Linfield College

Linfield Magazine

Volume 7
Number 2 *Fall 2010*

Article 7

Fall 2010

Ants! A Bug's Life

Mardi Mileham
Linfield College

Ants!

A bug's life

On a hot fall afternoon Chad Tillberg and six students grab nets, notebooks, small containers and vials, and tramp up a steep hill in the Coast Range. Loung Ly '11 pounds a round cylinder into the ground every 50 meters along the trail. Carson Moscoso '11 follows, inserting an open vial into each hole, making sure that it is at ground level. When they return in a week, their traps will contain a sampling of the insects that thrive in that environment.

Frank Andrews '10 and James Rhodes '11 help Tillberg, assistant professor of biology, set up a malaise trap, a tent-like structure designed to capture insects. Chris Turpin '11 walks slowly up a steep slope scanning the ground. Using an aspirator – a long rubber tube with a screen inside – he sucks an insect up, capturing it in the screen and releasing it into a vial. The students sift through litter on the ground, use nets to capture flying insects, place a bedsheet on the ground and shake branches of trees and then sift through the debris looking for a variety of bugs. They come away with spiders, ants, beetles, grasshoppers, dragonflies and other species.

Tillberg and his students are fascinated by insects – creatures that most people choose to ignore.

"It's a whole other story that is happening on a scale that we just don't notice," said Andrews, who has conducted research with Tillberg the last two summers. "All these little dramas are happening under our feet that we don't even know about."

That's changed for some Linfield students since Tillberg arrived in 2007. Tillberg's research is primarily on ants, which have fascinated him since childhood, and it has taken him to South and Central America and Mauritius. His work has appeared in publications and media outlets across the country. Now his Linfield students are helping investigate the distribution and ecology of pavement ants *(Tetramorium caespitum)*, one of the earliest and most widespread of invasive ants on the continent. Because little is known about this particular species, Tillberg is trying to determine how far pavement ants have spread in Oregon and how they interact with native ants.

This summer, Tillberg, Andrews and Moscoso visited several state parks, where they looked for evidence of pavement ants and what impact they are having on native species. Invasive species can change the character of native habitat, including flora and fauna at all levels, Tillberg said, and may be affecting agriculture.

Andrews and Moscoso learned firsthand how to conduct competition experiments to see how the pavement ants interacted with the native ants and which species dominated the food supply. Using tuna and cookies as bait, they spent two or three hours observing which ants would find it first.

"It turns out that when the invasive species does discover the bait first, no other ant species show up," Moscoso said.

While cities and towns with pavement and sidewalks provide prime nesting habitat for the pavement ants, Tillberg is interested to learn whether the pavement ants have invaded more natural areas of Oregon such as state parks, and if so, whether they are having negative effects on the native insect community.

The work this summer was also broadened to include other insects in the region. Because pitfall traps collect any insect that is cruising around on the ground, what was collected is part of Tillberg's research and part of his teaching collection for Insect Biology, a new class this fall. Andrews and Moscoso are key parts of that class, sharing the skills and knowledge they learned over the summer by showing students where to look for insects in the field and how to clean and prepare them in the laboratory.

Andrews said the summer research has helped him focus on which area of biology he wants to pursue in graduate school. He ultimately hopes to teach.

"It's been an opportunity to get out and measure something in the

natural world firsthand," he said. "I've been learning the theory, but it's been really nice to get out and apply it."

Moscoso said the experience has made him reconsider applying to an ecology-based graduate program. One of the key things he learned was how to identify ants.

"I could go out now in most places around McMinnville or the Willamette Valley, see an ant on the ground and tell you which genus it came from," he said.

The grant through the Center for the Northwest helped fund the students' work and provided necessary equipment for field work and for the new class. One of the center's requirements is to show that the field work and research is used as a tool in the classroom.

"Our research informs our teaching, and our teaching informs our research," Tillberg said. "This is helping me be more intentional about bringing what I learn into the classroom."

See more photos at www.linfield.edu/photogallery

– Mardi Mileham

Ants: in his own words

Chad Tillberg said he was somewhat of a feral child. While growing up, he spent a lot of time on his grandparents' farm, running around in the pastures chasing insects.

"I've always liked insects," he said. "There is just something about ants in particular that fascinated me. There was a large colony in my grandparents' pasture that I would visit every summer for years and years. I would watch them for hours.

"What's really interesting about ants is that you have to think of the colony as the individual. I once heard someone refer to ants as large animals that come in lots of tiny parts. They have all kinds of interesting qualities and ecologically they are really important players. They are incredibly efficient and organized about how they move about their environment. They make really good models for the behavior of complex systems. If you were to design a really complex system with lots of moving parts and have those parts work efficiently, a great way to understand how to do that is to look at how ants do it. People study the movement of ant trails to understand how to design traffic systems."