

April 27, 2024 – *Snake Taxon Advisory Group*

- **9:00 – 9:15** – Welcome and introductions
- **9:15- 9:45** – Filling Gaps and Dealing with Declines: Updates from Virgin Island boa recovery program. Dustin Smith, North Carolina Zoo
- **9:45 – 10:30** – Just How Common (or Uncommon) are Fatal Venomous Snakebites in zoos and Related Institutions? Robert Mendyk, Audubon Zoo
- **10:30 – 11:00** – Break
- **11:00 – 11:45** – Discussion on venomous snake collections: Are institutions downsizing, why, and what are the ramifications. Facilitated by Brian Aucone, Denver Zoo
- **11:45 – 1:00** – Lunch
- **1:00 – 1:45** – Reflections on the Remarkable Life and Contributions of a Forgotten Herpetologist. Robert Mendyk, Audubon Zoo
- **1:45 – 2:15** – Antivenom Index updates. Brian Aucone, Denver Zoo
- **2:15 – 2:45** – Lighting and Enrichment Affect Eastern Indigo Snake Behavior and Physiology. Dustin Smith, Betsy Roznik, and Emily Lynch, North Carolina Zoo
- **2:45 – 3:15** – Afternoon Break
- **3:15 – 4:15** – Improving Snake Care Through Evidence-Based Husbandry and Student Driven Research: an Introduction to Zoo Science at West Liberty University. Dr. Zac Loughman, West Liberty University
- **4:15 – 4:45** – Herp TAG meeting priorities and needs discussion. Facilitated by Brian Aucone, Denver Zoo

April 28, 2024 – *Lizard Taxon Advisory Group*

- **10:00-10:15** – Opening & review of RCP goals and TAG SC meeting
- **10:15-11:30** –
 - Kevin T. – Komodo
 - Sean Foley – Uro stuff
 - Kelly Garner – SE Chucks
 - Nick Hanna – Caiman Lizards
 - Cayle Pearson – *Cyclura* spp.
 - Dennis McNamara – Beaded lizard
 - Andy Reeves – Crocodile Monitor
- **11:30-12:00** – Andy Reeves, Supervisor of Reptiles, Omaha's Henry Doorly Zoo & Aquarium, A Study on Light Color in a Nocturnal Exhibit Featuring Northern Banded Knob-tailed Geckos (*Nephurus cinctus*) at Omaha's Henry Doorly Zoo and Aquarium
- **12:00-1:15** – Lunch
- **1:15-2:00** – Robert Mendyk, Curator of Herpetology, Audubon Zoo, Reproductive Management of Shingleback Skinks @ Audubon
- **2:00-3:00** – Megan Brown, AZA Updates
- **3:00-3:15** – break
- **3:15-3:45** – Steve Sharp, Zoological Animal Manager-Asia West, Fresno Chaffee Zoo, Opening the Conservation Action Center and update to the Blunt-nosed Leopard Lizard project at Fresno Chaffee Zoo
- **3:45-4:15** – Matt O'Connor, DVM, Director of Animal Health & Nutrition, Georgia Aquarium, Caring for Caiman Lizards: Habitat considerations and management of common diseases
- **4:15-4:45** – Allison Julien, Reproductive Science Biologist, Ft. Worth Zoo, Tracking female Texas horned lizard follicular development using ultrasonography and semen collection, analysis, and storage
- **4:45-open** – Closing remarks and discussions.

April 29, 2024 – *Chelonian Taxon Advisory Group & Zoo Day*

- **8:00** – ChAG Update
- **8:20** – Danielle Regan – Bog Turtle Genetics Across Western Maryland
- **8:40** – Mike Selig - Cleveland Metroparks Zoo -Spotted Turtles - Repatriation potential for turtles from the illegal wildlife trade
- **9:10** – Houston Chandler – Orianne Society Spotted Turtle conservation in the southeastern United States
- **9:40** – Dave Collins – TSA American Turtle SAFE 2.0 - Merging Missions
- **10:00** – Break
- **10:20** – Kortney Jaworski, Virginia Living Museum – Small Zoo, Big Impact? Using Annual Turtle Surveys as a Vehicle for Public Engagement
- **10:35** – Dennis McNamara – Virginia Zoo - Renovating an old sea lion pool into a Turtle Oasis for SAFE species
- **10:50** – Dan Carvalho, St Augustine Alligator Farm - The Great Galapagos Tortoise Heist of 2022
- **11:05** – Bill Hughes, TN Aquarium Increasing Institutional Chelonian Species Diversity by Utilizing Polycarbonate Food Containers: The Tennessee Aquarium Turtle Nursery
- **11:25** – Dan Self – Assessing the Well Being of Herps at the Birmingham
- **11:40** - Danielle Regan & Alyssa Borek - Egyptian Tortoise Breeding Success and the SSP
- **12:00-1:15** – lunch
- **1:15** – Simon Rouot – Turtle Conservancy Update
- **1:30** – Charlie Olson, TN Aquarium – lettuce feed turtles, a guide to hydroponic gardening for chelonian nutrition
- **1:50** - Micah Siegel, WCS-Bronx - Incubation and Captive Rearing of the Sulawesi Forest Turtle
- **2:10** - Matt Benedict - A Jaw-Dropping Look at Feeding Dynamics in Snake-Necked Turtles, National Aquarium
- **2:30** – Minh Le - Recovering one of the most endangered turtles in the world, the Vietnamese Pond Turtle, using an integrative conservation approach
- **2:50** – Session Ends
- **3:30** - Buses load for Zoo Day, meet at front of the hotel
- **3:45 – 8:00** Zoo Day, followed by buses returning to the hotel at 8pm.

April 30, 2024 – *Amphibian Taxon Advisory Group & Zoo Day*

- **9:00-10:00** – Welcome and ATAG Business:
 - Steering Committee Introductions
 - ATAG Business Update
 - 2024 ATAG Grant update – Mark Beshel
 - Houston Toad Program Update – Diane Barber
 - Wyoming Toad Program Update – Derek Benson
 - Panamanian Golden Frog SSP Program Update - Vicky Poole/Kevin Barrett
 - AZA Amphibian Course Update - Vicky Poole
- **10:00-11:00** – Session:
 - Natural history and conservation of the Reticulated Flatwoods Salamander in the Florida Panhandle. Houston Chandler, The Orianne Society
 - Status, Conservation, and Management of the Coastal Plain Population of the Eastern Tiger Salamander in Virginia. JD Kloepfer, Virginia Department of Wildlife Resources
- **11:00-11:10** – Break
- **11:10-12:00** – Session:
 - Conservation Assessment of the endangered species, *Eleutherodactylus lentus* (Mute Coqui). Pearl Cales, Staten Island Zoological Society
 - National Amphibian Rescue Programs. Luis Carrillo, Amphibian ARK
- **12:00-1:20** – Lunch
- **1:20-2:45** – Session:
 - Diversifying life stage releases of Puerto Rican Crested Toads (*Peltophryne lemur*) to increase survival rates. Derek Benson, Henry Doorly Zoo
 - Annual fluctuations in sperm quality metrics and follicular development in a critically endangered amphibian managed under human care. Allison Julien, PhD, Fort Worth Zoo
 - Effects of invasive Cuban tree frogs on endangered Puerto Rican crested toads: growth, survival, and stress within larval communities. Betsy Roznik, North Carolina Zoo
 - Deadly Outbreak and How to Recover; Ranavirus at the Houston Zoo. Tarah Cornelius, Houston Zoo
- **3:00-4:00** – Amphibian SAFE Program Development Discussion: Open to all. We will have an open discussion with AZA Conservation Coordinator Katey Leban, the ATAG SC, and ATAG Program Leaders, and any other interested programs regarding an umbrella SAFE program.
- **4:00-5:00** – Puerto Rican Crested Toad Conservancy Meeting: Open to any and all PRCT lovers and those who just like PRCTs, too!

Amphibian TAG Meeting Abstracts

- **Natural history and conservation of the Reticulated Flatwoods Salamander in the Florida Panhandle. Houston Chandler, Director of Science, The Orianne Society**
 - The Reticulated Flatwoods Salamander (*Ambystoma bishopi*) has experienced severe population declines and range contractions in recent decades. One of the few remaining strongholds for the species is Eglin Air Force Base in the Florida Panhandle. Populations on Eglin were initially surveyed in the mid-1990s and have been monitored annually since 2008 through larval dipnet surveys. Additionally, drift fences were installed encircling two breeding wetlands in 2010 to monitor salamander movements and breeding activities each year. To complement salamander monitoring, hydrologic monitoring wells were installed in over 30 wetlands beginning in 2012, tracking trends in surface water levels at breeding sites across the landscape. By integrating these long-term datasets, there have been many important insights into flatwoods salamander natural history, conservation, and management. This includes assessing site occupancy over time, identifying metrics to determine when breeding sites are unoccupied, examining salamander phenology, conducting a population viability analysis under future climate change scenarios, understanding how hydrologic factors (hydroperiod, recession rate, and wetland bathymetry) influence salamander populations, and evaluating reintroduction strategies. Overall, long-term monitoring of both salamander populations and associated environmental characteristics has allowed conservation partners to 1) refine sampling techniques, 2) build modeling tools to assist in conservation decisions, 3) identify potential threats and make recommendations to address these threats, 4) make landscape-level planning decisions, 5) pursue translocations in a framework that provides the highest likelihood of success, and 6) make large-scale improvements to breeding and larval habitat. The commitment to long-term research, monitoring, and habitat management from many partners has increased the ability to achieve species recovery goals.
- **Status, Conservation, and Management of the Coastal Plain Population of the Eastern Tiger Salamander in Virginia. John (J.D.) Kleopfer, State Herpetologist, Virginia Department of Wildlife Resources**
 - The eastern tiger salamander (*Ambystoma tigrinum*) is listed as State Endangered and is a Tier IIa Species of Greatest Conservation Need in Virginia's 2015 Wildlife Action Plan (WAP) but will most likely be elevated to a Tier Ia SGCN in the 2025 WAP. This ranking indicates it faces an extremely high risk of extinction or extirpation, and that managers have identified "on the ground" species or habitat management strategies expected to benefit the species; at least some of which can be implemented with existing resources and are expected to have a reasonable chance of improving the species' conservation status. In Virginia, the Ridge and Valley and Coastal Plain populations of tiger salamanders are unique lineages. The Ridge and Valley breeding sites occur almost entirely on protected lands in Augusta and Nelson counties, while the Coastal Plain breeding sites occur exclusively on unprotected private lands in Westmoreland, York, and Isle of Wight counties. Since the Coastal Plain population is genetically distinct from the Ridge and Valley population and occurs

on unprotected private lands, the conservation goals and objectives for the species in this region are somewhat unique.

- **Conservation Assessment of the endangered species, *Eleutherodactylus lentus* (Mute coqui).** Pearl Cales, Professional Development Coordinator, Staten Island Zoo
 - *Eleutherodactylus lentus*, an endangered species, is native to a single Caribbean island in the West Indies, specifically the United States Virgin Islands. Recently, new habitats for this species have been discovered on St. John, United States Virgin Islands, and Jost Van Dyke, British Virgin Island, although their native status is yet to be determined. These findings have unveiled new aspects of the species' natural history and behavior, underscoring the importance of habitat protection in conservation efforts. Passive acoustic monitoring was employed to detect *E. lentus*, resulting in successful captures at two locations where acoustic interference was minimal. Spectrogram analysis identified distinct *E. lentus* calls, thereby demonstrating the potential of this method for non-invasive and cost-effective monitoring. A comparative analysis of the habitats revealed both similarities and differences. Small populations were found in areas impacted by human development. These habitats provide ample coverage and retreat spaces for the species, suggesting a degree of adaptability.
- **National Amphibian Rescue Programs.** Luis Carrillo, Director of Training, Amphibian Ark
 - Amphibian Ark is developing a more country-based approach to programming. In this context, AArk aims to establish a National Program Coordinator in each range country prioritized by AArk and establish and support networks of institutions within those countries. Priority countries will have species in need of rescue, but there is not yet an effective response to the crisis or there are few existing programs and international assistance would help in developing an effective response with resources and training.
 - Amphibian Ark and the country coordinator will work with partner institutions within the range country, including suitably equipped zoos, aquariums, museums or universities that have a demonstrated commitment to amphibians, have access to key staff required to support long-term assurance programs and have links with the amphibian in situ community.
 - The initial goal is to identify at least six countries that meet the criteria outlined, in order to prepare for the first two years of country-based programming.
- **Diversifying life stage releases of Puerto Rican Crested Toads (*Peltophryne lemur*) to increase survival rates.** Derek Benson, Supervisor of Amphibian Conservation, Omaha's Henry Doorly Zoo & Aquarium
 - Over the past three years, Omaha's Henry Doorly Zoo & Aquarium has focused on reproducing and releasing older life stages of amphibians to their endemic habitats with the goal of increasing post release survival rates and bridging the gap between ex situ and in situ population conditions. In the next chapter of our zoo's amphibian conservation mission, we set to release three different life stages of Puerto Rican Crested toads (*P. lemur*) from the same cohorts to compare survival rates. In addition to mimicking in situ variables like temperature, humidity, and photoperiod, we aimed to build soft release styled enclosures to develop several microclimates, hunt a variety of prey, and increase overall fitness

while tracking activity through nocturnal cameras. This is an ongoing project and the older life stage releases is in addition to the more typical tadpole releases in an encompassing effort to rebound populations in Puerto Rico.

- **Annual fluctuations in sperm quality metrics and follicular development in a critically endangered amphibian managed under human care. Allison Julien, PhD*, Isabella Burger, Carrie Vance, Diane Barber, *Reproductive Science Biologist, Fort Worth Zoo**
 - The Puerto Rican crested toad (*Peltophryne lemur*) has seen a drastic population decline within the past 40 years necessitating the establishment of captive assurance colonies at several zoological institutions. These programs serve to maintain valuable genetic lineages and breed individuals for release. Within these programs, hormone use is common to stimulate reproductive behaviors in the absence of natural environmental cues. However, hormone use has not guaranteed consistent successful reproduction, and seasonal cyclicity may require greater consideration. To determine seasonal cycles of gamete maturation in *P. lemur*, this study examined male ($n = 86$) sperm quality and female ($n = 55$) follicular development by month over the course of a year. Sperm was collected from males through the use of hormone induction and assessed for motility and concentration while female follicular development was monitored using ultrasonography. While gametes were observed and able to be collected year-round, quality and quantity differed between month, sex, and expected natural breeding season. These disparate gametic trends may indicate disrupted reproductive cycling due to challenges in mimicking environmental cues such as barometric pressure, photoperiod, or precipitation.
- **Effects of invasive Cuban tree frogs on endangered Puerto Rican crested toads: growth, survival, and stress within larval communities. Betsy Roznik, PhD, Associate Curator of Regional Conservation, North Carolina Zoo**
 - The endangered Puerto Rican crested toad (*Peltophryne lemur*) has declined sharply due to habitat loss and the introduction of several nonnative species. A recent invader is the Cuban treefrog (*Osteopilus septentrionalis*), which is increasing in Puerto Rico, especially in areas occupied by Puerto Rican crested toads. This may pose a significant threat to the recovery of this endangered species, but potential impacts are not well understood. In other areas, invasive Cuban treefrogs impact native frogs through competition and predation, and many of these effects are pronounced in the larval stage, when individuals compete for space and resources in small pools. To investigate how Cuban treefrogs affect Puerto Rican crested toads in larval communities, we raised tadpoles in single species or mixed species groups and at two different densities. The goal of the study is to examine potential effects of these factors on growth, survival, and stress. We recorded tadpole survival daily, as well as the time to metamorphosis, and body size at metamorphosis. We also evaluated effects of the treatments on stress levels of Puerto Rican crested toads by collecting a baseline, stressed, and recovery sample of corticosterone release rate from each tadpole using a non-invasive method of water-borne hormone sampling. This study will help with conservation planning in Puerto Rico by clarifying the nature and strength of the threat posed by Cuban treefrogs and the urgency required to address this threat to promote recovery of the Puerto Rican crested toad.

- **Deadly Outbreak and How to Recover; Ranavirus at the Houston Zoo. Tarah Cornelius, Director, Animal Care, Houston Zoo**
 - In 2023 we had a devastating outbreak of ranavirus in our amphibian collection housed in our reptile building. We will discuss the origin of the infection, our response, lessons learned and our plans moving forward.

May 1, 2024 – *Crocodile Taxon Advisory Group & Zoo Day*

- Details coming soon.