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Pipeline route near bat habitat

By John Bruce • Staff Writer



Rick Reynolds, wildlife biologist, Virginia Department of Game and Inland Fisheries, explores a cave. At right, this cluster of Indiana bats was found in Bath County. (Photos courtesy Rick Lambert)

MONTEREY – Bad news for bats.

More than 90 percent of the two most common bat species in Highland and Bath counties are gone due to White Nose Syndrome, and the proposed Atlantic Coast Pipeline route would closely brush documented habitat federally endangered bats hoped to return.

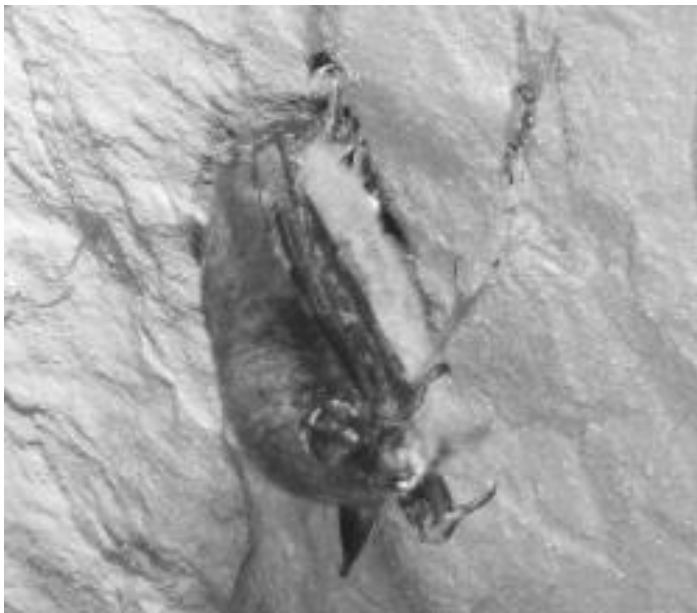
A recent survey of bat habitats coordinated by the Virginia Department of Game and Inland Fisheries found the number of once-common little brown bats was down 99 percent from the previous survey two years ago. The count for tri-colored bats was down 93 percent.

A third species, the federally endangered Indiana bat, “was declining before WNS showed up and is still declining,” noted Rick Reynolds, DGIF wildlife biologist.

According to Virginia Cave Board member Rick Lambert of Monterey, who participated in the survey, a documented Indiana bat roost tree is located less than 300 yards from the pipeline study corridor centerline. The tree is 1.33 miles to the west of the Dever Spring recharge area on Big Ridge, between Townsend and Erwin drafts. A second documented Indiana bat roost tree is located 2.15 miles north of the recharge area. A third is 1.12 miles to the southwest of the recharge area, and a fourth is a tenth of a mile southeast of the recharge area on the east side of Back Creek Mountain.

A Virginia Big-eared bat hibernacula is 1.5 miles north of the Dever Spring recharge area.

Declining Indiana bat populations, caused by human activity, prompted their listing 50 years ago as “in danger of extinction” under the Endangered Species Preservation Act of 1966. The bat is listed as endangered under the current Endangered Species Act of 1973.



This little brown bat was found alone and suffering from white nose syndrome. (Photo courtesy Rick Lambert)

Listing protects the Indiana bat from being harmed, harassed, or killed and requires federal agencies to conserve the species.

While not a specific threat to some bat species, the proposed pipeline’s route could harm the federally endangered one, Lambert explained.

“The ACP is not a threat to the tri-colored and little brown bats any more than it is a threat any other bat species due to the possibility of roost trees being cut,” Lambert said.

Roost trees are generally older trees that allow the bats to get up under the bark.

In the Townsend Draft area, the pipeline project will be a threat to the Indiana bat due to the proximity of that roost tree. This colony probably has many roost trees in that area, which they move to periodically to keep parasites down, Lambert said.

One Indiana bat colony has been tracked moving anywhere from a tenth of a mile to two miles to fresh roost trees, which are usually at least 200 years old, Lambert said.

No one knows where the alternate roost trees are located. “We know so little about the location of roost trees that the loss of any known roost tree should be a concern to DGIF and DCR (the Department of Conservation and Recreation). The main problem is, they don’t know how to protect the Indiana bat outside of the hibernacula,” Lambert said.

Reynolds pointed out the importance of bats. “An underlying question concerning many wildlife species, especially those that are not as charismatic as say deer, bear, or turkey, is why should I care? Or, what do they do for me? Bats play an important role in the ecosystem and have been critical as a natural night-time insecticide. All of the bat species found in Virginia eat insects, helping to control agricultural, forest, and residential pests, reducing the damage to crops, forests, and residential areas, while reducing the amount of pesticide applied on the landscape,” he explained.

“One paper estimated the average cost savings in reduced application of pesticides on agricultural crops to be about \$74 per acre. When you extrapolate this across the continental croplands of the U.S., the savings is roughly \$22.9 billion per year. These savings are just in reduced application of pesticides and do not include the added cost of impacts from pesticide drift and impacts to non-target species that are beneficial to agriculture,” he said.

“Bat guano is an important agricultural fertilizer in many parts of the world and was once mined from caves in the southwest U.S. The fruit bats of the tropics are important pollinators and seed dispersers of many plants — bananas, cashews, guava, etc. — that we consume on a daily basis.

“The study of bats has added to our understanding of many other issues including: study of bat echolocation has helped in the development of sonar and navigational aids; study of vampire bats and their ability to keep blood from coagulating has led to the discovery of a drug for treating blood clotting diseases, emboli and stroke.”

The spread of WNS and wind energy development are the two chief threats to bats, Reynolds said. “Depending on whether you are a tree bat or a cave bat, that will determine which threat affects you. Both of these threats have accounted for the loss of millions of bats over the past 10 years. Because bats typically produce only one or two young per year, these losses are significant, as it will take decades to replace these losses provided the current losses are curtailed,” he explained.

“We can classify bats as tree or cave bats based on where they hibernate, if their tail is furred and the average number of pups they have. Tree bats — red, hoary, and silver-haired bats — typically hibernate in tree cavities or under logs, their tails are covered with fur, and they usually have twins, but some species can have up to four pups. Cave bats — little brown, big brown, Indiana, etc. — typically hibernate in caves or mines, their tails are naked, and they usually have a single pup, but some cave bats have twins. Tree bats are also known to migrate longer

distances between summer and winter roosts than cave bats. Some tree bats will summer in northern NA and winter in the southern states. Cave bats move between summer and winter roosts as well, but these movements can be as short as tens of miles or up to several hundred miles.

White Nose Syndrome is a disease caused by a cold loving fungus that was introduced to caves in the eastern United States from Eurasia back in 2006, Reynolds said. “It first appeared in several caves outside Albany, N.Y., and has now spread to 29 states and five Canadian provinces. Seven species have been confirmed with the disease, and another five have been found to carry the fungal spores, but the disease has not developed. The fungus grows best at temperatures between 40 and 50 degrees Fahrenheit and in high humidity — the ideal hibernacula conditions for cave dwelling bats.

“The fungus grows into the exposed dermis layers of bats around the muzzle, wings, and tail membrane. Growing into the dermis causes water loss and dehydration along with the loss of other critical physiological processes. This disturbance causes bats to wake up from hibernation more frequently, using up the limited fat reserves needed to survive the winter. At sites during the initial year of infection, bats can be seen flying around the entrances to caves during the middle of the day in the middle of winter when snow was on the ground, presumably looking for food and/or water.”

Reynolds said WNS is responsible for the death of millions of bats in the eastern U.S. and now the Midwest. Three species — little brown, tri-colored, and northern long-eared bats, once very common to Virginia — have all declined by more than 90 percent of their pre-WNS population numbers, he said. “Caves that once had thousands of bats are lucky to have a 100 bats remaining after the impact of WNS,” he said.

“Wind energy development is an important renewable resource that reduces our dependency on fossil fuels and the associated pollutants. An unexpected downside to wind turbines is large number of tree bats that are killed at these facilities each year, mainly during the fall migration period. It is unclear what attracts bats to the wind farms, it could be the insects that are attracted to the warm generators, or these large ‘tree looking’ structures may appear to be potential roosts for bats, or they could just be in the natural path of bats as they migrate south for the winter,” he said.

“Fatality surveys at wind turbines have shown that tree bats account for the majority of fatalities with cave bats representing a smaller proportion. These studies have also shown that fatalities occur at low wind speeds and are often associated with weather fronts in late summer and fall. These conditions provide a management option for wind farms to reduce their impacts on bats without losing much energy production. Studies have already shown that fatality rates can be reduced by as much as 80 percent when cut-in speeds are increased during the fall migration period.”

Winter bat counts started in the 1980s as a means to monitor changes in bat populations during the hibernation period, Reynolds explained. “Several species of bats hibernate in large clusters in open areas in caves or mines and typically have fidelity to these roosts.”

This, he said, makes monitoring population changes easy for these species — little brown bat, Indiana bat, Virginia big-eared bat, to mention a few. But some species that hibernate outside of caves, such as red bat, silver-haired bat, etc., or deep in cracks and fissures or under rocks in caves like the northern long-eared bat, small-footed bat, and others, making them difficult to find and monitor.

“We then have to rely on other monitoring techniques to measure population changes for these species. Other techniques include acoustic recordings, mist-netting, harp trapping, or exit counts,” he said.

“The hibernation period is the time when bats move to protected roosts to live out the winter, usually from November through March into early April, depending on how autumn and spring develop. Bats hibernate through the winter because their food source, insects, is no longer available. Bats increase their foraging activity during the fall, adding body weight before going into hibernation. The added fat reserves allow them to make it through the winter months.

“Bats usually look for roost sites where temperatures remain fairly constant and they lower their body temperature to the ambient temperature of the roost in order to use less energy (body fat). Typical roost temperatures are in the 40-50 degree range. Caves and mines are the typical hibernacula we think of, but bats will also hibernate in human structures, cavities in trees, under logs, under boulders, in deep rock crevices, and other features with stable temperatures.”

Many agencies, organizations, and volunteers participate in the bat surveys, Reynolds said. “Our hibernacula surveys include a large cooperative effort between state and federal agencies, academic institutions, and volunteers.”

Federal agencies include U.S. Fish and Wildlife Service, U.S. Forest Service, National Park Service, and U.S. Geological Survey; academic institutions include Radford University, Virginia Tech, and University of Tennessee; state agencies include the Department Conservation and Recreation’s Division of Natural Heritage, Department of Game and Inland Fisheries; volunteers included individuals from the Virginia Speleological Survey, Virginia Tech Cave Club, Radford University and Virginia Tech student volunteers.