

## Western Toad (Boreal Toad) - *Anaxyrus boreas boreas*

Abundance: Extremely rare

Status: NSS1 (Aa)

NatureServe: G4 S1

Population Status: Imperiled due to greatly restricted numbers, extirpation is possible.

Limiting Factor: Disease: chytrid fungus (*Batrachochytrium dendrobatidis*) is thought to be the primary reason for recent mass die-offs.

Comment: The common name was changed from Boreal Toad to Western Toad.

### Introduction

The Western (boreal) Toad is thought to have two distinctive population segments in Wyoming, a northern Rocky Mountain population and a southern Rocky Mountain population. The northern population is located in the western part of the state (Fremont, Hot Springs, Lincoln, Park, Sublette, and Uinta Counties, including Yellowstone National Park). The southern population is located in the southeastern portion of the state (Albany, Carbon and Laramie Counties). Although chytrid fungus is of concern throughout both population segments, southern populations are of increased concern. Mass die-offs have been attributed to chytrid fungus within the Laramie, Medicine Bow, and Sierra Madre Mountain ranges. Both geographic isolation and disease are significant concerns for the Southern Rocky Mountain population segment (Keinath and McGee 2005). In 2011, either the Eastern population or the Southern Rocky Mountain population of Western (boreal) Toads was petitioned to be listed as an endangered species under the Endangered Species Act as a distinct population segment and a listing decision should be made by 2017. Western (boreal) Toads typically emerge shortly after snow melt, and are often diurnally found in association with water. However, this species often nocturnally visits more terrestrial habitats to forage (Baxter and Stone 1985). Western (boreal) Toads feed primarily on ants, beetles, moths, and other invertebrates. Breeding can occur from April to early August depending on climatic conditions and elevation. On average, 5,200 eggs are deposited in double-rowed strings in shallow water. Egg incubation and development times are temperature dependent and may take as long as 92 and 45 days respectively. Due to long incubation times, some tadpoles may not metamorphose before winter (typically over 10,500 feet in elevation). It is not thought that tadpoles are able to overwinter in Wyoming (Baxter and Stone 1985).

### Habitat

In Wyoming, the Western (boreal) Toad inhabits wet areas in foothills, montane, and subalpine zones from 6,500 to 11,500 feet in elevation (Baxter and Stone 1985). Western (boreal) Toads are usually found in association with water sources such as beaver ponds and streams. However, this species often nocturnally visits more terrestrial habitats to forage (Baxter and Stone 1985).

### Problems

- h Western (boreal) Toad populations appear to be in a state of severe decline. Factors that may contribute to perceived declines include habitat alteration, pollutants, climatic changes, and pathogens. However, at this time, chytrid fungus is considered to be the major contributing factor. In the southern Rocky Mountain population segment, this fungus has been linked to recent mass die-offs.

### Conservation Actions

- h A systematic study of this species should be conducted with respect to distribution, abundance, habitat associations, and disease status within Wyoming.
- h With populations in decline, additional research needs to focus on methods to retain existing populations. Data from this research is required to create management strategies for recovery.
- h The basic biology and transmission of *Batrachochytrium dendrobatidis* (chytrid) needs to be studied

### Monitoring/Research

Monitoring should occur at known populations of Western (boreal) Toads. Surveys should incorporate protocols to examine chytrid fungus prevalence. Studies should be conducted that examine possible habitat factors resulting in Western (boreal) Toad decline and results should be incorporated into repatriation projects. Rangewide surveys should be conducted to discover previously unknown populations of Western (boreal) Toad.

## Recent Developments

Annual monitoring of known populations has been performed in the Medicine Bow Mountains. Surveys were conducted within the Green River watershed to verify populations of Western (boreal) Toad after native fish restorations. Surveys were conducted in 2015, 2016, and 2017 in the Shoshone National Forest to verify Western (boreal) Toad populations, to test for chytrid fungus, and to collect genetic samples. Surveys were conducted to verify old observation records and to collect genetic samples in the Medicine Bow, Laramie, and Sierra Madre Mountain ranges. Surveys were conducted on the Bridger-Teton National Forest to document breeding locations and to collect genetic samples.

The Wyoming Game and Fish Department has contributed funding towards a study of the genetics of Western (boreal) Toads, with the hopes of better elucidating the boundaries of any potential distinct population segments. This information will hopefully assist in the potential Endangered Species Act listing.

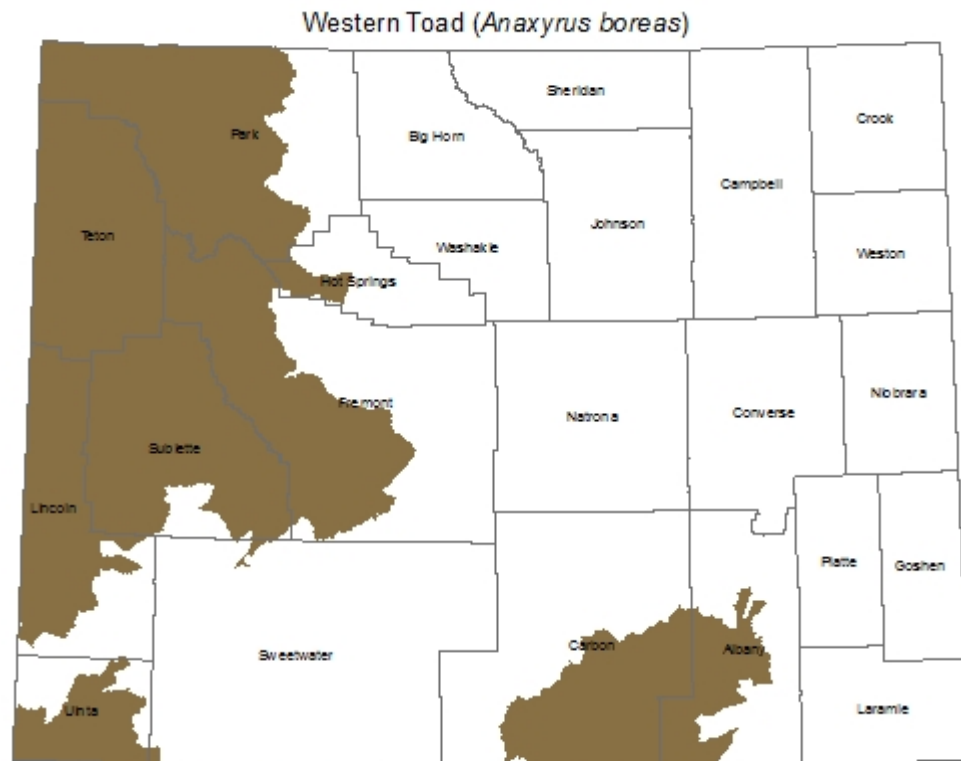
A graduate project began in 2015 focusing on Western (boreal) Toads on the Bridger-Teton National Forest. The objectives of this project are to assess Western (boreal) Toad movement, habitat selection, disease status, and adult survival across a gradient of livestock grazing intensity.

Wyoming has participated with the Boreal Toad recovery program, which was initiated by the state of Colorado. The Wyoming Game and Fish Department is also working with several other state and federal agencies on rewriting the conservation plan for the Southern Rocky Mountain Boreal Toad population.

## References

Baxter, G.T. and M.D. Stone. 1985. Amphibians and Reptiles of Wyoming. Second Edition. Wyoming Game and Fish Department, Cheyenne. 137pp.

Keinath, D.A. and M. McGee. 2005. Boreal Toad (*Bufo boreas boreas*) A Technical Conservation Assessment. Report prepared for USDA Forest Service, Rocky Mountain Region, Species Conservation Project by the Wyoming National Diversity Database-University of Wyoming, Laramie, WY.



SOURCE: Digital maps of ranges for Wyoming Species of Greatest Conservation Need: February 2016. Wyoming Game and Fish Department. Note that brown indicates the current known range of the species.