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UConn biologists to revive army ant collection thanks to $500,000 grant

By Diler Haji Life

A giant 4-foot black ant sits on a table in the Collections Facility on the UConn campus in Storrs, Connecticut on Thursday, April 21, 2016. (Allen Lang/The Daily Campus)

They move franticly together, rushing toward food beneath the rainforest canopy as they raid unsuspecting insect nests, armed with pincers attached to their heads and spider-like legs suspending them above ground.

Biologists have studied these army ants for over a century, but what may be even more interesting than the ants themselves are the creatures that live with them, known as ant "guests."

"Guests run the whole range of things that sit on one part of the ant to bigger things that come into play when the ants are foraging," said Jane O'Donnell, collections manager at the Biodiversity Research Collections Facility in the Biology-Physics building. "These specimens are a permanent record of what existed on the planet with human beings."

Thanks to a $500,000 National Science Foundation grant, O'Donnell's career has taken a slightly new course. She and others will be reviving a collection of over two million army ants and over 100,000 guests acquired during more than 50 years of expeditions by Carl and Marian Rettenmeyer.

Carl Rettenmeyer, who has since died, was once a professor in the ecology and evolutionary biology and the founder of the Connecticut State Museum of Natural History at the University of Connecticut. His and his wife's collection has now been handed down to the Collections Facility, where O'Donnell hopes to revive it and incorporate it in a digital database for use by other scientists.

It doesn't end there. A major component of the grant is outreach, O'Donnell said, which will involve working with high school students and the School of Fine Arts, among others.

A giant 4-foot black ant sits on a table in the Collections Facility and O'Donnell is waiting for 10 more. They will be hung on the side of the Biology-Physics building as part of the outreach effort, but also to draw attention to a new exhibit that will feature an even larger 8-foot ant on which larger-than-life guests will be attached. "Humans have a hard time relating to things that are not on the scale of the human body," O'Donnell said.

The Rettenmeyer collection, she said, includes thorough field notes and photos on Kodochrome slides. High school students will be recruited as "Kodacrews" to interpret what they see on the slides and write brief descriptions of how the ants forage and move. Their descriptions will help scientists find what they need in the

digital database of army ants and their guests.

“They’ll get a little bit of a feel of what’s going on,” O’Donnell said, referring to high school students. “This is part of the broader impact component of the grant.” In collaboration with the School of Fine Arts, Homer Babbidge Library and the Benton Museum of Art, O’Donnell hopes to organize an ant exhibit with involvement from puppetry and poetry students as well.

“We’re hoping this will serve as a model for collaboration with the natural sciences,” she said.

Within the Rettenmeyer collection, an untold number of unnamed and unidentified guest species are waiting to be discovered. Their relationships with army ants are to be determined and will give generations of future scientists questions and material to explore.

“We don’t know whether they’re just going along for the ride or getting nutrients,” O’Donnell said, adding that there are often 350 species of guests associated with just one species of army ant.

When O’Donnell began working toward a career in studying, identifying and organizing the vast array of insects in the natural world, she said there was almost no women in biology.

“I knocked on all the professors doors and got fascinated by insects and their diversity,” O’Donnell said. “It’s very satisfying to identify a species and give it a name. You can actually see the insects and understand them.”

The professor she ended up working with was a world-renowned expert on a group of insects called the true bugs. O’Donnell thought, “If he could make a career out of it, so can I.”

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