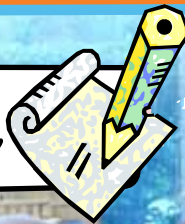
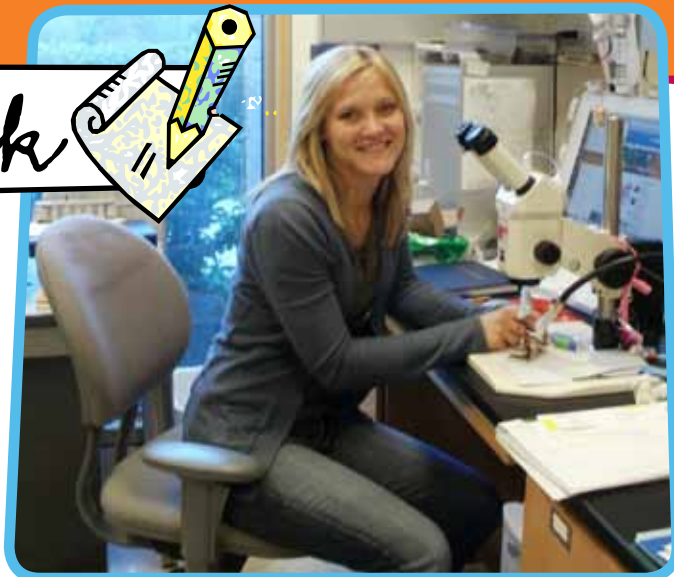


Women's Work



Blissed on Bugs: Entomology



Elizabeth at her university office

Meet Elizabeth Murray, entomologist! If you like nature, sleuthing, and adventure, the bug business may be in YOUR future. Laura, who's Elizabeth's sister, interviewed her.

What is an entomologist?

An entomologist is a biologist who studies insects. These scientists may study all aspects of insect life, including evolution, physiology, genetics, morphology, ecology, reproduction, and behavior, to name a few.

What do you do?

I am getting my Ph.D. (doctorate degree) at the University of California-Riverside. I am in the field of systematics, which is the study of relationships of organisms and the study of biodiversity. On any given day, you could find me on the lab computer doing analysis, writing papers, or outside collecting specimens.

In the past, I have studied tarantulas, frogs, and fruit flies. Now my research focus is on ant parasitoids, a group of tiny, non-stinging wasps. A parasitoid is an insect whose larva eats another insect alive so it can develop inside of it. A parasitoid wasp attacks ant larvae and goes through metamorphosis inside the ant nest—then comes out as a beautiful adult! Some of these wasps attack ant species that are pests.

Many systematists like me practice taxonomy (the naming of

new species) and piece together what scientists call the “tree of life.” All organisms are related to each other, and we can make educated guesses about their history. Entomologists are like detectives, trying to figure out how things have evolved into what they are today. I look at the wasps’ evolutionary relationships to each other and soon will be naming new species.

After graduate school, many researchers go on to a post-doctoral research job, and then find a more permanent job. I would like to find a job at a university where I can teach and do research at the same time.

When and why did you get interested in studying bugs?

I’ve always been fascinated by the bizarre beauty of insects. I grew up interested in insects, reptiles, and amphibians. There were so many kinds, or species, of insects all around our neighborhood. When our second grade class had Career Day, I went as an entomologist!

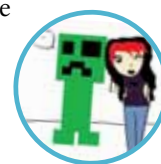
In the summers, my younger brother and I would use old jars to raise caterpillars into butterflies or keep an orb-weaver spider and watch it catch its prey. We kept animals like turtles, toads, and tree frogs in terrariums in our garage, observing their daily behavior. We also kept garter snakes, which we took to middle school during the winter. (They only escaped a couple of times inside the classroom!) We’d patrol the backyard garden, and it was so exciting to see something new, like the buckeye butterfly or a luna moth.

Our mom made sure we took community classes on insect collecting. I had old insect field guides that I read over and over, too. We even made an insect zoo for all of the neighborhood kids to visit!

I took my first entomology class in college. After getting a degree in biology, I went on to get a master’s degree in entomology. I worked in the field identifying insects for a year before starting my Ph.D.

Yummy Bugs

Want to make—and eat!—chocolate-covered crickets, salted queen ants, and these delicious no-bake mealworm drop cookies? Visit girlmeetsbug.com, the bug-eating blog of Daniella Martin, who was inspired to eat and research bugs during anthropological studies with the Maya people in Mexico.



Why are bugs important?

Insects are interesting because there are so many of them out there—both in species and in numbers. Around one million insects have been discovered, and there may be another nine million still left to be discovered. Studies using bugs that are easy to maintain in a lab (such as fruit flies, *Drosophila melanogaster*) can tell us things about other species, such as the ways genes change, or mutate.

We don't always realize it, but insects are extremely important to humans! We spend billions of dollars each year to keep insects away from our crops. One way to avoid pesticides that can pollute our water and air is to use insects called predators and parasitoids to help us get rid of the pests.

We use insects as bioindicators that can show how clean the environment is. For example, we use certain aquatic insects that can only live in clean water to tell if a stream is polluted.

Insects provide us with products we use, such as honey from bees or silk from silkworms (moth caterpillars). In many places, people eat insects as a cheap and delicious food source. And everyone enjoys insects! Have you ever noticed a beautiful butterfly or caught a flickering firefly?

What would you tell a girl who wants to be a scientist?

Get out and explore! Never stop learning and asking questions—there is always more to discover, even right in your backyard. Start your own field notebook, where you write or draw the things you see or questions you have.



Career Day: Elizabeth's an entomologist!



Photo by John Heraty

Elizabeth collects insects in Hungary.

When you pursue a future in science and STEM (science, technology, engineering, and math) areas, you'll be able to tackle important issues about our environment. You could affect laws that help us keep the earth healthy. You may know that there aren't enough women in those areas—we need voices and brains like yours to come up with great solutions. Even if you just take a few more science classes, you will be more informed about issues affecting your life as you grow up. And whatever you do, don't be shy about your achievements as many girls and women are. We need to be sure to take credit for the good work we do!

What is the coolest part of your job?

I get to be really creative as I explore all sorts of interesting questions. As a graduate student, I can pick a research topic and then investigate a hypothesis. I get to attend conferences and workshops so that I can see the newest scientific methods and share ideas with other scientists. Of course, I also get to “play” with bugs and go out into nature to observe and collect them.

What is the most exciting science exploration you've done?

My favorite adventure so far was a research trip to Dominica, an island in the West Indies. We collected parasitoid wasps by setting out sweep netting and insect traps and digging up ant nests. Dominica is mountainous and has lots of waterfalls. While we were out collecting in the rainforest, we swam in the pools at the base of the falls, picked mangos off the trees, and learned how to machete our way through the jungle!

I've been able to travel a lot as I collect insects and go to conferences to present my research. I also visit natural history museums to sort through insect collections—some with insects over 100 years old. I've been able to go to Dominica, Hungary, Costa Rica, London, Paris, South Korea, and different parts of the U.S. I know I'll go other places in the future—I can't wait to see where I'll go!

Laura Murray is a freelance writer and NMG volunteer. She thinks it's pretty cool to have an entomologist for a big sister, but don't ask her to hold a tarantula!