

Smith Lake: Arguments for Preservation

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Introduction

Smith Lake is a unique natural feature within the city of Olympia and should be preserved in its current natural state.

Setting

Smith Lake is located in Section 32, Township 18 North, Range 1 West, Thurston County, north of Yelm Highway, east of Wiggins Road, and west of the Chehalis-Western Trail. Refer to Figure 1. The lake lies in a drainage basin of approximately 67 acres and has a surface area averaging roughly 16 acres³. Maximum depth is around 10 feet, and recreation is limited to wildlife observing with limited opportunity for canoeing and kayaking.

Jurisdiction and Ownership

Smith Lake and its surrounding wetlands were annexed to the City of Olympia in 2006. About 70% of the lake itself is included in three parcels owned by Blackbird Smith Lake LLC, a Seattle real estate developer. These parcels are undeveloped, total 49 acres, and wrap around the lake on its north, east, and west sides.⁴ Approximately 25% of the lake is owned by the Shana Park Homeowners Association (SPHA). The remaining 5% is owned by Thurston County Parks and Recreation and two homeowners belonging to SPHA. Only twelve residential properties have been developed on Smith Lake, all on the south side.

Natural History and Classification

Smith Lake, like most Thurston County lakes, was formed during the last glacial episode, the Vashon stade of the Frazer Glaciation. The glacier left an expansive region of drift material that contained isolated masses of ice. These ice masses may have persisted for centuries, but they eventually melted leaving water-filled pits. Smith Lake is one of these: a “pit” or “kettle lake⁵.” In modern times the lake surface reached an elevation of about 194 feet above mean sea level. When inflow caused it to rise higher, water spilled over the southwest bank and flowed in a northwesterly direction⁶. A youth camp was allegedly once located on the southwest shore, close to present-day Viewridge Drive. But in 1949 the lake changed significantly. The 6.7 magnitude Olympia earthquake reduced inflow from natural springs, and lowered lake level about six feet. Now no surface streams enter the lake, and inflow is entirely from rainfall, groundwater, and runoff. Because there is no surface outflow, Smith Lake is classified by limnologists as an “endorheic” lake⁷. Such a lake is a closed system; its level is maintained only when precipitation, evaporation, and groundwater exchanges remain in delicate balance.

Flora and Fauna

The Smith Lake is surrounded by a mixed forest and palustrine emergent wetlands. The forest is dominated by Douglas fir, western red cedar, western hemlock, and big leaf maple; some specimens are magnificent with diameter at breast height of 4 feet or more. Tall Oregon ash grow near the water; red alder and Indian plum are prominent under the canopy. Major shrubs include spirea, salmonberry, and salal. The understory also includes sword fern and lady fern, while the emergent areas contain sedges and yellow pond-lily.

The area is a nesting and feeding habitat and migration corridor for wide variety of birds, including duck (11 species), sparrow (5 species), warbler (4 species), woodpecker (3 species), and owl (3 species). Great blue herons hunt regularly, and there is a nesting family of bald eagles. The lake and its surroundings are home to many species of amphibians and mammals, including salamanders (2 species), frogs (two species), and newts. Mammals include bats, shrews, weasels, muskrats, deer, and coyotes. An occupied beaver lodge is located off the southwest shore, and beavers can be seen at dawn and dusk towing cuttings from the west end of the lake to their home. River otters are occasional visitors.

We have compiled a table of our wildlife observations on and near the lake⁸. This table is included as Appendix A. It contains 95 bird species including three (white-breasted nuthatch, Vaux's swift, and pileated woodpecker) that are Candidates for Washington State Listing and an additional six that are Priority Species in Thurston County. The bald eagle is a Federally-Protected Species of Concern.

Environmental Health

Water can only be lost from endorheic lakes by evaporation or percolation, so pollutants can gradually build up. Most endorheic lakes occur in arid or semi-arid climates; they are naturally saline or are polluted from human activities, limiting the quantity and variety of wildlife they can support⁹.

Certain plants and animals called "indicator species" are often associated with the overall health of an environment. Smith Lake has well-established populations of a number of indicator species. For example, the lake has a thriving population of pied-billed grebes. These water birds are particularly sensitive to pollution, to loss of their wetland habitat, and to human disturbance. This has resulted in their serious decline or extinction in six New England states. Appendix B provides more information on the pied-billed grebe¹⁰. Other animals whose presence at Smith Lake reflects a healthy environment include damselflies, salamanders, bats, and river otters.

Smith Lake is surrounded by wetlands and by a belt of forest 150 feet to over 300 feet wide¹¹. This forest is a natural buffer zone for the lake and its wetland and, if left undisturbed, will continue to function as such. It also provides wildlife with irreplaceable shelter and food, and is a shield from artificial light and noise. For example, great blue heron and beaver need a disturbance-free buffer zone of more than 300 feet for successful feeding¹².

An environmental survey in 1998 concluded, “This is a high quality wetland because of its large size, forested buffers, connection to upland habitat, variety of vegetation classes, and extended period of ponding.”¹³ The health of Smith Lake has evidently not declined since this survey; indeed, the variety of wildlife is greater now than that reported 23 years ago. In our opinion the Smith Lake wetlands will be classified as Category I when examined by independent scientists using the Washington State Department of Ecology’s current wetland rating system¹⁴.

Value to the Public

The Chehalis-Western Trail (CWT) adjoins the developer’s property immediately to the east of Smith Lake. Just south of his property, on land held by Thurston County Parks and Recreation, the Rotary Club of Lacey has built a short gravel-and-dirt trail through the woods. The trail connects the CWT to a platform overlooking the lake. Here benches provide opportunity for quiet relaxation and observing the abundant wildlife of the lake and wetland.

Uniqueness

Only seven freshwater lakes lie within the City of Olympia. All of them have some development near their shores, but Smith Lake is the least developed¹⁵. Few lakes in Thurston County are likely to have attributes comparable to those of Smith Lake: unique natural history, little existing development, high environmental quality, charismatic wildlife, and access from a popular urban trail.

Conclusion

In spite of its many unique qualities, Smith Lake is highly vulnerable to new development. The Friends of Smith Lake believe the lake and its wetlands and woodlands should be permanently preserved in their present state. If you share our goal, please consider partnering with us to protect this valuable local resource.

Notes

¹ Warren Devine is a Senior Scientist (retired), Science Applications International Corporation. He served the Oak Ridge National Laboratory in site development planning and buffer zone determination for hazardous facilities on the U.S. Department of Energy's Oak Ridge Reservation in Tennessee.

² Friends of Smith Lake is an informal group interested in Smith Lake and its preservation.

³ Thurston County Water and Waste Management Storm and Surface Water Project. "Smith Lake Flood Level Mitigation and Feasibility Report." January 1999.

⁴ Thurston County Geodata Center, www.geodata.org, 2021.

⁵ Kruckeberg, Arthur R. The Natural History of Puget Sound Country. University of Washington Press, 1991.

⁶ Thurston County Storm and Surface Water Program. "Chambers/Ward/Hewitt Comprehensive Drainage Basin Plan." July 1995.

⁷ Cole, Gerald R. and Paul E. Weihe. Textbook of Limnology, Fifth Edition. Waveband Press, 2016.

⁸ Personal observations, 1996-2021, by wildlife biologist Cindy Levy, the authors, and numerous residents of Viewridge Drive. Information under status heading is from Washington Department of Fish and Wildlife "State Candidate Species" Revised February 2020, and "Priority Habitat and Species List" Revised February 2021. Priority species require protective measures to ensure their survival due to their population status or sensitivity to habitat alteration.

⁹ United Nations Environmental Program. "Endorheic Lakes: Water Bodies That Don't Flow to the Sea." Archived September 2007.

¹⁰ Beans, B.E. and L. Niles, eds. Endangered and Threatened Wildlife of New Jersey. Rutgers University Press, 2003, updated 2010.

¹¹ Measurements by authors using GIS.

¹² Zeigler, Robert, wetland biologist. Washington Department of Fish and Wildlife. "Wetland Systems." Undated report.

¹³ Swan Resource Company. "Wetland Report for the Smith Lake Property." May 1998.

¹⁴ Washington State Department of Ecology. "Wetland Rating System for Western Washington: 2014 Update (Effective January 2015)." Publication number 14-06-029. October 2014.

¹⁵ Various maps and visits to lakes by the authors.



Figure 1. Smith Lake area. The Shana Park, Demarie Park, and Woodsmuir neighborhoods lie south and west of the lake. Three thin black lines delineate property proposed for development. The eastern boundary of this property is former railroad right-of-way now held by Thurston County Parks and Recreation for the Chehalis-Western Trail, shown in red. The Rotary Trail leads to a platform overlooking the lake.

Appendix A. Smith Lake Wildlife Observations

Amphibians

Common name	Scientific Name	Status
Bullfrog	<i>Rana catesbeiana</i>	
Frog, chorus (Pacific treefrog)	<i>Pseudacris regilla</i>	
Newt, rough-skinned	<i>Taricha granulosa</i>	
Salamander, long-toed	<i>Ambystoma macrodactylum</i>	
Salamander, northwestern	<i>Ambystoma gracile</i>	

Birds

Blackbird, Brewer's	<i>Euphagus cyanocephalus</i>	
Blackbird, red-winged	<i>Agelaius phoeniceus</i>	
Bluebird, western	<i>Sialia mexicana</i>	
Bushtit	<i>Psaltriparus minimus</i>	
Chickadee, black-capped	<i>Parus atricapillus</i>	
Chickadee, chestnut-backed	<i>Poecile rufescens</i>	
Coot, American	<i>Fulica americana</i>	
Cormorant, double-crested	<i>Phalacrocorax auritus</i>	
Creepers, brown	<i>Certhia americana</i>	
Crossbill, red	<i>Loxia curvirostra</i>	
Crow, American	<i>Corvus brachyrhynchos</i>	
Dove, rock	<i>Columba livia</i>	
Duck, bufflehead	<i>Bucephala albeola</i>	Thurston Co. Priority Species
Duck, gadwall	<i>Anas strepera</i>	
Duck, hooded merganser	<i>Lophodytes cucullatus</i>	Thurston Co. Priority Species
Duck, lesser scaup	<i>Aythya affinis</i>	
Duck, mallard	<i>Anas platyrhynchos</i>	
Duck, northern shoveler	<i>Anas clypeata</i>	
Duck, ring-necked	<i>Aythya collaris</i>	
Duck, ruddy	<i>Oxyura jamaicensis</i>	

Duck, wood	<i>Aix sponsa</i>	Thurston Co. Priority Species
Eagle, bald	<i>Haliaeetus leucocephalus</i>	Federally Protected Species of Concern
Finch, Cassin's	<i>Carpodacus cassinii</i>	
Finch, house	<i>Carpodacus mexicanus</i>	
Finch, purple	<i>Carpodacus purpureus</i>	
Flicker, northern	<i>Colaptes auratus</i>	
Flycatcher, olive-sided	<i>Contopus cooperi</i>	
Flycatcher, Pacific slope	<i>Empidonax difficilis</i>	
Goldeneye, common	<i>Bucephala clangula</i>	Thurston Co. Priority Species
Goldfinch, American	<i>Carduelis tristis</i>	
Goldfinch, lesser	<i>Carduelis psaltria</i>	
Goose, Canada	<i>Branta canadensis</i>	
Grebe, pied-billed	<i>Podilymbus podiceps</i>	
Grosbeak, black-headed	<i>Pheucticus melanocephalus</i>	
Grosbeak, evening	<i>Coccothraustes vespertinus</i>	
Gull, herring	<i>Larus argentatus</i>	
Harrier, northern	<i>Circus cyaneus</i>	
Hawk, Cooper's (sharp-shinned)	<i>Accipiter cooperii</i>	
Hawk, red-tailed	<i>Buteo jamaicensis</i>	
Heron, black-crowned night	<i>Nycticorax nycticorax</i>	
Heron, great blue	<i>Ardea herodias</i>	Thurston Co. Priority Species
Heron, green-backed	<i>Butorides virescens</i>	
Hummingbird, Anna's	<i>Calypte anna</i>	
Hummingbird, rufous	<i>Selasphorus rufus</i>	
Jay, Steller's	<i>Cyanocitta stelleri</i>	
Junco, dark-eyed	<i>Junco hyemalis</i>	
Kestrel, American	<i>Falco sparverius</i>	
Killdeer	<i>Charadrius vociferus</i>	
Kingfisher, belted	<i>Megaceryle alcyon</i>	
Kinglet, golden-crowned	<i>Regulus satrapa</i>	

Kinglet, ruby-crowned	<i>Regulus calendula</i>	
Martin, purple	<i>Progne subis</i>	
Nuthatch, red-breasted	<i>Sitta canadensis</i>	
Nuthatch, white-breasted	<i>Sitta carolinensis</i>	Candidate for State Listing
Oriole, Bullock's	<i>Icterus bullockii</i>	
Owl, barred	<i>Strix varia</i>	
Owl, great horned	<i>Bubo virginianus</i>	
Owl, western screech	<i>Megascops kennicottii</i>	
Phalarope, Wilson's	<i>Phalaropus tricolor</i>	
Pigeon, band-tailed	<i>Patagioenas fasciata</i>	Thurston Co. Priority Species
Rail, Virginia	<i>Rallus limicola</i>	
Raven, common	<i>Corvus corax</i>	
Robin, American	<i>Turdus migratorius</i>	
Sapsucker, red-breasted	<i>Sphyrapicus ruber</i>	
Siskin, pine	<i>Carduelis pinus</i>	
Sparrow, fox	<i>Passerella iliaca</i>	
Sparrow, house	<i>Passer domesticus</i>	
Sparrow, savannah	<i>Passerculus sandwichensis</i>	
Sparrow, song	<i>Melospiza melodia</i>	
Sparrow, white-crowned	<i>Zonotrichia leucophrys</i>	
Starling, European	<i>Sturnus vulgaris</i>	
Swallow, barn	<i>Hirundo rustica</i>	
Swallow, tree	<i>Tachycineta bicolor</i>	
Swallow, violet-green	<i>Tachycineta thalassina</i>	
Swan, trumpeter	<i>Cygnus buccinator</i>	
Swift, Vaux's	<i>Chaetura vauxi</i>	Candidate for State Listing
Tanager, western	<i>Piranga ludoviciana</i>	
Teal, green-winged	<i>Anas crecca</i>	
Thrush, hermit	<i>Catharus guttatus</i>	
Thrush, Swainson's	<i>Catharus ustulatus</i>	

Thrush, varied	<i>Ixoreus naevius</i>	
Towhee, spotted	<i>Pipilo maculatus</i>	
Warbler, black-throated gray	<i>Dendroica nigrescens</i>	
Warbler, hermit	<i>Dendroica occidentalis</i>	Partners-in-Flight Species at Risk
Warbler, orange-crowned	<i>Vermivora celata</i>	
Warbler, yellow-rumped	<i>Dendroica coronata</i>	
Waxwing, cedar	<i>Bombycilla cedrorum</i>	
Wigeon, American	<i>Anas americana</i>	
Wood peewee, western	<i>Contopus sordidulus</i>	
Woodpecker, downy	<i>Picoides pubescens</i>	
Woodpecker, hairy	<i>Picoides villosus</i>	
Woodpecker, pileated	<i>Dryocopus pileatus</i>	Candidate for State Listing
Wren, Bewick's	<i>Thryomanes bewickii</i>	
Wren, marsh	<i>Cistothorus palustris</i>	
Wren, house	<i>Troglodytes aedon</i>	

Mammals

Beaver	<i>Aplodontia rufa</i>	
Chipmunk, Townsend	<i>Tamias townsendii</i>	
Coyote	<i>Canis latrans</i>	
Deer, mule (black-tailed)	<i>Odocoileus hemionus</i>	
Mouse, house	<i>Mus musculus</i>	
Muskrat	<i>Ondatra zibethicus</i>	
Opossum, Virginia	<i>Didelphis virginiana</i>	
Otter, river	<i>Lontra canadensis</i>	
Raccoon	<i>Procyon lotor</i>	
Skunk, striped	<i>Mephitis mephitis</i>	
Squirrel, Douglas	<i>Tamiasciurus douglasii</i>	
Weasel, long-tailed	<i>Mustela frenata</i>	

Appendix B. The pied-billed grebe

The pied-billed grebe is arguably the quintessential inhabitant of a healthy wetland. Smith Lake has long had a breeding population of these small birds, whose unusual calls are striking to even casual visitors. Pied-billed grebes are diving birds, and spend nearly all their time on the water. Breeding sites are floating platforms on fairly open water of depths 1 to 6 feet, interspersed with submerged or floating aquatic vegetation and dense emergent vegetation.

Pied-billed grebes are extremely sensitive to human disturbance, particularly during incubation. Intruders can cause adults to spend a prolonged period of time away from the nest, leaving the eggs vulnerable to weather and predators. Boating activity near nest sites can disturb breeding grebes and destroy nests through wave action. Since grebes have just one brood per year, a single disturbance can affect the local population.

Habitat destruction and degradation resulting from the draining, dredging, filling, siltation, and pollution of wetlands are the greatest threats facing the pied-billed grebe population. Palustrine emergent wetlands like those of Smith Lake is one of the most threatened wetland types in the United States. Changes in hydrology may render breeding sites unsuitable or may destroy nests through flooding. Contamination from hardscape runoff, pesticides, and herbicides threaten pied-billed grebes and the aquatic organisms upon which they feed. Pesticides that can be lethal to pied-billed grebes may leach from lawns, gardens, and farmlands into nearby wetlands. Grebes are highly susceptible to oil toxicosis and may die if impacted by a spill.

Pied-billed grebes tend to nest in low numbers throughout their entire range. This, coupled with wetland degradation and loss, has resulted in a very small local populations. The species is declining throughout New England. In Massachusetts, Connecticut and New Hampshire grebes are classified as endangered; Vermont lists the pied-billed grebe as a species of special concern; New Jersey considers the pied-billed grebe to be critically imperiled; and Rhode Island believes it to be locally extinct. Fortunately grebes are still somewhat common in the Puget Sound area, although there is evidence of recent declines.