

Abstract

Many nonnative species were found around Lake Ozette. Notable invasive species include reed canarygrass and tapegrass which carpet portions of the shore and lakebed. Several species found were not previously recorded in the area and even more plants found were outside of their field guide distributions. Water lobelia and quillworts also inhabit this lake and now share substrate with invasive *Corbicula*. Possible effects of the invasive clams have already been observed.

Introduction

Lake Ozette is home to a diverse amount of aquatic and shore flora. One plant of interest is the sensitive and regionally rare water lobelia (Figure 1). This is due to the positively buoyant parenchyma cells of the water lobelia. In order to access the current plant diversity and rare plant conditions around the lake 100 m transects were done around the lake.

Methods and Materials

- GPS points of 100 m transects plotted on MapSource beforehand (Figure 2).
- Points found with GPS and surveyed by three people (wading from 0-.5m, snorkeling .5-.75m, snorkeling .75-1m)
- Plants seen, substrate, and abundance of *Corbicula* reported to wader and recorded on waterproof paper.
- Species identified by surveyors or with field guides at camp.



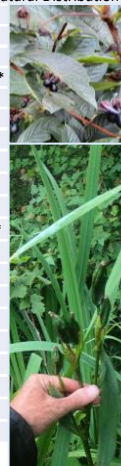
Figure 1. Floating water lobelia.

Results

- 51 species of plants were found in and around Lake Ozette. 8 of which did not match previously reported distributions (Table 1)(Cooke, 1997).
- 2 of the 8 had not been reported in the area before (English Ivy) (Acker and Olson, 2005).
- 11 of the 51 plants found are non-native (Cooke, 1997).

Above Water

Scientific Name	Common Name	Natural Distribution
<i>Alnus rubra</i>	Red Alder	N
<i>Chamaenerion anustifolium</i>	Fireweed	N
<i>Cornus sericea</i>	Red Osier Dogwood	N
<i>Hedera helix</i>	English Ivy	I***
<i>Mentha arvensis</i>	Field Mint	N
<i>Mentha spicata</i>	Spearmint	I*
<i>Physocarpus capitatus</i>	Pacific Ninebark	N
<i>Plantago major</i>	Broadleaf Plantain	I
<i>Polypodium glycyrrhiza</i>	Licorice Fern	N
<i>Potentilla palustris</i>	Purple Cinquefoil	N
<i>Ramnus purshiana</i>	Cascara Buckthorn	N**
<i>Rubus armeniacus</i>	Himalayan Blackberry	I
<i>Rubus laciniatus</i>	Evergreen Blackberry	I
<i>Solidago canadensis</i>	Canada Goldenrod	I
<i>Spiraea douglasii</i>	Douglas' spirea	N
<i>Thuja plicata</i>	Western Red Cedar	N
<i>Tsuga heterophylla</i>	Western Hemlock	N
Unknown Iridaceae	Iris	I
Unknown Salicaceae	Willow	N
<i>Vaccinium ovatum</i>	Evergreen Huckleberry	N



Sticking Out/In Contact with the Water

<i>Carex obnupta</i>	Slough Sedge	N
<i>Dulichium arundinaceum</i>	Three-way Sedge	N*
<i>Eleocharis palustris</i>	Spikerush	N
<i>Equisetum fluviatile</i>	Water Horsetail	N*
<i>Juncus bulbosus</i>	Bulbous Rush	I
<i>Menyanthes trifolita</i>	Buckbean	N
<i>Myrica gale</i>	Sweet Gale	N
<i>Phalavis arundinacea</i>	Reed Canarygrass	I
<i>Sagittaria cuneata</i>	Wapato	N
<i>Sparganium angustifolium</i>	Giant Bur-reed	N*
Unknown Carex	Sedge	



Floating Mat

<i>Brasenia schreberi</i>	Watershield	N
<i>Nuphar luteum</i>	Yellow Cow-lily	N
<i>Nymphaea odorata</i>	Fragrant Water Lily	I
<i>Polygonum amphibum</i>	Smartweed	N
<i>Potamogeton amplifolius</i>	Big-leaf Pondweed	N
<i>Potamogeton epihydrus</i>	Nuttall's Pondweed	N
<i>Potamogeton natans</i>	Broad-leaf Pondweed	N
<i>Potamogeton pusillus</i>	Small Pondweed	N
<i>Potamogeton richardsonii</i>	Richardson's Pondweed	N
<i>Potamogeton gramineus</i>	Grass-leaved Pondweed	N
<i>Vallisneria americana</i>	Tapegrass	I



Completely Submerged

<i>Elodea canadensis</i>	Common Waterweed	N
<i>Isoetes</i> sp.	Quillworts	N
<i>Lobelia dortmanna</i>	Water Lobelia	N
<i>Najas flexis</i>	Slender Water-nymph	N
Unknown Myriophyllum (not Eurasian)	Milfoil	N
Unknown Utricularia	Bladderwort	N*
<i>Vallisneria americana</i>	Tapegrass	I



Table 1. Scientific and common names of each plant found around Lake Ozette. Distribution of plant species (N=Native, I=Non-native, *=not found in one reference, **=not found in two or more references, ***=not previously reported).

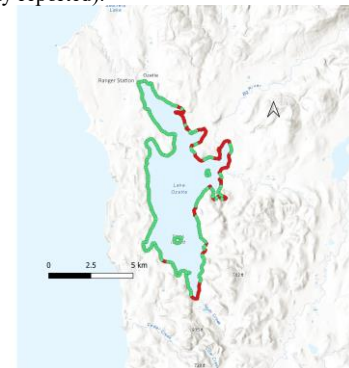


Figure 2. Map of survey points around Lake Ozette (Green=surveyed, red=skipped). Skipped points only mean that the transect was not able to be completed at that time due to substrate or shore conditions. Observations about some skipped points were still made.

Discussion

Water lobelia and quillworts were found bleached in conjunction with dead *Corbicula* shells in silty/sandy substrate. Although the population of water lobelia is high now if the bleaching is correlated with *Corbicula* the sensitive plants may be negatively affected in the future. Reed canarygrass seemed to overtake the sweet gale from behind as observed in decreasing abundance of reed canarygrass down the lake from N to S. Tapegrass was also distributed around the whole lake. It could have negative effects on native plants or the sockeye spawning grounds.

Conclusion

More research needs to be done to investigate these phenomena.

Work Cited

Acker, S. A., and Olson, Jr, R. W. (2005). *Vascular Plant Inventory of Coastal Bogs, Wetlands, and Lakeshores, Olympic National Park*, National Park Service U.S. Department of the Interior. http://olympicnationalparkvisitor.info/wp-content/uploads/2013/02/Plant_Inventory.pdf
 Cooke, S. S. (1997). *A Field Guide to the Common Wetland Plants of Western Washington & Northwestern Oregon*. Seattle Audubon Society.