

SPECIES PROFILE

Silver-Haired Bat

Lasionycteris noctivagans

Federal Listing: Not listed

State Listing: Not listed

Global Rank: Not ranked

State Rank: Not ranked

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ELEMENT 1: DISTRIBUTION AND HABITAT

1.1 Habitat Description

Silver-haired bats do not remain in New Hampshire during the winter (see Izor 1979 for discussion of silver-haired bats remaining in northern latitudes during winter). Individuals that inhabit New Hampshire during the summer migrate to southern states in autumn. During spring, individuals return to their summer habitat in New Hampshire (or, more generally, to northern states; Cryan and Veilleux *in press*).

The silver-haired bat is a tree roosting species that roosts in tree hollows (e.g. Vohnhof 1996, Betts 1998a, Crampton and Barclay 1998). No data describe the summer roosting ecology of silver-haired bats in New Hampshire, but several studies have examined summer roosting in the northwestern United States and southwestern Canada (Campbell et al. 1996, Vohnhof and Barclay 1996, Betts 1998a, Crampton and Barclay 1998). Though results of habitat studies varied, in general, silver-haired bats preferred to roost in large tall trees, often in early to moderate stages of decay, in deep cavities relatively high off the ground.

Betts (1998a) found most roosts used by silver-haired bats were in mature rather than young stands. Campbell et al. (1996) found roost sites located > 100 m from riparian areas, on slopes averaging 38%, and the slope aspect for 11 of 15 roosts within 70° of north. The maternity roost described by Parsons et al. (1986) was located within a mixed-wood stand

dominated by sugar maple (*Acer saccharum*), eastern white cedar (*Thuja occidentalis*), and white birch (*Betula papyrifera*).

1.2 Justification

Like other bats, silver-haired bats have a life history different from the life history of other small mammals. Individuals are relatively long-lived and have a low reproductive rate, typically giving birth to two young per year (Kunz 1982). Habitat loss and degradation may lead to population decline, which would be aggravated by slow reproductive rates. Silver-haired bats are also of conservation concern in New Hampshire because little is known about their population status. The lack of detailed data on the distribution, habitat use, and life history of silver-haired bats in New Hampshire may be largely due to a lack of research.

1.3 Protection and Regulatory Status

No specific Endangered Species Act (ESA) or RSA 212 regulations govern take, transport, or use of this species. Scientific collection or research requiring capture of individuals requires a permit through NHFG. Possession of live bats requires a permit under NHFG FIS 800.

1.4 Population and Habitat Distribution

Data on the current and historic range of silver-haired bats in New Hampshire are too few to allow a regional comparison. Only one individual has been captured in New Hampshire—Sasse (1995) captured an adult male in the town of Bartlett (Carroll County; D.B. Sasse, Arkansas Game and Fish Commission, personal communication). Reynolds (1999) also recorded echolocation calls at 3 sites: McDowell-Woodcock

(Peterborough, Hillsborough County), Bear Brook State Park (Pembroke, Merrimack County), and Pawtuckaway State Park (Nottingham, Rockingham County) and Krusic (1996) reported an echolocation recording from Bartlett, Carroll County. Existing data indicate that silver-haired bats may have a wide summer distribution in New Hampshire.

1.5 Town Distribution Map

Not completed for this species.

1.6 HABITAT MAP

1.7 Sources of Information

Data on species distribution were compiled by searching for specimens deposited in museums and college/university teaching collections and by examining published and gray literature of research on bat populations in New Hampshire.

1.8 Extent and Quality of Data

Data on the distribution of silver-haired bats in New Hampshire are extremely limited, though existing data are believed to be good. Hoary bats are morphologically unique and identifications should be accurate. Echolocation sequences of silver-haired bats are difficult to distinguish from big brown bats (*Eptesicus fuscus*; Betts 1998b), and therefore, such data should be treated with caution.

1.9 Distribution Research

A long-term, statewide mist-netting survey, accompanied by echolocation data (e.g., use of Anabat acoustic survey methods when mist-netting), is needed to determine the summer distribution of silver bats in New Hampshire.

ELEMENT 2: SPECIES/HABITAT CONDITION

2.1 Scale

Scale for an appropriate conservation planning unit has not been resolved by the upland forest habitat mapper (Steve Fuller, NHFG).

2.2 Relative Health of Populations

Population trends and viability cannot be inferred from the limited data on summer occurrences in New Hampshire.

2.3 Population Management Status

Silver-haired bats are not currently managed in New Hampshire. Management will require better information on the distribution of silver-haired bats.

2.4 Relative Quality of Habitat Patches

Scale for an appropriate conservation planning unit has not been resolved by the upland forest habitat mapper. Regardless of scale, it will be difficult to determine the relative quality of habitat patches in New Hampshire without first defining how and when silver-haired bats use various habitats.

2.5 Habitat Patch Protection Status

Because a scale for an appropriate conservation planning unit has not been resolved by the upland forest habitat mapper, data on the protection status of upland forest habitat patches are not available.

2.6 Habitat Management Status

Because a scale for an appropriate conservation planning unit has not been resolved by the upland forest habitat mapper, data on the habitat management status of upland forest habitat patches are not available.

2.7 Sources of Information

Because a scale for an appropriate conservation planning unit has not been resolved by the upland forest habitat mapper, sources of information used in determining the scale for conservation planning units are not available.

2.8 Extent and Quality of Data

Scale for an appropriate conservation planning unit has not been resolved by the upland forest habitat mapper. Therefore, the extent and quality of information used in determining the scale for conservation

planning units is uncertain.

2.9 Condition Assessment Research

Research priorities for silver-haired bats include a state-wide mist-netting survey, telemetry studies to determine habitat use (roosting and foraging habitat), life history studies to determine breeding status and reproductive patterns, and food habit analyses to determine prey preference.

ELEMENT 3: SPECIES THREAT ASSESSMENT

3.1.1 Development (Habitat Loss and Conversion), Unsustainable Harvest (Forestry Operations and Management)

(A) Exposure Pathway

As forested land in New Hampshire is cleared, silver-haired bats will experience habitat loss and degradation. Bats, particularly non-volant young, may experience direct mortality if the conversion occurs during the parturition/lactation period (late May through mid July). The cumulative result of habitat loss, degradation, and possibly direct mortality will likely reduce the population size.

(B) Evidence

Data indicate that individual roost trees are occupied by bats on a year-to-year basis (Barclay and Brigham 2001) and that individual bats return to the same, small summer roosting area each year (Veilleux and Veilleux 2004). These data are for colonial bat species, and therefore, bat biologists hypothesize that strong fidelity to roost areas (and possibly roost trees) in the landscape allows individuals to relocate colony mates after emerging from hibernation in the spring, or, in the case of silver-haired bats, after their return migration. The removal of roost trees may disrupt the process of colony formation. If individuals are unable to form a colony, it is likely that a corresponding reduction in individual fitness, and therefore population recruitment, will occur.

3.1.2 Energy and Communication Infrastructure

(A) Exposure Pathway

(B) Evidence

Turbine-related bat mortalities at the Backbone Mountain site (Mountaineer Wind Energy) show that non-hibernating migratory bats such as the silver-haired bat are at greatest risk of turbine impact. Mortality rates of silver-haired bats are usually lower than other migratory tree bats, but they are more likely to die at some sites. For example, silver-haired bats represented 56% of the total bat mortality at a site in Washington state (Erickson et al. 2003) and 31% at a site in Minnesota (Osborn et al. 1996).

3.2 Sources of Information

Sources of information on threats to silver-haired bats include peer-reviewed scientific articles, gray literature, and expert review by John O. Whitaker, Jr. of Indiana State University.

3.3 Extent and Quality of Data

The threats described under element 3.1 are relatively well documented. Data describing the long-term negative effect of habitat conversion (development/logging) are not well understood. The fidelity of bats to specific roost areas is fairly well documented, but not for silver-haired bats. It has been assumed that silver-haired bats will behave in a similar fashion to other species. Additional data on how silver-haired bats use roost areas and roost trees on a long-term (interannual) basis are needed.

3.4 Threat Assessment Research

A primary assessment would document areas in New Hampshire with relatively high numbers of silver-haired bats (i.e. roost areas). Radio-telemetry studies would allow managers to determine location of roost areas. Several years of capture and telemetry data at the roost areas would determine whether individual bats are returning to the same roost areas year-to-year. Such data would allow managers to assess the impact of deforestation (due to development or logging) on silver-haired bats.

ELEMENT 4: CONSERVATION ACTIONS

4.1.1 Documenting roosting habits, Habitat Protection

(A) Development (Habitat Loss and Conversion), Unsustainable Harvest (Forestry Operations and Management)

(B) Justification

- Identifying summer roost areas of silver-haired bats and determining whether individual bats return to specific roost areas on a year-to-year basis will allow managers to better assess the impact of logging and development in silver-haired bat habitat.
- Although no data exist about the scale of the silver-haired bat's summer roosting habitat, Veilleux and Veilleux (2004) observed individual female eastern pipistrelles returning to very small summer roost areas across years; minimum roost areas used by the same bats of this species over two years ranged from 0.6 to 2.3 ha. Where silver-haired bats are found to roost, it is important to manage logging and development at a comparably small scale.

(C) Conservation Performance Objective

Integrate critical roosting habitats into a wildlife database. This will help managers limit and ameliorate activities that threaten silver-haired bat populations. By protecting entire habitat areas, the smaller scale attributes of habitat needs for silver-haired bats (e.g. preferred species of roost tree) will be preserved as well.

(D) Performance Monitoring

To determine whether limiting or mitigating development and logging is beneficial to silver-haired bat populations at specific sites, managers can monitor whether silver-haired bats continue to use the habitat area over a relatively long period (perhaps periodic monitoring over a ten-year period).

(E) Ecological Response Objective

Maintain populations in delineated habitats. Since current data are too few to allow a valid estimate of current silver-haired bat population status at summer

roost areas, the minimal ecological response should be the maintenance of populations initially located by biologists.

(F) Response Monitoring

Identify more specific monitoring parameters. A summer survey at a known habitat area should be conducted every three years. This would provide data on silver-haired bats' fidelity to specific roost areas during summer and would allow managers to make better decisions about the maintenance of silver-haired bat populations in areas of logging and development.

(G) Implementation

After summer habitat is defined, the state should coordinate an intensive radio-telemetry study to determine habitat use by individual bats (perhaps six individuals), and establish a long-term monitoring program (ten years, with periodic monitoring every 3 years) to determine if silver-haired bats remain faithful to summer roost areas.

(H) Feasibility

The technical competence to determine general summer habitat areas of silver-haired bats (mist-netting) and the detailed patterns of their roosting habits (radiotelemetry) is available. The overall feasibility of conducting this research is limited by the availability of funding.

4.1.2 Site-Selection and Pre-Construction Regulations, Regulation and Policy

4.2 Conservation Action Research

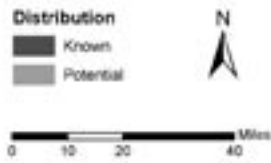
ELEMENT 5: REFERENCES

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Distribution of the Silver-haired Bat in New Hampshire



Known = confirmed summer observations obtained from mistnet surveys conducted by professional wildlife biologists.
Potential = evidence of species presence from recorded echolocation calls.

