



Career of the Month

Summer 2007, Science in the Workplace

Aquatic Conservation Biologist

To protect the diversity of life on Earth, conservation biologists study species and habitats in danger of extinction. Freshwater is arguably one of the most critical global resources. The ecosystem biodiversity of this invaluable resource is highly threatened. In his role as an aquatic conservation biologist, Zeb Hogan travels the world to better understand and reduce threats to endangered freshwater fish and their habitats. Hogan's efforts support the invaluable freshwater biodiversity and ecosystem health.

The work: An overview

My main project, National Geographic's Megafishes, focuses on the study and conservation of the world's giant freshwater fish (see photos). On expeditions to some of Earth's most diverse freshwater ecosystems, I collect information about the life history, population status, geographic range, and threats associated with giant fish species. This information is synthesized into IUCN Red List assessments of threatened species, which summarize population and distribution trends over time to determine extinction risk. While on missions, I meet with scientists and fishers, participate in biological studies and inventories, and talk with local people about their unique way of life. My principal goal is to investigate causes behind the global loss of freshwater biodiversity.

Locally, in the United States, I



Hogan holding a 117 cm taimen—which have undergone massive declines due to habitat loss, pollution, and overfishing—in the Eg-Uur river in northern Mongolia.

focus on the management of fish and their habitats in ecosystems such as Walker Lake, Nevada. Walker Lake is a desert lake becoming increasingly saline due to a combination of natural evaporation and extraction of water for agriculture. The lake is so saline that fish such as Lahontan cutthroat trout and tui chub struggle to survive. My research focuses on methods to improve the lake health and restore fish populations.

A typical day

Every day is different. When I am not in the field, I spend time in my university office (as an assistant research professor) responding to e-mails, planning future expeditions,

buying equipment, meeting with students, attending seminars, writing reports, submitting grants, and preparing scientific manuscripts. Once I am in the field, I spend almost all of my time on or near the water.

In Southeast Asia, most of my field sites are near populated areas, so my team boards in hotels and relies on local fishers to help gather information. In Cambodia, for instance, we stay in the city of Phnom Penh and take a small boat along the river twice a day. While on the river, we interview fishers about their catches and the abundance of endangered species. If fishers catch an endangered fish, we work with them to tag and release the fish.

Alternatively, in Central Asia's Mongolia we live in Mongolian *yurts* (tentlike structures), eat traditional food, and rely on solar energy to power our equipment. The temperature can drop to well below 0°C late in the season, so it is sometimes a challenge just to keep ourselves and our equipment in good condition. There, we work with recreational fishers to gather information about the ecology of the world's largest trout. Our days are spent on the river tagging and releasing fish, and our nights taking care of work-related chores (e.g., charging batteries, entering data in a computer, fixing equipment, making calls by satellite phone).

Aside from office and field work, I also write articles, speak at seminars, and work with the National Geographic Society to produce television news stories and shows. Sharing stories with a broader audience helps raise awareness about the existence and conservation status of endangered freshwater fish.

Advice for students

Students can start thinking about subjects that excite them and reflecting on what, specifically, they enjoy about those subjects. For example, students interested in ecology should try to figure out *why*. Is it because they like being outside, or, asking and answering scientific questions? In my case, I have always been curious about the natural world and I enjoy learning about that world through field studies.

In high school, I read news stories and books about ecology and conservation. Eager to get out in the field, I sent letters to aquariums around

the country inquiring about summer internships and applied for a summer field course on natural resources management. Most universities have research assistant positions available to undergraduates, so it was easier to get involved in the field once I was a college student at the University of Arizona. I worked as a field tech with the Arizona Fish and Wildlife Research Cooperative every summer until I graduated.

In all, I followed a traditional path for an academic research scientist. Upon receiving a bachelor's degree in ecology and evolutionary biology, I participated as an exchange student in the Fulbright Program in Thailand, attained a doctorate in ecology, and then continued as a post-doctoral fellow. While not all students need to follow this exact path, it is important for aspiring conservation biologists to receive good grades (especially in science classes) and have a relatively well-articulated idea of their research interests.

Job satisfaction

I love the freedom to direct the focus

of my research, which has developed and evolved over time. I am always challenged by a novel question or problem and almost everyday I learn something new. For instance, I recently started working with the United Nations Convention on Migratory Species. As part of this work, I am learning all about sharks, which were previously unfamiliar to me.

From a scientific perspective, the most exciting moments often come with an answer to a question about the behavior or life history of a poorly studied animal. For example, I worked for quite some time trying to determine how far *Pangasius krempfi* (a type of catfish) migrate up the Mekong River in Southeast Asia. We finally discovered that the catfish actually behave like salmon and migrate about 1,000 km upstream. Findings such as this are inspiring not only because they are breakthroughs, but also because the information may help protect the species. As for personal satisfaction, it is incredible to work in beautiful and remote areas and realize such places still exist.

—By Megan Sullivan

Bonus Points

Education:

B.S., ecology and evolutionary biology; Ph.D., ecology

On the web:

Society for Conservation Biology (www.conbio.org); International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species (www.iucnredlist.org)

Related careers:

Marine biologist, aquatic chemist, physical oceanographer, aquaculture veterinarian, environmental consultant