

North Carolina Department of Transportation

PROJECT INFORMATION

High Value Project Title	Ecology of <i>Corynorhinus townsendii virginianus</i> in North Carolina
Project ID	RP2013-35; FHWA/NC/2013-35
Project Cost	\$307,278
Duration	30 months

SUBMITTER

Submitter Agency	North Carolina Department of Transportation
Submitter Contact	John Kirby; Research Engineer, NCDOT Research and Development 1549 MSC, Raleigh, NC 27699-1549 919 508 1816 jkirby@ncdot.gov

RESEARCH PROGRAM

Sponsoring Agency	North Carolina Department of Transportation
Sponsoring Agency Contact	Neil Mastin, P.E.; Research Manager, NCDOT Research and Development 1549 MSC, Raleigh, NC 27699-1549 919 508 1865 jmastin@ncdot.gov

RESEARCH AND RESULTS

Brief Summary of the Research Project	<p>Background:</p> <p>The North Carolina Department of Transportation (NCDOT) has several State Transportation Improvement Projects (STIP) scheduled in Avery, Caldwell and Watauga counties. At the intersection of these three counties is the primary winter roost site of an endangered bat species, the Virginia big-eared bat (VABEB), <i>Corynorhinus townsendii virginianus</i>. The species has a very limited range in the eastern U.S., and very little was known about it. Only 12,000 to 20,000 Virginia big-eared bats remain in N.C., T.N., W.V., V.A. and K.Y. These docile animals provide a valuable service by eating many harmful insects on their nightly excursions. The major causes of the species' decline are loss of habitat, vandalism, and increased human visitation to maternity roosts and hibernacula. Virginia big-eared bats are extremely sensitive to human disturbance. Even slight disturbances can cause adults to abandon caves, abandon young, and force bats to use valuable energy reserves needed to survive hibernation. As a result, anticipating whether the effects of NCDOT highway and bridge projects by the presence of this species was not understood by NCDOT biologists or any other state or federal agency. STIP projects are proposed in the three counties within ten miles of known VABEB occurrences, a distance that bats can easily fly in one night. The most notable of the STIP projects occurring near the VABEB roost is STIP R-2566, the proposed widening of N.C. 105 in Watauga county.</p> <p>Specific Research Objective:</p> <p>Virginia big-eared bats are extremely difficult to capture with nets. Although the bats were known to be in the vicinity of STIP R-2566, two summers of mist-netting survey work by NCDOT staff had not produced any data about the species. U.S. Fish and Wildlife Service staff concluded that more information must be collected on the VABEB before formal consultation under the Endangered Species Act could occur. <i>The project(s) could not proceed until more information was obtained.</i></p>
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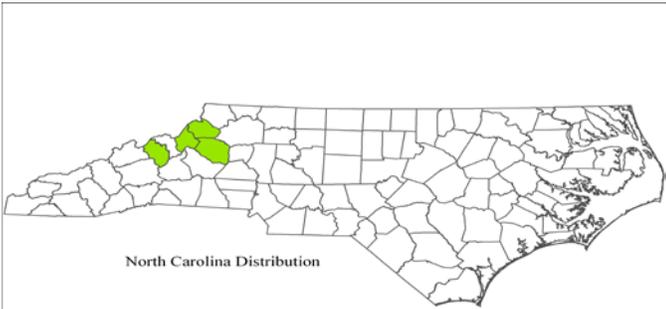
What research work was done?

NCDOT contracted with researchers at Indiana State University's Center for Bat Outreach, Research and Conservation. Graduate student Joey Weber and other researchers used advanced radio telemetry techniques to discover more about the migration routes and foraging areas used by these bats. Cave entrances were monitored with acoustics and night time emergence counts were recorded. Contact was established with approximately 20 private property owners to gain property access to bat roosts and foraging telemetry stations. Telemetry towers with data loggers were installed near North Carolina's Grandfather Mountain, including 5 points along N.C. 105. Tiny radio transmitters were attached to the backs of captured bats. Weber captured 42 bats in caves on Grandfather Mountain and other springtime roosts, attaching tiny radio transmitters to their backs. Researchers tracked the bats to caves at the base of Beech Mountain, North Carolina, eight miles away and to 31 additional roosts. This is the first time maternity roosts have been found in North Carolina. One transmitter was found in scat after the bat ran afoul of an owl and another was tracked to the basement of an unfinished house in a nearby golf course community. In addition, the researchers developed conservation outreach materials for the general public and private land owners affected by the VABEB.



Virginia big-eared bat research in western North Carolina

Bat roost, installing radio transmitters and collecting roost data by ISU graduate student Joey Weber.



Distribution of VABEB in North Carolina

Impact, or Potential Impact, of Implementing Research Results	<p>The research provided NCDOT with essential data for writing Biological Assessments as mandated under the Endangered Species Act to determine the effects on STIP R-2566 and other STIP projects, and developed potential conservation measures for VABEBs. In addition, it provided the US Fish and Wildlife Service with the necessary data to produce Biological Opinions necessary to allow STIP projects to proceed.</p>
Benefits of Research Results	<p>Data produced in this study will help NCDOT produce required environmental impact assessments that address potential areas of concern with the VABEB and keep projects on schedule, saving money and time. It also allowed NCDOT to anticipate what mitigation measures may be needed for upcoming projects. The location of maternity roosts for the population of VABEBs hibernating on Grandfather Mountain was unknown at the start of project. This research provided this information and allowed for protection of these important natural resources through state, federal and private conservation partnerships. With more the \$260 Million in construction projects programmed in this areas over the next decades, delays would add substantial cost and inconvenience.</p>
Web Links (if available)	<p>https://connect.ncdot.gov/projects/planning/Pages/ProjDetails.aspx?ProjectID=2013-35</p>
TRB Paper	