

Register of Natural Areas Recommendation



Site: Shadow Lake Bog

County: King, Township 22 North, Range 06 East, Section 07 S ½

Acres: approximately 20 acres

Site Description: The proposed registry site is located in south King County approximately eight miles east of the city of Kent. It lies just west of Shadow Lake. Historically the bog extended to the shoreline of the lake but a road now extends along the eastern edge of the bog, separating it from the lake. The site is within the Puget lowlands in unincorporated King County in a somewhat rural but developing area of the county. The site contains a moderately sized bog woodland on the northwest shore of Shadow Lake. The area of interest includes a mosaic of late-successional bog forest with earlier successional bog woodland. The bog woodland has an open canopy of western hemlock (*Tsuga heterophylla*), with sporadic occurrences of western white pine (*Pinus monticola*), western red cedar (*Thuja plicata*), and Douglas-fir (*Pseudotsuga menziesii*). Tall and vigorous bog Labrador tea (*Ledum groenlandicum*) and bog laurel (*Kalmia microphylla*) dominate the understory. Peat moss (*Sphagnum spp*) dominates the ground layer. The bog forest has very little understory except for continuous a carpet and hummocks of moss (mostly feather mosses, including dominant *Hylocomium splendens* and *Pleurozium schreberi*). There are also scattered *Sphagnum* patches where enough light reaches the peat surface. Western hemlock dominates, with western red cedar and Sitka spruce (*Picea sitchensis*) present. The understory shrubs are sparse with scattered salal (*Gaultheria shallon*) and red huckleberry (*Vaccinium parviflorum*). Rattlesnake plantain (*Goodyera oblongifolia* and reindeer lichen (*Cladina spp.*) are scattered within the understory. Bog Labrador tea occurs in trace amounts near the transition to bog woodland. The bog is surrounded on the north, west, and south by a lagg¹ primarily composed of forested swamp. The site also includes a boardwalk trail constructed by the Shadow Lake Nature Preserve. The boardwalk crosses the lagg, continues through the bog forest, and ends at an elevated viewing platform that sits on the edge of a patch of bog woodland.



¹ The lagg of a raised bog is a transition zone where runoff collects from the ombrotrophic (rain-fed) bog and adjacent mineral soils.

Site History/Background: The site is located in the Maple Valley area of King County. Historical photos indicate that the bog was at one time associated with Shadow Lake. A road built circa 1969 to facilitate development along the lake shoreline separated the bog from the lake. Almost all of the bog itself is protected by the Shadow Lake Nature Preserve which is a non-profit land trust. The organization is currently seeking land trust accreditation. The land containing the bog is presently in various ownerships. There are a total of ten parcels that contain portions of the bog feature. Some parcels are owned in fee by the land trust. Other parcels have conservation easements on all or portions of the property. Conservation easements are anticipated for the remaining privately owned parcels. Two parcels are owned by King County but are managed by the land trust as part of the Shadow Lake Preserve. The land trust is also seeking to acquire more of a buffer around the site. The land trust has requested that the bog be included in the Washington State Register of Natural Areas.



Site Significance: Shadow Lake Nature Preserve currently is the only site that affords some protection to the globally critically imperiled (G1S1) Western Hemlock - (Western Redcedar) / *Sphagnum* spp. (*Tsuga heterophylla* - (*Thuja plicata*) / *Sphagnum* spp.) Treed Bog. This particular plant association differs from the other wooded bog types in that the canopy is closed and there is very little living *Sphagnum* in the ground layer. These conditions either reflect a late successional stage of bog development or could represent a disturbance-induced community where some sort of ecological changes allow tree growth to accelerate and shade out *Sphagnum* species from the understory. Generally, without an abundance of *Sphagnum*, a bog will cease to accumulate peat. DNR is currently conducting research that may help shed light on whether the association is a result of natural succession or human-induced stressors. Even if the type is found to be a result of human stressors, the example protected at Shadow Lake Nature Preserve provides an excellent opportunity for conducting research to better understand how natural and human process affect bog succession.

An example of the state imperiled (G3S2) Western Hemlock - (Western Redcedar) / Bog Labrador-tea / *Sphagnum* spp. (*Tsuga heterophylla* - (*Thuja plicata*) / *Ledum groenlandicum* / *Sphagnum* spp.) Treed Bog is also found within Shadow Lake Nature Preserve. This type is found in bogs across the Puget lowlands.

The site has served as an important site for bog research. Most recently, the Washington Natural Heritage Program included Shadow Lake Nature Preserve in its ongoing study of how adjacent land use affects the ecological integrity of bogs in the Puget lowlands.

Elements found at Shadow Lake Nature Preserve.

Element	Conservation Status Rank	Other known protected examples	Element Code
Tsuga heterophylla - (Thuja plicata) / Sphagnum spp. Treed Bog	G1S1	None	CEGL003417
Tsuga heterophylla - (Thuja plicata) / Ledum groenlandicum / Sphagnum spp. Treed Bog	G3S2	Kings Lake Bog Natural Area Preserve; Snoqualmie Bog Natural Area Preserve; Devils Lake Natural Resources Conservation Area	CEGL003339

Manageability and Viability:

The bog woodland is generally free of weeds and has minor rose spirea (*Spiraea douglasii*) and bog rush (*Juncus hesperius*) increasing near the road and a somewhat reduced presence of alpine laurel (*Kalmia microphylla*), but the forest has no obvious vegetation degradation. The bog Labrador tea is somewhat dense and leggy in the woodland, and may potentially shade-out the *Sphagnum*. The peat surface appears intact. There are some anthropogenic inputs to the lagg, but don't appear to have much impact on the bog. The hydrological connectivity is reduced by the road separating the bog from the lake; the hydroperiod may also be impacted. Threats to the site include adjacent development and associated water quality and water discharge concerns. The lagg may be vulnerable to invasion of nonnative and invasive species. The bog forest and woodland are unlikely to experience invasion of non-natives due to a lack of non-native species capable of surviving in the bog. Of course, significant alteration to the bog's hydroperiod and water chemistry could make it vulnerable to such invasions. Protection of the lag surrounding the bog is critical to long-term maintenance of the bog's hydrology and should be considered in any comprehensive management planning.

Adding the site to the Washington Register of Natural Areas will recognize the protection and conservation of the Tsuga heterophylla - (Thuja plicata) / Sphagnum spp. Treed Bog (this is the only site known to provide protection for this community) and the Tsuga heterophylla - (Thuja plicata) / Ledum groenlandicum / Sphagnum spp. Treed Bog (there are 3 other examples with some level of protection). The site has an excellent environmental education program and could be expanded to provide more information about the State System of Natural Areas and bog ecology.

Shadow Lake Bog - Registry Proposal

