

ABQJOURNAL UPFRONT: Bat Cave Research Requires Rabies Shot

Wanted: scientist.

Must be vaccinated against rabies.

Experience crawling around in the dirt a plus.

That is not exactly the job description that took University of New Mexico biology major Kaitlyn Hughes into the darkness of an El Malpais lava cave with biology professor Diana Northup. But it might as well have been.

The lava caves, in a sprawling volcanic field south of Grants in west-central New Mexico, mark one of the front lines in the struggle to understand "white nose syndrome," a mysterious disease that is devastating bat populations across the United States.

The work Northup and Hughes are doing there also marks a second front line, in the hands-on education of UNM's undergraduates.

"Our undergraduate students in New Mexico are a gold mine," said Maggie Werner-Washburne, a UNM biology professor whose work getting undergrads into the lab to do real science is something of a campus legend, and whose achievements in combining science and undergraduate education for UNM's diverse student population have been nationally recognized.

White nose syndrome is a mysterious disease that causes widespread death among colonies of hibernating bats. It was first spotted in New York state in 2006 and 2007, according to scientists from the U.S. Geological Survey who have been tracking its spread across the United States in the years since.

The disease has not been seen in New Mexico. Yet.

But the Bureau of Land Management is taking no chances. The agency has closed human access to 28 caves on federal land with known bat

populations, according to agency spokeswoman Donna Hummel.

The fact that the disease has not yet reached New Mexico's caves presents an important scientific opportunity, which Northup and her students are exploiting.

Deep and dank, caves might seem largely bereft of life. But Northup, a biologist who has made a career of exploring their nooks and crannies, both physical and biological, knows different.

Strange and wonderful bacteria, fungus and other organisms have adapted to a life of darkness. Northup has studied these underground ecosystems for years, but the spread of white nose syndrome has given the work a new urgency.

Ali Ghadimi, a UNM sophomore also recruited to the cave science team, had never thought about the question until he took Northup's class as a freshman.

"I had never thought about the biology of the cave," he said.

Now, he's not only been down in caves collecting fungal samples, but he has also learned how to culture and study them in the lab.

This is not a make-work assignment. The young researchers' goal is to collect real baseline data: What do the fungal and bacterial communities look like in a cave without white nose? That way, if (or when?) the disease finally arrives in New Mexico, the scientists will have a better chance at understanding the changes it causes in bats and the ecosystems around them.

But to get permission from federal officials to go underground into caves inhabited by bats, the scientists needed to have rabies vaccinations. Northup and her caving husband, Kenneth Ingham have been vaccinated, but, for safety reasons, they needed a third person.

Hughes, as it happens, had been vaccinated for rabies before taking a trip to Nicaragua.

"Kait just one day said, 'Well, I have rabies shots,' " Northup recalled.

Hughes had learned the basics of caving as a teenager, and the relationship was sealed.

Undergraduate experiences like this can be an incredibly valuable launchpad for young people, said Werner-Washburne, who was recently honored with the Harvard Foundation's 2011 Distinguished Scientist Award, both for her scientific achievements and for her innovative approaches to educating the diverse group of young students in the University of New Mexico's biology department.

Werner-Washburne noted that more than a hundred of the department's students already have scientific publications to their names by the time they get their undergraduate degrees — a milestone that for most scientists comes much later in their careers.

"I already have publications with my name on them," said Ghadimi, who is only a sophomore.

Work with undergraduates is about more than teaching lab skills, said Werner-Washburne. It is also about teaching "life skills and how to think."

And the scientists get something out of it in return. Jesse Young, a 19-year-old biology major, has been pushing Northup to find a way to study viruses that occur naturally in bats.

"They see things with fresh eyes," Northup said of her undergraduates. "They see things you wouldn't, because they're looking at it with the wonder of youth."

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