BOREAL TOAD 90-DAY FINDING
QUESTIONS AND ANSWERS

What are the conclusions of the U.S. Fish and Wildlife Service regarding the petition to list the Eastern population or Southern Rocky Mountain population of the boreal toad?

The Service completed a 90-day finding on a petition to list either the Eastern population or Southern Rocky Mountain (SRM) population of the boreal toad under the Endangered Species Act (ESA). After evaluating all of the scientific information described or cited in the petition and information readily available in our files, we concluded that the petitioners provided substantial information indicating that the Eastern population of the boreal toad may qualify as a Distinct Population Segment (DPS), and listing under the ESA may be warranted. The Eastern population of this amphibian occurs in portions of Colorado, Idaho, New Mexico, Nevada, Utah, and Wyoming. The Service will conduct a full status review of the Eastern population, and once the review is complete, determine whether to propose adding the population as a DPS to the Federal lists of threatened or endangered wildlife and plants. We determined that the petition and our files did not contain substantial information that the SRM population of the boreal toad constitutes a DPS under our DPS Policy. Therefore, we will not conduct a status review for the SRM population. However, the SRM population, which includes New Mexico, Colorado, and southeastern Wyoming, is part of the larger Eastern population.

What is a 90-day finding?

A 90-day finding is an initial review to determine whether or not a petition presents substantial information indicating that listing a species under the ESA may be warranted, thereby necessitating a full status review of the species. The standard for "substantial information" is the amount of information that, when reasonably viewed in light of all information available in the petition and in our files, tends to show that the listing action may be warranted.

What is a DPS?

Under the Service's DPS policy, the following three elements are considered concerning the classification of a possible DPS as a listable entity under the ESA: 1) the discreteness of a population in relation to the remainder of the species to which it belongs; 2) the significance of the population segment to the taxon to which it belongs; and 3) the population segment's conservation status.

How did the Service determine that the Eastern population may be a valid DPS?

Based on substantial information presented in the petition and available in our files the Service determined that the Eastern population may be a valid listable entity based on sufficient genetic and geographic discreteness from the other boreal toad populations, and based on evidence of significance, including a significant gap in the range of the boreal toad that would be created if the Eastern population should become extirpated, and from marked genetic haplotype differences between the Eastern population and boreal toads to the north.

How did the Service determine that the SRM population was not a valid DPS?

We determined that there was not substantial information in the petition and our files that the SRM population may be a valid listable entity. Although this population appears geographically discrete, we did not find substantial information that it may be significant according to the

standard in our DPS policy. For significance an unusual or unique ecological setting was not apparent, a gap in the range of 5%, if the SRM population was extirpated, was not considered significant, and genetic differences in haplotypes were currently determined to not be significant. However, the SRM population constitutes the eastern half of the larger Eastern population.

Doesn't the overlap of ranges of the Eastern population and populations to the north prevent the Eastern population being classified as a DPS?

Based on current knowledge from genetic studies and distribution information, there does appear to be genetic and geographic overlap of the Eastern population with boreal toads to the north (and possibly the west) of the Eastern population. However, some genetic and geographic overlap is allowed by the DPS policy and we determined that the extent of overlap may be within the bounds of the DPS policy. As the DPS policy states, animals do not "require absolute reproductive isolation as a prerequisite to recognizing a distinct population segment" and that "recognized species… are known to sustain a low frequency of interbreeding with related species" (61 FR 4722). Furthermore, as the DPS Policy explains, discreteness "does not require absolute separation of a DPS from other members of its species, because this can rarely be demonstrated in nature for any population of organisms. This standard adopted [by the DPS Policy] is believed to allow entities recognized under the Act to be identified without requiring an unreasonably rigid test of distinctness" (61 Fed. Reg. 4722).

What have recent genetic studies found?

Independent mitochondrial DNA analysis from two authors indicates that the SRM population is not markedly different from the western part of the Eastern population. However, the authors found that the Eastern population was genetically discrete from other populations despite genetic and geographic overlap with areas to the north. One of the authors found through nuclear microsatellite DNA analysis that breeding populations of the toads appear isolated from one another. Other preliminary nuclear DNA analysis from one of the authors suggests that there is a possibility that the SRM population may be diverging on its own evolutionary path (towards a species or subspecies) but analyses have not been completed. Therefore, we are currently unable to determine if significant nuclear DNA genetic differences exist between the SRMs and other areas occupied by the boreal toad that may lead to the SRM population being designated as its own discrete entity (whether a DPS, subspecies, or species).

What does the Service look at to determine if listing a species or DPS may be warranted?

We conducted an analysis of the information the petition provided regarding five factors specified in the ESA. The five factors include: A) the present or threatened destruction, modification or curtailment of a species' habitat or range; B) overutilization for commercial, recreational, scientific or educational purposes; C) disease or predation; D) the inadequacy of existing regulatory mechanisms; or E) other natural or manmade factors affecting a species' continued existence. The petitioners presented substantial information indicating that listing the Eastern population of the boreal toad may be warranted based upon factors C and E. Specifically, information was substantial regarding disease and vulnerability of small, isolated populations.

What does the boreal toad look like?

Boreal toads may reach a length of 12.7 centimeters (5 inches). They possess warty skin, oval parotid glands, and often have a distinctive light mid-dorsal stripe. During the breeding season, males develop a dark patch on the inner surface of the innermost digit. Unlike many other toad species, the boreal toad has no vocal sac and, therefore, no mating call. Tadpoles are black or dark brown.

How does a boreal toad live?

Boreal toads in the Eastern population typically lay eggs from mid-May to mid-July in shallow areas of pools, ponds, lakes, and slow moving streams. Within 2 weeks the eggs hatch and the larvae (tadpoles) metamorphose into toadlets, typically from the end of July to the end of August but as late as the end of September. Adults move to upland habitat after the breeding season, then adults and juveniles move to hibernacula (winter quarters) in the fall to overwinter. Boreal toads prefer post-breeding upland habitats that are more humid or moist, but they are able to forage in or take advantage of drier sites especially if puddles or cool, moist, burrows are available to regulate body water and temperature levels.

Where do boreal toads live?

Boreal toads occur from coastal Alaska south and east through the Yukon Territory, the extreme southwest corner of the Northwest Territory, British Columbia, western Alberta, Washington, Oregon, northern California, northern Nevada, Idaho, western Montana, western and southeastern Wyoming, central and northern Utah, central to western Colorado, and extreme north-central New Mexico. The Eastern population of this amphibian occurs in portions of Colorado, Idaho, New Mexico, Nevada, Utah, and Wyoming. Boreal toads occur in a variety of habitat and occur as low as sea level on the Pacific coast, but in the Eastern population they typically occur in subalpine habitat from 2,440 meters (8,000 feet) to 3,350 meters (11,000 feet).

How many boreal toads are in the Eastern population?

Specific numbers of boreal toads in the Eastern population are not known. At least 75 breeding sites in 47 populations (1 or more closely located breeding sites) were known to exist in the SRMs as of 2009. However, only 5 of the 47 populations had 20 or more adults observed during the breeding season. A population of 20 or more adults is considered a large breeding population as defined in a conservation plan for the SRMs. Most populations had fewer than 10 adults observed in the SRMs in 2009. The number of toads in the rest of the Eastern population is less well known. In Utah 102 breeding sites were known to exist as of 2004 but more recent numbers are currently unknown. Only a couple of toads are known from genetic samples taken in northeastern Nevada and southeastern Idaho and the number of toads in southwestern Wyoming are not currently known.

Why should we care about the boreal toad?

Amphibians are sensitive to changes in their environments, and can serve as a "canary in the coal mine" on contamination or other environmental changes that can affect humans. Their presence can be an indication of a healthy ecosystem. Amphibians also are a key part of the food chain, both as prey and as predators. Boreal toads are insect eaters, so they can assist in the control of insect pests, such as mosquitos. Additionally, amphibians are preyed upon by several species of mammals, birds, fish, and reptiles.

What factors may impact the boreal toad?

Disease: A chytrid fungus (*Batrachochytrium dendrobatidis*--commonly referred to as Bd) is affecting boreal toads as well as other toads and frogs all over the world. Boreal toad numbers in the SRMs (a portion of the Eastern population) have declined since the 1970s, likely from Bd. The fungus is present across Utah but it is unknown what effects it has had to boreal toads there. It is unknown whether Bd is present in southwestern Wyoming, southeastern Idaho, and northeastern Nevada, but it is highly likely considering presence in Utah, the SRMs, and around the world. There is currently no known way to limit mortality from Bd in the wild, although evidence of toads surviving in areas known to have Bd suggests that some toads may be able to shed the fungus or may be immune to Bd.

Isolation and Small Population Size: The boreal toad has only been observed to travel about 5 miles in a year. Many breeding sites or breeding populations are separated by more than 5 miles so genetic interchange can no longer happen or may happen very infrequently. Additionally, many of the populations are very small. The combination of isolated populations and small population size may contribute to the species' vulnerability to extirpation if Bd appears in a population or continues to cause declines in a population, killing the few toads that were there. Isolation and small population size also could cause the boreal toads to eventually succumb to genetic problems as a result of inbreeding (lack of genetic exchange with other populations). If other stressors such as habitat alteration limit the toads' ability to move among and breed with other populations or simply make the habitat unsuitable for the toads' survival locally they also could become extirpated.

Are there other factors affecting the boreal toad?

We evaluated other potential stressors including habitat destruction and modification; overutilization for commercial, recreational, scientific, or educational purposes; predation; inadequacy of existing regulatory mechanisms; climate change, and UV-B radiation. However, there was not substantial information presented in the petition or in our files to conclude that these stressors are likely impacting the species. However, we will evaluate all potential threats to the species more thoroughly during our status review.

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