

## **Eastern Red Bat**

*Lasiurus borealis*

Federal Listing	N/A
State Listing	SC
Global Rank	G4
State Rank	S3
Regional Status	Very High

### **Justification (Reason for Concern in NH)**

Like other bat species, the eastern red bat's life history is different from the typical life history of small mammals. Individuals are relatively long-lived and have a low reproductive rate with a mean litter size of three young per year (Shump and Shump 1982). Habitat loss and degradation may lead to population declines, which, when coupled with their slow reproductive rate, could lead to a slow population recovery time. Eastern red bats are of conservation concern in New Hampshire for the above reasons and because of the lack of knowledge about the species' population status in New Hampshire. Only 54 individuals have been captured in New Hampshire (NHFG unpublished data) from 7 counties. Ecolocation calls have been recorded in one additional county (Reynolds 1999). The above data indicate that eastern red bats may have a wide summer distribution in New Hampshire. The current lack of detailed data on the distribution, habitat use, and life history of eastern red bats in New Hampshire is largely due to a lack of research. The biggest threats to eastern red bats are wind turbines and habitat loss.

### **Distribution**

Data on the current and historical ranges of eastern red bats in New Hampshire are too few to allow a regional population comparison. Available data indicate that eastern red bats may have a wide summer distribution in New Hampshire.

### **Habitat**

Eastern red bats inhabit New Hampshire during the summer. Individuals migrate to southern states in the fall and return to New Hampshire and other northern states in the spring (Cryan and Veilleux 2007). No available data describe the summer habitat requirements of eastern red bats in specifically in New Hampshire. During the summer, eastern red bats roost in tree foliage (Shump and Shump 1982, Whitaker and Hamilton 1998). Adult males and non-reproductive females roost singly; reproductive females are colonial and roost with their young (Mumford 1973, Shump and Shump 1982, Hutchinson and Lacki 2000). Females give birth and wean their young within foliage roosts. Studies have found that red bats roost in a variety of deciduous tree species, in the largest trees, often high off the ground near the outer canopy edge. Hutchinson and Lacki (2001) suggest that eastern red bats roosting at such locations are sheltered from high temperatures caused by direct solar insolation and benefit from the cooling effects of wind caused by evaporative/convective heat loss. Eastern red bats roosting in fragmented habitats, such as urban areas and farmland, may roost nearer the ground. This behavior may reflect the lower height of tree canopies in such areas, as well as benefits from the cooling effects of wind.

Roost trees are typically located close to permanent water sources (Hutchinson and Lacki 2000).

## Appendix A: Mammals

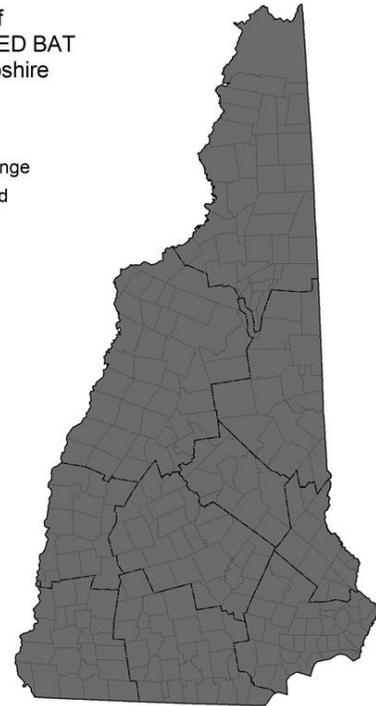
Menzel et al. (1998) reported the mean roost area (the area containing all roost trees) at 2.6 ha, while Mager and Nelson (2001) reported a mean roost area of 90 ha.

### NH Wildlife Action Plan Habitats

- Hemlock Hardwood Pine Forest
- Northern Hardwood-Conifer Forest
- Appalachian Oak Pine Forest
- Floodplain Habitats
- Lowland Spruce-Fir Forest
- Northern Swamps
- Temperate Swamps

Distribution of  
EASTERN RED BAT  
in New Hampshire

■ Core Range  
▨ Localized



Distribution Map

### Current Species and Habitat Condition in New Hampshire

The paucity of data on summer occurrences in New Hampshire prevents an analysis of the population trends and viability of eastern red bats.

### Population Management Status

Eastern red bats are not currently managed in New Hampshire. The risk to bats from mortality due to wind turbines is considered during the environmental review process for wind power facilities.

### Regulatory Protection (for explanations, see Appendix I)

- NHFG Permit for collection or possession

### Quality of Habitat

Unknown.

### Habitat Protection Status

Unknown.

## Appendix A: Mammals

### Habitat Management Status

None.

### 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:

Mortality and species impacts from agricultural pesticide use causing prey declines

Habitat degradation from succession that causes loss of drinking and foraging habitats

Mortality due to prescribed fire during winter

Habitat degradation from timber harvest that removes summer roosting and foraging areas

Habitat degradation from roads and powerline development

Mortality and conversion of migratory habitat due to wind turbine development

Habitat conversion and degradation due to removal of summer roosting and foraging areas

### Actions to benefit this Species or Habitat in NH

#### Protect occupied roosting trees

**Primary Threat Addressed:** Habitat degradation from timber harvest that removes summer roosting and foraging areas

**Specific Threat (IUCN Threat Levels):** Biological resource use

**Objective:**

Prevent occupied roosting trees from being cut down.

**General Strategy:**

Develop voluntary BMPs for forestry that help landowners and foresters identify and protect known and potential roosting trees during harvesting operations. Provide these guidelines to organization building trails or otherwise potentially cutting trees. BMPs could include time of year restrictions for cutting, tree size limitation and other techniques. Coordinate with other states for consistency.

**Political Location:**

Statewide

**Watershed Location:**

Statewide

#### Develop standard processes to reduce the effect of wind energy production on bats

## *Appendix A: Mammals*

**Primary Threat Addressed:** Mortality and conversion of migratory habitat due to wind turbine development

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

**Objective:**

Develop and implement rules on siting and operation of wind turbines to reduce mortality of bats during construction and operation

**General Strategy:**

Develop and implement siting rules that protect migration routes and occupied habitat from wind turbine development. Develop required operational mitigation measures such as curtailment to reduce bat mortality post-construction. Develop these in conjunction with nearby states to provide consistency to energy developers across the northeast.

**Political Location:**

Northeast, Statewide

**Watershed Location:**

Statewide

### **Monitor bat populations**

**Objective:**

Continue to monitor summer bat populations.

**General Strategy:**

Resurvey summer mist netting sites that have been historically monitored such as Surry Mountain Dam and New Boston Air Force Station.

**Political Location:**

Statewide

**Watershed Location:**

Statewide

### **Promote organic practices and integrated pest management (IPM)**

**Primary Threat Addressed:** Mortality and species impacts from agricultural pesticide use causing prey declines

**Specific Threat (IUCN Threat Levels):** Pollution / Agricultural & forestry effluents / Herbicides & pesticides

**Objective:**

Provide technical assistance to organizations that provide education, technical assistance and funding to farmers and homeowners on organic growing practices and IPM.

**General Strategy:**

Work with the Northeast Organic Farmers Association, UNH Cooperative Extension, NRCS, nursery stock growers, garden centers, garden clubs, landscapers and others to educate farmers, homeowners and commercial landscapers on using IPM and organic practices

## Appendix A: Mammals

### Political Location:

Statewide

### Watershed Location:

Statewide

## References, Data Sources and Authors

### Data Sources

Town data on the eastern red bat's summer distribution were compiled from museum specimens, college and university teaching collections, and the published and gray literature of bat research in New Hampshire. NHFG unpublished data includes capture records provided by researchers as part of their reporting requirements for obtaining scientific collecting permits in NH.

### Data Quality

Data on the distribution of eastern red bats in New Hampshire are extremely limited, but the quality of existing data is believed to be good because eastern red bats are morphologically unique and easy to identify. The major knowledge gap is the paucity of occurrence records and research into distribution patterns.

### 2015 Authors:

Emily Preston, NHFG

### 2005 Authors:

Jacques Veilleux, Franklin Pierce University; D. Scott Reynolds, St. Paul's School

## Literature

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## *Appendix A: Mammals*

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