Fowler's Toad

Anaxyrus fowleri

Federal Listing	N/A
State Listing	SC
Global Rank	G5
State Rank	S3
Regional Status	High

Photo by Michael Marchand

Justification (Reason for Concern in NH)

Fowler's toads have apparently declined throughout much of the northeast and are listed as a species of high regional concern (NEPARC 2010, Weir et al. 2014). New Hampshire constitutes the northeastern limit of the range of the Fowler's toad. Little information on the Fowler's toad exists in New Hampshire and it is possible that the species occurs in low numbers. The lack of confirming evidence of a robust population in southern New Hampshire is cause for concern. The lack of information on this species in the state is the most serious threat, as it is currently unknown whether the species is locally abundant, but not widespread, or rare. This information is crucial for informing habitat protection and species management guidelines.

Distribution

The Fowler's toad range is southern New England westward through southeast New York, New Jersey and northern parts of Pennsylvania, the Midwest (parts of Michigan, Illinois and Ohio), and southern Ontario, Canada. Throughout its range in New England and New York, the species has an irregular or spotty distribution, although it is often described as being "widespread". The species occurs throughout the south, with the exception of coastal plain areas of Georgia and South Carolina and peninsular Florida. Fowler's toads are limited to the southern portion of the states of Vermont and New Hampshire and are described as reaching the Atlantic Coast almost into Maine (Stewart and Rossi 1981, Krauss and Schuett 1982, Shaffer 1991, Harding 1997, Klemens 1993). Limited records exist for the species in New Hampshire.

The distribution pattern of this species in the state is poorly documented. However, it is likely that the species occurred irregularly or patchily in areas with appropriate upland and breeding habitat. There are a limited number of Fowler's toad records in the state, but it is likely that they are associated with the Merrimack and Connecticut rivers. The documented historic sightings (more than 20 years old) are from the towns of Canterbury, Amherst, and Milford. Observations considered verified within the last 20 years are from the towns of Boscawen and Hinsdale. Overall, available data suggest that either the species suffers from poor monitoring and documentation or that it is rare and therefore constitutes a very small proportion of the regional Fowler's toad population.

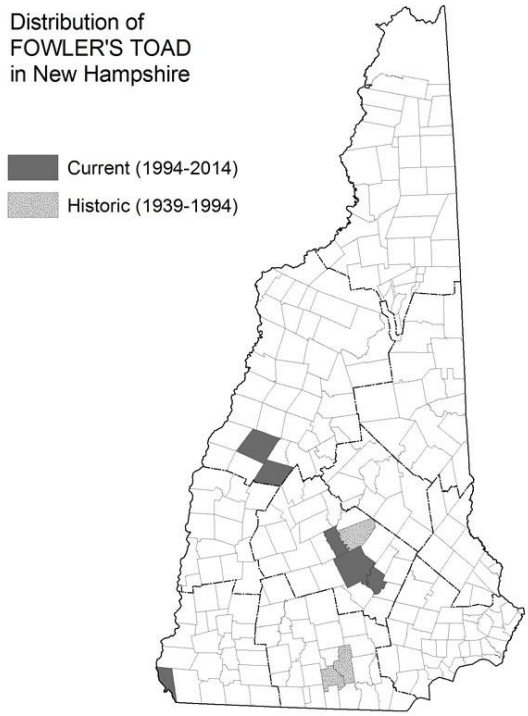
Habitat

Throughout most of its range the Fowler's toad occurs mainly in habitats with loose, well-drained sandy or gravelly soils including river banks, lake margins, beach and coastal dune systems, and sandy or scrubby woodlands (Wright and Wright 1949, Smith 1961, Minton 1972, Green 1989, Breden 1987, Klemens 1993). Fowler's toads can be found along roadsides, near homes and gardens, and in fields and pastures (Wright and Wright 1949). Breeding habitat is generally the shallow margins of

permanent water bodies, including lakes, farm ponds, rivers, and slow-moving streams (Wright and Wright 1949, Smith 1961, Breden 1988, Kemens 1993). Vernal pools may also be used for breeding (Wright and Wright 1949, Green 1989). In areas in which the species co-occurs with the American toad (Anaxyrus americanus), the Fowler's toad is often found in dryer areas whereas the American toad is found in more mesic habitats (Klemens 1993).

NH Wildlife Action Plan Habitats

- Large Warmwater Rivers
- Appalachian Oak Pine Forest
- Dunes
- Marsh and Shrub Wetlands
- Pine Barrens
- Shrublands
- Vernal Pools
- Warmwater Lakes and Ponds
- Warmwater Rivers and Streams



Distribution Map

Current Species and Habitat Condition in New Hampshire

There are not sufficient data available from which to make conclusions about population health or trends for this species.

Population Management Status

There is no population monitoring efforts currently occurring for this species.

Regulatory Protection (for explanations, see Appendix I)

- NHFG Rule FIS 803.02. Importation.
- NHFG Rule FIS 804.02. Possession.
- NHFG Rule FIS 811.01 Sale of Reptiles.
- NHFG FIS 1400 Nongame special rules
- Fill and Dredge in Wetlands - NHDES
- Rivers Management and Protection Program - NHDES
- Comprehensive Shoreland Protection Act - NHDES
- Clean Water Act-Section 404

Quality of Habitat

There are not sufficient data available to assess the quality of habitat patches for the Fowler's toads.

Habitat Protection Status

As the distribution of this species is not known, there is insufficient data to assess protection status.

Habitat Management Status

There are no habitat management efforts being made for Fowler's toads. Because the distribution and abundance of the species is unknown, management efforts that might indirectly benefit this species cannot be assessed at this time.

Threats to this Species or Habitat in NH

Threat rankings were calculated by groups of taxonomic or habitat experts using a multistep process (details in Chapter 4). Each threat was ranked for these factors: Spatial Extent, Severity, Immediacy, Certainty, and Reversibility (ability to address the threat). These combined scores produced one overall threat score. Only threats that received a "medium" or "high" score have accompanying text in this profile. Threats that have a low spatial extent, are unlikely to occur in the next ten years, or there is uncertainty in the data will be ranked lower due to these factors.

Habitat conversion due to development (Threat Rank: Medium)

Fowler's toads require sandy upland habitat near appropriate breeding sites. As many of these sites are likely to be along large river systems and lakes, and these areas are places where humans often build houses, Fowler's toads may suffer loss of habitat and fragmentation. As habitat suitable for Fowler's toads likely has a patchy distribution since not all shorelines are sandy, development on parcels used by Fowler's toad could result in local extirpation if adjacent areas are mesic (and therefore unsuitable habitat) and interpatch distances are beyond dispersal capabilities of Fowler's toads.

There is no direct information regarding this threat because Fowler's toad population information is generally lacking. However, the most likely areas in which Fowler's toads may occur are in the southern part of the state and along riverine areas such as the Connecticut and Merrimack Rivers. Given current population growth and development trends (Sundquist and Stevens 1999), and the expansion of I-93, it is likely that there will be increasing developmental pressures in areas where Fowler's toads may occur.

Habitat conversion and mortality from mining (sand & gravel) (Threat Rank: Medium)

Fowler's toad's preference for loose sand and gravel substrate elevates the risk of mortality and habitat destruction from mining.

One vouchered RAARP Fowler's toad observation was recorded in close proximity to an active sand and gravel pit in Boscawen, but the effect this has on the local population is not known.

Mortality of individuals from vehicles on roadways (Threat Rank: Medium)

Direct mortality of toads caused by vehicle traffic can be a significant mortality agent, and may be particularly problematic for small populations. Roads fragment toad habitat and may act as partial barriers to migration. Thus, roads may decrease toad dispersal, resulting in decreased exchange of individuals among populations and consequently reduce colonization/recolonization and gene flow among local populations. This could disrupt (meta) population dynamics of the species and reduce the ability of the species to remain viable.

There is substantial support in the literature that roads are a significant source of direct mortality for migrating amphibians (e.g., Fahrig et al. 1995, Ashley and Robinson 1996, Mazerolle 2004) and Fowler's toads may use roads at a higher frequency (i.e., non-rainy nights) due to behavioral, structural, and physiological anti-desiccation adaptations. At Cape Cod National Seashore in Massachusetts, Fowler's toads were documented using roads as movement corridors for hydro-thermo regulation, ease of movement, and foraging opportunities (Timm and McGarigal 2014). Given current population growth and development trends (Sundquist and Stevens 1999), and the ongoing widening of I-93, it is likely that there will be increasing developmental pressures in areas where Fowler's toads may occur.

List of Lower Ranking Threats:

Common reed may dominate breeding wetlands, reducing habitat

Mortality and species impacts (reduced fitness) from contaminants

Mortality and species impacts (decreased fitness) from various diseases (ranavirus, chytrid)

Species impacts from hybridization (with American toads)

Mortality from drawdowns of lakes and ponds that results in the desiccation of eggs and tadpoles

Mortality and degradation from increased droughts

Actions to benefit this Species or Habitat in NH

Monitor Fowler's toad populations

Primary Threat Addressed: Habitat conversion and mortality from mining (sand & gravel)

Specific Threat (IUCN Threat Levels): Energy production & mining

Objective:
Monitor the distribution, condition, and risk to Fowler's toad populations.

General Strategy:
The distribution and condition of Fowler's toad populations is not well known. Calling surveys can be effective at identifying breeding populations of Fowler's toads. Targeted distribution surveys should be conducted near potential Fowler's toad habitat. Once populations are confirmed, the condition of populations should be assessed.

Political Location:
Cheshire County, Hillsborough County, Merrimack County

Watershed Location:
Lower CT Watershed, Merrimack Watershed

Conserve habitat at known priority Fowler's toad sites.

Primary Threat Addressed: Habitat conversion due to development

Specific Threat (IUCN Threat Levels): Residential & commercial development

Objective:
Identify priority sites and conserve habitat at those sites.

General Strategy:
Population condition is not known for Fowler's toad sites in NH. Once that information is acquired, priority sites can be established and these areas can be included in land conservation priorities.

Political Location:
Cheshire County, Hillsborough County, Merrimack County, Rockingham County, Strafford County

Watershed Location:
Lower CT Watershed, Merrimack Watershed, Coastal Watershed

References, Data Sources and Authors

Data Sources
Information was obtained from an extensive literature search, RAARP (2015), and the New Hampshire Wildlife Sightings database.
Threat assessments were conducted by a group of NHFG biologists (Michael Marchand, Brendan Clifford, Loren Valliere, Josh Megysey).

Data Quality
The collective published works on Fowler's toad provide little insight into the species in New Hampshire. There have been no systematic surveys for Fowler's toads in the state. The quality of the existing data on Fowler's toad distribution in the state is extremely poor.
Although the literature can provide a general description of habitat associations for this species, distribution and population numbers are lacking for this species in New Hampshire. Because American toads are commonly misidentified as Fowler's toads, few records have been confirmed in New Hampshire (M. Marchand, NHFG, personal communication).

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2005 Authors:
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