

Wildlife Conservation Land Program Priority Habitat Management Guidelines

Bat Caves



Listed species associated with bat caves in the Southern Blue Ridge eco-region include gray bat, Virginia big-eared bat, Indiana bat, Rafinesque's big-eared bat, Eastern small-footed bat and Northern long-eared bat.



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Habitat Description

Caves are mainly found scattered across the Southern Blue Ridge physiographic province, although some do occur in other regions of the state. While there are several different types of caves, the most common types found in North Carolina are solution caves, fissure caves, rock shelter and boulder caves.

These types of caves differ primarily in the way they are formed. Solution caves are created by the action of water, dissolving the underlying rock to form tunnels. Fissure caves are formed by movement of the earth's surface that results in cracks of the rock layers. Rock shelter and boulder caves are formed by erosive forces, weather events, earth surface movements and other factors, which essentially leave spaces underneath or behind surface rock. Most caves in North Carolina are rock shelter or boulder caves.

In addition to natural caves, extensive mining in North Carolina has resulted in numerous manmade subterranean excavations that also function as bat caves. The Wildlife Conservation Land Program (WCLP) allows manmade subterranean excavations to be considered bat cave habitat when conditions inside the mine shafts and tunnels mimic natural caves and provide suitable structure for bat inhabitation.

Caves may be used by 11 species of bats in North Carolina for hibernation, birthing and raising of pups and roosting, while other caves may not be used by bats at all. To be considered bat cave habitat under WCLP, the cave must have documented use by aggregations of bats.

The volume of air, temperature and relative humidity are important factors influencing the use of caves by bats. Surface conditions surrounding cave entrances can have significant effects upon those conditions.

Land use in the immediate vicinity of cave entrances can affect air flow through the cave and foraging conditions for resident bats. Changes to adjacent vegetation can impact the microclimate of the cave, rendering it unsuitable for bats habitation. For all these reasons qualifying bat cave habitat must include a buffer which encom-

passes the cave, all its entrances and suitable area necessary to sustain the temperature, air flow, humidity and foraging conditions needed to maintain the bat population.

Management Strategies – Wildlife Conservation Land Program (WCLP)

Any cave or mine enrolled in the Wildlife Conservation Land Program, must have documented use by an aggregation of bats in order to be considered bat cave habitat.

Landowners with caves or mines on their property will need to have the sites surveyed by a private contractor who is qualified to ascertain whether or not bats are using their tract. Most cave bats spend the winter hibernating in caves or mines. Some species of cave bats reside in caves year-round, although different caves may be used during summer and winter. Other cave bats prefer to roost in trees or structures during summer. Summer “maternity” colonies of pregnant or nursing females will use caves or mines to raise their young.

The two major threats to bat cave habitat are recreational impacts and development. Activities associated with recreational caving and exploration can easily disrupt the normal behavior patterns of wildlife using the resource and may also result in negative changes to habitat conditions for the cave dwelling animals. Human entry into caves may introduce the fungus that causes [White-Nose Syndrome](#). This disease has caused significant mortality in bat populations across western North Carolina.

Human disturbance to hibernation and maternity colonies can be very harmful to bat populations. Bats aroused from hibernation expend critical energy needed to survive until spring. If aroused from hibernation often, they may ultimately starve to death or experience declined body condition which may impact reproductive success. Disturbance to summer maternity colonies can result in baby bats being dropped to their deaths or abandoned by panicked adults.

Once documented populations are confirmed on a tract, landowners must be willing to institute appropriate restrictions upon use of the sites to prevent both direct impacts (e.g., repeated disturbance during bat hibernation), as well as indirect impacts (e.g., habitat changes that make microhabitat conditions inside the cave or mine unsuitable). This can entail permanent closure of the cave or mine to ensure the habitat is protected. At least three caves and two mine complexes in North Carolina currently have bat friendly gates installed to prohibit or regulate human entry. These exclusion devices reduce habitat disturbance and the subsequent impacts upon cave conditions.

A buffer of sufficient width will also be needed to minimize negative impacts to the site and its wildlife. Barring special circumstances, the maximum buffer for any bat cave will be 600 feet. A wildlife biologist can assist with delineating the area to be protected.

Conservation easements are strongly encouraged to help protect these sites from long-term impacts such as residential development.

Information concerning this and other priority habitat types can be found in the [North Carolina Wildlife Action Plan \(NCWAP\)](#).



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