

CONSERVATION

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Perspectives in Conservation

Maria Elena Barragan-Paladines serves as Executive Director of the Fundación Herpetológica Gustavo Orces, an Ecuadorian NGO dedicated to the study, conservation, and protection of reptiles and amphibians from Ecuador (Fig. 1). This organization established the first collection of captive reptiles and amphibians in Ecuador (The Quito Vivarium). Maria has held this role for six years. She was interviewed by Section Editor Jennifer Stabile in December 2018.

Growing up in Ecuador, what sparked your interest in reptiles and amphibians?

My parents are Ecuadorians. I am lucky because my mom comes from the coast of Ecuador and my dad from the mountain region. My mom, having grown up around snakes along the coast, would talk with my brother, sister, and me about nature and she would take us out into the forest. She would explain to us that we shouldn't be scared of snakes, that they were a part of our natural world. My dad was a fishery technician and he taught us about love and respect for wild places around us. So, the influence of both my parents was half the reason why I became a biologist. When I was 16, I decided I wanted to study wild animals at University, but it wasn't until I started volunteering at the vertebrate museum at a local university that I began working specifically with reptiles and amphibians. As I was working with the preserved collection, I realized I really would like to work with the live versions of these animals! Around that same time, this was back in 1990, a friend called and asked if I would like to visit a new vivarium that had just opened in Quito. I had never seen a vivarium, and upon visiting that was my big moment. I realized this was what I wanted to do with my life, this is where I wanted to work. I can recall walking around the vivarium, observing each animal while taking notes. The Director, Jean-Marc Touzet, came up to me at one point and upon seeing my interest in snakes took me on a tour of the facility. It was the most amazing place I had ever seen. After the impromptu tour, I asked the Director if I could volunteer at the vivarium, and he said sure, you can start tomorrow morning. I started by cleaning the rodent cages and here I am, 28 years later, as the Director.

Quite a bit happened in between volunteering at the vivarium and coming back as the Director. I understand you worked for Gerald Durrell's Jersey Wildlife Preservation Trust (JWPT). What led you there?

My Director at the vivarium had been encouraging me to complete a Master's degree while I was working there. I

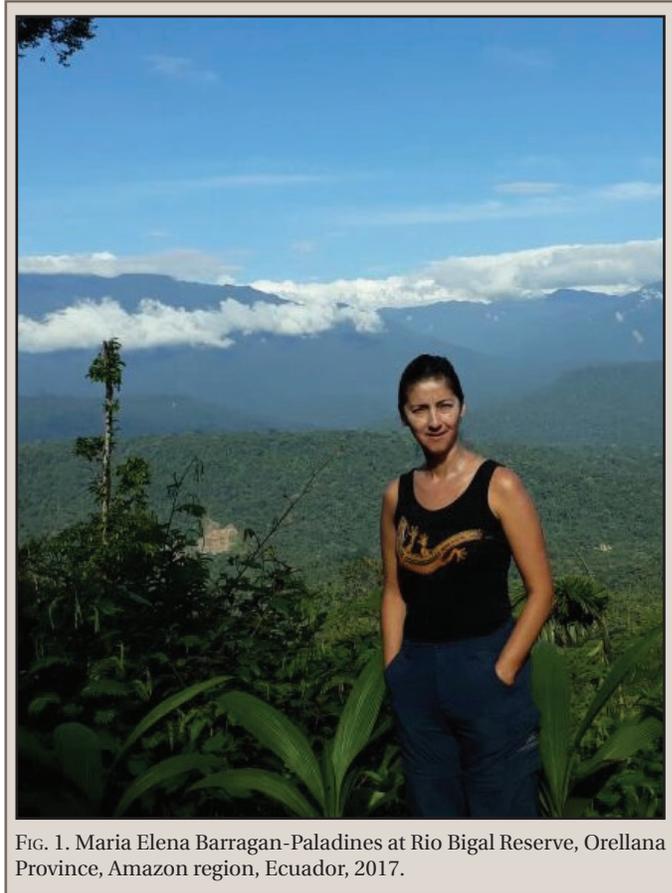


PHOTO BY KATTY GARZÓN

FIG. 1. Maria Elena Barragan-Paladines at Rio Bigal Reserve, Orellana Province, Amazon region, Ecuador, 2017.

was becoming involved in the Latin American community of animal management, I was beginning to understand how these collections changed the way people viewed animals, and I was interested in this. One of the overseas courses I attended was actually in the United Kingdom at Gerald Durrell's JWPT. In 1994 I had applied for and received a scholarship for professionals from undeveloped countries working in animal captive management and conservation. This was a life-changing experience for me. After finishing the three-month course, I was offered a job as a reptile keeper. At this time I was not yet fluent in English, studying and writing in a new language can be difficult and demanding, but getting offered this position gave me confidence that I was on the right track. I was involved with some research while I was attending the course; one project was to evaluate spatial ecology in Jamaican Boas (*Epicrates subflavus*). This research was part of the course criteria in collaboration with the Durrell Institute of Conservation (DICE), endorsed by Kent University at Canterbury. This was a wonderful opportunity as I was able to use this work for credit and received a diploma on endangered species management.

From here, you returned to Ecuador and the vivarium for a period of time before heading to Griffith University in Australia. Take us through that journey.

After that I returned to Ecuador. I was full of energy and new ideas that I wanted to apply to the vivarium. In 1996 as the Vivarium Director, my responsibilities were not only about reptile and amphibian captive management but to work with the public in an environmental education program. I enjoy communicating with the public, so this was demanding but also a good role for me. I love the research and publishing aspect of conservation, but I wanted to do more than that, so I took some time to think about this before I went back to get my Master's degree in 2010. A year earlier, in 2009, a group of universities from around the world came to Ecuador to promote their programs, one of them being Griffith University. After hearing their presentation on wildlife biology and community conservation, I felt as if they were talking directly to me! I knew this would be the perfect fit, so I went to Australia to pursue a Master's degree in Environment and Education for Sustainability.

Given your biological background, why did you choose this degree path?

Ecuador is a tropical country with 10% of the total amount of the world's snake diversity. In 1993, my organization began working with the Makuma community located in the jungle. We taught children about reptiles, snakes in particular, and snakebite accidents. That project reminded me that this was an opportunity to understand the impact of snakes in rural areas where indigenous communities live in isolation. As a result, I really wanted to work more with these people and develop methods to minimize the impacts of venomous snake encounters. I felt there were already good people, advanced professionals, working in herpetofaunal taxonomy, biology, and ecology in Ecuador; I wanted to be able to contribute in an area that was underexplored. In my opinion, it is not possible to conserve venomous snakes without community involvement. Without this support, it is a case of wasting funding and efforts. I challenged myself to discover mechanisms that would involve communities in my research and conservation projects. I also wanted to be able to communicate with them on equal ground. I did not want to follow previous paths where these communities were treated as people without knowledge; this of course is not a good approach. These communities should feel comfortable with us as researchers, but we also need to learn from them in a way to understand why some snake species are impacting them more than others. I wanted to design techniques or methods that could be used to approach them, to talk with them, to understand their needs and to offer support. After establishing these bonds, we can start thinking about conservation. So, my dissertation was built upon the comparison of indigenous communities' conservation approaches around the world (Australia, Africa, Brazil, Canada, and Ecuador) and how they view snakes. There are patterns and similarities across all of the communities. For instance, most indigenous people find snakes in general to be positive symbols of fertility and wealth; however, venomous snakes have had negative impacts in their lives or the lives of their relatives. I am working on publishing a guide of principles on the natural criteria of indigenous communities in terms of snake conservation. I am hoping this would be useful to conservationists around the world, especially for those of us interested in preserving venomous snakes.

I look forward to that guide, but in the meantime, you did publish a book on the venomous snakes of Ecuador, which I am holding in my hand as we speak.

Ah, yes, this was an effort at multiple levels. This book compiles information from 27 years of collaborative work. A little background information. Ecuador has received a good amount of funding for conservation programs over the past 50 years, but mostly focusing on mammals or birds. Not much had been done for reptiles, or more specifically about venomous snakes, other than a few important contributions such as *The Venomous Reptiles of Latin America* (Campbell and Lamar). We found that people enjoyed visiting the facilities at the vivarium, and they often wanted more information, something in writing that they could take home. This venomous snake book was the dream of Jean-Marc Touzet, the founder of our organization, but for many reasons it never materialized. So, it became an institutional goal many years ago, and in 2012, my co-authors and I made this a priority. This is my first book and it was an amazing amount of work! We all had daily job responsibilities, but would go home and work on the book after dinner and after putting kids to bed, so our dedicated book time was usually between midnight and 4 a.m. The book was published in June 2016, and it's not only for herpetologists; we wanted it to appeal to botanists, artists, and medical professionals; in short, there's something for everyone in this book.

The book received an award from the Illustrious Municipality of Quito, as the best 2016 publication in the field of Biological Sciences, for its contribution at the local and regional level. It's our baby, we are really happy with the outcome.

I noticed there is an anthropological component to this book, which is relative to your work as a herpetologist in contact with different communities in Ecuador. I am aware of a conservation award presented to you at the 2018 IHS meetings for your work with indigenous communities, with a focus on women of these communities, and herpetological conservation. Let's talk about this conservation program.

Yes, the first step in contacting an indigenous community is to overcome language and social barriers and gain their confidence (Fig. 2). Sometimes this is hard if there is no one to translate from Spanish to their language, so we have to spend significant time with them to work through this.

The role of men and women in indigenous communities in the Amazon is very clear. In many communities and indigenous cultures such as Kichwa, Shuar, Waorani, Cofan and many others, the role of men is to go into the forest and hunt for meat, which of course means they are taking many risks. They are facing potentially dangerous wildlife when they are in the forest, and venomous snakes are one of their immediate threats. Women, on the other hand, and even though they stay home, their main role is the collection of food and teaching their children life skills such as which plants are safe to eat, how to clean the seeds, and how to collect crops. So, in my view, this puts women in the same or higher risk because they are grabbing the food by hand, they are manipulating the bushes and placing their hands in holes for seed collection. Also, women are in charge of knowledge, their role is to teach their children about nature and the animals around them. For these reasons, we felt it was important to include women and children in venomous snake

PHOTO BY ADRIANA DAVILA



FIG. 2. Sharing experiences with Shuar Women at Textures & Color Festival. Quito, 2014.

education. My colleague and I wanted to share with them what we knew about snakes, how they behave, why snakes may bite, and what they can do about a venomous snakebite. This was well received by the women, and they came back to us later because they were beginning a textile project in their community, weaving animal designs from fibers, to help tell their stories and teach their children about the natural world. They came to us because they wanted to include snakes, and we offered to help them with the designs, patterns, and colors of local species they might encounter. We found we can help them sell these textiles as well, so they can produce some type of sustainable income. At the same time, they are teaching next generations to protect snakes and benefit economically from them. There were some issues with this. The important thing to recognize here is that the social structures of these communities provide the males with access to the money. The males were the ones who would go out to buy things that were needed, or sometimes they would go out to get alcohol and get drunk while the women were at home with the children. These are their roles in the society, the women depended on the men 100%. Women have organized day-to-day tasks, for instance, on Saturdays they may get together to go collect crops for food in a community context. All of the community would benefit from the collection of the crop, and so on with other designated duties. With this in mind, the first issue we ran into by giving a few women access to income was that they stopped showing up to the Saturday crop gatherings. This started to alienate them from the other women, because they were not as involved in their community responsibilities. It also made the women less likely to organize as a united group, as they had done in the past. The other issue was that as soon as the women become economically independent, meaning that they did not need the men to be the primary provider, they would sometimes leave the community. So, this is a very interesting and delicate situation. For these conservation projects to be sustainable, we need to be sure we are providing roles for both men and women that do not interfere with their roles in their community. By now, and while adjusting these socioeconomic issues, we are selling all the production of woven snakes at the gift shop at the vivarium, making sure that the quality and design is accurate, and promoting a sustainable income for women (Fig. 3).

PHOTO BY KATTY GARZÓN T.



FIG. 3. Workshop to show coral snake patterns. Kichwa Women Community. Tena, Napo Province, Amazon region Ecuador. 2017.

Thinking of long-term sustainability, what do you feel is in store for future conservation efforts in Ecuador?

That's a big question. In general, Ecuador has few conservation efforts, and in regard to the conservation of venomous snakes, nothing has been done. Despite the isolated efforts of professionals who are part of research centers such as universities and NGOs like ours, there is much to be done. Some government and private efforts have been made in improving economic conditions and reducing poverty of indigenous communities. But perhaps the most important issue is legislation. Even though our constitution in 2008 declared that nature has rights, this needs to be seen in practice. Our national system of parks and reserves is about 18.5% of the total Ecuadorian territory, but we have the third highest rate of deforestation in South America. Additionally, the country's economy depends on oil and minerals; if these resources are found, they can be poached. But I have hope that more communities will gain access to resources to improve snakebite education and antivenom access, as well as outreach programs that teach residents about the benefits of snakes and their venom. This will reduce the killing of venomous snakes. To conserve our venomous snake populations, we need the collaborative efforts of scientists, industry professionals, and policy makers. Until now, efforts toward snake conservation have been isolated and scarce.

What advice can you give to the next generation of conservation biologists? How can they help?

First, the advice I would give to anyone is to stay passionate. We are people who decided to work in this field because we love what we do, that is our compensation, and the benefits of looking at our outcomes after years of effort. This is not a field where you can be a millionaire, well at least not in Ecuador. This is not a field where we will receive recognition because society still struggles to recognize that we need professionals in this field, with years of experience or academic preparation. Second, be tenacious. Many people may not understand why we choose to work with venomous snakes, and we might not change everyone's opinion of venomous snakes, but it's important to be persistent. If we change even one person's opinion that is a win. Third, stay humble. I am from the "old school," and I've learned to work hard and show humility. Worry less about having a profile picture and more about our ethics at work.