

CONSERVATION

This section provides a platform to showcase innovative conservation projects, partnerships in achieving conservation and management objectives, and conservation success stories or lessons learned, and to bridge the gap between science and management. Subjects appropriate for this section include the following:

- *In-situ* conservation programs, particularly those involving local communities and governments
- *Ex-situ* conservation programs and success stories, or lessons learned
- Habitat protection or species appreciation and protection via ecotourism, education, and outreach
- Proactive and multi-partner efforts to improve conservation policies or actions, or to increase public awareness of conservation issues
- Point-counterpoint essays on hot topics in herpetofaunal conservation

Manuscripts, ideas, or questions for consideration should be directed to Conservation Section Editor, Jennifer Stabile (jens@fieldprojects.org). All manuscripts will undergo external peer review. For detailed instructions on manuscript preparation, please consult the SSAR web page at: <http://www.ssarherps.org/pages/HRinfo.php>. For authors whose native language is not English and who might require assistance with manuscript preparation, we invite you to consult SSAR's Presubmission Manuscript Review service: <http://www.ssarherps.org/page/presub.php>.

Editor's note.—In this issue, we introduce a new feature to our Conservation section—*Perspectives in Conservation*. This will consist of interviews with individuals who have played significant long-term roles in herpetofaunal conservation efforts. Suggestions for future interviewees may be communicated to the Conservation Section Editor, Jennifer Stabile, at jens@fieldprojects.org.

Herpetological Review, 2016, 47(3), 413–416.
© 2016 by Society for the Study of Amphibians and Reptiles

PERSPECTIVES IN CONSERVATION: An Interview with Ray Pawley

Ray Pawley served as Zoologist at Lincoln Park Zoo (January 1962 to May 1964) in Chicago and as the Curator of Herpetology at the Chicago Zoological Park (May 1964 to June 1997) in Brookfield, Illinois, USA. Ray was interviewed by Jennifer Stabile on 12 June 2016.

Please share your history in the field of herpetology?

I retired from Brookfield Zoo after 33 years as Curator of Herpetology. Since my duties were not confined to a rigid job description, from time to time I was (concurrently) curator of birds, curator of public relations, and unofficial curator of special projects including foreign animal affairs. Since leaving Brookfield Zoo I have expanded my zoo/museum consulting business, and most recently served as Director of the Hubbard Museum of the American West in Ruidoso Downs, New Mexico. I'm involved in some local zoo and museum programs as well as numerous studies of local fauna/flora including hibernation of local Diamondback and Black-tail Rattlesnakes. There is so much to learn and I have always felt that I am just scratching the surface.

What encouraged your interest in herpetology and other wildlife?

My earliest recollection was when I was about three years old and realized I was very interested in animals. Although I grew up in a rural environment where domestic animals predominated, it was the non-domestic, wild animals that fascinated me. Then

at about age ten the insecticide DDT hit the streets. At that time no one was aware of the deleterious connection between DDT and the resulting massive amphibian die-offs that occurred as well as the rapid decline in bird populations.

At that time DDT was being used and over-used by the farming industry but it wasn't until I was at Michigan State University taking classes under Ornithologist Dr. George Wallace that the world would begin to understand the cause of these wholesale population disasters. Wallace was doing preliminary work on the connection between DDT and wild bird reproductive failure. Over time I began to appreciate the enormity of environmental fragility and the adverse consequences that can prevail due to basic ignorance. What happened years ago in early April when I discovered hundreds of bloated bodies of dead anurans floating on my favorite wetland pond made an indelible impression.

On the other hand, reptiles did not come into my world until I was about 13 or 14 years old. Just after WW II, my parents took my brother and me on a trip from Michigan west to Yellowstone. On the way we stopped to see Mount Rushmore in the Black Hills that had been completed a few years earlier. We also stopped at the Black Hills Reptile Gardens near Rapid City, South Dakota, where I touched a snake (Bull Snake) for the first time (Fig. 1).



FIG. 1. Black Hills Reptile Gardens, South Dakota, in 1952, my first professional job with animals—Guide and Assistant Curator.

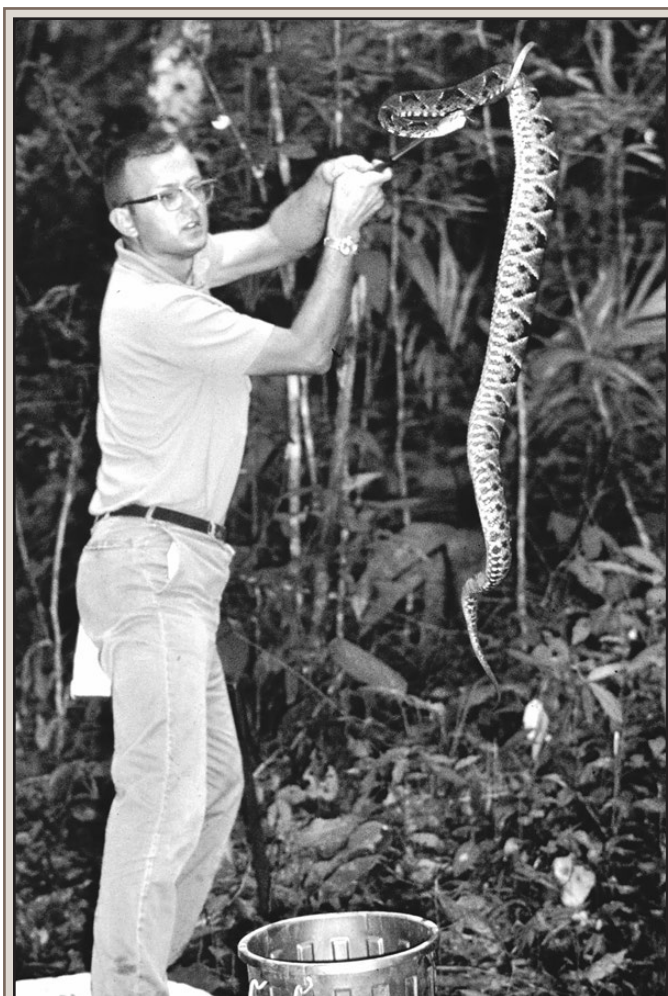


FIG. 2. Capture of a *Bothrops asper* near Ocozocoautla, Chiapas, a few miles west of Tuxtla Gutierrez. This forest no longer exists. The snake was collected in November 1965 on a Vampire Bat expedition I was leading at the time. This is the snake that I referred to in our interview that nearly died before I was finally able to comprehend the problem and meet its needs. Having no access to my records I believe it went on for another 11 years in spite of its being a very large adult. It died of chronic and worsening complications of its integument.

That experience flew in the face of all the myth-based information that my parents had told me about snakes. I will never forget that moment and from that point forward reptiles became my primary animal interest.

Did you have any role models during this time?

There were several over the years. Perhaps because my father was not very visible in my life I was drawn to remarkable individuals who possessed passions similar to mine and were willing to share their knowledge and advice. The first was Earl Brockelsby, owner of the Black Hills Reptile Gardens. Besides being an extraordinary eternal student in all that he took an interest in, he had a strong business outlook combined with an ethical lens through which he viewed the world around him. The Gardens' Curator was Earl Chace, formerly a reptile keeper of the Bronx Zoo. Those two men, for quite different reasons were formative influences at that time. Later there was Marlin Perkins, Don Miguel Alvarez Del Toro of ZOOMAT in Chiapas, Mexico, Director Vladimir Spitsin of the Moscow ZOOPARK, naturalist extraordinaire John Burch in the Okefenokee Swamp, Sox Sutherland with whom I spent many weeks over the decades patrolling rattlesnake dens north of the Capitan Mountains in New Mexico, MD/Veterinarian Ursula Rowlatt and others. I was very fortunate in meeting a succession of key people with whom I stay in communication over the years. To this list I need to acknowledge a couple of special non-humans as well. Although not often thought of as role models there were some including a female Chimp at Brookfield Zoo who patiently coached me in human-chimp interactions. There was also Judy the Asian Elephant at Lincoln Park Zoo with whom I spent time. My challenge was to understand what they were communicating, which for me has always been a primary motivator when working with non-humans.

Can you tell us a little bit more about your career in herpetological conservation?

My interest in herpetological conservation began (at least subliminally) when, as a kid I experienced firsthand the enormous amphibian "crash" that occurred in my area of Michigan. I didn't realize it at the time but that triggered a keener interest and awareness of the natural world around me.

During my Zoo years I was able to develop species management and breeding programs with several goals in mind principally that of creating an understanding of what conditions may be necessary for reproductive success in nature. In the '80s-90s when Galapagos Tortoises were being sorted for genetic purity and shuffled between zoos for breeding purposes a few smaller zoos were at risk of being deprived of their only giant tortoise. The only replacement options for smaller zoos were Leopard and/or Red-legged Tortoises, which hampered their giant tortoise conservation education programs. With the cooperation of Greg Moss and Ramon Noegel of Life Fellowship in Seffner, Florida, a breeding program to raise generic Galapagos Tortoises was begun with hatchlings being raised at Brookfield Zoo. Offspring would then be made available to smaller Zoos for education purposes while at the same time and with generic progeny we would refine our Galapagos Tortoise rearing strategy to improve their long term health and growth.

Another program was the management of a group of Galapagos Marine Iguanas (*Amblyrhynchus cristatus*). Although I wrote two articles on this project for the *International Zoo Yearbook*

this initiative went nowhere since there was no companion effort elsewhere upon which to build a captive breeding program for these unique lizards. Then there was the Green and Black Poison Arrow Frog (*Dendrobates auratus*) project. After learning that inbreeding was a threat to captive bred *Dendrobates* I assembled a closed population of six frogs which continuously bred for 3 generations. During that time no observable physical or behavior anomalies occurred. We were also the first to breed Green Crested Basilisks (*Basiliscus plumifrons*) and later Puerto Rican Toads (*Peltophryne lemur*), progeny of which went to the Toronto Zoo. A proposed importation of Goliath Frogs (*Conraua goliath*) was never approved by the Amphibian TAG Committee and thus could not be initiated although we had created a several years' successful management program including video recordings of combat and vocalizations for this species. These examples along with numerous others were at the top of my list of herp projects that I have been particularly pleased with over the years.

Why do you feel those programs were so successful?

I was very fortunate to have a highly capable and talented crew of keepers who were exceptional links between me and the animals. We all tried very hard to elicit the cooperation of the animals and learn how to listen to what they were telling us. We were in a perpetual state of negotiation with our animals to improve their quality of life. My point was that we needed to glean all that we could first from the literature and specialists. Then through innovation we would elevate our management protocols to an art form. As humans we obviously cannot understand or articulate the languages of Goliath Frogs or Galapagos Tortoises so we will always be in a state of inquiry. We kept copious notes since sophisticated and passionate keepers working on the front line with animals are particularly adept at documenting details that might not make sense at first but could be pivotal at a later date as more information emerges.

One example involved a large (2 m) *Nauyaca Real* or *Fer de Lance* (*Bothrops atrox asper*) that I collected in Chiapas in 1965 (Fig. 2). The problem involved continual unsuccessful attempts to persuade the snake to accept food. Because I had never put my hands on it, I knew that the snake had been captured with minimal stress. Yet in its enclosure many months went by without the snake showing any interest in feeding. After one year the snake was still alive but extraordinary measures were obviously needed. It was at that point that I had an epiphany that a role reversal was needed: instead of my trying to "preach the gospel" to the snake about its needs, I had to readjust and try to perceive what the snake was "telling me" that it needed. In an attempt to prioritize the Snake's sensory receptors and identify with what it was experiencing I realized that the problem might be connected to infrasound. The Snake may not have been able to acclimate to the continual "infra-white noise" created by the public as they shuffled about the building. The infra-noise was going on for 8 hours daily, followed by the rumbling of the climate control equipment at night, which could be (to the snake) like a radio blaring in its ears. So I removed a pad of sponge rubber from the seat of a discarded office chair and inserted it under the gravel in the enclosure where the *Fer-de-Lance* habitually rested, thus "turning off the radio". The upshot: The Snake fed the next day, and fed consistently for 11 more years. My take-home message: Keep trying to listen to what the animals are telling us and don't wait so long to make necessary adjustments. An article on this



FIG. 3. With Anastasia Simonova, translator at the Moscow Zoopark in October 2014, and at the request of the Zoopark's President Vladimir Spitsin, I gave a lecture to the Zoopark's Docent/Volunteer group.

topic was later published in the *International Zoo Yearbook*.

Looking back on your experiences with these programs, is there anything you would do differently?

Using the *Bothrops* as an example, if I had learned about the snake's needs sooner a lot of wasted time and trauma to the snake could have been prevented. I always hoped that I could learn the needs of animals early on, thus minimizing stresses on both of us: The animal and me. As my education continues today in Arabela among a wide range of creatures along with the components of their environment (plants, weather, minerals) I wish I could go back and start my career over again. At least I can make enlightened suggestions with consulting clients as I learn more about what is happening in the natural world around here.

What was your greatest learning experience in conservation?

There have been many, just like with the *Fer-de-Lance* when I have thought--Oh no! How could I have been so oblivious? Conservation of animals really starts with endangered environments, usually where numerous species are found. In that sense I believe that a broader, rather than narrower understanding of species' needs can be an enormous advantage, particularly in seeing how the needs of dissimilar species may intersect in unexpected ways. In fact, having detailed management experiences across a wide range of species enables me to sometimes see connections that would never have occurred to me if I had just been a "bird man" or a "reptile person."

Another example: When I went to Kenya to collect birds and reptiles for Brookfield, Lincoln Park and Milwaukee Zoos I brought back some Narina's Trogons which had never been kept successfully in Zoos. Once brought into captivity the Trogons became progressively thinner, elevating my concerns about their ability to adjust to a captive environment. I noticed that throughout the day these "downy" birds were often preening, sometimes vigorously. One of my daily morning duties was to mist all the reptiles and birds, including the Trogons, which would immediately begin to preen feverishly and appear to be drinking moisture from their saturated down feathers. On reflection I could

not recall an instance when a Trogon was seen drinking from a water dish, a behavior similar to several lizard species that drink by lapping up droplets of water on rocks or leaves. At once, I began misting the Trogons 5 to 6 times each day. Much of the mist would collect in droplets on their fluffy coat and soak into their down feathers like water being absorbed by blotting paper. The turn-around was dramatic. Food intake went up as hydration was restored. The point is that if my experience had been limited only to reptiles or only to birds, this critical clue might have been missed. Especially in situations where an array of species occurs within an endangered habitat, familiarity with each of the different species' needs across broad taxonomic lines can lead to new revelations. This is especially important when reintroduction programs are contemplated.

What do you feel have been the biggest challenges and changes throughout your career?

Certainly there are species and through them their habitats that need protection with more examples to come on line in the future. There were no endangered species laws during my early years. The listing of new species is likely to continue at a faster pace than the delisting of those species that we consider "recovered". However, long-term effects of species recovery are inseparable from the habitats in which they evolved. As such, and with few exceptions such as the beaver or Alligators of the Everglades, animals do not define and cannot alter their environments. People will ultimately, through their actions enable the delisting of species such as has already happened with the Alligator and the Bald Eagle. Will the California Condor follow? Properly implemented, solutions to the myriad endangerment problems should be aggressive enough that the "delisting" of endangered species will exceed the "listing" rate.

And, yes there are on-going problems with environment and habitat integrity as they continually evolve (and devolve) at an ever-faster pace on a planet increasingly impacted by Human overpopulation. Most if not all species are dealing with the moving targets of deforestation, siltation of water sources and more. Animals need to adapt (sometimes rapidly) or die unless some safeguards such as endangered species programs can provide a catch net and buy them some time. And yet, in spite of the negative impacts on so many environments most species have a remarkable capacity to accommodate and adapt.

One of the biggest challenges in my opinion emanate from the Human world which include ego, egocentricity, politics, greed (even among some of the rightists groups) and profit motives gone rogue. Even so, and based on many animal behavior studies, Humans certainly come by these traits honestly. Just as honestly we need to rise above these.

What keeps you optimistic about herpetological conservation?

If newcomers to the conservation arena have the passion to elevate their work and commitment ethics high enough to override dependence on electronic games and "selfies" then the on-going conservation continuum should prevail. I believe it will. Fortunately, many of the young people who will be our future replacements are not held hostage by the electronic social media any more than television and cell phones held previous generations captive.

There is an eternal student in all of us that shouldn't be stifled. At the personal level, I simply need to keep learning. Egotistically I thought that after 30+ years of experience with animals in managed zoo environments I could come to Arabela, New Mexico, and teach the wildlife of this area a thing or two. Wrong. In fact my learning curve has grown keener than ever. Questions abound. Examples include my preoccupation with the hibernation phenomenon with Rattlesnakes and Bull Snakes. I would like to know why hibernation seems to override the "couch potato sag" syndrome that was evident in the Rattlesnakes that I managed in Zoo collections years ago. I would also like to know why "fish hook" barrel cacti have seemingly counter-productive recurved spines that clutch a victim rather than repel. What is going on in the brain of a Turkey Vulture as it soars to a flaps-down "effortless" upright landing, achieving 0 mph stall speed in a 30 mph gusty crosswind? Directly and indirectly the answers that emerge from the exploration of questions help push us toward healthier, more comprehensive solutions as new and on-going conservation initiatives continue.

Can you give some advice for the next generation of conservationists?

That's a tough one. One of my admonishments has always been to keep one's eyes and ears open in order to learn more about the animals around us. Initially, try to learn as much as possible about a species of interest via a literature search and through direct communication with experienced specialists. Then, with input from the animal(s) have the courage to elevate your results to an art form. Observe the results for acceptance by the animal. Very often your first attempt may fail in some way (mine certainly do). Then admit your mistake to yourself and the animal, regroup and fine-tune your program for the next try. Be ready to innovate and educate not only the public *but also those you report to*. Learn your own strengths, build on them, and be prepared for criticisms and not always praise, which is likely to be part of your "reward" when you advocate for any animals' interests. Working with people who know more than you can be a step forward, especially from experienced individuals on the front line.

So jump in. Don't lose your sense of humor! Surround yourself with a work environment that's fun.