

Wildlife Conservation Land Priority Habitat Management Guidelines

Bat Caves



Protected species associated with bat caves in the Southern Blue Ridge eco-region include gray bat, Rafinesque's big-eared bat, Virginia big-eared bat, Indiana bat, and Eastern small-footed 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, and rock shelter / 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 / boulder caves are formed by erosive forces, weather events, earth surface movements, and other factors, which essentially leave spaces underneath or behind surface rock. The vast majority of caves in North Carolina are rock shelter / 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. Under the Wildlife Conservation Land Program (WCLP) the definition of bat cave habitat is intended to include only mines that include subterranean excavations with conditions inside the mine shafts and tunnels that resemble natural caves in temperature, humidity and/or structure.

Caves may be used by 13 species of bats in North Carolina for hibernation, birthing and the raising of pups, and roosting; while other caves may not be used by bats at all. In order to be considered bat cave habitat under the WCLP, the cave must have documented use by aggregations of bats.

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

In addition, land use in the immediate vicinity of cave entrances can affect air flow through the cave and foraging conditions for resident bats, and can render the cave unsuitable for bats due to disturbance by humans. For all these reasons, bat cave habitat includes an area encompassed by the cave and all its entrances as well as the surface area necessary to maintain the temperature, air flow, humidity, foraging, and disturbance regime such that conditions for bat use are retained.

Management Strategies – Wildlife Conservation Land Program (WCLP)

Under the Wildlife Conservation Land Program, any cave or mine submitted for enrollment must have documented use by aggregations of bats in order to be considered bat cave habitat.

Landowners with cave 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 the tract in some instances where bats are concerned, NCWRC employees may be available to conduct a site visit/survey for data collection purposes. However, time constraints and available personnel may delay landowner's enrollment if using NCWRC personnel. 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

Major threats to bat cave habitat include 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. Widening cave entrances can also significantly alter the value of the cave to bats and is not allowed unless specifically instructed/approved by NCWRC personnel. Gating cave entrances may be of value to bat colonies however all gate construction and placement should be supervised by a qualified wildlife biologist.

Human disturbance to hibernation and maternity colonies can be very harmful to bat populations. Bats aroused from hibernation burn fat reserves needed to make it through to spring. If aroused often, they may ultimately starve to death. 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 NC currently have bat friendly gates installed to prohibit or regulate human entry and subsequent impacts upon cave resources.

A buffer of sufficient width will also be needed to minimize negative impacts to the site and its wildlife. A resource professional can assist with delineating the area to be protected.

