



# Best Management Practices for Construction and Development Projects

## Gray bat

*Myotis grisescens*

**Common name** • Gray bat  
**Scientific name** • *Myotis grisescens*  
**Federal status** • Endangered  
**State status** • Endangered

### Purpose and Use

The information in this document is to be used to help avoid and minimize species impacts due to construction practices. It is not intended as a guide to manage habitat for a given species. Please contact the Department of Conservation if habitat management information is needed. Because every project and location differ, following the recommendations in this document does not guarantee impacts will not occur to the species and additional information may be required in certain instances. Following the recommendations in this document does not complete Endangered Species Act consultation that may be necessary for species listed under the federal Endangered Species Act; please contact the U.S. Fish and Wildlife Service for more information.

### Ecology

Gray bats inhabit caves throughout the year. Most of Missouri's winter population hibernates in three caves, all of which are in the southern part of the state. In the spring, usually in April and May, these bats migrate to over 50 other caves scattered throughout the Ozarks. Migration from summer caves to winter hibernacula is more drawn out, beginning in August and going through early November. Adults mate in the fall prior to hibernating. Hibernation lasts from October through April. Gray bats hibernate in deep, vertical caves that trap cold air. Bats have the ability to lower their metabolism during hibernation, thereby reducing the amount of energy and food they use. However, they enter hibernation with only enough fat reserves to last until spring. Any disturbance to bats while they are hibernating can arouse them and possibly result in death by starvation if fat reserves are depleted.

In summer, pregnant females form maternity colonies in caves that have domed ceilings where the mothers can cluster together to keep their babies warm. Females produce only one offspring per year, usually in June. Males and first-year females (which do not bear young) form bachelor colonies in separate caves or, sometimes, in cooler portions of maternity caves. Gray bats forage up to 12.4 miles (20 km) from their summer roosts and feed on aquatic and terrestrial flying insects. They generally feed over water or in adjacent riparian vegetation.

### Reasons for Decline

Gray bats are sensitive to human disturbance of their roosts. In hibernacula, human disturbance causes the bats to use up vital fat reserves, their only source of energy throughout winter. In maternity caves, pregnant females may abort unborn young or panicked mothers may drop babies to their deaths if forced to flee from intruders. Severe or repeated disturbance may cause reproductive failure of an entire colony. Mortalities resulting from collisions with wind turbines have the potential to cause significant impact to the Gray bat population, particularly in Missouri. Wind turbines pose the greatest threat to bat populations when sited near roosts and foraging areas. Other reasons for the decline in gray bat populations include a decrease in the number of suitable caves because of climate changes in caves due to nearby deforestation. Deforestation between caves and rivers or reservoirs along migration and foraging routes also may increase the risk of predation on bats. Climate change will also likely lead to increased spread of disease, disruption of hibernation, and extreme weather events such as flooding of caves. Use of pesticides and insecticides may not only reduce food supply for bats but also will introduce poisons into the food chain.

### Specific Recommendations

It is important to protect caves and riparian corridors because gray bats use these areas for roosting and foraging.

- Avoid human entry into gray bat caves during the season(s) in which the bats are present. This is dependent upon whether the cave is a maternity or hibernation cave. Maternity and bachelor caves should be closed to human entry April 1 through October 1. Winter hibernacula should be closed to human entry October 1 through March 31.
- Retain corridors of mature trees between bat caves and waterways to provide protection from avian predators between roosts and foraging areas.
- Avoid activities that could displace large amounts of smoke towards cave entrances during the season(s) when bats are present.
- Avoid activities (>85 decibels) within 50 feet from a cave where bats are hibernating to minimize disturbance.
- Minimize logging and other deforestation activities, especially within a 100-foot buffer of the river or reservoir, to protect stream quality so the aquatic insect community remains healthy.
- Avoid or minimize pesticide use where gray bats forage.

- Wind energy developments should coordinate directly with the U.S. Fish and Wildlife Service Missouri Ecological Services Field Office and the Missouri Department of Conservation in order to apply the latest data and practices to minimize the potential to impact Missouri's gray bat population.

## General Recommendations

Refer to *Best Management Practices for Construction and Development Projects Affecting Missouri Rivers and Streams and Management Recommendations for Construction and Development Projects Affecting Missouri Karst Habitat*.

If your project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or the [Missouri Department of Transportation Environmental Studies webpage](#) for additional information on recommendations.

## Information Contacts

For further information regarding regulations for development in rivers and streams, contact:

For species information:

### [Missouri Department of Conservation](#)

Science Branch  
P.O. Box 180  
Jefferson City, MO 65102-0180  
Telephone: 573-751-4115

For species information and Endangered Species Act Coordination:

### [U.S. Fish and Wildlife Service](#)

Ecological Services  
101 Park Deville Drive, Suite A  
Columbia, MO 65203-0007  
Telephone: 573-234-2132

For Clean Water Act Coordination:

### [Missouri Department of Natural Resources](#)

Water Protection Program  
P.O. Box 176  
Jefferson City, MO 65102-0176  
Telephone: 573-751-1300, 800-361-4827

### [U.S. Army Corps of Engineers](#)

Regulatory Branch  
700 Federal Building  
Kansas City, MO 64106-2896  
Telephone: 816-389-3990

### [U.S. Environmental Protection Agency](#)

EPA Region 7 Water Division  
11201 Renner Boulevard  
Lenexa, KS 66219  
Telephone: 913-551-7977

## Disclaimer

These Best Management Practices were prepared by the Missouri Department of Conservation with assistance from state and federal agencies, contractors, and others to provide guidance to those who wish to voluntarily act to protect wildlife and habitat. Compliance with these Best Management Practices is not required by the Missouri wildlife and forestry law nor by any regulation of the Missouri Conservation Commission. Federal laws such as the Clean Water Act and the Endangered Species Act, and state or Local laws need to be considered for construction and development projects and require permits and/or consultation with the appropriate agency. Following the recommendations provided in this document will help reduce and avoid project impacts to the species, but impacts may still occur. Please contact the appropriate agency for further coordination and to complete compliance requirements.