

Northern Bog Lemming

Synaptomys borealis sphagnicola

Federal Listing	N/A
State Listing	SC
Global Rank	G3
State Rank	S1
Regional Status	

Justification (Reason for Concern in NH)

Bog lemmings are an extremely rare mammal in New England and eastern Canada, making them vulnerable to local extirpation (Banfield 1974). Recent surveys in the White Mountains found one individual at 1 of 108 sites (Yamasaki, unpublished data). Only two other sites in the region have yielded specimens over the last 100 years. Comprehensive surveys for bog lemmings have not been conducted outside of the White Mountains; difficulty in properly identifying this species may contribute to its lack of detection. Considerable work is required to understand the habitat requirements of this rare mammal in northern New Hampshire, as it has been found in low numbers across a variety of northern forest, alpine, and sphagnum vegetative communities. Further surveys for bog lemmings in sphagnum-dominated vegetative communities might be productive as in Montana surveys (Reichel and Beckman 1993, Reichel and Beckman 1994, Reichel 1995, Reichel and Corn 1997).

Distribution

Three specimens of bog lemmings have been recorded in New Hampshire in the past 100 years in the White Mountains region (Preble 1899, Clough and Albright 1987, Yamasaki, unpublished data). Northern New Hampshire represents the southernmost edge of the range of bog lemmings in northern New England and eastern Canada (DeGraaf and Yamasaki 2001, NatureServe 2015). There are insufficient data to determine any further spatial distribution patterns.

Habitat

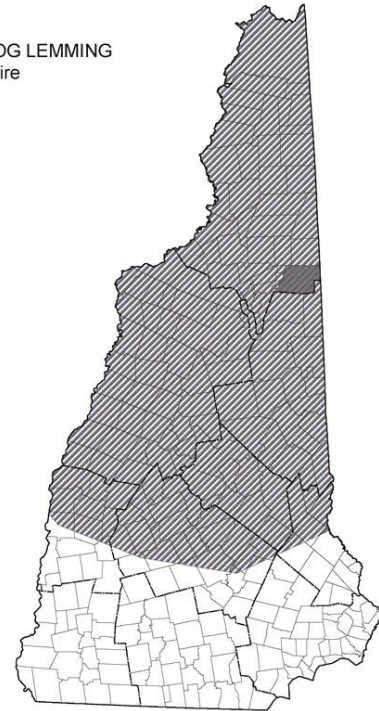
The northern bog lemming (hereafter called bog lemming) is found in northern New England, New York, and eastern Canada in higher elevation mossy spruce woods (1,300 to 4,500 feet), low elevation spruce-fir, hemlock and beech forests, sphagnum bogs, damp weedy meadows, and alpine sedge meadows (Clough and Albright 1987, DeGraaf and Yamasaki 2001, Banfield 1974, Saunders 1988). Special habitat requirements include moist loose soils or leaf mold (Banfield 1974, DeGraaf and Yamasaki 2001). Bog lemmings feed on grasses and sedges and are active year-round. Bog lemmings use tunnels several inches below ground and shallow runways on the ground surface (Banfield 1974). In the summer, bog lemmings construct spherical nests of dried grasses in burrows, and in winter, it nests on the ground (Banfield 1974).

Appendix A: Mammals

NH Wildlife Action Plan Habitats

- High Elevation Spruce-Fir Forest
- Lowland Spruce-Fir Forest
- Northern Hardwood-Conifer Forest

Distribution of
NORTHERN BOG LEMMING
in New Hampshire



Distribution Map

Current Species and Habitat Condition in New Hampshire

There are insufficient data to draw conclusions about the population health or distribution of bog lemmings.

Population Management Status

There are no management efforts for bog lemmings in New Hampshire.

Regulatory Protection (for explanations, see Appendix I)

- NH NHB Database - historic

Quality of Habitat

There are no data to with which to assess the relative quality of habitat patches for *S. borealis*.

Habitat Protection Status

All documented specimens in New Hampshire are within the proclamation boundary of the White Mountain National Forest. The bog lemming is recognized as a “Region 9 Regional Forester Sensitive Species” whose special concerns are addressed in the planning or analysis phases of management programs.

Appendix A: Mammals

Habitat Management Status

There are no habitat management efforts for bog lemmings.

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.

There are no threats ranked high or medium for this species.

List of Lower Ranking Threats:

Habitat degradation from forestry practices

Habitat loss or conversion due to communication tower and wind turbine development

Habitat loss and conversion due to the development of ski areas

Actions to benefit this Species or Habitat in NH

Minimize or mitigate the loss of high elevation habitat due to development

Primary Threat Addressed: Habitat loss or conversion due to communication tower and wind turbine development

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

Objective:

General Strategy:

Political Location:

Watershed Location:

Provide technical assistance and outreach for management in potential habitat

Primary Threat Addressed: Habitat degradation from forestry practices

Specific Threat (IUCN Threat Levels): Biological resource use

Objective:

General Strategy:

Appendix A: Mammals

Political Location:

Watershed Location:

Minimize or mitigate the loss or conversion of high elevation habitats

Primary Threat Addressed: Habitat loss and conversion due to the development of ski areas

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

Objective:

General Strategy:

Political Location:

Watershed Location:

References, Data Sources and Authors

Data Sources

Information on habitat, population distribution, and status was collected from unpublished data, scientific literature, and limited agency data.

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Data Quality

The bog lemming is probably the least understood mammal species in New Hampshire due to its rarity. With the cooperation of the WMNF, Yamasaki conducted a 3-year systematic survey of small mammals between 1995 and 1997. This survey took place in potential habitats across three levels of vegetation management in the White Mountains region. Directed searches used snap trap grids and 10-bucket, Y-shaped, drift fence pitfall sets to target rock voles (*Microtus chrotorrhinus*), long-tailed shrews (*Sorex dispar*), and northern bog lemmings. Out of the 108 study sites surveyed across managed, unmanaged, and remote locations in the forest, one managed site in a lowland spruce-fir stand yielded a bog lemming specimen (Yamasaki 1997). The positive identification was confirmed by the American Museum of Natural History where the specimen now resides.

While 10 years of small mammal sampling at the Bartlett Experimental Forest in Bartlett produced many specimens of small mammal species from the White Mountains region, including occasional specimens of southern bog lemmings, it produced no specimens of northern bog lemmings.

The bog lemming is probably the least understood mammal species in New Hampshire due to its rarity. Systematic searches in appropriate habitats in the White Mountain National Forest located 1 occurrence out of 108 sampled sites during a study from 1995 to 1997 (M. Yamasaki, USDA Forest Service, unpublished data).

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Appendix A: Mammals

Literature

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