

# Kimball Creek Amphibian Monitoring

## Quick Facts

**What:** Monitoring of pond breeding amphibians (frogs, toads and salamanders) through monthly surveys, coupled with ongoing water quality monitoring.

**Who:** Surveys conducted by ENR staff, WCC crew members, data shared with Woodland Park Zoo amphibian monitoring program.

**Where:** On the Snoqualmie Tribe Admin property, along Kimball Creek where it runs through Tribal property. Kimball Creek is a major tributary to the Snoqualmie River.

**When:** Monthly during the amphibian breeding season, approximately late January through June

**Why:** Amphibians make up an important component of the food web, and they link aquatic and upland habitats through their two-phase life cycle. Amphibians are seriously threatened throughout the region, and we need more information on what species occur where to inform management decisions on Tribal land.

## *Introduction*

Amphibians, including frogs, toads, and salamanders, are the most numerous vertebrates in some terrestrial ecosystems, although they are seldom encountered. While there are exceptions, most amphibians are small bodied, nocturnal, partially aquatic, and typically hidden underground, or under rotting wood and organic litter on the forest floor. This life history makes many amphibian species hard to observe, and their presence can easily go unnoticed unless they are deliberately searched for.

Despite their low profile, amphibians play a crucial role in many terrestrial and aquatic ecosystems. As most of the public knows, many amphibians have a two-part life cycle in which aquatic tadpoles or larvae spend their early life in ponds and streams before transforming into

terrestrial adults. While not all amphibians display this bi-phasic life history, those that do represent an important path by which aquatic and upland systems are connected, with newly metamorphosed frogs bringing pond derived nutrients into surrounding forests and fields. Amphibian adults and larvae also provide an important control on aquatic algae and insects including mosquitos, and themselves are prey for an enormous variety of native predators.

In the Pacific Northwest, cool, moist forests and plentiful ponds, rivers, and streams provide habitat to a diverse assemblage of amphibian species. In the Puget Lowlands and western slopes of the Cascade Mountains, at least 10 species occur. Despite their diversity, amphibians in the Puget Sound region have been rapidly declining, due in part to habitat loss, pollution, and invasive species infestations. Since 2010, Woodland Park Zoo has organized a community volunteer project to gather data on the occurrence and trends of local amphibians. Local ponds and wetlands are surveyed by regional partners like the Snoqualmie Tribe as well as volunteers for egg mass, larvae, and adults. Collected data are then compiled to inform management decisions.

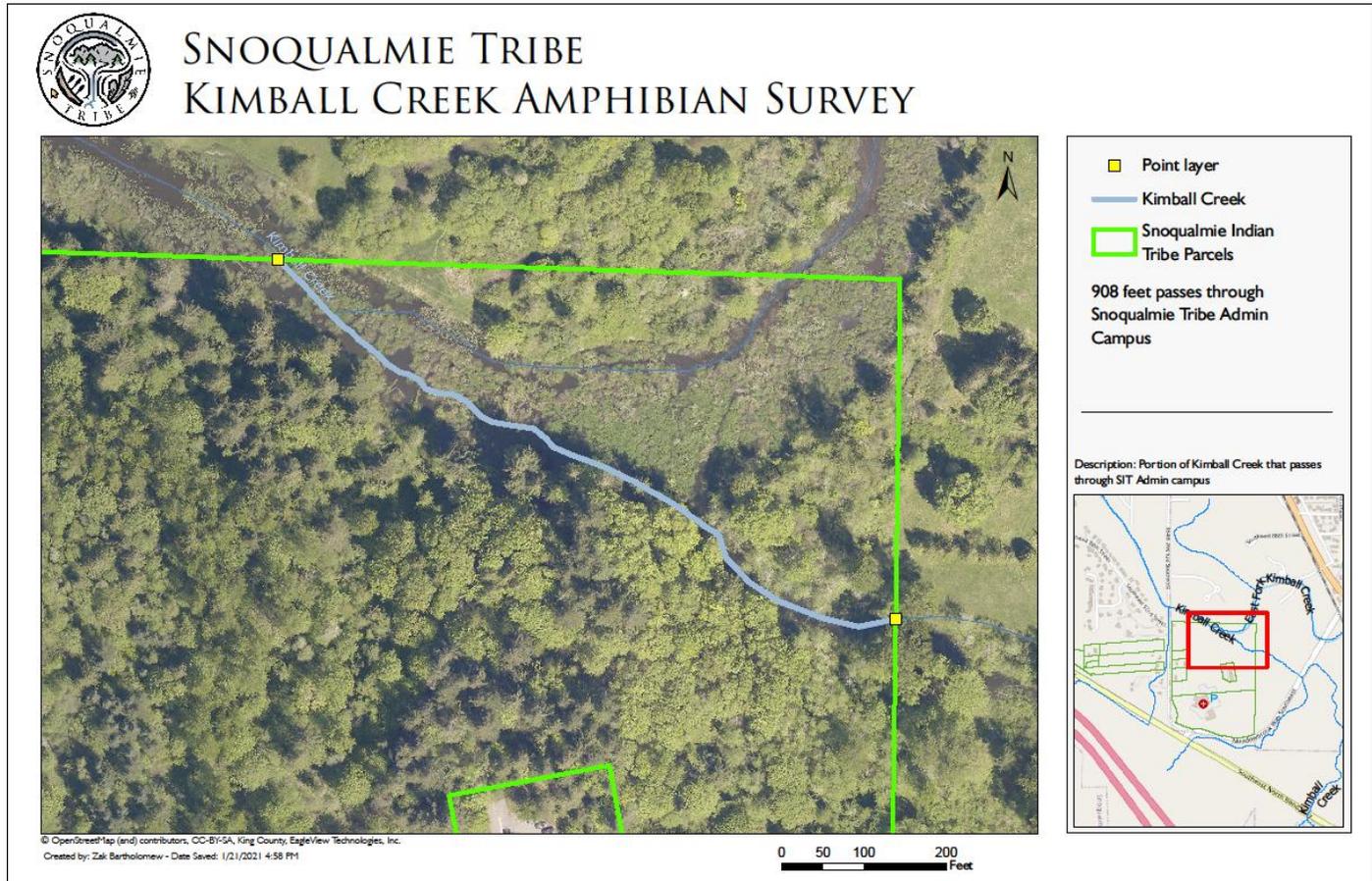
*Study Site*

The Snoqualmie Tribe’s Environmental and Natural Resource (ENR) department has the opportunity to participate in the Woodland Park Zoo program, allowing for an inventory of amphibians on a Tribally owned property, on the campus of the Administrative Headquarters. Kimball Creek, a tributary to the Snoqualmie River, flows through Tribal property at the edge of an intact 20-acre second-growth conifer forest (see figure 1). ENR has been studying water quality in Kimball Creek for years, and amphibian monitoring would add to existing data examining the health of the creek. Several pond breeding amphibians have been previously documented on the Administrative Headquarters property, including the northern red-legged frog, which has been sharply declining throughout the region (see table 1).

**Table 1:** Amphibian species observed or having potential to occur within the study reach of Kimball Creek:

<b>Common Name</b>	<b>Binomial</b>	<b>Notes</b>
northern red-legged frog	<i>Rana aurora</i>	Previously observed, in sharp decline regionally
Pacific treefrog	<i>Hyla regilla</i>	Common and widespread, important prey item for many
American Bullfrog	<i>Rana catesbeiana</i>	Invasive from eastern US, voracious predator of fish and other frogs
long-toed salamander	<i>Ambystoma macrodactylum</i>	Previously observed, one of our most common salamanders
northwestern salamander	<i>Ambystoma gracile</i>	Large salamander with poison glands, can coexist easily with fish
Oregon spotted frog	<i>Rana pretiosa</i>	Previously widespread frog now very rare, extremely imperiled
rough-skinned newt	<i>Taricha granulosa</i>	Occurs sporadically throughout region, data are lacking

**Figure 1:** Study location at Kimball Creek at Snoqualmie Tribe Admin property



### *Survey Methods*

ENR and Washington Conservation Corps (WCC) staff would conduct monthly surveys for breeding amphibians during the appropriate season (January - late spring). Number, species, and lifestage data would be compiled at each visit. Specifically, one ENR staff member would wade along the Kimball Creek shoreline, looking for egg masses and larvae. When encountered, and underwater viewing scope would be used to closely examine and ID the individual without harming it. Additional personnel would assist in data recording and spotting from shore. At each site visit, ENR staff would also collect water quality measurements including temperature, turbidity, and conductivity. Coupled with water quality data, amphibians presence can be an important indicator of pollution or water temperature impairment.

### *Data and Management*

These data would be compared year over year to uncover long term trends as surrounding areas to the north continue to develop, as well as any impact of changing climate. Species data will be shared with Woodland Park Zoo to leverage the many separate data sets collected

regionally into useful information about the long term status of amphibians in the Puget Sound region. Woodland Park Zoo provides equipment and access to scientific experts if necessary. Data would also be managed internally and used to inform staff decisions about habitat management on Tribal lands.