

Western Toad Management in the Summit Lake Area

The Basics:

Where are western toads found?

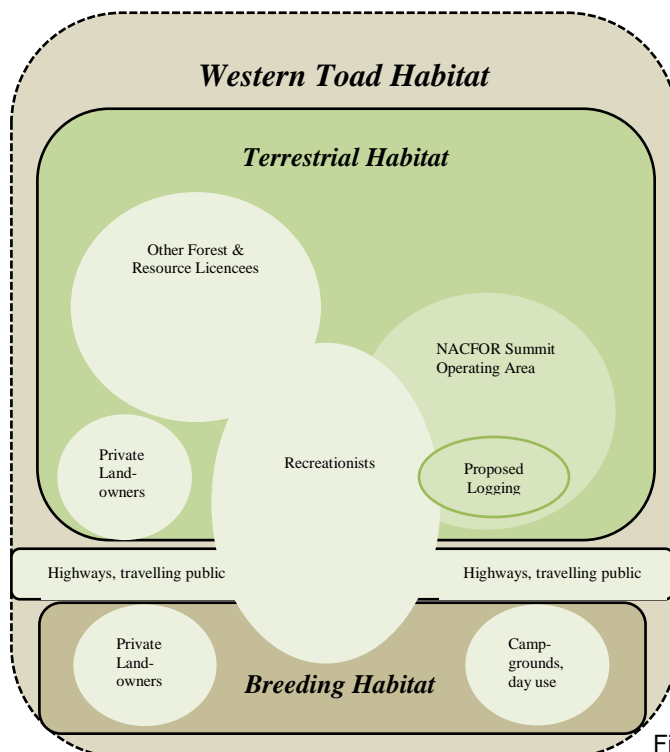
Western toads can be found throughout Canada and the United States, from the Rocky Mountains to the Pacific coast, and from sea level to alpine areas. In British Columbia the western toad is found within most biogeoclimatic zones and forest districts throughout the province.

Closest to Nakusp and area, western toads are found in the Arrow Lakes Valley and along its tributaries, in the Slocan Valley including areas around New Denver, Silverton, Castlegar, and in the Kootenay Lake area from Nelson north to Duncan Lake. Specifically around Summit Lake they are found up and down the lake with highest concentrations along the south shoreline. *See Figure 2.* The western toad is also found in Box Lake and other lakes in the area, on both sides of the Arrow Lakes.



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About NACFOR's Summit Lake Operating Area

The Summit Lake Operating Area is a productive and economically important part of the Nakusp & Area Community Forest (NACFOR) working forest.

Previous to the NACFOR Community Forest Agreement (CFA), this area had a disturbance history from both wildfire and logging. Catastrophic fires have burned large areas of the mountainside and the area has been periodically harvested, most recently in 2007 when a BC Timber Sale comprised of small patch cut areas was logged.

This area is a mosaic of timber types, ages and densities. It is characterized by healthy ecosystems and provides a good diversity of habitat for many species, including toads.

The Summit Lake area is also home to many recreational opportunities, and private land development continues to expand around the lake.

Figure 1. Western toad habitat in context with other activities in the Summit Lake Area



Where do western toads live?

Western toads are active when temperatures are above freezing (0°C) and hibernate when temperatures dip below freezing. Their hibernacula (winter hibernation areas) need to stay above freezing and can be found as deep as 1.3m underground. Preferable hibernacula include deeper soils, hummocks, squirrel middens, abandoned beaver lodges, rodent burrows, rotten stumps, and patches of old or burnt structure. In the Summit Lake area, toads may be active from April through October depending on elevation and weather. There are three major migrations: adults moving to and from spawning areas, and toadlets leaving the lake for terrestrial habitat.

What kind of western toads are they?

Western toads are broken into two distinct populations: calling toads found in most of Alberta and extending into British Columbia in the Rocky Mountains, and non-calling toads found within the remaining part of the species' Canadian range. Male toads from the calling population have a vocal sac and call loudly during mating season whereas non-calling toads lack a mating call (COSEWIC 2012).

Western toads found in the Summit Lake area are the non-calling population.

Why do toads need to be managed?

The western toad has suffered population declines in the southern part of its range in British Columbia, as well as in the USA (COSEWIC 2012). Because of this, the non-calling population (*anaxyrus boreas*) of the western toad was designated as a species of special concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 2012. Since 2010 the western toad has been on the blue list in British Columbia. Blue-listed species are at risk, but are not extirpated, endangered or threatened. *See Figure 3.*

Habitat loss due to logging, agriculture and the oil and gas industry is also of concern. The COSEWIC report cites that western toads are relatively tolerant of logging, but it is unclear what the long-term effects of forest harvesting might be on population dynamics (COSEWIC 2012).

What are the specific concerns about toads in the Summit Lake Area?

1. Summit Lake has high recreational values and is the site of a limited number of permanent and seasonal residents, recreation property, a provincial park and campground, a provincial day use picnic area and boat launch site, a private campground and the Summit Lake Ski Area located to the south-east of Summit Lake. Most of this infrastructure is within the high-use breeding or riparian habitat of the toad. *See Figure 2.*

This area has high public visibility because of the seasonal mass migration of toads and toadlets between the breeding habitat on the lakeshore and terrestrial habitat directly upslope. This spatial arrangement of the habitats, bisected by Highway 6, has historically created issues with toad and toadlet mortality as they cross the highway *en masse* (toadlets) or individually (adult toads).

2. A portion of Nakusp and Area Community Forest's (NACFOR) Summit Lake operating area lies adjacent to Highway 6 and upslope of the well-known breeding habitat of the western toad along the shores of Summit Lake. *See Figure 2.* NACFOR has initiated work to develop a cutting permit with seven cutblocks, five to seven hectares in size, in the Summit Lake operating area.

As part of the cutting permit development process, NACFOR completes numerous assessments to ensure due diligence and legal obligations for the project can be met. Specific information about the proposed development can be found at www.nakuspcommunityforest.com. *See also Figure 2.*

What is being done to address the Summit Lake concerns?

The overall body of knowledge about western toads is limited. Most of the research and resultant knowledge is based on breeding habitat because those habitat areas have greater development activity and toads are easier to spot and study. Little is known about the lifecycles and habits of western toads within their terrestrial habitat.

Research

A multi-year project funded by the BC Hydro Fish and Wildlife Compensation Program (FWCP) and the Columbia Basin Trust (CBT) was initiated in 2010 to assess road mortality on long-term western toad population trends of the Summit Lake toads. To date, the project has focused on highway mortality, efficacy of the underpass tunnels and identification of breeding distribution and adult abundance (Dulisse 2012). Results show that highway underpass use is low and barriers are somewhat effective at directing toadlets, but the barriers also trap toadlets and toads on the highway resulting in mortality.

Further research in 2015 will focus on the study of western toad upslope movements and terrestrial habitat use.



ToadFest

During times of high toad and toadlet movement, volunteers have physically helped to move toads across the highway using buckets or other means. One annual, public event at Summit Lake (ToadFest) has been designed to draw attention to the plight of the toad, to orchestrate labour to move toads and to act as a local and regional education opportunity about toads. ToadFest is hosted by Fish & Wildlife Compensation Program, Columbia Basin Trust, BC Parks, Ministry of Environment, and the Ministry of Transportation & Infrastructure with support from Yellowbridge Road Builders (YRB).

What is NACFOR doing to address the Summit Lake concerns?

Best Management Practices for the Summit Lake Operating Area

NACFOR has completed research and taken extensive measures to identify and develop forest management strategies and activities that will mitigate impacts to the western toad population and its habitat in the Summit Lake area. The following best management practices will be implemented:

Timing of Operations

The most important measure for minimizing direct impact to toads will be timing of operations. NACFOR will carry out harvesting and log hauling from mid-October to April during periods when toads are not migrating. By minimizing ground disturbance, winter operations will also mitigate impacts to toads during foraging and overwintering periods.

If road and terrain conditions prevent winter operations, harvesting and hauling can occur in mid-summer (July) when adult toads move to summer foraging habitat near the lake and before toadlets start their migration to the upslope forests. Toad presence and movement will be monitored during all operations.

Access

Existing forest roads can impede upslope movement of the toadlets during the fall migration if the roadside fill slope material is too steep or has heavy angular rock. One way to enhance migration in the Summit Lake area is to improve these steep fill slope sections of the Summit Lake Forest Service Road. Road construction for the proposed cutting permit is temporary which means roads will be rehabilitated once harvesting and reforestation has been completed. Measures will be taken during construction and maintenance of the temporary roads to ensure fill slopes are passable for toadlets and to reduce sediment delivery into streams and riparian areas.



Best Management Practices for the Summit Lake Operating Area, continued

Habitat

Hibernacula features such as hummocks, squirrel middens, rotten stumps and logs will be protected by the snowpack during winter logging.

Studies of the Summit Lake toads indicate that summer foraging habitat is mainly in riparian areas along the lake. NACFOR's operations will not impact these areas; however, riparian areas in the vicinity of the proposed cutblocks will be protected to reduce impacts to toad movement and foraging in these areas. Some research shows that logging may actually improve summer habitat for toads: studies have shown that clearcuts may benefit toads due to increased coarse woody debris and increased moisture (Ministry of Forests, 1998). As well, logging debris may actually enhance overwintering habitat by increasing the number of hibernation sites in clearcuts.

NACFOR will investigate opportunities to create hibernacula by burying coarse woody debris on rehabilitated roads and landings.

NACFOR: Work Completed and Next Steps

NACFOR's development work to date and future commitments include:

- reconnaissance and preliminary layout of cutblocks, roads and wildlife tree retention areas. Assessments have been completed to support detailed site level prescriptions.
- site plans describing silviculture and harvest systems, resource management and reforestation strategies will be completed for each cutblock prior to submitting a cutting permit application in July, 2015.
- providing partnership funding for the 2014 Western Toad Migration at Summit Lake Field Research Project to support additional radio-tagging of adult toads into hibernation.
- committing further funds and in-kind support for the 2015-2016 toad research season.

Research data will help NACFOR work towards protecting toad habitat within its licence areas.

In addition to research work, NACFOR is interested in working with other organizations to address the larger issues such as toad mortality from Highway 6 and private land development in the Summit Lake area.

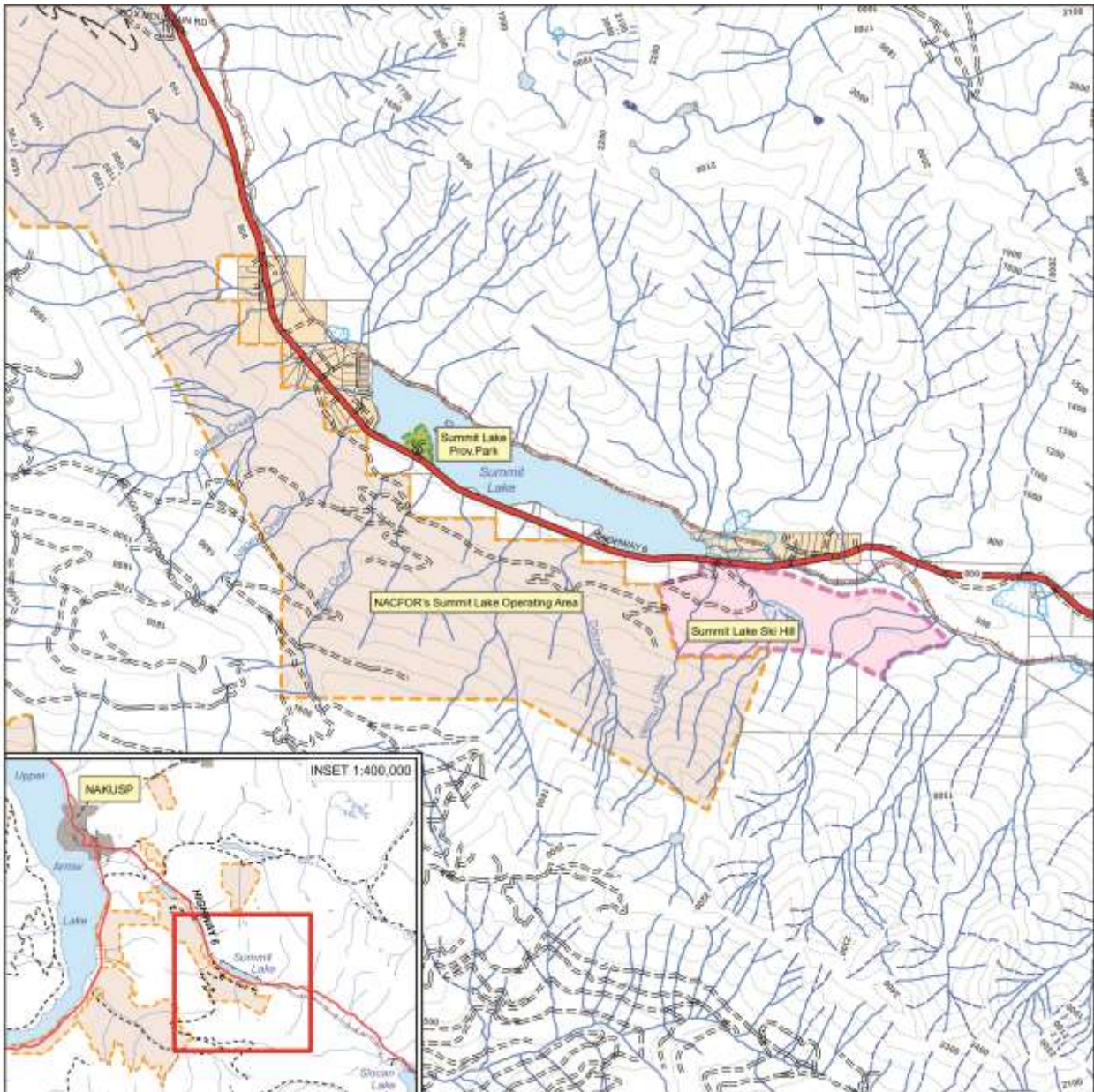


Figure 2. Nakusp and Area Community Forest, Summit Lake Operating Area

Figure 3. Status of the Western Toad

Status: <i>Anaxyrus boreas</i> – Non-calling population (found at Summit Lake, BC)	
COSEWIC ¹	Special Concern (2012) ²
Provincial Conservation Status	S3S4 ³
BC Status	Blue-list ⁴
BC Wildlife Act	None
BC Forest and Range Practices Act	None
SARA ⁵	Schedule 1 – Special Concern (2005)
Global	G4 (2008) – Apparently Secure

¹ Committee on the Status of Endangered Wildlife in Canada. ² A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events. ³ (2010) 3 = special concern, vulnerable to extirpation or extinction and 4 = apparently secure. ⁴ The Blue list includes any ecological community, and indigenous species and subspecies considered to be of special concern (formerly vulnerable) in British Columbia. Species are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed species are at risk, but are not Extirpated, Endangered or Threatened. The Red list Includes any ecological community, and indigenous species and subspecies that is extirpated, endangered, or threatened in British Columbia. ⁵ *Species At Risk Act*

Further information about the status of the western toad can be found at www.registrelep-sararegistry.gc.ca/default_e.cfm

References

Conservation Data Centre: *Conservation Status Report for Western Toad*

<http://a100.gov.bc.ca/pub/eswp/esr.do?id=16554>

COSEWIC. 2012. COSEWIC assessment and status report on the Western Toad *Anaxyrus boreas* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Xiv + 71 pp.

www.registrelep-sararegistry.gc.ca/default_e.cfm

Davis, T.M. 2000. *Ecology of the Western Toad (Bufo boreas) in Forested Areas on Vancouver Island. Final Report*. Forest Renewal Research Project. B.C. Ministry of Forests, Victoria, British Columbia. 28 pp.

Gyug, L.W. 1996. *Timber-harvesting Effects on Riparian Wildlife and Vegetation in the Okanagan Highlands of British Columbia*. British Columbia Ministry of Environment, Lands and Parks, Wildlife Branch, Victoria, British Columbia. Wildlife Bulletin No. B-97. 112 pp.

Ministry of Environment. Endangered Species and Ecosystems [Internet] [cited January 9, 2015]. Available from <http://www.env.gov.bc.ca/atrisk/red-blue.htm>

Ministry of Environment. BC Conservation Data Centre: Conservation Status Report [Internet] [cited January 9, 2015]. Available at <http://a100.gov.bc.ca/pub/eswp/esr.do?id=16554>

Ministry of Forests. 1995. *Effects of Disturbance on Terrestrial Amphibians in Three Biogeoclimatic Zones*. [cited May 13, 2015]. Available from <https://www.for.gov.bc.ca/rsi/research/cextnotes/extnot18.htm>

Cover photo of western toad: Photo credit, Walter Siegmund



Box 925, Nakusp, BC V0G 1R0
250-265-3656
nakuspcommunityforest.com

The Village of Nakusp is the owner and sole shareholder of Nakusp and Area Community Forest (NACFOR). NACFOR is governed by an eight member Board of Directors composed of a diverse and representative cross-section of the community.

Under a Community Forest Agreement (CFA) with the Province of British Columbia, NACFOR undertakes forest management activities including logging, road construction and silviculture across the community forest land base.

As the agreement holder, NACFOR has exclusive rights to harvest timber within the CFA areas, which comes with obligations to reforest and otherwise manage the land base.