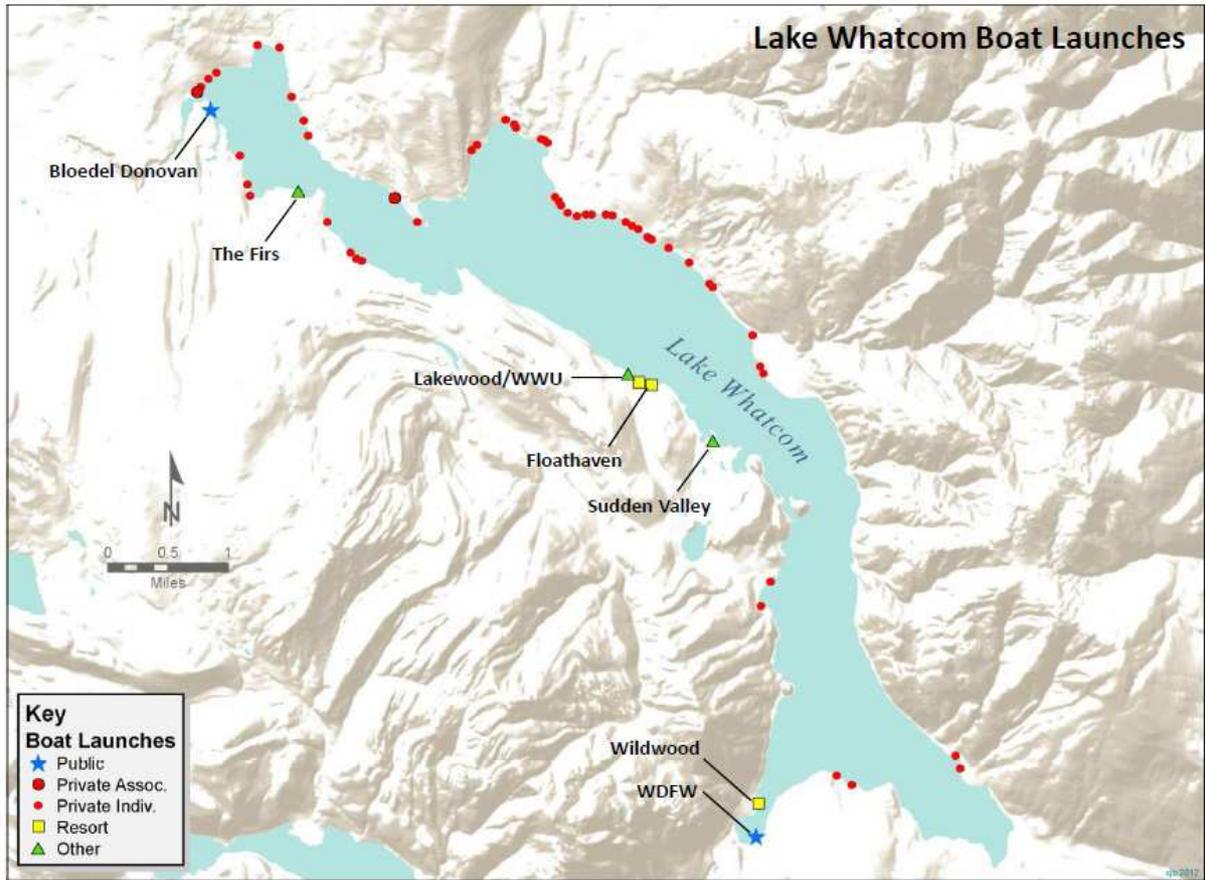


## Appendix G - Influence of Temperature by Day



Figures 11, 12, and 13: Influence of temperature on number of boats launching per day for Fridays, Saturdays, and Sundays.

## Appendix H - Map of Lake Whatcom Boat Launches



**Figure 14:** Location of Lake Whatcom Boat Launches. Red dots refer to private launches, blue stars refer to public launches (E.g. WDFW and Bloedel Donovan), yellow squares refer to resorts, and green triangles refer to all other quasi-public launches (E.g. Lakewood and Sudden Valley).

## Appendix I - Program Budget and Funding

On May 21, 2012 the City of Bellingham was awarded a grant for \$164,000 from the Puget Sound Partnership to fund Lake Whatcom aquatic invasive species prevention and monitoring efforts through June 30, 2013. The tables below outline program funding projections and potential funding sources for 2013-2014 (Tables 3-5).

**Table 3. Program Cost Estimates for 2013**

Program Characteristic	Cost Estimate 2013
AIS Inspection Staff (Staffing only)	\$107,520
Program Operations (infrastructure, equipment, supplies) Portable decontamination unit, gates, vehicle, signage,...	\$17,500 (vehicle) \$56,000 (PSP Grant)
Education and Outreach	\$39,000 (PSP Grant)
Early Detection and Monitoring	\$12,000 (PSP Grant)
<b>Total</b>	<b>\$232,020</b>
*This estimate does not include costs for Program Coordination and Management that are already being incurred by the City of Bellingham and Whatcom County.	

**Table 4. Potential Funding Sources**

Funding Source	2013 Pending
City of Bellingham	\$44,380 - \$57,820
LWWSD	\$50,000
Whatcom County	\$13,440 - \$26,880
Puget Sound Partnership Grant	\$107,000 - \$121,000
Program Fees	N/A
<b>Total</b>	<b>\$228,260 - \$242,260</b>

**Table 5. Potential Revenue for 2014 (Example Only)**

Type of Permit/Pass	Price	# Passes/Permits	Total Revenue
Annual Permit	\$50	900	\$45,000
Day Pass	\$20	750	\$15,000
<b>Total</b>		<b>1,650</b>	<b>\$60,000</b>

**Aquatic Invasive Species Program Contacts:**

City of Bellingham - Natural Resources  
Teagan Ward, 778-7972, [teward@cob.org](mailto:teward@cob.org)

Whatcom County Noxious Weed Board  
Laurel Baldwin, 715-7470, [LBaldwin@co.whatcom.wa.us](mailto:LBaldwin@co.whatcom.wa.us)