

Little Brown Myotis (*Myotis lucifugus*)

Species Status Statement.

Distribution

Little brown myotis has a wide distribution across the United States and Canada, and until recently was regarded as one of the most common bats in North America. The bat occurs in all of Utah except for the extreme southeastern corner (Oliver 2000, UDWR data).

Table 1. Utah counties currently occupied by this species.

Little Brown Myotis
ALL

Abundance and Trends

The emerging fungal disease, white-nose syndrome (WNS), has resulted in the precipitous decline of little brown myotis as the disease has spread from its first known occurrence in New York in 2006 (Frick et al. 2010). In the northeastern United States, winter hibernacula populations of little brown myotis have declined an average of 90%. The species now exists there in small, remnant populations. For now, little brown myotis remains relatively common in Utah. Monitoring surveys since 2009 show stable occupancy (UDWR data).

Statement of Habitat Needs and Threats to the Species.

Habitat Needs

Little brown myotis feeds on small aerial insects and inhabits a variety of habitats across its range. In Utah, it primarily occurs in forests of various types, often at moderately high elevation (Oliver 2000). It is also common in cities and towns in Utah, where individuals sometimes roost in buildings, and may create nuisance situations. It is generally unknown where these bats hibernate in Utah or other western states. However, recent work suggests that little brown myotis may hibernate in relatively small aggregations, in cliffs and rock crevices (Weller et al. 2018).

Threats to the Species

The invasive disease WNS is identified as the greatest threat to little brown myotis. The disease affects bats during hibernation, leading to dehydration, emaciation, and eventual death. In robust healthy populations, other activities that kill small numbers of individuals or disrupt maternity roosts and hibernating bats are lesser threats.

Table 2. Summary of a Utah threat assessment and prioritization completed in 2014. This assessment applies to the species' entire distribution within Utah. For species that also occur elsewhere, this assessment applies only to the portion of their distribution within Utah. The full threat assessment provides more information including lower-ranked threats, crucial data gaps, methods, and definitions (UDWR 2015; Salafsky et al. 2008).

Little Brown Myotis
Very High
Disease – Alien Organisms
Medium
Habitat Shifting and Alteration
Water Developments for Livestock

Rationale for Designation.

As of 2019, Utah managers have not detected WNS in the state. Elsewhere, managers have documented the causative fungus as near as eastern Wyoming and western Washington. Given its past rate of spread, WNS will probably reach Utah within 5 years. Some publications have predicted the extinction of little brown myotis (Frick et al. 2010), while others have noted limited recovery in affected areas (Dobony and Johnson 2018).

It is unknown how WNS will affect Utah's little brown myotis populations. The impact of the disease, and the potential for recovery, may depend on transmission risk between individuals, environmental factors, nutritional and immune status, as well as other stressors that may affect the populations (Cheng et al. 2019). Petitioners have requested federal ESA listing for this species (Kunz and Reichard 2011), and the US Fish and Wildlife Service have scheduled a status review and determination for 2023.

In Utah, conservation actions will focus on implementing the Utah Bat Conservation Plan and WNS Management and Surveillance Protocol (Oliver et al. 2009, Roug et al. 2016). These documents outline goals, objectives, and strategies designed to prevent this disease from establishing in Utah bat populations, and provide management and surveillance strategies should WNS be detected in Utah.

Economic Impacts of Sensitive Species Designation.

Sensitive species designation is intended to facilitate management of this species, which is required to prevent Endangered Species Act listing and lessen related economic impacts. Endangered Species Act listing of other bat species in eastern states has prompted requirements for extensive regulatory compliance for a wide variety of project categories including transportation, utility rights-of-way, habitat management, and forest management. Given the wide distribution of this bat, formal and informal consultation could be required for

most projects with a federal nexus. Restrictions would be placed on activities around sensitive areas including maternity roosts and hibernacula. Even where mitigation is not ultimately required, ESA compliance increases the cost and alters timelines of many projects. Additionally, little brown myotis is known to roost in buildings, and ESA listing could complicate efforts to remove the bats from structures.

Literature Cited.

- Cheng, T.L., A. Gerson, M.S. Moore, J.D. Reichard, J. DeSione, C.K.R. Willis, W.F. Frick, and A.M. Kilpatrick. 2019. Higher fat stores contribute to persistence of little brown bat populations with white-nose syndrome. *Journal of Animal Ecology* 88: 591-600.
- Dobony, C.A. and J.B. Johnson. 2018. Observed resiliency of little brown myotis to long-term white-nose syndrome exposure. *Journal of Fish and Wildlife Management* 9(1):168-179; e1944-687X. doi:10.3996/102017-JFWM-080.
- Frick, W.F., J.F. Pollock, A.C. Hicks, K.E. Langwig, D.S. Reynolds, G.G. Turner, C.M. Butchkoski, and T.H. Kunz. 2010. An emerging disease causes regional population collapse of a common North American bat species. *Science* 329: 679-682.
- Kunz, T.H., and J.D. Reichard. 2011. Status review of the Little Brown Myotis (*Myotis lucifugus*) and determination that immediate listing under the Endangered Species Act is scientifically and legally warranted. Boston University's Center for Ecology and Conservation Biology.
- Oliver, G.V. 2000. The bats of Utah. Publication Number 00-14. Utah Division of Wildlife Resources. Salt Lake City, Utah, USA. 140pp.
- Oliver, G., K. Hersey, A. Kozlowski, K. Day, and K. Bunnell. 2009. Utah bat conservation plan. Utah Division of Wildlife Resources. Salt Lake City, Utah, USA.
- Roug, A, K. Hersey, K. Day, and G.V. Oliver. 2016. Utah white-nose syndrome management and surveillance protocol. Utah Division of Wildlife Resources. Salt Lake City, Utah, USA.
- Salafsky, N., D. Salzer, A.J. Stattersfield, C. Hilton-Taylor, R. Neugarten, S.H.M. Butchart, B. Collen, N. Cox, L.L. Master, S. O'Connor, and D. Wilkie. 2008. A standard lexicon for biodiversity conservation: unified classifications of threats and actions. *Conservation Biology* 22: 897–911.
- Utah Division of Wildlife Resources [UDWR]. 2015. Utah Wildlife Action Plan: A plan for managing native wildlife species and their habitats to help prevent listings under the Endangered Species Act 2015-2025. Publication Number 15-14, 385 pp.
- Weller T.J., et al. 2018. A review of bat hibernacula across the western United States: Implications for white-nose syndrome surveillance and management. *PLoS ONE* 13(10): e0205647. <https://doi.org/10.1371/journal.pone.0205647>