Science & Space

Posted 3/14/2005 9:34 AM Updated 3/15/2005 2:12 PM

Scientist tracks crickets with micro-radios, glue gun

By Valerie Bauman, Associated Press

CHAPEL HILL, N.C. — Armed with a glue gun and radio transmitters the size of a penny, a University of North Carolina scientist is trying to stop mass insect migrations that devastate ranches in the mountain West.

A female Mormon cricket wears a tiny radio transmitter near Utah's Dinosaur National Monument.

Courtesy Darryl T. Gwynne via AP

Mormon crickets, also known as flightless katydids, travel in massive packs, devouring all surrounding terrain as they move. Packs of the bugs can cover more than a mile a day and devastate crops.

Scientists are trying to identify patterns the crickets follow so they can kill them or divert their paths with small distributions of pesticide, rather than the blanket applications now used against the pests.

Patrick D. Lorch, a postdoctoral fellow in biology at UNC-Chapel Hill, is among three scientists studying the crickets and their travels.

The trio — which also includes Gregory A. Sword, a research ecologist with the U.S. Department of Agriculture's Agriculture Research Service, and Darryl T. Gwynne, a biology professor at the University of Toronto at Mississauga — do their research by gluing tiny radio transmitters to the backs of crickets, and then tracking the signals they emit as they travel.

The researchers spend weeks in the field each summer, usually between Utah and Colorado. Last June, the team spent two-and-a-half weeks working near Utah's Dinosaur National Monument. Their research, in its third year, is funded by the Agriculture Department.

To understand why the insects travel in packs that can stretch several miles wide and 10 miles in length, the scientists separate individual crickets from the mass. Then they glue transmitters — each weighing less than half a gram — to the backs of their selected critters.

When separated, their research found, 50 to 60% of the crickets were killed by predators within two days. That led to the conclusion that pack travel is a survival mechanism for the crickets, a finding that could be applied all mass migrating animals and insects, from locusts to wildebeests, Lorch said.

Although the theory that mass migrations help protect animals from predators has been proposed before, Lorch said this study is the first to quantify the benefits of such behavior

If the research eventually allows Lorch and his colleagues to predict migration patterns, the information could aid farmers in protecting crops and could ultimately reduce the cost of producing beef in certain parts of the country, Lorch said.

"Colorado, Utah, Wyoming and New Mexico spend on the order of millions of

Today's Top Tech Stories

- U.S. may restrict sale of Social Security numbers - 5:31 PM
- Rockingham may lease land near dam to organic farmer - 3:09 PM
- Diebold ATMs provide more than cash - 2:22 PM
- Pentagon seeks proposals on spyware fighter - 2:06 PM
- NASA antennas could be located in New Mexico - 1:59 PM

- Add USATODAY.com RSS feeds XML

E-Mail Newsletters

Sign up to receive our free **Tech e-newsletter** and get the latest tech news, Hot Sites & more in your inbox.

E-mail: Go

Select one: HTML Text

dollars to try and stop these things," Lorch said.

In 2002, rancher Darryll Johnson of Rush Valley, Utah, suffered a huge loss due to a combination of drought and crickets. Between 30 and 60% of the grass-foraging land for his livestock was destroyed. He also lost between 60 and 70% of his alfalfa.

"You couldn't step without stepping on one of them," Johnson recalled.

Johnson said he felt "helpless" watching his land destroyed by drought and insects. He had to sell a third of his livestock to get through the season and then had to buy hay to feed the remaining animals. Since then, he has been able to buy back only about a third of the livestock he lost that year.

Johnson said spraying pesticides has helped manage the crickets in the years since, but the land surrounding his private property is government land and some of it cannot be treated. Pesticide treatments aren't cheap either — about $8,000 per application.

Farmers and the government now combat the crickets by mixing chemicals with oats and wheat germ and spreading the material over a large area.

The process has bad side effects, as the pesticide kills all insects that ingest it, which can hurt the food chain. The chemicals also can get into water supplies, causing additional environmental damage.

If scientists can accurately predict the crickets' movement, ranchers and the government should be able to use less pesticide, but with increased effectiveness.

And solving the cricket problem in the United States could have international implications, Lorch added. The crickets follow migration patterns similar to those of young locusts that plague crops on five continents.

"One of the things that got me into this is curiosity, Lorch said. "But another motivation is the idea that we can make the lives of these farmers easier and possibly help reduce famine in Africa."
