

Western Toad Management in the Summit Lake Area

The Basics:

Where are western toads found?

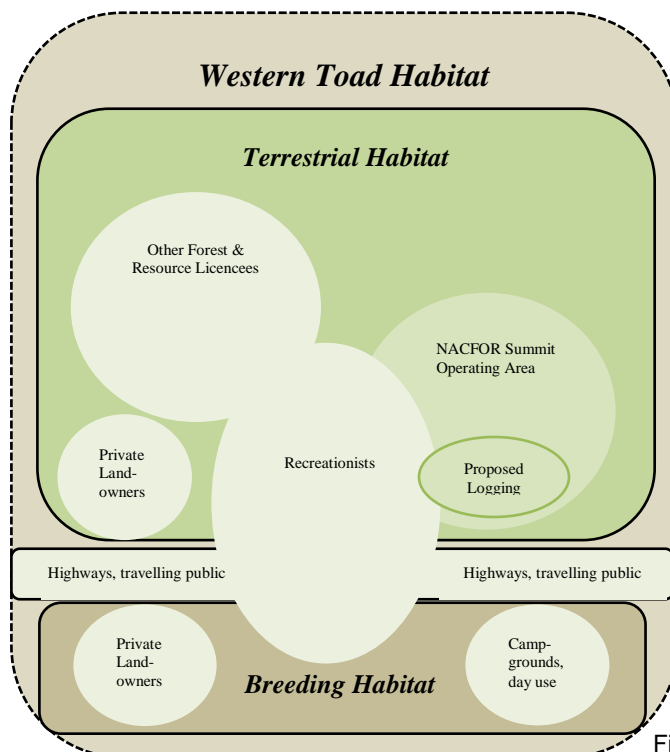
Western toads can be found throughout Canada and the United States, from the Rocky Mountains to the Pacific coast, and from sea level to alpine areas. In British Columbia the western toad is found within most biogeoclimatic zones and forest districts throughout the province.

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 breeding areas 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.



Contents

Where are western toads found?.....	1
About NACFOR's Summit Lake Operating Area	1
Where do western toads live; what kind are they?	2
Why do toads need to be managed?	2
What are the specific concerns about toads in the Summit Lake Area?	2
What is being done to address the Summit Lake concerns?	3
What is NACFOR doing to address concerns?.....	3
NACFOR: Work Completed & Next Steps	4
Map, Summit Lake Operating Area.....	5
References	6



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, in 2007 by BC Timber Sales and most recently in 2017-2019 when NACFOR harvested seven small cut blocks.

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 March through November depending on elevation and weather. There are three major migrations: adults moving to and from breeding 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. In 2017 western toads were re-assigned to the yellow list in British Columbia as threats are lower than previously determined. Yellow-listed species are at the least risk of being lost. *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. Threats to Breeding Habitat and Toad/Toadlet Mortality During Migration: 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. Threats to Terrestrial Habitat During Logging Operations: 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 recently harvested seven cut blocks, five to nine hectares in size, in the Summit Lake operating area.

As part of the cutting permit development process, NACFOR completed numerous assessments to ensure due diligence and legal obligations for the project were 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, but growing. 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. This is the main focus of NACFOR's research efforts.

Research

In 2010 the Ministry of Forests, Lands and Natural Resource Operations initiated a multi-year project, funded by the Fish and Wildlife Compensation Program – Columbia and the Columbia Basin Trust, 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 2015).

However ...

How does clearing of private lands, recreation infrastructure and activities, building structures, altering foreshore and riparian areas, application of pesticide and herbicide chemicals and constructing and paving roads impact the Western Toad's breeding habitat?

To date, these questions have not been addressed.



What is NACFOR doing to address the Summit Lake terrestrial habitat concerns?

Forest Practices for the Summit Lake Operating Area

NACFOR is partnering / supporting the Summit Lake toad research project in order to learn more about western toad requirements for upland habitat. The project will help identify and evaluate forest management strategies and activities that will mitigate impacts to the western toad population and its terrestrial habitat in the

Timing of Operations

An important measure for minimizing direct impact to toads will be timing of operations. NACFOR harvesting will be carried out from November to March during periods when toads are not migrating. By minimizing ground disturbance, winter harvesting will also mitigate impacts to toads during foraging and overwintering periods.

If site, road, or terrain conditions prevent winter operations, harvesting and hauling can occur when adult toads move to summer foraging habitat and before toadlets start their migration to the upslope forests. Roads may be constructed during any season, if site conditions are favourable. Toad presence and movement will be monitored during all operations.

Habitat

Hibernacula features such as hummocks, squirrel middens, rotten stumps and logs will be protected by the snowpack during winter logging. Small reserves around important habitat features were established in the lower cut blocks to retain ground and below-ground habitat complexity. Forest practices such as partial harvesting, wildlife tree retention areas, retaining broadleaf trees and coarse woody debris are implemented to maintain stand diversity and provide cover and foraging areas for toads. NACFOR will investigate opportunities to restore degraded habitat by burying slash on rehabilitated roads and landings.



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).



Forest Practices for the Summit Lake Operating Area, continued

In 2015 NACFOR studied toadlet presence across three habitat types in the upslope area above Summit Lake. Results of the study showed that toadlets use roads to move between forested areas and the existing cut blocks, with more toadlets found in near streams or riparian areas with some cover. Buffers will be established along streams and riparian areas to protect important habitat and migration corridors. NACFOR has been carrying out daytime surveys on Summit Forest Service Road since 2016 to assess western toad use on logging roads. Western Toads use roads and highways to thermoregulate. Adult toads will use the roads at night in order to expel heat while young toadlets will use the roads in the day time to gain heat. This behavior puts them at risk to mass mortality from highway traffic as well as resource road traffic. Further monitoring in 2019 indicates that juvenile toads are widespread throughout recently logged areas and rehabilitated road surfaces.

Access

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.

Reforestation

To protect hibernacula site preparation, treatments such as mounding and stump removal are not recommended.

NACFOR: Work Completed and Next Steps

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

- reconnaissance and preliminary layout of cutblocks, roads and wildlife tree retention areas
- assessments supporting detailed site level prescriptions
- site plans describing silviculture and harvest systems, resource management and reforestation strategies completed for each cut block
- providing partnership funding for the 2014, 2015 and 2016 Western Toad Migration at Summit Lake Field Research Project
- providing in-kind assistance with toad fencing and nocturnal toad surveys in 2015 and 2016 field seasons
- completing annual surveys to monitor toad use on resource roads and logged areas
- creating overwintering habitat on landings and road sides
- post-harvest assessments to evaluate the effectiveness of forest practices

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 threats to the toad's breeding habitat from private land development and recreation use in the Summit Lake area.**

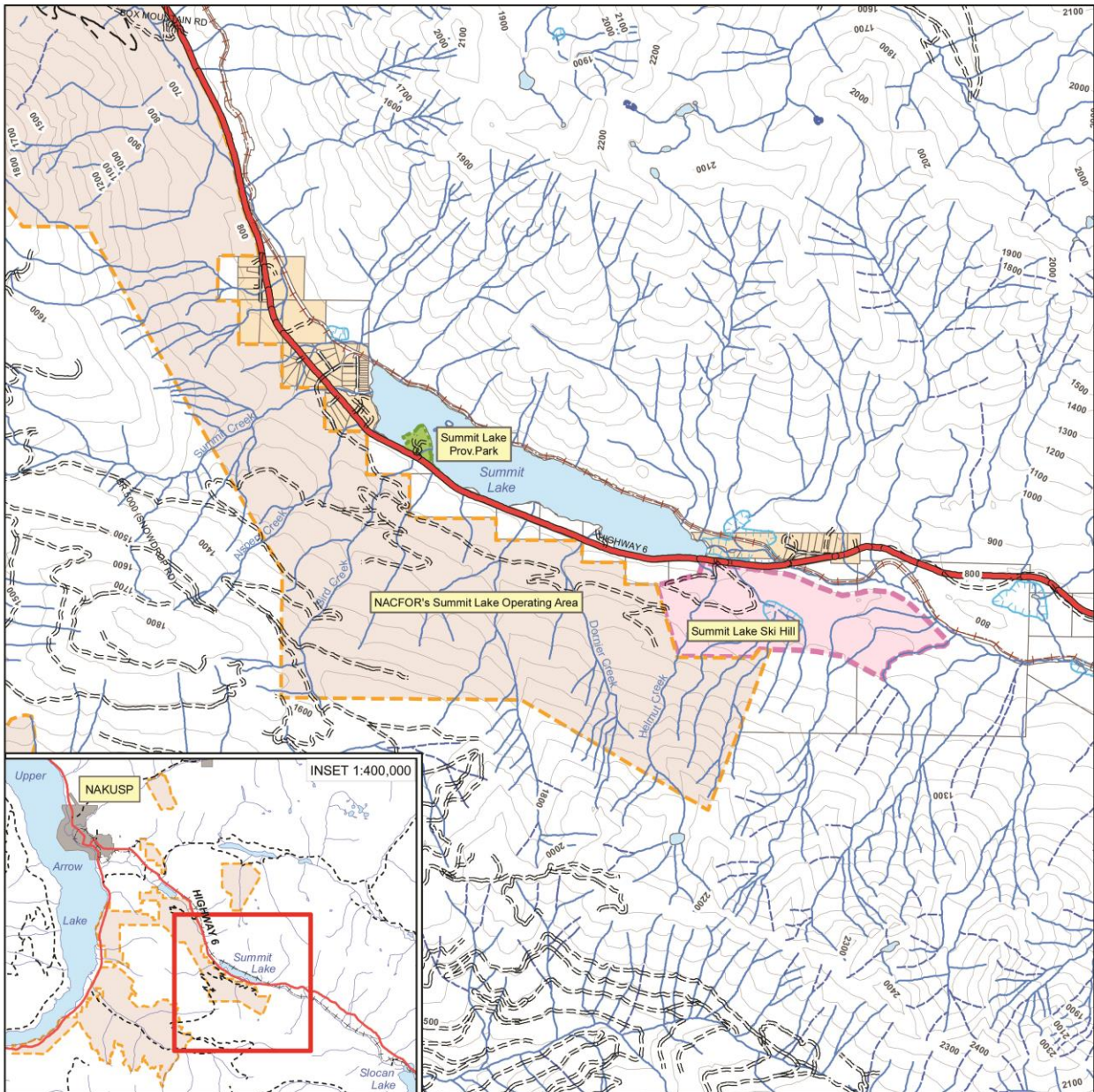
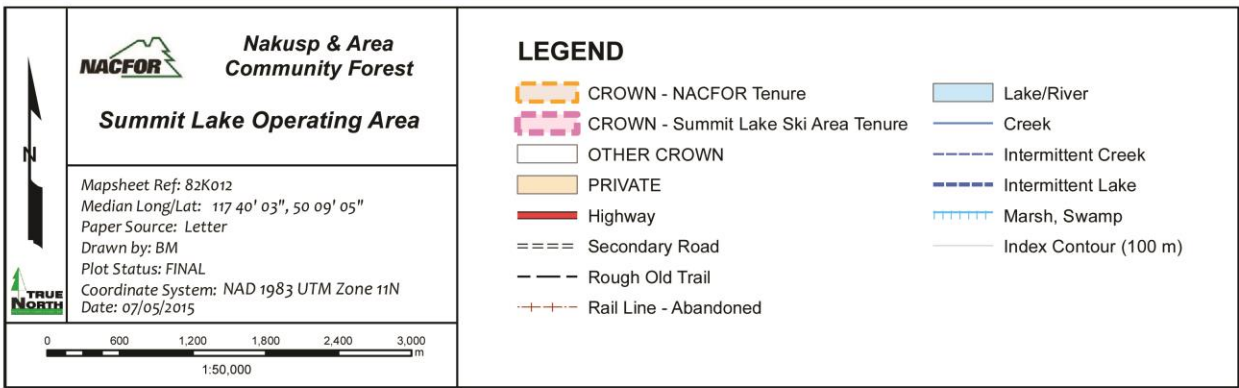


Figure 2. Nakusp and Area Community Forest, Summit Lake Operating Area

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	S4 ³
BC Status	Blue-list ⁴
BC Wildlife Act	None
BC Forest and Range Practices Act	None
SARA ⁵	Schedule 1 – Special Concern (2018)
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 (2016) 4 = apparently secure. ⁴ The Yellow list includes species that are apparently secure and not at risk of extinction. Yellow-listed species may have red- or blue-listed subspecies. ⁵ Species At Risk Act

Further information about the status of the western toad can be found at http://www.registrelep-sararegistry.gc.ca/virtual_sara/files/cosewic/sr_Western%20Toad%20_2013_e.pdf

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.

http://www.registrelep-sararegistry.gc.ca/virtual_sara/files/cosewic/sr_Western%20Toad%20_2013_e.pdf

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.

Dulisse, J. 2015. Western Toad Migration at Summit Lake 2014 Field Season. Unpub. report prepared for Irene Manley, Ministry of Forests, Lands and Natural Resource Operations- Fish and Wildlife Compensation - Section, Nelson, BC. <http://a100.gov.bc.ca/pub/siwe/details.do?id=4834>

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>



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 a seven 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 manage for a broad range of environmental, social and economic values and objectives.