

exploring career options

Wildlife Biologist

Interview by Amy Entwisle

Brian Gratwicke, PhD

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Zimbabwe, where Brian Gratwicke grew up, is a land synonymous with elephants, lions, and giraffes, but it was the aquatic life that got the young Gratwicke's attention. Here, he explains how he turned his fascination into a career, and how he uses that career to help preserve the nature that he loves.



How did you become interested in biology?

I always knew I wanted to be a biologist. As a kid, I would go down to the public pond at the bottom of our street, catch little minnows, and put them in jars all over my bedroom. Eventually, I had 20 fish tanks lining my bedroom, I had dug up my mother's garden, and I had eight fish ponds.

How did you parlay that interest into a career?

I got my undergraduate degree in zoology and my master's in fisheries ecology. Then, as a Rhodes Scholar at Oxford, I did a PhD on coral reef fishes in the British Virgin Islands.

Afterward, I knew that I didn't want to be an academic, per se, the kind that focuses exclusively on making observations and testing hypotheses. I wanted to use my personal values to guide my conservation actions.

What was your first job after grad school?

After I finished my PhD, I got a job with the National Fish and Wildlife Foundation working as a grant administrator for Save the Tiger Fund. What I really learned there was that my training as a biologist didn't give me all the tools I needed to be a conservationist. I was well prepared for species and habitat management, yet poorly equipped to raise money and hire staff to implement a conservation program. Conservation financing, land acquisition, policy, and education are some of the key areas in which conservation biologists work in order to save species or ecosystems.

Why did you decide to work with amphibians?

Amphibians are some of the most accessible forms of wildlife on the planet. Kids tend to love them. Parents like them because they're not especially dangerous for kids to play with. But amphibians also have an intrinsic value of their own. They're incredible little jewels with important ecosystem functions. They eat an enormous number of invertebrates, including pests that spread human pathogens and attack crops. There are chemicals in their skin that help them fight pathogens and diseases, chemicals that may be used to help develop medicines and cures for humans.

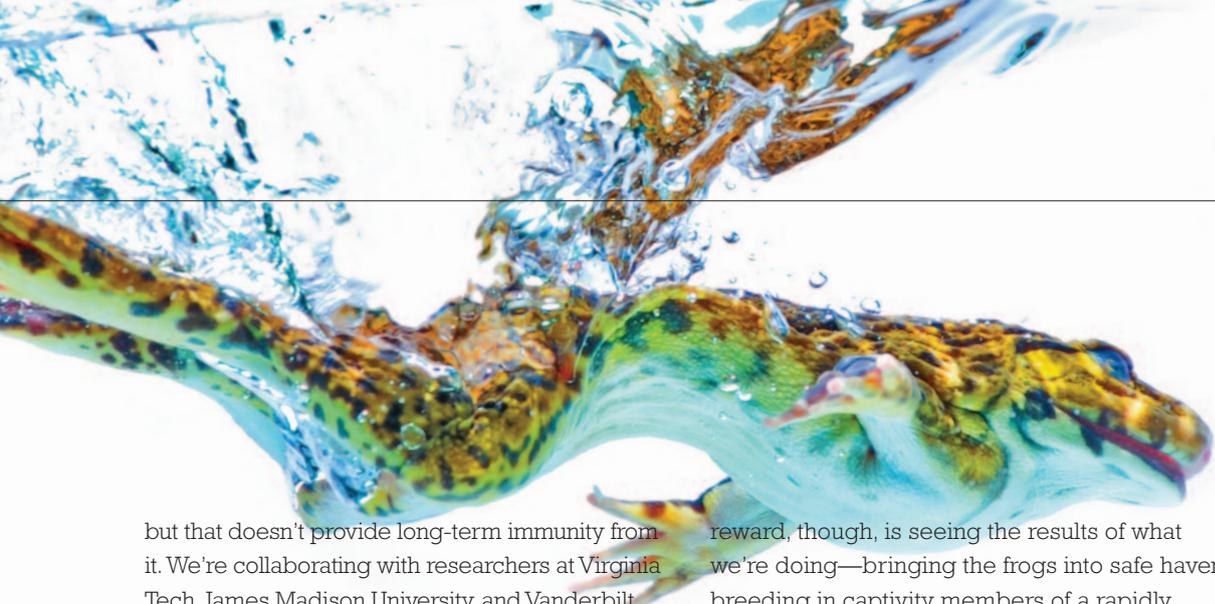
Amphibians are the sound of the rainforest at night. They are the wildlife in your own garden, but they're disappearing from ecosystems all over the world. They helped to greatly enrich my childhood, and I think it would be a shame if that piece were missing from the childhoods of our children, or our children's children.

What are you working on now?

I'm working on a novel disease that was actually discovered here at the National Zoo by one of our pathologists who was trying to identify what was killing some frogs in an exhibit. It's called *Batrachochytrium dendrobatidis*, or amphibian chytrid fungus, and it's causing massive amphibian declines and extinctions. It's now moving through Latin America, wiping out frogs along the way. Panama was the last Latin American country to be hit by this chytrid wave, but there are still some populations of frogs there that haven't been affected. I'm working there to try to stop it.

You're helping create what's been called a Noah's Ark for frogs whose population is threatened by chytrid fungus. Can you talk a little bit about that?

At the Smithsonian, we're working with the International Union for Conservation of Nature (IUCN) on the Amphibian Ark Program, a global project to create assurance colonies of amphibians that will otherwise go extinct in the next few years. We've put those frogs most urgently at risk of extinction in a captive breeding facility where we can keep the fungus out. We can cure chytrid fungus in frogs in captivity by using anti-fungal chemicals,



but that doesn't provide long-term immunity from it. We're collaborating with researchers at Virginia Tech, James Madison University, and Vanderbilt University to try to use bacteria that occur naturally on frog skin to produce anti-fungal chemicals as a metabolic byproduct that protects them from chytrid fungus. It's worked in mountain yellow-legged frogs and in red back salamanders. Now we're hoping to develop a probiotic cure for species such as the Panamanian golden frog, which is extinct in the wild.

Can you describe your job?

My role at the Smithsonian includes grant writing, communicating with collaborators about goals, and forming alliances to tackle these huge problems as a team. Developing a cure for chytrid fungus involves many different scientific and non-scientific disciplines, including fundraising, policymaking, and conservation financing. I work with scientists, veterinarians, and microbiologists who go to Panama to find species of bacteria that inhibit chytrid fungus 100 percent. I also work with geneticists, who help monitor the probiotic bacteria we've introduced on the frogs' skin, and with endocrine biologists, who study stress hormones to see if something in these bacteria might stress out the frogs. I work with a husbandry team that ensures that the things we're doing while searching for the cure won't compromise the frogs' health.

What's the most rewarding thing about your job?

I get to work with people who are way smarter than I am, who bring together lots of different skill sets from many different disciplines. I travel to places like Panama on a regular basis and see incredible wildlife up close. The real

reward, though, is seeing the results of what we're doing—bringing the frogs into safe havens, breeding in captivity members of a rapidly declining species, and seeing them continue in captivity even as we witness their population crash rapidly in the wild. It's sad watching them decline, but it's satisfying knowing that we've managed to save some of them for the future. It will be even more satisfying to be able to put them back into the wild where they belong.

What skills and qualities does one need to be successful in a field like yours?

You should love what you do, because it's a tough job. You need to be able to communicate well and work well as part of a team. You also need to be quite bold and fearless of the unknown. I'm often doing things that I don't have a lot of training in, such as molecular methods, microbiology, pathology, disease ecology, and fundraising. You need faith in your own ability to understand some of these big problems, and the confidence to draw on experts who have the skills you lack in order to achieve something bigger than you could on your own.

What advice would you give to students who are interested in working in conservation biology?

Study subjects that are going to help you think outside your discipline. Take a course in English literature, or hardcore stats. Ask yourself, "What am I really good at? What really interests me?" If it's government or international affairs, then maybe some policy-oriented studies would be good for you. If you're interested in TV and media, go for it. Get some training in things that inspire you, because in the field of conservation biology, you'll use all kinds of skill sets. **i**

What wildlife biologists do

Wildlife biologists study animals in their natural habitats, including their origin, behavior, diseases, and life processes. They may experiment with animals and collect and analyze biological data to assess the effects of environment and industry. They disseminate information in papers, journal articles, and educational presentations. They may coordinate programs to control outbreaks of disease in animals.

Where they work

Many wildlife biologists work for government agencies and zoos. Others work for museums, historical sites, social advocacy organizations, and scientific research and development companies.

Education required

A PhD is generally required for independent research, but a master's or bachelor's degree may suffice for some jobs in applied research.

Salary range

According to the Bureau of Labor Statistics, the median annual wage for zoologists and wildlife biologists in 2010 was \$57,430.

For more information:

American Institute of Biological Sciences
www.aibs.org

Association of Zoos and Aquariums
www.aza.org/careers-zoos-aquariums

Ecological Society of America
www.esa.org

Society for Conservation Biology
www.conbio.org