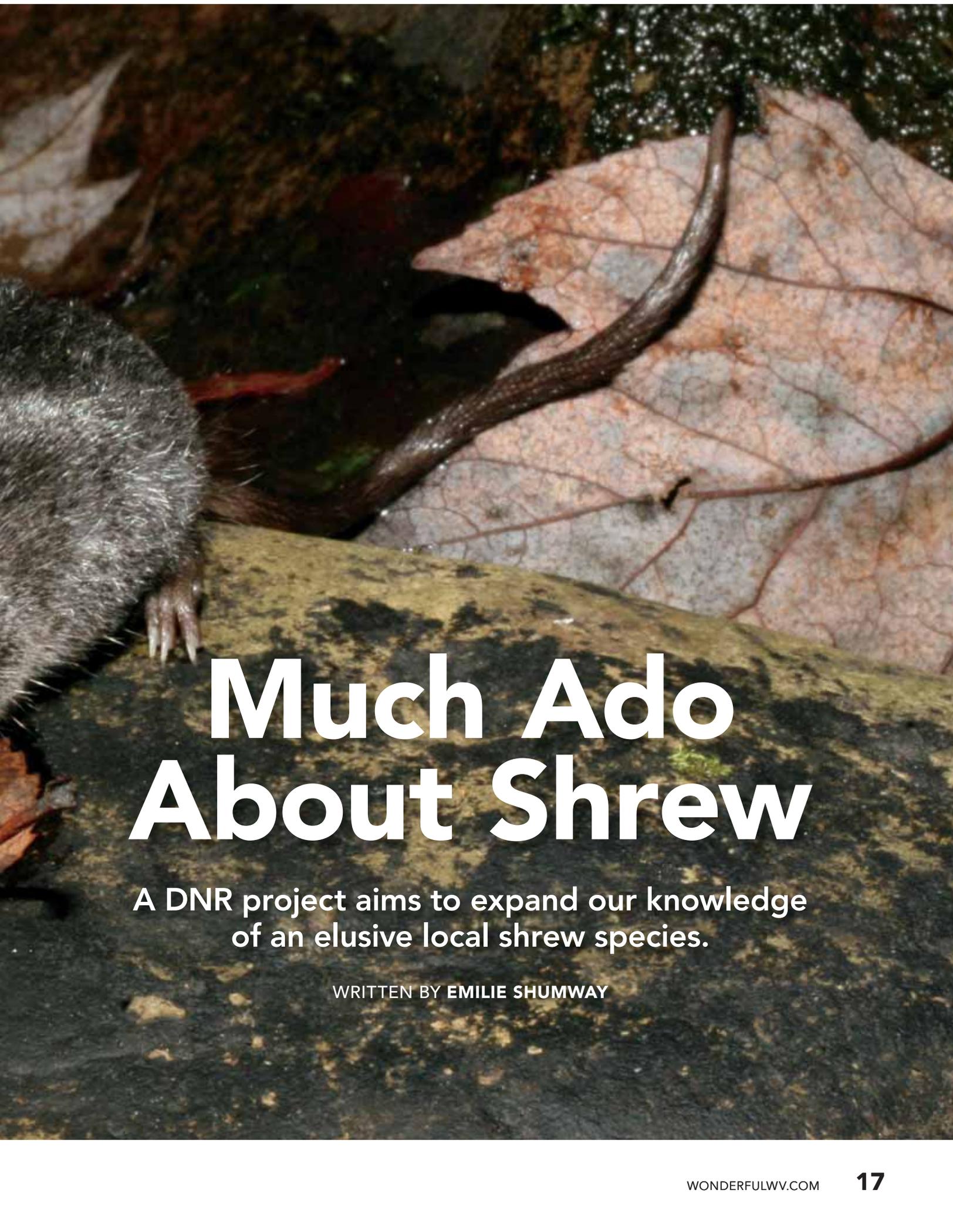




CHARLIE EICHELBERGER



Much Ado About Shrew

A DNR project aims to expand our knowledge
of an elusive local shrew species.

WRITTEN BY EMILIE SHUMWAY

Q

uick—without looking too closely at the photo on the previous page, attempt to picture a shrew.

Maybe you're visualizing something vaguely like a groundhog, with a fat body and beady eyes. Maybe

you're seeing more of a mole, with a pointed nose and paddle-like hands. Or maybe you're right on the money, picturing an extra-furry rat.

If you're having trouble conjuring an image, don't feel too bad. Shrews are notoriously elusive—so much so that it's difficult to determine how healthy the state's populations might be.

"To give you an idea, we only have 16 records of the species over the last 80 years," says Mack Frantz, a West Virginia Division of Natural Resources zoologist based in Elkins.

One species—the West Virginia water shrew—is even harder to find than others. But Frantz has taken a special interest in the critters and is planning a research study to learn more about them.

Looming Threats

The West Virginia water shrew, sometimes identified as the southern water shrew, is a cousin of the northern short-tailed shrew. But unlike its short-tailed cousin, which comfortably inhabits a wide variety of habitats, the West Virginia water shrew requires pristine water systems in northern climes. It has been found—when it has been found—in the high Allegheny mountains of Preston, Tucker, Randolph, Pendleton, and Pocahontas counties, mainly in streams but sometimes wetlands and swamps, too.

As far as naturalists know, the West Virginia water shrew has always been elusive. But several factors have combined to catch the attention of Frantz and other local naturalists who study animal conservation. One is the animal's habitat.

The animals feast on aquatic insects that inhabit the streams, like mayflies and stoneflies—invertebrates that are particularly sensitive to declining water quality. That makes the human impact on these habitats a concern.

Water acidification can be catastrophic to insect populations and, consequently, to the water shrews that depend on the insects. Rivers like the Cheat, the lower Blackwater, and the Tygart are affected by acid mine drainage, mainly from abandoned coal mines. Acid can also come from natural sources as well, like plant deposition.

While stream acidification certainly isn't a new issue, scientists predict climate change could make the problem worse. Earlier snow melts caused by a warmer climate may reduce summer streamflows, resulting in more concentrated pollution levels. Climate change could also lead to gradual habitat loss and unpredictable water flow events—long dry periods or flooding, for example—ultimately making shrew populations more vulnerable.

To get a better sense of the health of West Virginia's water shrew population, DNR zoologists like



Frantz are partnering with the Pennsylvania Game Commission and the West Pennsylvania Conservancy to conduct a genetic study. Naturalists have been watching a group of water shrews over the past few years in southwestern Pennsylvania, trying to determine if the West Virginia water shrew has migrated north or if a whole other subspecies has emerged.

Differentiating between shrew species is a difficult affair. Zoologists often have to examine the arrangement of the animals' teeth to tell them apart. The water shrew does have a special characteristic that makes it instantly discernible, though: enlarged, partially webbed hind feet covered in tough, fringed hairs. These unique feet allow for seemingly miraculous behavior.

"In historical accounts of the water shrew, people say they saw it 'walking on water,'" Frantz says. While the shrew does seem to skid along the surface, the reason is more physiological than spiritual. After diving down into the stream and using all four feet to cruise the bottom in search of insects, the shrew springs to the surface and skids along, buoyed by globules of air beneath its feet.

This helps the water shrew conduct its most urgent activity: eating. Shrews are burdened with an enormously

The West Virginia water shrew's partially webbed, hair-covered hind feet allow it to "walk on water."



hyperactive metabolic rate. “Studies in captivity have shown the water shrew eating every 10 minutes,” Frantz says. “This is the case with all shrews. They kind of look like you’re watching someone in fast-forward on a video. Because of that high metabolism, they are just constantly moving, jerky, just looking for food.”

This high metabolism is one more reason to be concerned about the health of the animals’ food sources. “If the water shrew goes even three hours without eating, it dies,” Frantz says.

And not only does the water shrew have a perilously high metabolic rate—it also lives only one or two years and likely breeds only once or twice a year. That means a threat to a water shrew could wipe out the population in a matter of months, leading to trouble for larger mammals and birds higher up the food chain.

A Fragile Catch

As part of the upcoming study, West Virginia DNR zoologists will first try to identify exactly where water shrews live.

To determine whether a shrew population is present, zoologists will set the traps directly into a stream channel for a total of three nights, checking each morning to see if they’ve caught a shrew. Once a shrew has been captured, all traps will be pulled. This will allow the DNR to affect the shrew populations as little as possible while still tracking habitation and providing a better picture of the animal’s actual population spread.

Currently, the most effective method of capture involves the use of “museum special” snap traps, fatal traps that are designed to keep the fur and bones of the animal intact for research. “If you do try to live-trap them,” Frantz says, “you have to check the traps every two hours and provide living material and food. And even then, they will still usually die in the traps because of their high metabolic rate. It kind of happens no matter what you do.”

Once DNR determines water shrew habitation at a site, Frantz and his team will be able to focus their study on populations and habits of the animals. Then they will also be able to test and implement non-lethal means of detection. It’s possible, Frantz notes, that the study could reveal higher densities of water shrews than is currently known. So while zoologists are concerned, they’re not panicking quite yet.

While the water shrew is seldom seen, Frantz says it’s a species that all outdoors lovers should be paying attention to. “They occupy a special niche not only on land, but within the stream as well,” Frantz says. “If something would happen to them, it would kind of put the aqua-terrestrial food webs out of balance.”

And if populations are healthy? That’s an important sign too. “If the water shrew is present at one of these streams, that’s a high-quality site that’s also probably good for brook trout too. So you do need to care about the water shrew.” 🐾

The northern short-tailed shrew, a critter often confused with the West Virginia water shrew. They look similar, but naturalists can tell the difference by examining the animals’ teeth and hind feet.