

Boreal Toad Recovery Project

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Objectives:

1. To restore a small, remnant population of the state endangered (Federal candidate species) boreal toad to "viable" status.
2. To establish that an endangered amphibian can not only coexist, but thrive within the perimeter of a public golf course without infringing upon normal golf course activities.

Start Date: 2001

Project Duration: 1 year

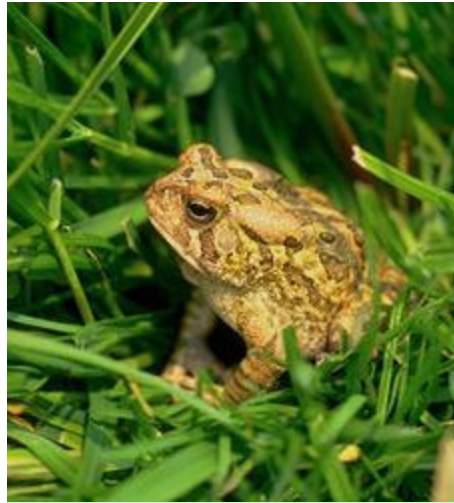
Total Funding: \$6,200

A very small, remnant population of boreal toads exists within the Pole Creek Golf Course. Annual breeding season monitoring has documented an average of seven adults and two egg masses for the previous six years. However, recruitment into the population has been minimal to nonexistent. Micro-habitat requirements critical to boreal toad success were missing from the breeding sites. Limiting factors were determined to be desiccation of eggs/tadpoles, cold water temperatures, and avian/aquatic insect predation.

Two experimental, boreal toad breeding ponds were created, utilizing out-flow water from existing, adjacent golf course water hazards. In-line water control structures controlled both the water level and rate of flow through the breeding ponds. Every aspect of boreal toad breeding ecology was incorporated into the ponds, including size, depth, slope, aspect, solar exposure, aquatic vegetation, terrestrial vegetation/refugia, connectivity to existing wetland/riparian zones, and minimization of avian, mammalian, and aquatic insect predation.



Researchers discovered a new predator of boreal toads: the song sparrow.



The experimental breeding ponds were very successful in producing adults and egg masses.

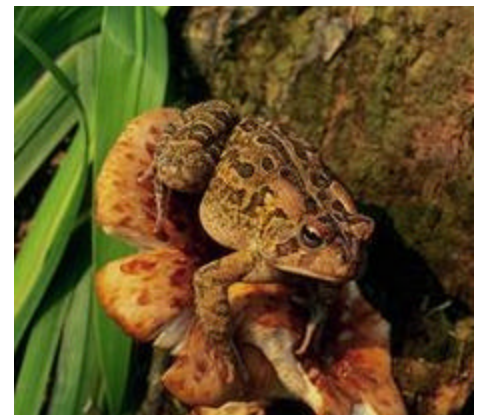
The response by the boreal toads was remarkable: 16 adults and seven egg masses were documented during the breeding season. At each pond, natural colonization by age-one toads and other subadults followed within one month. Eggs and tadpoles developed within norms.

The ponds were monitored one to three times per day throughout the season, adjusting water flow/depth and aquatic/terrestrial habitat as deemed necessary. A previously unknown boreal toad tadpole/toadlet predator was documented: the song sparrow. This new predator was more insidious, and more difficult to control, than either of the other two avian predators (robin and killdeer) documented at the breeding ponds.

Experimental, screened bird exclosures (6" high) were eventually placed over the metamorphosis "beaches". These devices covered both the shallows and adjacent shoreline, allowing aquatic entrance by tadpoles and terrestrial exit by the new metamorphs. The exclosures worked to perfection, and song sparrows were often

seen perching atop the screens, eye-balling their potential prey, but unable to access them.

As a result of recovery efforts this year, 1500-2000 boreal toadlets successfully metamorphosed and dispersed into the adjacent wetland/riparian zone. If age-one toadlets are documented next spring, the Pole Creek boreal toad population will meet the "viability" definition set by the interagency Boreal Toad Recovery Team. Currently, only 1 of 52 known boreal toad breeding locales in Colorado meet that definition.



As a result of recovery efforts this year, 1500-2000 boreal toadlets successfully metamorphosed and dispersed into the adjacent wetland/riparian zone.

Summary Points

- Two experimental, boreal toad breeding ponds were created, utilizing out-flow water from existing, adjacent golf course water hazards.
- Sixteen adults and seven egg masses were documented during the breeding season. At each pond, natural colonization by age-one toads and other subadults followed within one month.
- As a result of recovery efforts this year, 1500-2000 boreal toadlets successfully metamorphosed and dispersed into the adjacent wetland/riparian zone.