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# The Future of Food Valerie Stull



By 2050, the Earth is expected to be teeming with nine billion people. That's two billion more mouths to feed than today. What are all those people going to eat? Valerie Stull is working hard on that tough question. Even today, many people don't have enough to eat, she says. Food isn't available to everyone equally, and much of what we eat impacts climate, harms our environment, and can be unhealthy for our bodies.

The solution? Valerie firmly believes we can't keep eating many of the foods we eat now. To combat hunger and climate change, she and other experts researching the future of food say humans need a healthy, sustainable alternative to cattle, chicken, and pigs.

The alternative?  
Eating bugs.



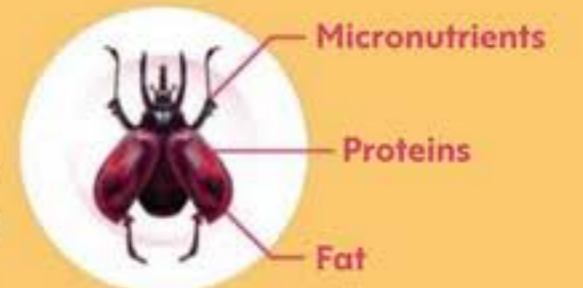
## Bugs as superheroes

If just the thought of eating insects makes you cry "Yuck!" you're not alone. But consider this—about two billion people in 130 countries around the world already do, choosing from a variety of 2,100 edible insect species. They're served up raw, pan-fried, boiled, and spiced. They're ground into powders and put into breads and cookies. They're an important part of food culture and food traditions around the globe, so be careful when you say, "Gross!" You might be yucking someone's yum.

Sometimes called "land shrimp" or "mini meat," farmed insects use less feed, water, and land area than traditional meat, so they're more environmentally friendly. Insects can be raised in small spaces; they don't need acres of land like livestock. Anyone can be an insect farmer, right under the kitchen sink.

Early humans probably always ate bugs. They're full of micronutrients, as well as protein and the fat needed to fuel our large brains. And they're often much easier to catch than wild game. There's a reason chimps poke sticks into termite mounds and lazily lick off the bugs rather than chasing after zebras and impalas.

When Valerie tasted a fried ant at age 13 on a family trip to Costa Rica, was it destiny that she would study insect eating, or entomophagy (entomon—insect, phagein—to eat)? No!





That ant was just her first step towards understanding there are many ways to be in the world, and many different lenses to see through. She had to travel all over the globe before she found her place in science.



### You don't have to choose just one path

The first thing you need to know about Valerie is that she's a scientist who doesn't fit neatly into any one science topic. She works best where sciences overlap, designing her own area of expertise by combining the things she loves most—environment, people, agriculture, and nutrition. Overlaps are where you find new things, like beaches which only exist where water and land overlap. Scientific overlaps are where researchers are open to wacky, outside-the-box thinking, and where really different ideas mix to create more than the sum of their separate parts, or synergies.



Valerie's an environmental health scientist. What does that mean?

"I'm a scientist that studies food—how we produce food, how that food impacts our bodies, how it impacts the environment, and how the way that we produce food impacts people."

But to understand how Valerie arrived at bugs as the future of food, we have to dig deeper.



### Charting her own path

As a kid, Valerie was a sports-loving tomboy—baseball cap backwards and all. Her love of nature came from growing up in the mountains of Colorado. Exploring the wilderness really imprinted on her how humans are not separate from nature. She cares deeply about people and communities. "My mom, who's an empathic people person, says that at a young age I would see something horrific on television, like a famine, and I would start collecting all the spare change in the house to help." Valerie's urge to problem-solve may have also come from her Dad's work as a chemist making cancer-curing drugs.

But the most important impact, she says, came from traveling. In college, she applied for volunteer work abroad. In South Africa she spent time with children, in Rome she worked as an intern with the United Nations (UN), and in the Peruvian jungle she was an assistant researcher. As she traveled, she began to reflect on an uncomfortable truth. She was drawn to helping suffering people, but she realized how much she and others from wealthy nations created their problems.



MIGHTI team plus collaborators at Zambian cricket farm

*"Traveling really opened my mind to the bias I had growing up, that the United States is the greatest place in the world. But what we do here in the US—for example our pollution, our emissions, and our behaviors—doesn't always have a positive impact on the world."*

Everywhere she went, she looked for overlaps, to create synergies that others were missing. The summer she interned with the UN, she learned what international organizations are doing to improve the lives of people suffering from famine and poor nutrition. But she was frustrated that different programs in the UN didn't combine their efforts more often. For example, UN health and hunger projects didn't always work with agricultural projects. "You can't have health without food," she says, "And you can't have food without farming. That set up my whole career. I really want agronomists [crop scientists] and doctors to talk to each other and work together."



### Every path has roadblocks

Meanwhile, Valerie was in college, on track to major in chemistry, getting straight A's. But she hit a roadblock—her calculus grades were awful. "I worked so hard, but I couldn't work my way to mastering calculus. I was so sure it was the end of my dream to be a scientist."

Anxiety has been an ongoing challenge for Valerie, along with migraines, since she was a teenager. A perfectionist, she was always trying to be the absolute best and putting a lot of pressure on herself, or worrying she was doing things wrong. The calculus roadblock actually helped. It made her step back and see herself more clearly. She realized that a nutritional science major fit her goals better than chemistry, and didn't require calculus. Now a professor, she advises her undergraduates—particularly those suffering from anxiety—you don't have to master everything to do science. And don't worry about making a wrong decision. No matter what you do, it's a learning opportunity with knowledge you'll use later in life.

### Insects at last

When Valerie was in graduate school, a powerful UN report on edible insects came out, about the future of healthy and sustainable food. It changed her life. She already knew that insect-eating was culturally important in Zambia where she had previously worked. But she was intrigued by the environment and agriculture side to insect-eating. A fellow PhD student was interested in the health aspects. "We had a lot more questions than answers. That's a good place for science to start." So, they designed a project to explore insect farming in Zambia, to interview and listen to the actual experiences of people who eat insects. The project became her PhD thesis, and blossomed into MIGHTi, the Mission to Improve Global Health Through Insects. Valerie continues to seek out synergies, with women and communities who want to better their lives and the lives of others through insect farming and other innovations. Recently, the "i" in MIGHTi has become "Innovation," as their many synergies took flight. Check them out at [www.mighti.org](http://www.mighti.org)!

Valerie is part of a movement in the United States to include insects in our everyday foods. Restaurants already serve up insect dishes.



*"I have a two-year-old son. He's had cricket powder in bread and other foods already. He will most certainly be eating insects!"*



#### When Valerie's not working...

**If you could hang out with any cartoon character, who would it be?**  
Snoopy, because growing up I felt like just taking a nap on the doghouse would be great.

**What sport would you compete in if you were in the Olympics?**  
If I could just automatically have the ability? I would be a marathon runner.

**What is your most-used emoji?**  
I really like the upside-down smiley face! Because it's very flexible—it can mean a lot of things.





# 10 Most Popular Edible Insects



## Crickets

Rich in protein, vitamins and minerals. Eaten whole, ground into powder or used as cricket flour.



## Grasshoppers

Well known for their crunchy texture and are a good source of protein and fiber.



## Mealworms

Larvae of beetles. Used in baking, cooking and as protein-rich addition to meals.



## Silkworms

A good source of protein and healthy fats. Typically eaten steamed, boiled, or fried.



## Ants

Leaf-cutter ants are edible and have a tangy citrus-like flavor.



## Beetles

Various beetle species are edible including buffalo beetles, palm weevils and rhino beetles. They are a rich source of protein and are eaten fried or roasted.



## Caterpillars

A good source of protein and healthy fats. Typically eaten steamed, boiled, or fried.



## Termites

Known for their nutty flavor, termites are often roasted or fried to be eaten.



## Dragonflies

Rich in protein. Consumed as a crunchy snack.



## Waxworms

Are the larvae of wax moths and are used as food for certain animals and consumed by humans. They are a good source of protein.