Professor's Research Looks to Save Species of Bat

By John Robertson IV

Maj. Paul Moosman searches for eastern small-footed bats at Devil's Marbleyard Sept. 20. – VMI Photo by John Robertson IV.

Maj. Paul Moosman '98, assistant professor of biology, is working to understand and protect a species of bat about which little is known: the eastern small-footed bat, *Myotis leibii*.

Moosman's research is being funded by a grant from the Virginia Department of Game and Inland Fisheries, which has supported the research with $33,000 over the past two years.

The species is currently under review for endangered status. Since the U.S. Fish and Wildlife Service needs population data to list a species as endangered, the first step to protecting these bats is finding out how many there are and how their populations are changing.

"With small-footed bats we don't know enough about their populations to have them listed as endangered. The goal is to come up with a methodology for monitoring populations and measuring whether the bats' numbers are declining or increasing," said Moosman "Every species of bat has its own unique set of behaviors. I'm trying to develop something that will work for this bat."

The species, like most bats, is nocturnal and roosts during the day among the rocks located on talus slopes. These seemingly barren rock fields offer plenty of crevices in which the bats can roost out of reach of predators.

Moosman, who is on sabbatical this fall, is conducting research at several local slopes, including sites at Devil's Marbleyard, Sherando Lake, and St. Mary's Wilderness.

Having studied the bats for years, Moosman has learned a significant amount about their ecology, including their preferred roost cavity characteristics.

"We've identified the shape of crevices they prefer, so I've got a pretty good idea in my head of what to look for," said Moosman.

Moosman is pioneering new methods for tracking the populations of these bats. Having identified the size and shape of bats' preferred roosting sites, Moosman is able to simply climb around the slope looking in all the likely places until he locates the bats.

Given the success he's had finding the bats in their roosts during the day, Moosman has learned that he can determine bat density in a given area by conducting a plot survey. By exhaustively surveying smaller plots, the entire population of bats on a given slope can be determined.

In addition to catching bats during the day, Moosman is using nets over the rocks to catch bats as they leave their roosts at nightfall to feed. Transmitters are then attached to the bats, relaying information back to a receiver.

Another piece of the puzzle is determining when the bats hibernate. Knowing this will tell researchers at what time of year population studies will produce usable results.

"I'm going to get continuous data this fall to find out how long they're present at the site," said Moosman. "At a certain point we'll stop finding them, so then we'll know when they've left or are hibernating."

With the spread of white nose syndrome devastating bat populations across the country, it's imperative to understand whether populations of eastern small-footed bats are in decline.

"We're looking at a continentwide pandemic that's killing off a sizable chunk of our bat diversity," said Moosman. "Simply by knowing the basics about this bat, we'll be able to help protect it."

In addition to conducting field research during his sabbatical, Moosman is working toward publishing the data that his research has generated so far. His hope is that publishing the findings will generate further interest in the species.

"These bats are part of our natural heritage; they're part of what makes Virginia unique," said Moosman. "Mankind has accelerated the rate of extinctions at an alarming rate. Every species has a purpose in its ecosystem, and we may only learn the purpose of something after it's gone and we see the consequences of its absence."