

Utah Bat Conservation Plan

by

George V. Oliver, Adam J. Kozlowski, Keith S. Day, and Kevin D. Bunnell

**Utah Division of Wildlife Resources
1594 W. North Temple
Salt Lake City, Utah 84116**

Version 1.0
Effective _____ **2009** – _____ **2014**

Executive summary

There is conservational concern for nearly all bats. Great declines have been observed in some populations of even the most widespread and abundant bat species in America. Of the bat species that inhabit Utah, six are on the Utah Division of Wildlife Resources' Sensitive Species List, Tier II of Utah's Wildlife Action Plan (WAP), one species is in Tier III of WAP, and several were former Category 2 candidates for federal listing by the U. S. Fish and Wildlife Service as threatened or endangered, under provisions of the Endangered Species Act, until Category 2 was eliminated in 1996.

The biology and life histories of most of the bat species that occur in Utah remain poorly and incompletely known, and this lack of knowledge impedes effective efforts to manage and to conserve their populations. Protection of roosting habitats, foraging habitats, and water are obvious conservational needs. To guide appropriate management, improved knowledge of the distributions (geographic inventory) and populations (monitoring of population trends) of the bat species that inhabit Utah is needed. To acquire the understanding needed for informed management, inventory and monitoring must be undertaken and accomplished in a systematic way.

This plan provides an overview of the bats of Utah, it summarizes threats to bats in Utah, it identifies conservational objectives, it recommends needed actions, and it provides tools and informational resources that can be used to carry out the needed actions.

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Purpose

The purpose of this document is (1) to identify deficiencies in the understanding of the biology of the bats that inhabit Utah, (2) to identify anthropogenic threats to the bats of this state, (3) to recommend conservational actions, (4) to direct research efforts to acquire needed knowledge, and (5) thus to guide management of Utah's bat species to ensure the viability of bat populations in the state. It is intended not to be static but instead to be a dynamic or a "living" document that will be updated and expanded in future editions.

General overview of the biology of Utah bats

Utah's known bat fauna comprises 18 species (Hasenyager 1980, Oliver 2000) or perhaps 19 or 20 species, depending on differing taxonomic opinions ("splitting" versus "lumping"). Three additional species have been reported from Utah based on misidentification or presumption (see Oliver 2000, pp 125–127), but some or all of these three species, and perhaps even others, may eventually be found in the state.

Being volant, bats, like birds, are among the most vagile of all organisms, and many species make long-distance seasonal migrations. Their great vagility facilitates their colonization of new areas and the expansion of their geographic

ranges. It also predisposes them to wandering, and it makes them susceptible to passive dispersal by windstorms. Thus bats can quickly reach and exploit new suitable sites that have been artificially created, such as water sources (e.g., livestock tanks), roosts (e.g., buildings, mines, bridges), and altered landscapes (e.g., urban parks, orchards, pastures). Species of bats also sometimes appear in surprisingly unexpected places as “occasional”, “accidental”, or “vagrant” occurrences, which are temporary (i.e., not resulting in colonization, reproduction, and establishment of a local population). Thus the known bat fauna of an area, like its avifauna, not only can change more rapidly than that of non-volant animals but also can at times include unpredicted, accidental species. As a result, the documented bat fauna of Utah is expected to be less static or fixed than is the rest of Utah’s mammalian fauna.

All of the bat species known to occur in Utah, and all but one of the species that may yet be found to occur in the state, belong to two families, Vespertilionidae (vesper bats), which are cosmopolitan, and Molossidae (free-tailed bats), which are mostly pantropical but extend into subtropical and milder parts of temperate latitudes. The one species not known from Utah but of possible occurrence in the state that is not a member of these two families belongs to the family Phyllostomidae (New World leaf-nosed bats), which are neotropical, with a few species ranging into subtropical parts of the New World.

All of the bats that inhabit or potentially inhabit Utah are nocturnal, although a few are also crepuscular. All of the bats that occur or may occur in Utah are insectivorous, most of them strictly so, though at least one consumes some non-insect arthropods, and a few occasionally take vertebrate prey (including other bats). Some Utah bats capture prey in the air, some glean prey from foliage, some glean from rock surfaces, and at least one Utah species often alights on the ground, where it captures prey in terrestrial, quadrupedal fashion. Most Utah bats eat mainly moths, though a few species feed heavily on beetles. Despite frequent claims that bats control mosquitoes, mosquitoes are not an important component of the diet of most bat species in Utah or elsewhere in America.

Some of Utah’s bats migrate south out of the state for the winter; others hibernate in Utah, though they may be facultatively active during warmer periods, especially at the lowest latitudes and lowest elevations in the state (e.g., southern Washington County).

Roosts are of critical importance to bats, and different roosting situations may be used for different purposes. Roosts are of four general types: (1) diurnal roosts, (2) nocturnal roosts, (3) maternity roosts, and (4) hibernacula. Some species use a single roost for all of these purposes; others require as many as four roosts with very different physical and structural characteristics. Roosting situations used by different bat species in Utah include caves, mines, buildings, rock crevices, foliage, and crevices, hollows, and spaces under exfoliating bark of trees. It has even been speculated that one species that occurs in Utah may

roost in burrows of rodents such as those of kangaroo rats. Some Utah bats roost in groups of various sizes, but other species roost singly, almost never being found with others except their own dependent young. Most Utah bats bear single young, but four species typically bear twins, and one species usually produces even larger litters. Only one litter is produced each year. This, together with small litter size, makes the reproductive potential of bats quite low relative to other small mammals. However, bats are much longer lived than most mammals of comparable size, individuals of some Utah species living 40 years or more.

Drinking water is of critical importance to most bats in Utah. Drinking is mostly accomplished by skimming the water surface with open mandible (jaw). Surface waters also provide rich foraging sites since flying insects are often abundant over even small bodies of water, and surface water often is bordered or surrounded by more luxuriant vegetation that favors insect abundance.

Essentially all habitats that are present in Utah are utilized by bats. Only alpine tundra, vast, sparsely vegetated salt flats, and large hypersaline water bodies (e.g., interior portions of the Great Salt Lake) can be considered marginal or unsuitable habitats for bats in this state. Some Utah bat species are highly selective in their use of habitats, while others utilize a very broad range of habitats. A few species appear to be favored by certain human alterations of the landscape (e.g., livestock tanks and other artificial water sources, mines, buildings, and even cities), but others are affected only negatively by human alterations of the natural environment.

Their ecological requirements (suitable habitats that provide water, insect prey, and particular roost conditions) together with their life history characteristics (low reproductive rate and long life) make Utah's bats especially vulnerable to mortality and population reduction resulting directly or indirectly from many human activities including the use of insecticides, water pollution, timber harvest and forest management, wind turbine energy production, abandoned mine closures, alterations of riparian habitats, and persecution and disturbance at roosts.

As a group, bats are arguably the most widely distributed of non-marine mammals. As discussed above, being volant, they are not limited by most of the barriers that impede dispersal and colonization by other mammalian groups. In terms of living species, the order Chiroptera (bats) is the second largest order of mammals, surpassed only by the order Rodentia (rodents). Despite their diversity, abundance, and worldwide distribution (except for Antarctica and the highest northern latitudes), bats are, as a group, perhaps the most poorly known of living mammals. Most of what is known of their biology has been learned since ca. 1960. The use of mist nets for the capture of bats revolutionized their study, and further technological advances continue to expand possibilities in bat research. Despite the much greater understanding of bats that has been

