

42nd
International Herpetological
Symposium



June 19-22, 2019
Belize City

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Dear Friends,

This year, 2019, marks the 42nd anniversary of the International Herpetological Symposium. The first annual symposium on Captive Propagation and Husbandry of Reptiles and Amphibians was held in July 1976, at Hood College in Fredrick, Maryland. The International Herpetological Symposium (IHS) evolved from this meeting. The primary purpose of the IHS is to provide a forum for the dissemination of information and results of such research pertaining to the natural history, conservation biology, and captive management and propagation of amphibians and reptiles. Each year the IHS is held in a different location hosted by a zoological, herpetological, or herpetocultural institution. This year, IHS is proud to partner with the Crocodile Research Coalition in Belize, dedicated to the preservation of crocodilians and their environments throughout Central America and the Caribbean.

Unlike most herpetological societies or associations, IHS does not have a voting membership, but an electoral body. That body consists of the volunteer members of the Board of Directors, the Advisory Council, and chairs of various committees. Zoologists, herpetologists, and private herpetoculturists are all involved in organizing the annual symposia. These meetings and programs are largely supported by the generosity of our donors and sponsors, to whom we are eternally grateful.

We have an exciting meeting planned, kicking off with our Keynote speaker, Sharon Matola, founding Director of the Belize Zoo and Tropical Education Center. We also welcome you to join us for a special field trip all day Friday out into the forest to the beautiful Bocawina National Park. During our field trip we will have the opportunity to explore the forest and view species native to this ecosystem, plus we will partake in a special ranger-guided waterfall trek! We also would like to thank all of our fantastic symposia speakers and Junior/Next Gen Herpetologists for joining us this year, as well as our major sponsors, Timberline and Zoomed Industries. We would not be where we are today without you. Please support all of our sponsors whenever you are able.

Over the years, an increasing number of people with varied interests in herpetology have attended IHS meetings, and this curious mix has allowed IHS to develop its “unique” flavor. Although IHS is often visualized as an organization with an interesting blend of academia and herpetoculture, the types of people who attend the meetings far exceed those bounds. Progressive programs such as the Junior Herpetologist Award and Collegiate Speed Session have also opened the doors to the next generation of reptile and amphibian enthusiasts and conservationists. So whether you are a reptile breeder, a budding herpetologist, a natural historian, a wildlife artist, a commercial importer, a student, a veterinarian, a zookeeper, an academician, or a dry-goods vendor, IHS has something for everyone young and old.

The 42nd meeting marks my second full year as President of this dynamic organization. I gave my first public presentation at an IHS in my early 20's; I recall feeling nervous but the welcoming IHS board and attendees made it easy. At that same meeting, I met a soon to become employer and mentor who played a significant role in both my career and life. You never know what opportunities may present themselves at an IHS meeting. We may live at a time where much of our communication is through a screen and keyboard, but nothing can compete with a conversation and handshake. I am honored to have the opportunity to work with such a multi-talented and highly dedicated group of volunteers as we continue to move forward. For our old friends, we thank you for your continued support, and for those who are joining us for the first time, we welcome you. We look forward to seeing you at these annual gatherings for many years to come.

Bienvenido a Belize!

Jennifer Stabile

President

International Herpetological Symposium

SCHEDULE

Wednesday: 6/19

3:00pm-5:00pm Board Meeting (closed to public)

7:00pm-10:00pm Ice Breaker and Registration Opens

Thursday: 6/20

8:30am Registration Opens

9:00am-9:15am Opening Remarks: Jennifer Stabile, IHS President

9:15am-10:15am Keynote - Jacob Marlin, Executive Director, BFREE "The Herpetofauna of Belize, 30 Years of Observations, Myths, Facts, and Hot Spots"

10:15am-10:30am BREAK

10:30am-11:00am Marisa Tellez PhD "Back to the Future: A Glimpse of the Past, Present, and Future of Crocodile Conservation in Belize"

11:00am-11:30am Heather Barrett, Deputy Director, BFREE "Awareness Messaging as a Tool for the Survival of the World's Most Endangered Turtle Family"

11:30am-12:00pm Derek Cossaboon, Amphibian Keeper, Denver Zoo "The Lake Titicaca Frog: Captive Husbandry and Breeding"

12:00pm-1:30pm LUNCH

1:30pm-2:00pm Collegiate Speed Session:

Andres Novales, Universidad del Valle de Guatemala "Paradise in the Clouds"

Myles Masterson, Tidewater Community College "Searching for *Crotalus* in Tamaulipas"

2:00pm-2:30pm *Gary Harwell, DVM, Southeast Animal Clinic, Marisa Tellez, PhD, Crocodile Research Coalition, Isabelle Paquet-Durand, DVM, Belize Wildlife and Referral Clinic, Miriam Boucher, Crocodile Research Coalition "Are Crocs One Up On Us Medically After 80 Million Years?"

2:30pm-2:50pm Nelson A Melendez, Instructor, St. Andrew's Episcopal School "Diet of Bog Turtles (*Glyptemys muelenbergii*) from Northern and Southern New Jersey"

2:50pm-3:05pm BREAK

3:05pm-3:45pm Jaren Serano, BFREE "Turtle or Fish? Investigations into the Captive Management and Reproductive Biology of the Central American River Turtle (*Dermatemys mawii*), at the Hicatee Conservation and Research Center, Belize"

3:45pm-4:15 pm Grace Taracka "Rattlesnake Conservation Through Education"

4:15 pm-4:30 pm Daniela Novelo "Conservation of the American Crocodile on Caye Caulker"

4:30pm-4:40pm Jonathan Dubon "The Treefrogs of Belize"

4:40pm-4:55pm BREAK

4:55pm-5:10pm Joshuan Gonzalez "Report on the Hicatee Turtle"

5:10pm-5:40pm John Tashjian HERP QUIZ

Friday: 6/21 FIELD TRIP: Mayflower Bocawina National Park and Hopkins

Transport, lunch, park entrance fee and guided waterfall hike provided by IHS. Please wear comfortable shoes for a hike and dress accordingly for our time outdoors in the sun and forest. A refillable water bottle is suggested. Dinner will be on your own in Hopkins before heading back to the hotel.

Saturday: 6/22

8:30am Registration Opens

9:00am-9:10am Opening Remarks: Jennifer Stabile, IHS President

9:10am-9:40am Michael Starkey, Executive Director, SAVE THE SNAKES "Save The Snakes - Bridging the Gap Between Snake Conservation and Human-Snake Conflict Mitigation"

9:40am-10:10am Maria Elena Barragan, Executive Director, Fundacion Herpetologica Gustavo Orces "Contingency Plan for the reintroduction of the Marsupial Frog (*Gastrotheca riobambae*) in a natural creek in Quito-Ecuador"

10:10am-10:25am: BREAK

10:25am-10:45am Brian Freiermuth, WRA Environmental Consultants "Conserving the Amphibians of California in an Age of Decline: The Role of Environmental Consultants"

10:45am-11:15am Patrick Maher, Instructor and Nature Educator "Herping Adventures in Alamos, Sonora"

11:15am -11:30am Erica Holding "The Hybridization Phenomenon of American and Morelet's Crocs in Belize"

11:30am-11:40am Aledra Sacasa "The Green Iguana"

11:40am-11:50am Ajay Williams "The Sea Turtles of Belize"

12:00pm-1:30 pm LUNCH

1:30pm-2:15pm Neil Balchan (University of Northern Colorado) "A Chemical Arms Race: Venom-mediated Predator-Prey Interactions Involving Colorado Rattlesnakes"

2:15pm-2:45pm Lauren Taracka “Understanding Washington’s Northern Pacific Rattlesnake: Venom and Conservation”

2:45pm-3:00pm Janine Gillet “Fibropapillomatosis in *Chelonia mydas*”

3:00pm-3:10pm Jonathan Triminio “Population Status of the Morelet’s Crocodile in Belize”

3:10pm-3:20pm Giovanni Emilio Mendez “The Tropical Rattlesnake”

3:20pm-3:35pm Alson Ovando “Frogs and Toads of Belize”

3:35pm-3:50pm BREAK

3:50pm-4:00pm Preston Moguel “Report on Morelet’s Crocodile”

4:00pm-4:10pm Jalen Jaleel Mendez “The Fer-de-Lance”

4:10pm-4:30pm Carlos Murillo “Venomous Snakes of Belize”

4:30pm-5:15pm Tim Trout, Reptile Keeper, Denver Zoo “Komodo Dragons: A 20-year Retrospective”

**5:15pm Closing Remarks, IHS 2020
Jennifer Stabile, IHS President**

6:00pm-10:00pm Banquet/Awards/Grants/Closing Remarks

IHS Welcomes our Junior and Next-Gen Herpetologist Speakers:

NextGen Herpetologists / Collegiat Presenters

Neil Balchan

Jonathan Dubon

Janine Gillet

Myles Masterson

Carlos Murillo

Andres Novales

Alson Ovando

Jonathan Triminio

Ajay Williams

Junior Herpetologists

Joshuan Gonzalez

Erica Holding

Giovanni Emilio Mendez

Jalen Jaleel Mendez

Preston Moguel

Daniela Novelo

Aledra Sacasa

Grace Taracka

Lauren Taracka



Jacob Marlin

Executive Director of Belize Foundation for Research and Environmental Education

Jacob Marlin is Executive Director for BFREE and President of the BFREE Board of Directors. Raised in Washington, D.C., he had a passion for the natural world at a young age, with a focus on reptiles and amphibians. In his early twenties, Jacob travelled to Belize to explore the country and its wild places – soon after, in 1995, he co-founded and established BFREE. Jacob is an active advocate for the conservation and protection of the Bladen Nature Reserve and the larger system of National Protected Areas in Belize. Jacob is adjunct assistant professor at University of North Carolina Wilmington.

Some of the recent conservation initiatives he has developed and managed are the “Integrated Community-Based Harpy Eagle and Avian Conservation Program for the Maya Mountains Massif” in 2006 with Dr. Jamie Rotenberg of UNCW; “Hicatee Conservation and Research Center,” in 2011 with Rick Hudson of the Turtle Survival Alliance, and “Belize Cacao-based Agroforestry Restoration Project (BCARP)” in 2012 in conjunction with the US Fish and Wildlife Service.

Jacob splits his time between Belize and Gainesville, Florida. Most recently, in 2015, he has established the Monkey River Watershed Association in an effort to provide a structure for stakeholders to share information and work together to solve problems and find solutions, all for the overall purpose of protecting and conserving the health of the watershed.



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ABSTRACTS

Contingency Plan for the Reintroduction of the Marsupial Frog (*Gastrotheca riobambae*) in a Natural Creek in Quito-Ecuador

Maria Elena Barragan

Executive Director

Fundacion Herpetologica Gustavo Orces

The Gustavo Orces Herpetological Foundation carried out the project entitled: Contingency plan for the reintroduction of *G. riobambae* in natural in Cumbaya-Quito, Ecuador.

The construction of the Ruta Viva" autovan affect some of the remain ecosystems of Montane forest where this endemic frog lives. The project starts phase I on October 15, 2015 and finish on November 2016, and it was carried out under agreement between EPMOP (City Metropolitan Public Company for Mobility and Public Work) and FHGO (Gustavo Orcés Herpetological Foundation).

This plan considered the captive management of the *Gastrotheca riobambae* species in order to breed the frog in captivity, and release them in wild, after a complete habitat restoration where the frog was monitored in previous years. The project includes captive management, a breeding program for the frog, veterinarian analysis in order to make sure health conditions of the frogs are fine for reintroduction, an educational and community involvement by creating webs at schools and local neighborhood. This project release 300 tadpoles, 100 juveniles, 67 sub-adults and 54 adults.

On 29th September 2017, phase II started with a period of 6 months of field work in order to carry out the monitoring and evaluation of the released population. After almost 3 years of being released some data in the research site such as vocal recording from adults, juveniles living in the restored area and new tadpoles living in the artificial pond confirmed the evidence of success in the entire process. Additionally, some other species of frogs such as Common Frog (*Pristimantis* sp.), and snakes i.e., False coral (*Erythrolamprus micropholis*), Green Snake (*Erythrolamprus ephippelus*), Snail eater-snake (*Dipsas* sp.) and saurian "Huaxa" (*Stenocercus* sp.) were also found, as part of the fauna living near the area. The new phase of the project will include a monitoring stage to evaluate the adaptation of the released frog population, a restoring plan for the flora used for habitat restoration and an involvement of 120 more schools into the education programme.

Awareness Messaging as a Tool for the Survival of the World's Most Endangered Turtle Family

Heather Barrett and Tyler Sanville

Belize Foundation for Research & Environmental Education (BFREE)

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Belize mailing address: PO Box 129, Punta Gorda

hbarrett@bfreebz.org and tsanville@bfreebz.org

The Hicatee Conservation and Research Center was established in 2013 at the BFREE Field Station in southern Belize to investigate the reproductive biology of the critically endangered, *Dermatemys mawii*, locally known as *Hicatee* turtle. The goal of the HCRC has been to build large assurance colonies to aid in reintroductions. From the inception of the HCRC, BFREE and our partner, Turtle Survival Alliance, recognized the need for a strong and structured awareness program to ensure that turtles bred in captivity could be safely released without fear of immediate hunting. With the help of partners throughout Belize and the U.S., Hicatee Awareness Month was launched in October 2017 to raise awareness of the plight of *D. mawii*. Equipped with a newly produced documentary film, an online outreach toolkit, educational materials, and a media plan, #HicateeHeroes worked hard to spread the message and, ultimately, #savethehicatee. With the momentum gained during 2017, Hicatee Awareness Month 2018 encouraged Belizeans to think bigger with "Let's make the *Hicatee* our national reptile." This talk describes our campaign as well as other initiatives and programs that create an ever-expanding

international community of individuals and organizations concerned with the survival of the species. The motto for Hicatee conservation in Belize continues to unite efforts, which is important because our work is far from finished - **The *Hicatee* is disappearing, but together we can save it!**

The Lake Titicaca Frog: Captive Husbandry and Breeding

Derek Cossaboon

The Lake Titicaca Frog (*Telmatobius culeus*) is a wholly aquatic species endemic to Lake Titicaca, and is listed as a critically endangered by the I.U.C.N. Working in close collaboration with our South American partners, the Denver Zoo imported 0.0.20 individuals in 2016; the first North American import of the species since the mid 1960's. Applying strict controls of the physical and chemical parameters of their tank water, we had breeding success in 2017; the first successful reproduction outside of South America. This presentation covers a brief natural history review, and in depth husbandry protocols employed leading to captive reproductive success.

Conserving the Amphibians of California in an Age of Decline: The Role of Environmental Consultants

Brian D. Freiermuth

WRA Environmental Consultants

As researchers document declines in an increasing number of amphibian species, public and governmental awareness of these trends increases. As a result, many states create new regulations and implement existing legislation to prevent further declines of at-risk species. In the U.S. and California, in particular, the industry of Environmental Consulting has become increasingly important to navigate the complex regulatory environment to balance responsible development and species conservation. WRA has been a leader within the Environmental Consulting industry, providing assessments, surveys for state and federal listed species such as California red-legged frog, foothill yellow-legged frog and California tiger salamander, often in areas that are poorly surveyed do to access restrictions. In some cases, these assessments lead to opportunities for stakeholders to create positive conservation initiatives, which can ultimately support species recovery. Using specific examples, this presentation will describe the interplay between private landowners, government laws/ regulations and amphibian conservation, with specific focus on the catalytic role that WRA biologists have been able to play in maximizing benefits to all concerned parties.

Are Crocs One Up On Us Medically After 80 Million Years?

Gary Harwell, DVM¹

Dr. Marisa Tellez²

Isabelle Paquet-Durand, DVM³

Miriam Boucher²

¹ Southeast Animal Clinic, 7565 Drouet, Houston, TX 77061 bayareabirdvet@yahoo.com

² Crocodile Research Coalition, Maya Beach, Belize Marisa.Tellez@crcbelize.org

³ Belize Wildlife and Referral Clinic, P.O. Box 226, San Ignacio, Cayo Belize, Central America
jpaquet@BelizeWildlifeClinic.org

Crocodylian researchers, veterinarians, and zoo keepers have long observed the implausible healing abilities of injured crocs. Healed missing limbs, tails, jaws and lacerations are frequently observed in nature, the healing process taking place all the while submerged in an aquatic ("contaminated") environment.

The healing process in vertebrates is somewhat elucidated by peptides elaborated in injured tissue at the wound site. Assistive osteoichthian wound debridement and submersive/free flowing aquatic environment also likely contributes to the wound treatment process. Additionally, tropical sunlight/uvb may play a significant role in contamination management. Conversely, in a captive environment, aggressive veterinary care is often essential to manage wounds. A possible additional healing factor is interaction with bacteriophages (phages).

The presentation will summarize wound healing and phage therapy principles, with a photographic summary of wounds and emergencies seen in Belize crocs. This presentation is to stimulate the conversation in regards to phage therapy asking some of the following questions: Is there a potential application to crocodilian veterinary and husbandry practices with phage therapy? Can such knowledge be applicable in maintaining the health of crocodilians in the captive environment? No one knows at present.

Herping Adventures in Alamos, Sonora

Patrick Maher

Teacher/Nature Educator
Tijuana, Baja California Norte, Mexico
patriciomaher6@gmail.com

Alamos, Sonora is a Biological and Cultural Jewel set in Southern Sonora, Mexico. Here You can Find Jaguars, Ocelots, and many other cool critters. Mexico is rich in Biodiversity, including herpetofauna. Sonora in particular boasts a stunning variety of wildlife. I spent two weeks in August, 2017 exploring the environs of Alamos and want to share with you some of what I saw and experienced while there, including Goode's Thornscrub Tortoise: *Gopherus evgoodei*, a new subspecies of desert tortoise described in 2014. Alamos is at the very heart of this animal's natural habitat. The Mexican Beaded Lizard, known locally as *El Escorpion*, is locally abundant around Alamos. I will also be discussing a number of snakes, lizards, and amphibians I encountered.

Searching for *Crotalus* in Tamaulipas

Myles Masterson

Tidewater Community College
Norfolk, Va.

Mexico is well known to be the most viper rich country in the entire world. In the Summer of 2018 we setup a trip to visit the North-Easternmost state of Tamaulipas. While this area is known to have some of the worst cartel activity of the country, its wildlife diversity is special. With an array of habitats it offers an opportunity to see an incredible assortment of herpetofauna. It serves as the northernmost point in many tropical species' range such as Neotropical rattlesnakes, *Bothrops*, *Isthmura*, *Abronia* and more, all within a few hours of the United States border. I will cover the species we encountered with notes on habitat from this trip.



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The Herpetofauna of Belize, 30 Years of Observations, Myths, Facts, and Hot Spots

Jacob A. Marlin

Belize Foundation for Research and Environmental Education (BFREE)
Mile 58, Southern Hwy, BFREE Reserve, Toledo District, Belize C.A.
[jmarlin@bfreebz.org]

Nestled between temperate North America and the humid tropics of South America, Belize contains a unique herpetofauna mix of both regions. Though the country is small in size, its variety of climatic conditions, geography, and habitats provide a rich playground for reptile and amphibian enthusiasts. Over the course of more than 30 years of living in the country and observing the rich diversity of species, myths, facts, and hotspots are described, though much is still unknown about the country's reptiles and amphibians.

Diet of Bog Turtles (*Glyptemys muhlenbergii*) from Northern and Southern New Jersey

Nelson A Melendez, MSc.

St. Andrew's Episcopal School, Austin, TX
Melendenz89@gmail.com

Contributing Authors: **Brian Zarate** - New Jersey Division of Fish and Wildlife, Endangered and Nongame Species Program; **Jonathan Fingerut** - Department of Biology, Saint Joseph's University, Philadelphia, Pennsylvania; **Scott P. McRobert** - PI - Department of Biology, Saint Joseph's University, Philadelphia, Pennsylvania
Speaker: **Nelson A Melendez, MSc.**

We tracked Bog Turtles (*Glyptemys muhlenbergii*) using radio-telemetry equipment to obtain fecal samples. We analyzed fecal samples to determine the identity of food items in both northern and southern populations in New Jersey, USA. Food items identified included: beetles, millipedes, ants, flies, caddisfly larvae, snails, and plant material, including seeds. While we found no significant differences between the diets of the two populations, fecal samples from the northern population contained more millipedes, caddisfly larvae, flies, and snails. Conversely, fecal samples from the southern population contained more beetles and seeds. This work adds to the basic life-history data on *Glyptemys muhlenbergii*, and may be valuable to conservation efforts.

Permits: Scientific Collecting Permit #SC2014130 from the New Jersey Division of Fish and Wildlife, Wildlife Permits Unit.

Tandy Keenan, Biologist

Licensed Wildlife Rehab / Relocation of Reptiles * Wildlife Education Programs

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Paradise in the Clouds

Andres Novales

Universidad del Valle de Guatemala
Guatemala City, Guatemala

Standing in between the mighty Sierra de las Minas and Sierra Xucaneb, the cloud forests of Alta Verapaz and Baja Verapaz in Guatemala are one of the largest remaining patches of cloud forest in Central America. This life zone is home to a great diversity of reptiles and amphibians, orchids and birds including Guatemala's national bird the Resplendent Quetzal (*Pharomachrus mocinno*). Cloud forests are amongst the most vulnerable ecosystems due to recent rising temperatures. Through out this talk I will cover the main threats affecting the area and current conservation work I'm involved in; with special interest on species like the Yellow Blotched Palm Viper (*Bothriechis aurifer*), endangered Arboreal Alligator Lizards (*Abronia* spp.) and the elusive Long Limbed Salamander (*Nyctanolis pernix*). The main focus will be the Yellow Blotched Palm Viper and how the population is being affected by recent events. We will discuss the species natural history, ecology and behavior.

Turtle or Fish?

Investigations into the Captive Management and Reproductive Biology of the Central American River Turtle (*Dermatemys mawii*), at the Hicatee Conservation and Research Center, Belize, C.A.

Jaren Serano, Thomas Pop

Belize Foundation for Research and Environmental Education (BFREE)
Mile 58, Southern Hwy, BFREE Reserve, Toledo District, Belize C.A.
[jmarlin@bfreebz.org]

The Central American River Turtle, (*Dermatemys mawii*), known locally in Belize as the *Hicatee* has undergone massive declines throughout its limited range of southern Mexico, northern Guatemala, and Belize due to extensive harvesting for its meat. Ranked Critically Endangered by the IUCN Red List, it is ranked 15th in the report *Turtles in Trouble: The World's 25 Most Endangered Tortoises and Freshwater Turtles* (2018). It is the most critically endangered turtle family in the world, representing a unique evolutionary lineage. Intensive conservation measures are needed to restore depleted wild populations and prevent the species from extinction. Historically, *Hicatee* have proven difficult to reliably reproduce in captivity due to their secretive and unusual behavior and aquatic nesting habits and the fact that eggs undergo embryonic diapause. In order to address these challenges in a controlled setting, the Turtle Survival Alliance in partnership with the Belize Foundation



for Research and Environmental Education (BFREE) completed construction of the Hicatee Conservation and Research Center at BFREE in 2013. Breeding ponds were designed and constructed to permit the manipulation of numerous environmental variables. Since 2014, adult turtles (45) have been acquired from confiscations, rehabs, and wild stock. Successful nesting has taken place each year, with a total of 321 eggs deposited to date, reflecting 29 nests, with high rates of fertility and hatching. Captive husbandry protocols and best management practices have been put into place, including pond design, water management, preferred nesting sites, diet and feeding, and rearing of juveniles. Information gathered includes: clutch sizes, nesting season, egg incubation, diet preferences, growth rates of juveniles and adults including onset of sexual maturity.

Save The Snakes - Bridging the Gap Between Snake Conservation and Human-Snake Conflict Mitigation

Michael Starkey

Save The Snakes
Executive Director and Co-Founder
Email: starkey@savethesnakes.org

Despite their unwarranted reputation, snakes are critically important animals for our world. Yet, global snake populations are at risk from many threats, including persecution by humans. Conflict between snakes and humans is increasing and each year, over 2.5 million people around the world suffer a serious snakebite envenomation. Simultaneously, the conservation needs of most snake species are underfunded, remain poorly understood by researchers and garner little attention from society. To address these issues, Save The Snakes was founded in 2017 to bridge the gap between successful snake conservation efforts and human-snake conflict resolutions. Together with our international network of snake conservationists, we protect threatened snake populations and reduce direct conflicts between humans and snakes by implementing mitigation strategies which will lead to peaceful coexistence. By empowering and supporting conservationists to mitigate human-snake conflict, this unique, community-based approach to snake conservation can save snakes and reduce snakebite in the global majority.

Back to the Future: A Glimpse of the Past, Present, and Future of Crocodile Conservation in Belize

Dr. Marisa Tellez

Crocodile Research Coalition, Maya Beach, Stann Creek, Belize.
E-mail: marisa.tellez@crcbelize.org

In the early 1900s, a sea of red eyes enshrouded the aquatic habitats of Belize at night. However, the exploitation of American crocodiles (*Crocodylus acutus*) and Morelet's crocodiles (*Crocodylus moreletii*) began to



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rise in the late 1920s for their skin, and were nearly extirpated by the 1950s. For the last 75 years, various conservationists and natural enthusiasts have played a part in ensuring the preservation of the crocodile species in Belize, and positive steps have been taken to reverse previous decimation. This presentation will provide a glimpse into the history of crocodile conservation in the Central American country of Belize, and discuss the 2nd Crocodile Renaissance occurring now, which includes exploration of unidentified crocodilian populations in remote areas of the country, initiating nationwide population surveys, creating anti-poaching programs, and providing various outlets of wildlife outreach. False beliefs and misguided information about the crocodiles in Belize in conjunction with the continuous fight against wildlife trafficking has created challenges in improving human-crocodile relations, yet with the implementation of current research and education programs initiated by organizations such as the Crocodile Research Coalition, a strong foundation is currently being built to empower the communities in co-existing with the American and Morelet's crocodiles, and joining the global movement in wildlife conservation.

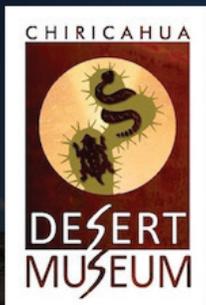
Komodo Dragons: A 20-year Retrospective

Tim Trout

Reptile Keeper
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Having worked with Komodo Dragons for 20 years in a zoo setting and participating in field work with their wild counterparts, I have gained much admiration and fondness for this taxa. From the early days of keeping and breeding them to growing knowledge of their biology from ongoing field work, we are still learning much about the earth's largest lizard. Denver Zoo has unique philosophies and husbandry practices that over the past 25 years have proven to be both innovative and successful in routine maintenance, reproduction and medical care. I will discuss care throughout their life cycle—from incubation to geriatric care—and share the strategies that have led to their successful management at Denver Zoo.

The Charles W. Painter
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Herpetology



<http://www.chiricahuadesertmuseum.com/charles-w-painter-grant>



INTERNATIONAL HERPETOLOGICAL SYMPOSIUM JUNIOR HERPETOLOGIST AWARD

This program created by Russ Gurley, Todd Goodman, and the IHS Board and a dozen other excited sponsors, is a new program for IHS, implemented in 2015. The Junior Herper committee thoroughly examined every application and one winner in each age category was chosen. This winner received an all expenses paid trip to the 2018 International Herpetological Symposium. In the two younger age groups, an all expenses paid trip was given to a parent or chaperone as well. Two runners-up in each age category received free registration to the 2019 IHS meeting and \$200 towards travel expenses.

Applicants submitted:

1. A cover letter explaining why the applicant should be chosen as the Junior Herpetologist winner
2. A short essay (500 to 1,000 words) with the topic of Natural History or Conservation or Herpetoculture
3. Two letters of recommendation from a teacher, friend, parent, or someone who knows the applicant well

*** Note from Russ: We have a very energetic, interesting, sophisticated, and intelligent group of young herpetologists out there, studying, researching, flipping boards and flat rocks, taking care of their reptile pets, and growing into the amazing herpetologists who will replace us all someday. I was so encouraged and excited to read these essays and applications and I hope the Junior Herper program continues for IHS long into the future. Thank you to my judges for your hard work and to all who supported this program in 2019.**

JUNIOR HERPETOLOGISTS 2019 (USA)

12-15

Winner: Grace Taracka, Port Townsend, WA
Runner up: Cameron Sanders, Scottsdale, AZ
Runner up: Nathan Atkinson, Midland, TX
Runner up: Ellie Bickel, North Palm Beach, FL

16-18

Winner: Lauren Taracka, Port Townsend, WA
Runner up: Katie Karl, Springfield, IL
Runner up: Mark Moses, Fort Worth, TX
Runner up: Greyson Offermann, Austin, TX

NextGen HERPETOLOGISTS 2019 (USA)

Winner: Neil Balchan, Greeley, CO
Runner up: Calvin Vick, Benton, AR
Runner up: Calvin Schaefer, Kirksville, MO
Runner up: Olivia Damm, Lodi, OH

2019 JUNIOR HERPETOLOGISTS 2019 (BELIZE)

Jonathan Dubon	Daniela Novelo
Janine Gillet	Alson Ovando
Joshuan Gonzalez	Aledra Sacasa
Erica Holding	Jonathan Triminio
Giovanni Emilio Mendez	Ajay Williams
Jalen Jaleel Mendez	
Preston Moguel	
Carlos Murillo	

The Joseph Laszlo Memorial Award

Many individuals were fortunate to have known the late Joseph Laszlo, long-term Superintendent of the Department of Reptiles at the San Antonio Zoo, San Antonio, Texas, who died on 14 November, 1987. In recognition of his lifelong achievements in and contributions to herpetology, especially in herpetoculture, the International Herpetological Symposium, Inc. has bestowed an annual award in his name. The Joseph Laszlo Memorial award is presented to the speaker at the IHS meeting who has demonstrated that his or her work represents new and exciting views and advances in herpetology. For information on the interesting life of Joseph Laszlo, an obituary was published in Herpetological Review, 19, 5-6 (1988).

The following individuals have received the Joseph Laszlo Memorial Award:

- 1991 Seattle, WA - Richard Shine, Ph.D., University of Sydney, Australia
- 1992 St. Louis, MO - Brian A. Kend
- 1993 Miami, FL - Dr. Hans-George Horn, Germany
- 1994 New Orleans, LA - Dante Fenolio/Michael Ready
- 1995 Denver, CO - Ross M. Prazant, D.V.M./Phillipe DeVosjoli
- 1996 San Antonio, TX - David Grow, Oklahoma City Zoo
- 1997 Liberia, Costa Rica - Allen E. Anderson, Norwalk, Iowa
- 1998 Cincinnati, OH - Harry Greene, University of California, Berkeley
- 1999 San Diego, CA - Carlos H. Arevalo Gtez, Guadalajara Zoo
- 2000 New Orleans, LA - Gregory C. Lepera, Jacksonville Zoological Gardens
- 2001 Detroit, MI - Scott J. Stahl, DVM
- 2002 St. Louis, MO - John Brueggen, St. Augustine Alligator Farm, FL
- 2003 Houston, TX - Bill Love, Blue Chameleon Ventures, Alva, FL
- 2004 Daytona Beach, FL - Dr. Stephen P. Mackessy, University of Northern Colorado, CO
- 2005 Phoenix, AZ - Dante Fenolio, University of Miami, Coral Gables, FL
- 2006 San Antonio, TX - Dr. David Lazcano Jr., Universidad Autonoma de Nuevo León, México
- 2007 Toronto, Canada - Ray E. Ashton, Jr., Newberry, FL
- 2008 Nashville, TN - Wayne Hill, Winter Haven, FL
- 2010 Tucson, AZ - Carl Franklin University of Texas at Arlington, Arlington, TX
- 2011 Fort Worth, TX - Alan Kardon San Antonio Zoo, San Antonio, TX
- 2012 Baltimore, MD - Marie Rush DVM
- 2013 New Orleans, LA - Chawna Schuett, Saint Louis Zoo, St Louis, MO
- 2014 Riverside, CA - Philippe de Vosjoli
- 2015 San Antonio, TX - Collette Adams, Gladys Porter Zoo, Brownsville, TX

2016 Saint Louis, MO – Roger Sweeney, Virginia Zoo, Norfolk, VA

2017 Rodeo, NM - Robert Mendyk, Jacksonville Zoo, Jacksonville, FL

2018 – Houston, TX - Micha Petty, Louisiana Exotic Animal Resource Network, LA

PORRAS CONSERVATION AWARD

In recognition of lifelong achievements in and contributions to field biology, the International Herpetological Symposium is pleased to bestow the Porras Conservation Award. This award is presented to a speaker at the IHS annual meeting who has demonstrated that his or her work represents exceptional accomplishments in the field that benefit herpetological conservation.

AWARD RECIPIENTS

2018 – HOUSTON, TX
Maria Elena Barragon Paladines

2017 – RODEO, NM
Jeffrey Lem

2016 – ST. LOUIS, MO
Jeff Ettlting, Ph.D.

2015 – SAN ANTONIO, TX
Robin Moore, Ph.D.



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IHS GRANTS

The IHS Grant Committee reviewed (23) COMPLETE APPLICATIONS in 2018, and again the various projects covered an amazingly broad scope in subject species, project type, and multinational localities. The competition was quite close in the three selected categories warranting full-funding for those winners rather than splitting available funds between four categories. Due to the continuing generosity of Grant Fund donors and dedicated fundraising events, the IHS Grant Committee was pleased to award a total of \$3,000 in total to the following winning projects in 2018:

- **Kinsey M. Brock** (University of California, Merced) – **Natural History**
Causes and Consequences of Color Polymorphism in an Endemic Island Lizard
- **Adam G. Clause** (University of Georgia) – **Conservation Biology**
Dragons in the Mist: Species Discovery and Cloud Forest Conservation in a Biodiversity Hotspot
- **Arun Kanagavel** (Conservation Research Group, Kochi) – **Education**
Busting the myth of consumption of threatened endemic chelonians for curing hemorrhoids in Kerala, India

On behalf of the entire IHS Grant Committee and Executive Board, congratulations to the 2018 grant recipients!

The IHS Grant Fund is made available through the fundraising efforts of our annual Silent Auction and dedicated donations. Over \$18,000 has been provided to worthy projects since 2012.

All grant applicants are now required encouraged to present at a future IHS meeting as it offers a great opportunity for young researchers to develop presentation/public speaking skills, and we are always interested in their projects (if travel is difficult for international applicants, we accept a poster presentation of their work in lieu of attending). For more information on the annual IHS Grant Program, which opens January 1 each year, please check out the IHS website: <http://www.internationalherpetologicalsymposium.com/ihs-grant/>

Finally, my most sincere thanks to the Grant Committee members for their tireless efforts and time in reviewing grants and assisting with fundraising.

Vicky A. Poole

International Herpetological Symposium (IHS) – Treasurer and Grants Committee Coordinator

The IHS would like to thank Donna Dee for donating some of Mike's book collection for us to sell and for the proceeds going to benefit programs, scholarships, and expenses for future meetings. Your generosity is greatly appreciated and our memories of Mike continue to inspire us to be better and to do better for the wild creatures that you both love so much.

REMEMBERING MIKE DEE

The city of Los Angeles joins the international zoological community and all of Earth's wild creatures to mourn the passing of Michael Joseph Dee, known to all as Mike, who started out as a zookeeper in 1967; just ten months after Griffith Park Zoo was loaded onto trucks and moved two miles to its current location, where it was renamed The Greater Los Angeles Zoo.

Dee's vast zoological knowledge and terrific sense of humor made him a beloved and indeed legendary figure. As his friend, NBA superstar Shaquille O'Neal, said, "Whenever you saw Mike you knew two things: you were going to laugh your ass off, and you were going to learn something amazing. If I could be remembered like Mike when I leave this earth - no, not Michael Jordan, no, not Michael Jackson, I'm talking about Mike Dee - then that means I've done my job in society. Mike was a perfect gentleman - a man that cared - a man that inspired - a man that helped people - and a man that built a legacy at the LA Zoo."

In his distinguished forty-year career, Dee oversaw the evolution of Los Angeles Zoo from a depressing concrete Gulag that he once said "looked like a bunch of bomb shelters" to a modern conservation zoo situated amidst botanical gardens that today attracts almost 2,000,000 visitors per year. Dee's dedication to wildlife, large and small, helped save numerous species from extinction, and his tireless efforts to improve the lives of zoo animals by giving them more space and superior enrichment, in order to encourage better health, longer lives and natural behaviors, led to numerous innovations; including the creation of the "Chimpanzees of the Mahale Mountains" facility in 1998, which remains home to one of the largest and most socially successful chimpanzee troops in human care, and was hailed by renowned primatologist, Jane Goodall, as the finest she'd ever seen, transcending state-of-the-art to what she called "state-ofthe-world".

"The Zoo community has truly lost one of its best", said Jack Hanna, Director Emeritus of the Columbus Zoo, popular television host, and the public face of American zoos. "Mike Dee was a champion for the important work of zoos, animal welfare, and conservation. The animal world is a better place because Mike was in it."

by Bradley Trevor Greive AM
September, 2017

"I, of course, will never see a tapir or a rhino without thinking of my friend, Mike Dee. Mike lost his courageous battle with cancer today. It breaks my heart, but I am glad his suffering is over. Mike's big smile, twinkling eyes, outrageous shirts, and hilarious LA ZOO stories will stay with me forever. His stories of what some people do at a zoo, even surrounded by large crowds, still baffle me... I am thinking about Mike and Donna today and I am hoping his spirit arrives someplace wonderful and full of dappled sunlight, twisted vines and exotic plants, colorful birds and bugs, and monkeys playing in the treetops..."

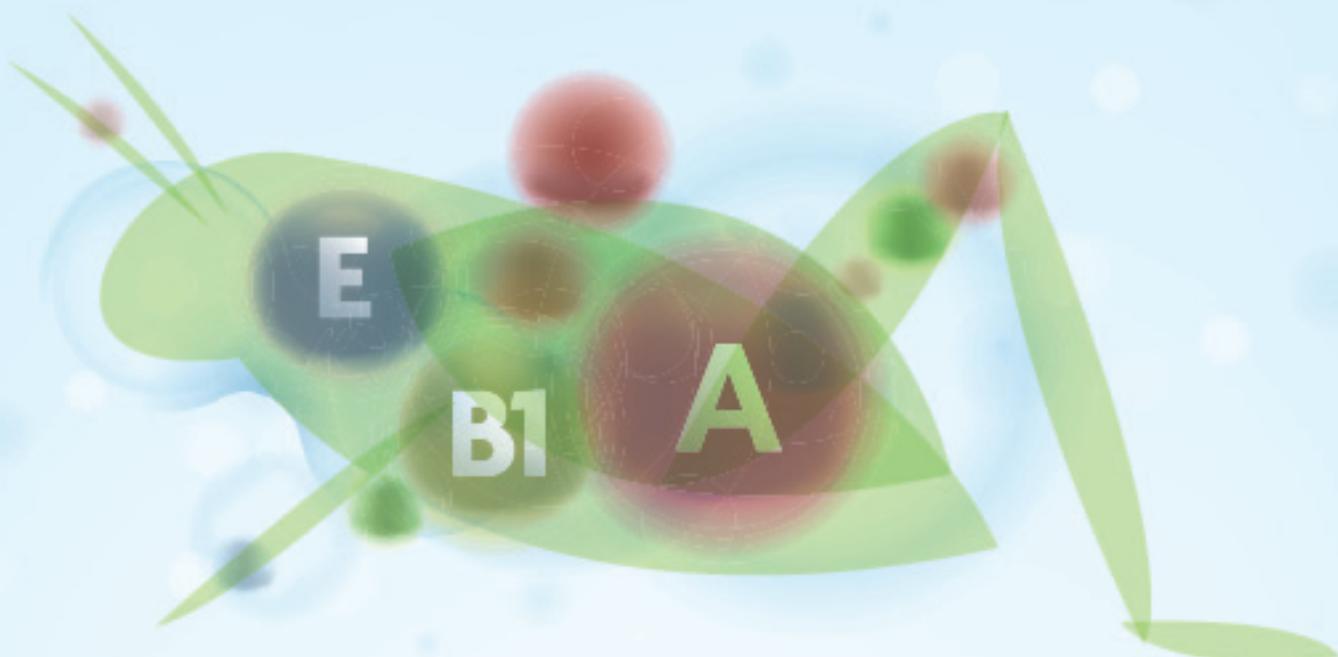
Russ Gurley

"Whenever you saw Mike you knew two things: you were going to laugh your ass off, and you were going to learn something amazing. If I could be remembered like Mike when I leave this earth - no, not Michael Jordan, no, not Michael Jackson, I'm talking about Mike Dee - then that means I've done my job in society. Mike was a perfect gentleman - a man that cared - a man that inspired - a man that helped people - and a man that built a legacy at the LA Zoo."

Shaquille O'Neal

"There's a gigantic Hawaiian-shirt shaped hole in our world.RIP"

Kirin Daugharty



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