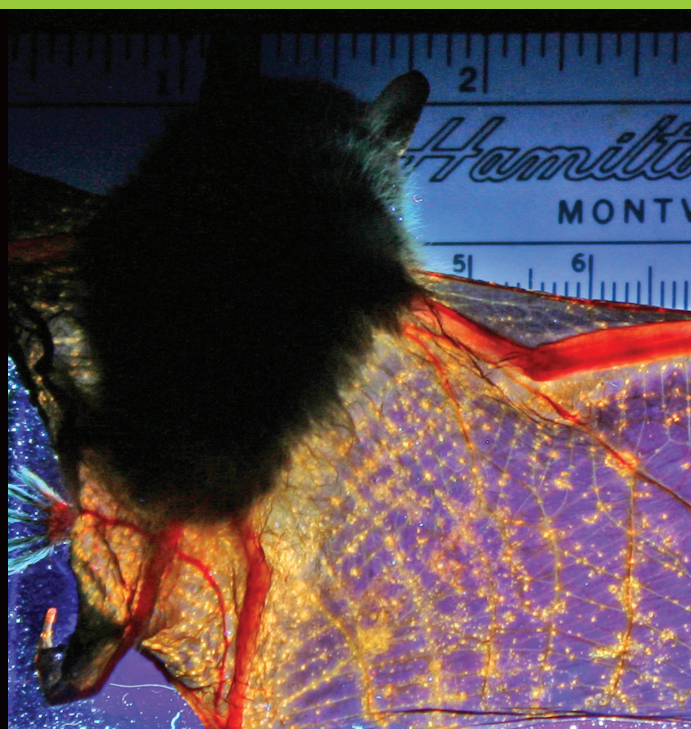
Above, Turner shows off his favorite bat species—the Virginia big-eared bat—in the Hellhole Cave in West Virginia. The cave houses 50 percent of the known species population.
PHOTO BY CARL BUTCHKOSKI, PENNSYLVANIA GAME COMMISSION

Right, Turner checks an escape- and predator-proof cage to house bats for an experiment.
PHOTO BY TRACY GRAZIANO, PENNSYLVANIA GAME COMMISSION



ENVIRONMENTAL PROTECTOR

GREG TURNER '94 CHAMPIONS BATS AND OTHER ENDANGERED SPECIES

By Krista Weidner

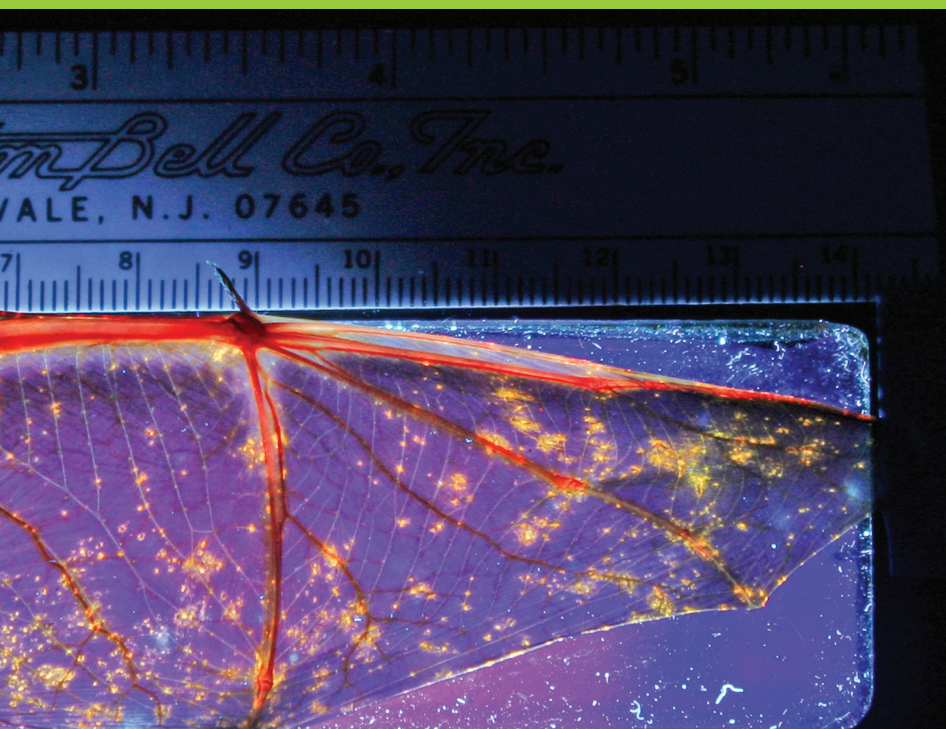
Greg Turner '94, a wildlife biologist for the Pennsylvania Game Commission, isn't easy to track down. If he's not monitoring the state's population of rare small mammals such as water shrews or spotted skunks, he might be rappelling down a cliff to band peregrine falcons or into a cave to count and identify hibernating bats.

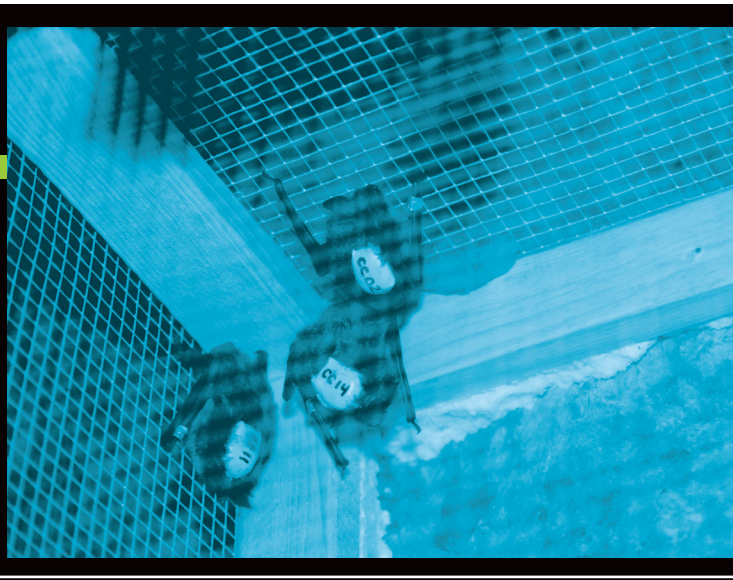
As leader of the endangered nongame mammal section of the Pennsylvania Game Commission's Bureau of Wildlife Management, Turner's primary focus is to survey, monitor, and manage Pennsylvania's protected mammals. "That includes everything you don't trap and shoot—chipmunks, squirrels, wood rats, shrews, bats," he says. "Yeah, I'm the bats and rats guy. It's a good place to be: Of the world's 5,000-some species, a third are rodents and a quarter are bats. That's where all the diversity is. Only so many people can specialize in lions and tigers."

Within the past several years, Turner, who lives in State College, Pa., has come to be known as one of the nation's foremost authorities on white-nose syndrome—a fungal disease that has destroyed large segments of the bat population in the Northeast and has spread to the central United States. In Pennsylvania, the bat population has suffered a 99 percent decline, with the once-common little brown bat declining 99.9 percent.

"Along with these massive declines are survivors in each species, and that's where our focus is," Turner says. He and his team monitor bats living in caves and underground mines throughout the state, using ultraviolet light to screen the bats for levels of infection. This noninvasive technique was pioneered by Turner and requires taking a small biopsy from the bat's wing where the fungus first appears. It is now being used internationally by dozens of researchers and was recently featured in a *National Geographic* story about white-nose syndrome. Over the past six to seven years, as they have observed colonies, the researchers have seen fungus levels taper off from about 50 percent of the bats' wings to about 10 percent—a hopeful sign for bat populations.

Another positive sign is that bats seem to be adapting to white-nose syndrome by putting on more body fat during hibernation. The extra fat seems to help the bats cope with the energy drain the fungus puts on their bodies. "Looking at the survivors, we're seeing they are putting on 30 to 40 percent more body fat than they used to," Turner says. "We're working to prove that these survivors have adapted behaviorally to deal with white-nose syndrome."





Above, Bats are housed in a cage where Turner is testing a new treatment. The bats are wearing temperature-sensitive data loggers to monitor arousal during hibernation caused by white-nose syndrome.

Left, an ultraviolet image of a bat's wing. Each yellow dot represents a point of fungal infection. Turner has pioneered an ultraviolet treatment for white nose syndrome.

PHOTOS THIS PAGE BY GREG TURNER, PENNSYLVANIA GAME COMMISSION

Turner holds a little brown bat for a treatment study.
PHOTO BY TRACY GRAZIANO, PENNSYLVANIA GAME COMMISSION

Greg Turner

State College, Pa.

Bachelor of Science, Biology, Wilkes

Master of Science, Biology, Frostburg State University

Career: Wildlife Biologist, Pennsylvania Game Commission, Bureau of Wildlife Management

Notable: One of the world's foremost authorities on white-nose syndrome, which is threatening bat populations in the Northeast

Favorite Wilkes Memory: "Helping Dr. Mike Steele's students trap gray squirrels and perform behavioral experiments, and the plethora of interesting encounters we had in dealing with the other indigenous locals inhabiting the park."

Turner readily acknowledges many people's aversion toward bats. "Why should we care about them?" he says. "Lots of reasons. Bats perform many vital roles: They eat insects, they pollinate, they spread seeds around. If you like margaritas, you can thank bats—they are the sole pollinator of the agave plant, where tequila comes from. If you like bananas, avocados, and almonds, thank bats. Those foods, among many others, are pollinated solely by bats. They also do wonders for us when it comes to insect control." The average bat eats about a million insects each year, saving U.S. farmers about $74 billion annually.

Turner views his education at Wilkes as an important career stepping stone. Although his early interest in ecology and nature led him to pursue a degree in biology, he wasn't sure how he would parlay that degree into a profession. Meeting Michael Steele, professor of biology and H. Fenner Chair of Research Biology at Wilkes, set him on his path.

"I remember going to a job fair, and there was a dentist and a doctor and I don't know what else, and I was feeling clueless as to what I was going to do with this degree in biology," Turner says. "I met Mike, and he told me about a research project he was working on, looking at how mice and chipmunks manipulate acorns and how that affects oak regeneration. He offered me the opportunity to work with him, and I knew instantly that I wanted to be in the field and do research. I was fortunate to find him. We ended up working together on several research projects."

Teaming up with Turner was an advantage for Steele as well. "After joining my research team, Greg quickly distinguished himself as a truly talented field ecologist," says Steele. "He is passionate about working in the bush, putting in long hours under harsh conditions. What sets him apart is that he is fiercely independent, yet adept at working closely with others of all ages and skill levels. Today, I'm proud to call Greg a lifelong colleague and friend."

When Turner decided to enter a graduate program at Maryland's Frostburg State University, Steele pointed him toward mammalogist John Hoogland, who would become Turner's advisor. Turner was researching the recovery of prairie dogs following the bubonic plague, studying the populations that had survived. "John was the king of prairie dogs," Turner says. "He did a lot of great behavioral work, which not many people do very well. It was a great fit for me because I wanted to study behavioral ecology in mammals." A bonus was the opportunity to spend time in Utah's Bryce Canyon and the Petrified Forest National Park in Arizona, where Turner and Hoogland conducted research.

Even in his free time, when Turner isn't home with his wife and two children (his wife, Melinda, is a wildlife biologist for the U.S. Fish and Wildlife Service), you'll find him outdoors. He enjoys exploring Pennsylvania's streams and woods year-round, through fly fishing, archery hunting, mountain biking, and cross-country skiing.

One of Turner's Game Commission duties, banding peregrine falcons, keeps him in touch with Wilkes. "There are a few nests in the Wilkes-Barre area, and I get called to rappel off the cliff and get the chicks off the ledge and bring them up so they can be banded. I always get some Wilkes biology students to come out and join me. They see me in action, sometimes they get to hold the chicks, and it gives them a taste for what they can do with their biology degree."