

Lake Wilderness Citizen Advisory Committee

2018 Annual Report

October 2018

The Lake Wilderness Citizen Advisory Committee (LWCAC) presents the 2018 annual report on the aquatic plant management and lake stewardship activities for Lake Wilderness. The LWCAC is comprised of five Regular voting members and one or more Alternate members. The 2018 members include:



View From South Shore Looking North
Photo courtesy of Dave Barber

Paul Wichelmann, Chair

Paul Eaton, Vice Chair

Pat Anderson, Member

Linda McMonagle, Alternate Member #1

Laurie MacKenzie, Alternate Member #2

Sam Whitman, Member Representative,

King County Parks and Natural Resources

Diana Pistoll, City Member Representative

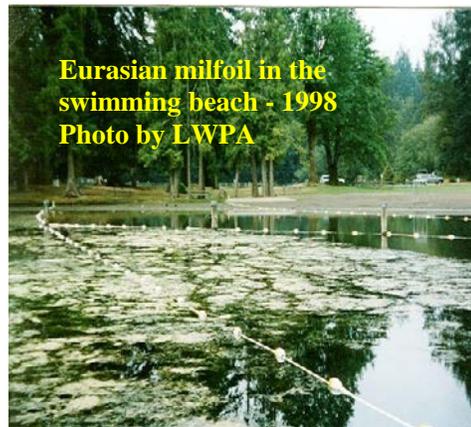


Eurasian milfoil
(*Myriophyllum spicatum*)

Background on Lake Wilderness Preservation Association (LWPA) and Lake Wilderness Citizen Advisory Committee (LWCAC).

In January 1994 Lake Wilderness shoreline property owners Patrick W. Anderson, Roger King, and Mac McMonagle formed the Lake Wilderness Preservation Association (LWPA), a volunteer group. They worked to gather community support from other property owners to manage an infestation of Eurasian milfoil (*Myriophyllum spicatum*) a noxious non-native aquatic plant. The LWPA members partnered with King County Surface Water Management Division and obtained a grant to develop the lake's first Integrated Aquatic Vegetation Management Plan (IAVMP) in 1997. The IAVMP, as updated in 2004, continues to guide the aquatic plant management options and actions for Lake Wilderness today, in accordance with the Washington State Department of Ecology Aquatic Plant and Algae General National Pollution Discharge Elimination System Permit. A survey conducted during the development of the original IAVMP revealed that Eurasian milfoil had spread rapidly and dominated the lake.

In 1998, LWPA members canvassed Lake Wilderness watershed residents to gather support for the City of Maple Valley's first special assessment district to fund the lake work long-term. The Lake Management District No. 1, established by a simple majority of watershed property owners, was formed in 1998 under Ordinance O-98-57. A whole-lake herbicide treatment was performed that same year which successfully eradicated Eurasian milfoil from the lake.



Eurasian milfoil in the swimming beach - 1998
Photo by LWPA

Pursuant to the creation of the special assessment district, a plant advisory board was to be established to oversee the annual work program for the lake. The LWPA informally fulfilled that role until 2002 when Maple Valley City Council adopted Resolution R-02-220 creating the Lake Management District Advisory Committee. The Lake Management District Advisory Committee terminated concurrently with the sunset of the special assessment district in 2006.

The current Lake Wilderness Citizen Advisory Committee was created by Council adoption of Resolution R-06-495 as amended by R-07-518, R-08-576, and R16-1073. The duties of the LWCAC are; 1) discuss with the city the annual work program for the lake; 2) provide input and suggestions regarding implementation of the annual work program; 3) work with the City in preparation of educational materials relative to the lake and surrounding watershed; 4) provide input to the city on the preparation of an annual report to the City Council, City Manager, and the LWPA regarding the progress on the work program and health of the lake; 5) support a public meeting on the contents of the annual report.

Background on Eurasian milfoil in Lake Wilderness

Following the discovery of Eurasian milfoil in 1994, and the subsequent whole-lake Sonar treatment in 1998 that successfully eradicated it, the lake remained free of Eurasian milfoil for several years. However, it was found again in the fall of 2002 and was subsequently treated with aquatic herbicides in the summer of 2003. Small infestations of milfoil were found in the lake during the summers of 2005, 2006, and again in years 2008 through 2018. Typically these plants have been located in the shallow southwest bay and boat launch bay, along the western residential shoreline, in the swimming bay and on occasions up near the Lake Wilderness Lodge shoreline. Once established in the lake Eurasian milfoil propagates by plant fragments as well as rhizomes, and although it produces seeds, propagation by seed is considered less common.

King County reports that Eurasian milfoil is widespread throughout King County in lakes that closely follow the I-5 corridor. Eurasian milfoil can be spread from lake to lake by plant fragments on boats, boat trailers and fishing gear. With the public boat launch on Lake Wilderness the reintroduction of Eurasians milfoil is somewhat expected. Ongoing surveys are a critical element in identifying and controlling this invasive noxious weed and also important as a tool for early identification of new infestations of other invasive weeds or pests such as Brazilian elodea or New Zealand mud snails.

Two professional Eurasian milfoil surveys are conducted each year in Lake Wilderness. The LWPA also conducts two volunteer Eurasian milfoil patrols which are typically done over a two week period in advance of the professional surveys. The LWPA volunteers continue to play an active role in outreach and prevention. They provide and staff a booth at the annual fishing derby, over a 24 hour period, to inspect every boat and trailer for plant fragments before it enters the lake. Volunteers greet derby participants and discuss the importance of cleaning equipment and fishing gear. They also provide educational information and offer anglers free hot refreshments.

Background on Nuisance Native Aquatic Plants



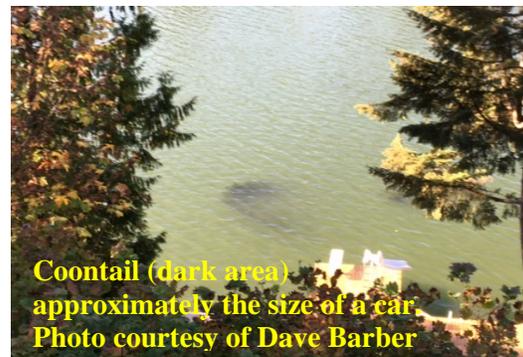
Under favorable conditions, some native pondweed has a tendency for robust growth in the lake's shallow coves and shorelines. It can reach nuisance levels forming dense mats on the lake's surface which can pose a hazard to swimmers and anglers. Herbicide treatments to address nuisance levels of pondweed have been implemented in years 2001, 2004, 2006, 2008, 2009, 2010, 2012 and 2014 through 2018.

The LWPA volunteer patrol has been tracking the growth of the Big leaf pondweed since it was identified in the boat launch bay about five years ago. Big leaf pondweed has established colonies along the western, southern, and eastern shoreline. Shoreline property owners have expressed concern that it will soon dominate the entire shoreline. Big leaf pondweed is a beneficial native plant providing excellent habitat for fish and insects; however, it can exhibit rapid early growth achieving nine feet in length as early as May and twenty feet in length during favorable seasonal conditions. It forms thick mats of floating leaves on the lake surface. Action to reduce the biomass of Big leaf pondweed is addressed below under *2018 Aquatic Plant Surveys*.



Since 2014 LWPA volunteers have identified Coontail (*Ceratophyllum demersum*) as another aquatic plant they've put on their "watch" list. Coontail is a native underwater rootless perennial plant that forms dense colonies that freely float slightly below or on the surface. It can be confused with Eurasian milfoil and likewise can be very invasive. It can pose a risk to swimmers and can be a hindrance

to fishing and boating. The LWPA have observed that Coontail colonies have been rapidly expanding around the lake. They can grow into large floating masses as seen in the photo above which is approximately the size of a car as shown in the photo on the right.



2018 Aquatic Plant Surveys

AquaTechnex, LLC, the city's aquatic plant management vendor, conducted surveys on Lake Wilderness on May 22nd and September 24th in 2018. Aquatic biologists conducted a visual systematic survey, by boat and with the use of an underwater drone, of the aquatic plant community along the lake shorelines. They also take rake-toss samples at 5, 10, 15, and 20 foot contours along transects perpendicular to the shoreline at regular intervals

Lake Wilderness Survey 5-22-18



around the lake. The LWPA Volunteer Patrol surveyed over several week period preceding the professional surveys. The LWPA volunteer milfoil patrol participants were Bill Hatters, Charles Benedict, Pat Anderson, Dave Barber and Paul Wichelmann.

During the spring 2018 surveys, AquaTechnex and the LWPA found two areas with Eurasian milfoil plants as depicted by red stars on the map on the left. The Eurasian milfoil plants were located in

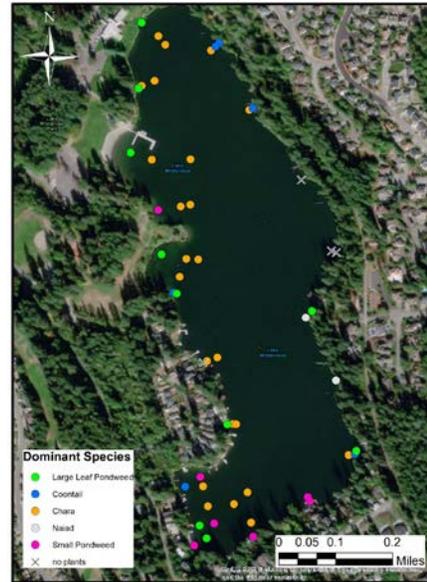
the bay north of the boat launch and on the south residential shoreline. Numerous areas were identified where native Big leaf pondweed and Elodea canadensis had reached nuisance levels by mid-May that adversely impacted beneficial use of the lake in designated high-use zones. The Eurasian milfoil plant in the bay by the boat launch has hand harvested by AquaTechnex and the plant on the southern shore was in the herbicide treatment zone.

The map on the right shows locations where certain native plants are dominate.

AquaTechnex 2018 Survey and Treatment Report can be viewed at

<http://www.maplevalleywa.gov/departments-services/public-works/about-our-lakes>

Lake Wilderness Survey 9-24-18



2018 Aquatic Plant Control Recommendation and Actions



Suggested Treatment Areas, June 2018

An herbicide treatment was recommended and supported by the LWCAC to knock back the nuisance Big leaf pondweed and Elodea. Treatment was done on June 4, 2018 in the tan areas shown on the map on the left. A mix of the contact herbicides Endothall and Diquat Dibromide, both effective on Eurasian milfoil and Big leaf pondweed and Elodea. Washington State Designated Swim Area Guidelines, recommend removal of underwater obstructions, including aquatic plants, in designated swimming areas as part of their state-wide effort to reduce drowning incidents. Public notices by mailing, and shoreline

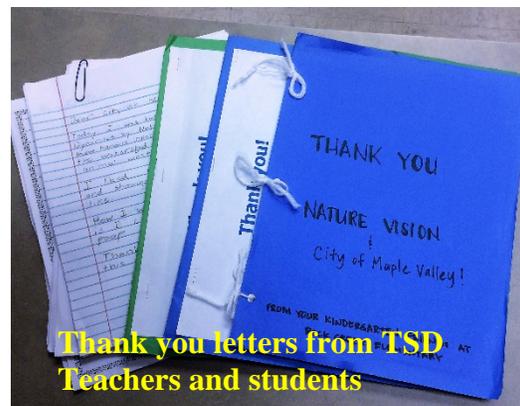
postings, as required under the Washington State Department of Ecology permit, were completed in advance of the treatment. Subsequent late season surveys by AquaTechnex and the LWPA Volunteer milfoil patrol found no Eurasian milfoil and a reduction in the pondweed biomass.

Lake Wilderness CAC 2018 Work Plan

In 2018 the LWCAC approved agendas and meeting minutes at four meetings. They also took action to approve the aquatic plant management control recommendations for Lake Wilderness in 2018. Education outreach activities in 2018 included the following:

- Staffing the booth with LWPA volunteers at the boat launch at the Annual Fishing Derby to hand out education material and inspect boats, trailers and equipment for plant fragments.
- LWPA volunteers performed two shoreline litter clean-ups.
- Between September 2017 and June 2018,

Nature Vision, an award winning non-profit environmental education firm provided classroom workshops on watershed education to 1,057 Tahoma School District (TSD) Elementary School children. The LWCAC took action to use the annual education budget to ramp up watershed education efforts. By the City contracting with Nature Vision these programs can be offered to TSD at no charge. The photo to the right shows a



large stack of thank you letters that students and teachers provided to express their appreciation to Nature Vision and the City of Maple Valley for providing these valuable programs. Many teachers expressed interest in seeing these programs continue.

Other Lake Wilderness Programs



Paul Wichelmann preparing to sample

Volunteer Water Monitoring

The volunteer water quality monitoring program for Lake Wilderness dates back to 1974 when volunteers from the community were trained to collect water samples and coordinate data collection and evaluation with staff from the Metropolitan Municipality of Seattle (METRO) Small Lakes Program. In 1995, following METRO's merge with King County, data collection and evaluation responsibilities transferred to the King County Lake Stewardship program (now the Department of Natural Resources and Parks). The program was then funded by the Wastewater Treatment Fund. In 2004 budgetary constraints resulted in those funds being diverted to another priority and King County notified cities that they could no longer fund the volunteer water quality monitoring program for lakes. The City of Maple Valley through Interlocal Agreements with King County began funding the program in 2005.

Volunteer water monitors receive training and equipment from King County. Volunteers measure daily precipitation and lake water levels, surface water temperatures, Secchi transparency, and depth profiles. The program covers a total of twelve sampling events throughout the growing season with routine measurements for concentrations of total phosphorus, total nitrogen, chlorophyll-*a*, soluble reactive phosphorus, nitrate, pH, alkalinity and water color. Volunteers collect samples and coordinate with King County staff for the laboratory analysis.



The Trophic State Index (TSI) is an index that classifies waterbodies based on the total weight of biomass at the time of measurement. The index applies a scale of zero to one hundred based on the summer mean values of three commonly measured lake parameters; Secchi depth, total phosphorus, and chlorophyll-*a*, as indicators of a lake’s biomass. Lake Wilderness is considered moderate (mesotrophic) in primary productivity and low (oligotrophic) in Secchi transparency which means that the lake water is very clear. The Volunteer Monitoring Program results indicate water quality in Lake Wilderness is good and phosphorus levels appear to be trending downward.

In 2018 volunteer water monitors were Paul Wichelmann, Dan Tift, and Renato Santos which Charles Benedict as backup. The final 2018 report water monitoring reports from King County, which are anticipated in early 2019, will be posted on the City website once received.

Swimming Beach Monitoring



Lake Wilderness swimming beach bacteria monitoring program began in 2008. The program monitors for fecal coliform, a bacteria indicator of human health risk which can be an indicator of sewage pollution. In 2018, nineteen samples were drawn from Lake Wilderness swimming beach mid-May through mid-September by King County Lake Stewardship scientific staff.

The swimming beach program follows the Low levels of fecal coliform of 50 CFU/100ml (colony forming units per 100 milliliter) are commonly found in water with high quality water. Under the swimming beach program when a single sample exceeds 1000 CFU/100ml, or a geometric mean of five consecutive samples exceeding 200 CFU/100ml, triplicate resampling is done to rule out error. If resampling confirms no error, beach closure would be recommended to the city by the Department of Public Health.

Ten State Standard for fecal coliform bacteria.

Fecal Coliform Value	Concern Level
Individual value < 200 CFU/100 ml	Low Concern - safe for swimming
Individual value \geq 200 & < 1000 CFU/100 ml	Moderate Concern – still safe for swimming
Individual value \geq 1000 CFU/100 ml or geometric mean \geq 200 CFU/100 ml	High Concern – flagged for resample and closure recommended if substantiated

In 2018, two high fecal counts on August 6th and August 27th, of 960 CFU/100 ml and 1,000 CFU/100 ml respectively, resulted in a triplicate resample, however, results came back considerably lower in the moderate range where it was safe to swim. Five other sampling events were also of moderate concern, however, still safe for swimming. Online data can be viewed at <https://green2.kingcounty.gov/swimbeach/default.aspx>

Cyanobacteria Blooms

No visible scum formations have been observed in Lake Wilderness and visually the water column appears clear as of this report date; October 16, 2018, however, the fall lake turnover has been associated with Cyanobacteria blooms in Lake Wilderness on some occasions over the years. The Parks and Recreation maintenance staff will be watchful for bloom scum formations and will be prepared to sample and post as needed.

Cyanobacteria, formerly known as blue-green algae, are naturally occurring in nature and under certain conditions can bloom causing clear water to appear cloudy and green, blue-green, brown or red. Cyanobacteria can produce toxins that pose health risks to humans and animals. Not all blooms product toxins, however, the only way to tell whether toxins are present is to have samples pulled and analyzed for toxicity by a laboratory. Cyanobacteria can be suspended in the water column giving the lake a green pea-soup appearance. However, as it floats to the lake surface it can form ribbons of scum that can be blown about the lake from shoreline to shoreline. Washington State Department of Ecology Freshwater Algae Control Program provides for free cyanobacteria toxicity testing for Washington's freshwater lakes when visible scum formations are detected. The funds are finite and can be depleted depending on state-wide bloom activity, at which time Maple Valley would fund the toxicity testing.

Historical toxic bloom data for Lake Wilderness and other area lakes can be found at the Northwest Toxic Algae website at <https://www.nwtoxicalgae.org/>



End of Report