



# Conservation and Research Report 2013



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### Director's Update



Partnering.

Conservation gains momentum through partners. This year, in a three way agreement between Florida International University, the Zoological Society of Florida and Zoo Miami, we agreed to work together to further our common efforts in conservation and research. From university interns to projects throughout South

Florida, we will become the “top of mind” resource when any question on habitats, animal care, breeding programs and species conservation is posed. A living laboratory for both undergrad and graduate students, we will all benefit from the work produced by the passion of these young people, eager to contribute to our natural world.

Many examples of important work by many of our own staff are highlighted throughout this document. Please take a moment to better understand the unique compassion these dedicated, hardworking people show every day, by the love they have not only for the animals in their care here at the zoo but also for their wild cousins. Keeping part of the world as wild as we can is also part of the goal.

Our local chapter of the American Association of Zookeepers is a vibrant and fun loving group, raising funds for rhinos by bowling and for tigers by throwing a pie in the face of a willing co-worker.

I continue to be honored to work at a place where this effort goes on and where we will do so much more, hopefully, also with you as our partner. Find out how you can take part in the amazing projects highlighted here by Dr. Ridgley.

# 2013 and Beyond

Zoo Miami staff has been diligent this year in advancing our conservation programs while initiating and fostering new research efforts. 2013 has seen new partnerships develop with the National Park Service, United States Fish and Wildlife Service, Tropical Audubon Society, University of Florida, Florida International University, Florida Fish and Wildlife Conservation Commission and Miami-Dade College. These partnerships, programs and collaborations help us all advance our missions. The sharing of resources, knowledge and expertise between our staff and our partners have enabled many exciting new programs and projects to begin, even in the face of a weak economy where every dollar counts.

We have made great strides this past year toward becoming more sustainable in our operations. Energy, water, and waste surveys have been performed. The resultant information obtained will provide a multitude of new measures that will greatly reduce Zoo Miami's impacts on the environment in the next year while at the same time reducing Miami-Dade County spending.

Our Animal Science department has celebrated many significant births of some imperiled species culminated through many years of hard work. Some of these births have been firsts for the species at Zoo Miami. Some of the species that we have been successful with are the only examples of reproductive success with a particular species in the U.S.

Ron Magill's commitment to the harpy eagle resulted in an amazing achievement this year by bringing a juvenile harpy eagle, hatched at Zoo Miami, back to its native country of Panama. The excellent care provided the zoo's staff, and Ron's personal efforts, has made this a very successful international collaboration over two decades in the making.

We hope that you will join us in celebrating our successes, supporting our mission, and look forward to many new exciting achievements and programs that will be starting in the next year.

Dr. Frank Ridgley  
Conservation and Research Manager



# FIU and Zoo Miami Begin New Chapter

In July of this year, representatives from [Florida International University \(FIU\)](#), the Zoological Society of Florida (ZSF), and Zoo Miami signed a Memorandum of Understanding (MOU) ushering in an exciting new chapter for both institutions. This MOU will allow greater collaboration between the two Institutions in many diverse fields. The first area of concentration will be in conservation and research programs but plans to incorporate other fields such as marketing, multimedia and tourism are being developed.

The agreement will allow better access for FIU staff and students to the zoo grounds and involvement in programs to conduct research, expand efforts, and help us achieve our mutual goals. Access to the zoo's animal and botanical collections, as well as the imperiled pine rocklands will open up many opportunities to the university. Zoo staff will also be able to attend continuing education and career training opportunities at FIU.



One of the first collaborations seen from this new agreement has been a joint public lecture series featuring experts from FIU and Zoo Miami staff to discuss animal research and environmental issues. These evening lectures address such diverse issues such as global amphibian decline and recovery programs, trained canine detection dogs being used in conservation, and cutting edge research into predator roles in the environment.

Future plans for this collaboration are to move far past just an agreement on paper and work towards building a joint facility to further build upon the collaborations and shared resources. This is envisioned to serve as a world class educational, academic and public resource for the entire region focusing on the Caribbean and the Americas.

# Significant Births/Hatches/Acquisitions

## Births/Hatches

Addax—Critically Endangered

White-Cheeked Gibbon—Critically Endangered

Jamaican Iguanas—Critically Endangered

Annam Leaf Turtle—Critically Endangered

Puerto Rican Crested Toads—Critically Endangered

Edward's Pheasant—Critically Endangered

Black Handed Spider Monkey—Endangered

Giant River Otter—Endangered

Matschie's Tree Kangaroo- Endangered

Malaysian Giant Turtle—Endangered

Golden Poison Frog—Endangered

Green Peafowl—Endangered

African Lions—Vulnerable

Eastern Box Turtle—Vulnerable

Congo Peafowl—Vulnerable

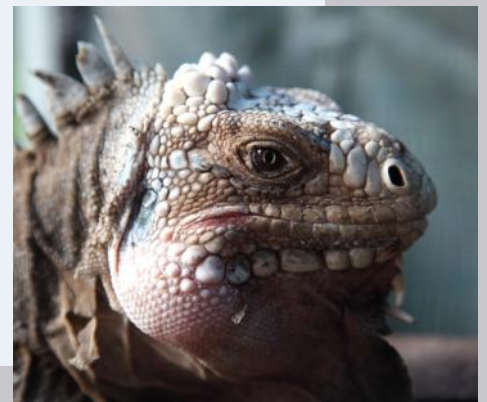
## New Acquisitions

Addra gazelle—Critically Endangered

Axolotl—Critically Endangered

Panamanian Golden Frogs—Critically Endangered

Lesser Antillean Iguana—Endangered (New Species for Zoo Miami)



# Harpy Eagle Project

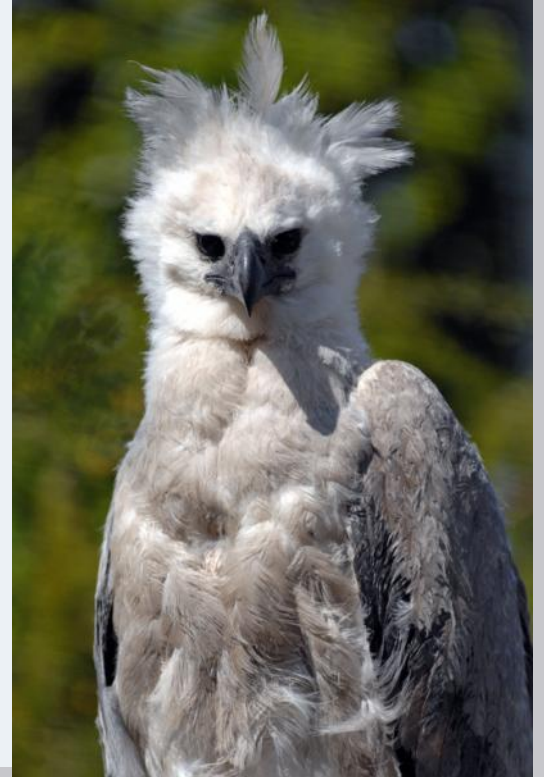
On December 2nd, 2012 a harpy eagle (*Harpia harpyja*) chick hatched in the eagle exhibit in Amazon & Beyond. Because bird hatchings, especially those of large raptors, are extremely delicate and experience relatively high mortality during the first few weeks, the zoo's protocol is to wait 30 days before formally announcing the hatching to the public.

This is the second hatching of this highly endangered eagle at Zoo Miami which is only the second zoo in all of North America to successfully reproduce this species.

Harpy eagles are the most powerful birds of prey in the Western Hemisphere and one of the largest in the world. They are found in large undisturbed tracts of lowland tropical forests in Central and South America and feed on a variety of canopy birds and mammals including macaws, monkeys, and sloths. A female harpy eagle can weigh as much as 20 pounds and has talons the size of grizzly bear claws. They usually reach sexual maturity at between 6 and 7 years and have a lifespan of approximately 35 years.

The 11 year old mother and nearly 13 year old father were captive hatched at the San Diego Zoo. Currently, they are at Zoo Miami as part of a breeding loan agreement between the two institutions. Both parents arrived at Zoo Miami in 2002 and were introduced to each other in August of that year. They produced their first successful hatching in October of 2009.

Although still reasonably common in the Amazonian forest of Brazil and Peru, it will only survive in the long term if the escalating rate of deforestation in the region is brought under control and a network of inviolate reserves is established. These eagles need huge areas of undisturbed tropical forests to survive and are easily disturbed by human encroachment and development. Low overall population densities and slow reproductive rates make shooting the most significant threat over its entire range. It could perhaps survive in disturbed forests or even forest mosaics if its large size and boldness in the face of humans did not make it an irresistible target for hunters.



# Harpy Eagle Project

Conservation actions that are underway include reintroduction programs in Belize and Panama. For nearly 15 years, Zoo Miami has been a partner in conservation with the government of Panama and in 1989 it helped direct the construction of a state-of-the-art harpy eagle center just outside of Panama City. In April of 2002, Zoo Miami played a critical role in lobbying the Panamanian Congress to pass a law officially declaring the harpy eagle as the National Bird of Panama thereby providing it federal protection across the republic.



On June 15th 2013, “Panama”, the first chick born at Zoo Miami, was escorted to the Republic of Panama by Zoo Miami’s communication director, Ron Magill, to much national fanfare. “Panama” will be



on breeding loan to the Summit Zoo and Botanical Gardens in hopes of pairing her up with a male of wild descent which will provide a much needed new bloodline in the present SSP population. She will live in the huge free flight aviary at the Harpy Eagle Center, surrounded by pristine tropical forests where she is often visited by wild sloths, monkeys, agoutis, parrots, and toucans. As Panama’s National Bird, she will serve as an ambassador for her species to the many thousands of visitors to the Summit Zoo and hopefully inspire further conservation action for the species in the region. Long term conservation actions proposed include working with local communities to reduce hunting and strengthening the network of protected areas to include core remaining areas of habitat. This would include clarifying the eagle’s precise ecological requirements and its ability to persist in fragmented and altered habitats.

# Florida Panther Recovery Plan

Zoo Miami staff participated in the recovery efforts of the federally endangered Florida Panther (*Puma concolor coryi*) in 2013 through providing veterinary support as part of the capture team operating in the [Big Cypress National Preserve \(BICY\)](#). Biologists at BICY track panther movements throughout the park through placing radio collars on adult panthers to understand habitat usage patterns, home ranges, denning activities, and mortality events. All of this information has helped researchers and managers make decisions that have increased the panther population from only around 12-20 individuals in the 1970's to an estimated 120-150 today.

The Florida Panther once ranged throughout most of the Southeastern United States but is now restricted to less than 5% of its historical range. Panthers require vast areas of contiguous landscape with a suitable prey base. The current densities throughout their range is 2-2.8 individuals per 100 square miles. With the constant development of South Florida and criss-crossing roadways, the panther faces many challenges to its continued survival and recovery. About 19% of all panther mortalities are due to road collisions.



The surviving breeding population of panthers is entirely south of the Caloosahatchee River. Male panthers do venture and disperse north of the river as little available unoccupied territories exist south of it. No female panthers have been documented north of the river since the 1970s. One of the main goals of the recovery plan is to get the breeding population in South Florida stable and large enough that dispersion of breeding females north of the river can occur.

# Florida Panther Recovery Plan

Young female panthers tend to only disperse around 12 miles from their mothers to establish a new territory while males disperse an average of 42 miles away. This slow geographic dispersal is one of many limiting factors to the surviving population's natural return to parts of their historic range in central Florida and northward. Male panthers aggressively defend their large territories. This means that their ecological and behavioral habits force many male panthers to occupy less suitable fringe habitat where no females are found.



With all of the challenges that the panther faces, there is still much hope and tremendous effort being put forth to ensure the panther's survival. It has been brought back from the edge of extinction and largely overcame some crippling genetic deficiencies that were stifling its recovery.

One of the most memorable aspects of the field season for staff is being able to experience the majestic prairies, cypress domes and pinelands within the Big Cypress National Preserve. The images brought back of the wildlife and scenery is awe inspiring. It makes us thankful that such a place exists for not only the panthers to roam but for all of us to be able to experience.



# Belize Cat Project and Community Support



World Association of Zoos and Aquariums | **WAZA**  
*United for Conservation*

This year marked the beginning of the trapping season to fit radio collars on cats in our study area in Belize. Months of preparing traps, coordinating essential staff trips and acquiring veterinary support supplies have led to this point. The camera trapping efforts over the last couple years from our partners at the [University of Florida](#) and the [Lamanai Field Research Center](#) has helped all of us get a grasp of where the cats are frequenting in the landscape and begin to identify individuals that might be causing the most conflict with the surrounding communities. All of this aids us in focusing our efforts and passing along useful information to the locals on how they can coexist with cats in the surrounding landscape.

We also welcomed two new partner AZA organizations this year who lent veterinary support throughout the weeks of trapping. Omaha's Henry Doorly Zoo and Rolling Hills Zoo both sent down veterinarians to be on hand for immobilizations and brought diagnostic and medical supplies. Vets from all the zoos also teamed up to conduct two community veterinary health clinics in the villages of Indian Church and San Carlos where they saw everything from rabbits and parrots to dogs and kinkajous. Some of the locals volunteered their dogs to allow blood draws to screen for diseases that will be compared to the wild cats and look for possible disease transmission between the species occurring so closely together in this area.



A disturbing trend that has been very apparent in the Lamanai area has been the rapid deforestation and conversion to agricultural lands. Many hundreds of acres of forest where we had camera traps deployed just a few months prior and were recording cats and other wildlife have been cleared. This is a fact of a developing agricultural country. But, the Belizean people must find a balance to also preserve their natural resources and cultural heritage. This is a common problem in the modern world where communities must be allowed to provide for their families and prosper while still retaining an important global habitat.

To find out more, click [here](#)





# Lamanai Hicatee Conservation Initiative



World Association of Zoos and Aquariums | **WAZA**  
United for Conservation



Since starting the “Lamanai Hicatee Conservation Initiative” in 2012 with the [Lamanai Field Research Center](#), we have made huge strides in such a short amount of time. This year, we have already received two grants to support this project. [The Turtle Conservation Fund](#) and the [Mohamed bin Zayed Species Conservation Fund](#) were both very generous in their support of this initiative.

In early 2013, we conducted surveys to find the hicatee, or Central American River Turtle (*Dermatemys mawi*), as part of a mark/

recapture study. Because this species is nocturnal, the majority of the work is done at night. Once the turtles are captured, we measure their shells, weigh them, and implant a small microchip. After collecting the data they are released in the same location, with the intention of an eventual recapture. When recaptured, the microchip will allow us to identify the same turtle and find out important biologic information like growth rate, sexual maturity, lifespan and seasonal occurrence.

For being such a large and unique turtle, there is not a lot known about this species. Based on a few studies in Belize, we know that the numbers for this critically endangered species, have been declining for more than 25 years. The primary cause for decline is human exploitation for consumption. Because this is the primary cause for decline, we have started an education program aimed at school age children to educate the future generations on what is needed to conserve this species.

Our educational program has included the production of the “Hicatee Activity Guide” which is a fun and educational brochure for children to learn about the hicatee and the laws associated with them. In addition, we have also printed temporary tattoos with a cartoon hicatee (pictured to the right). All of the educational materials are being distributed in the villages adjacent to our study sites, in Northern Belize.



To find out more click [here](#)

## Project Supporters:



# Cheetah Conservation

The Zoological Society of Florida and some very generous donors helped make this past year very special for our cheetah programs. Through Ron Magill and Zoo Miami's continued support of the [Ann van Dyk Cheetah Centre](#) in De Wildt, South Africa, we were able to welcome two new captive born cheetah cubs to our Cheetah Ambassador Program.



The Ann van Dyk Cheetah Centre has used captive born cheetahs to act as ambassadors for their wild counterparts and educate the general public and school children about the plight of cheetah. The experience of seeing a live cheetah up close leaves a lasting impression to all those whom get the opportunity to meet them and the center's work has made a significant positive impact on the attitudes of inhabitants within their endemic range.

Financial support was also given to the [Endangered Wildlife Trust](#) that manages the Livestock Guarding Dog Project. This program works closely with farmers in South Africa to place guard dogs on farms where they are bonded with herds of livestock and serve as a very effective deterrent to predators that will often take that livestock. Whereas in the past, farmers would habitually shoot predators such as cheetahs, this program has reduced the losses of livestock to predators by over 85% and in turn changed the mentality of farmers who are now learning to co-exist with these animals without having to shoot them.

Our two new cheetahs will not only be able to be seen at our daily Wildlife Show at the zoo's new amphitheater, they will also participate in appearances off zoo grounds at schools and other venues to help promote awareness about cheetahs and hopefully inspire support for their conservation for generations to come.

We would like to especially thank the generous support of R. Kirk Landon, Pamela Garrison, and Mike and Laura Jones who funded the acquisition of the cubs and made significant donations towards the above mentioned cheetah conservation efforts in South Africa.



# Lake Enhancement Project

When the zoo was moved from Crandon Park to the Richmond area about 30 years ago, three large lakes were created on zoo grounds. These lakes are called “borrow pits” because the material dug out was “borrowed” to create the exhibits and burms for the animal enclosures. Although these lakes became a beautiful addition to the landscape of the Zoo Miami grounds, they were not fulfilling as much as an important environmental resource for native wildlife as they should. They were left largely unchanged since they were originally constructed and have a low biodiversity. A Florida lake should be lush with diverse plant life, lined with wading birds, and teeming with fish, reptiles and amphibians. This year, we began the process of changing that.

Our lakes had begun to be choked out by invasive species on their shores and waters. Hundreds of Australian pines, patches of cane grass, torpedograss and some Brazilian pepper, melaluca and earleaf acacia were crowding out and outcompeting our native species along the shorelines. In the water, invasive cichlids and tilapia had been introduced at some point and had heavily suppressed the few native species that were present. Osprey and Bald Eagle used to occasionally visit the lakes to fish for some of the larger cichlids but all of that changed when a couple simultaneous cold winters killed off most of the invasive fish that are not adapted to cold temperatures. When the fish disappeared, so did the raptors.

Zoo Miami was able to obtain a grant from the Florida Fish and Wildlife Conservation Commission (FWC) to help enhance our lakes, make them more suitable for wildlife, and provide recreational opportunities for residents. The process would start with removal of invasive plants and then begin planting native plants that will eventually spread to change the entire ecosystem over the coming years.



# Lake Enhancement Project

In some areas the plants were so thick that the lakes were no longer even visible. After the removal of the invasives, and when the rainy season arrived, the transformation and rebound of native species along the shores was remarkable.

To provide wildlife cover and add diversity, over 30,000 native plants were placed along the submerged waterline. This included bald cypress, pond apple, spikerush, bulrush, alligatorflag, bulltongue arrowhead, and spatterdock which were all not formally present. As the plants were being placed, fish began to immediately use them for cover, herons followed the staff and began to hunt among the plants, least terns were diving into the edges of the plants to grab small fish and an explosion in the dragonfly population ensued over the next few weeks.



Students in some of the Zoological Society of Florida's programs chipped in by planting Carolina willow cuttings along some of the cleared shore areas that will eventually grow to provide wildlife cover and is a favorite browse plant for many animals in the zoo collection.

Last year, largemouth bass and Florida gar were added to the lakes to help control the cichlid populations and ensure that another cold snap will not leave our lakes without a viable fish population. The zoo also hosted our first ever fishing event on Father's day this year, which helped remove over 100 spotted tilapia from one lake. Schools of all age classes of largemouth bass can now be seen trolling the shores and using the plants for cover. Osprey and bald eagle have also begun to return and can again be seen regularly as the fish populations are recovering.



It will take many years for all of the plants to mature and spread to their fullest potential but the first steps have been taken and we enjoy seeing the transformation. We hope you will also have a chance to experience our lakes and appreciate the native Florida wildlife when you visit.

# Conservation Teen Scientist Program

Conservation Teen Scientist (CTS) is a volunteer-based interpretive program at Zoo Miami, operated by the Zoological Society of Florida (ZSF), that trains high school participants to engage and teach zoo visitors about wildlife and conservation. CTS helps Zoo Miami fulfill its mission by increasing conservation and environmental stewardship behaviors amongst the student participants and zoo visitors.

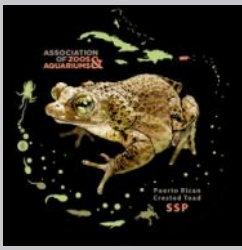
This year, returning CTS students engaged in various citizen science opportunities at Zoo Miami. The first citizen science project was the Father's Day Fishing Derby, an effort to rid the lakes of invasive species and teach member's about native fish. Working with Florida Fish and Wildlife Commission, CTS participated in a fishing safety and fish identification training. The training prepared the students to instruct members during the fishing derby held on zoo grounds. All fish caught were identified, measured, and recorded. Fish that were returned to the lakes were also marked for a capture-mark-recapture project.



CTS students have also surveyed Zoo grounds to photograph, identify and record invertebrate species as part of an ongoing citizen science project to create an inventory of the biodiversity of terrestrial invertebrates found on zoo property.



In recent years, non-native orchids have been seen growing in the mulch surrounding the Zoo's developed areas. They are proliferating extensively, yet what is pollinating the orchid remains a mystery. In collaboration with researchers at FIU, students identified over 200 individual orchids and 4 different orchid species in the mulch. Over the summer, the students performed pollinator watches in hopes of identifying the pollinator of these non-native orchids. The students are the drivers of this citizen science project and their efforts are continuing throughout the school year.



# Puerto Rican Crested Toad Program

In 2012, Zoo Miami ectotherm staff was successful in their attempt to breed the Puerto Rican crested toad! This was the first successful breeding of this critically endangered toad at the zoo in over 5 years. More than 400 tadpoles were produced and all were sent back to Puerto Rico for release into the wild!

The Puerto Rican Crested toad is the only native toad in Puerto Rico and inhabit arid to semi-arid karst limestone habitats. It has been extirpated from most of its historic range, due to habitat loss, degradation, and invasive species introductions.

While the toad was once found at many locations in northern and southern Puerto Rico, it is now only found naturally in the southern portion of the island. The habitats from the north and the south are extremely different, with the northern portion of the island having a slightly cooler climate, more precipitation, and higher elevation. The southern portion of the population is the exact opposite and the toads are found closer to the coast.



Although it once flourished in the north, it has not been seen there since the early 1990's. Since then, the [Association of Zoos and Aquariums \(AZA\)](#) has been reintroducing toads to the North in hopes of re-establishing the northern population of the species. In addition, reintroductions are underway in the south as well, but they are focused on sites where the toads don't currently exist.



Amphibian declines, similar to what we are witnessing with the Puerto Rican Crested Toad, are happening worldwide. Some of these declines have been caused by diseases, such as the "chytrid" fungus, which is suspected to have caused the extinction of numerous species over the last few decades. As part of our commitment to this program, we participate in a variety of field work in Puerto Rico, including disease surveys for "chytrid" throughout the current range of the toads in Puerto Rico.

# South Florida Chapter of the American Association of Zookeepers (SFAAZK)

The keepers at Zoo Miami are always engaging the public through events, fundraisers, and talks to aid and raise awareness about the issues effecting their beloved animals that they diligently care for. Some of their activities this last year are discussed below:

**Pies For Panthera**—Zoo staff got to bid on the chance to throw a pie in the face of many of the supervisors and managers at the zoo. The money all went to a great cause supporting conservation programs for tigers in the wild.



**Bowling for Rhinos**—This annual [SFAAZK](#) fundraiser has helped raise significant funds to aid in rhino protection and conservation around the world through silent auctions, and a team bowling competition. This event occurs across the country by many AAZK chapters that has helped raise millions through the years.

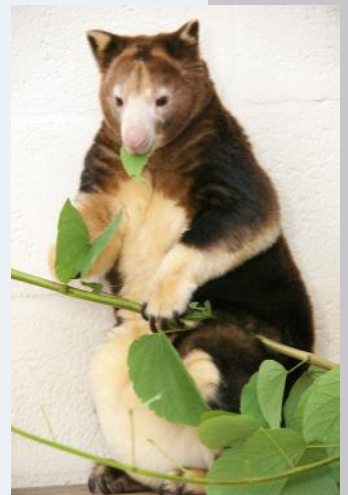


**Savage Art Show**—SFAAZK partnered with the Conservation and Research Department to hold the 2nd exhibition and fundraiser for local and international conservation programs. SFAAZK members helped make this years event at the Bakehouse Art Complex another resounding success through months of work with the animals to produce some amazing art pieces.



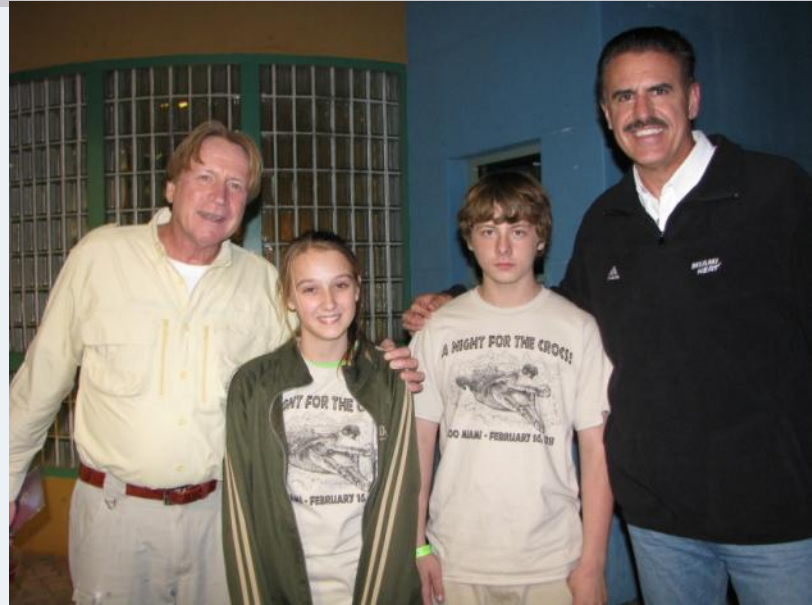
**International Vulture Awareness Day**—AAZK members held a public awareness day outside vulture exhibits at the zoo to educate the public about declining populations of some of the vulture species around the world. Many people do not realize the important role that vultures play in the ecosystem and how human actions are causing their decline.

**Tree Kangaroo Awareness Weekend**—Deforestation and conversion of habitat to agricultural use is greatly effecting tree kangaroo populations in their native ranges. Zookeepers held a weekend long awareness event outside our Australia exhibit to educate the public about how their actions can influence the markets and help curtail the pressures on these species.



# A Night For The Crocs

On a brisk night in February, Zoo Miami hosted the second [Tomistoma Task Force](#) fundraiser, “A Night for the Crocs” to benefit research of the False Gharial (*Tomistoma schlegelii*). The event began with a dinner for the 150 guests who attended, then proceeded to the amphitheater for a variety of lectures. Wildlife researchers working around the world with crocodilians, educated the guests about their research and the plights which False Gharials and other crocodilians around the world are facing. At the end of the event, there was a silent auction which helped raise more than \$8000 for False Gharials.



False Gharials are listed as endangered throughout their native range of Indonesia and Malaysia and are found in freshwater swamps, rivers and lakes. They are regionally extinct from Thailand. Although their range is considered widespread, the density of which they are found is very low with only an estimated 2,500 mature individuals left in the wild. Zoo Miami maintains a potential breeding population of False Gharials, behind the scenes, in the Conservation and Breeding Center.



# Regal Horned Lizard Conservation

Zookeepers at Zoo Miami have a wide range of passions for a variety of species, and one keeper, Ryan Zach, is extremely interested in the horned lizards of North America. There are no native species of horned lizards in Florida, but there are a few species in Tucson, Arizona. This is where Ryan spent two weeks studying the Regal Horned Lizard (*Phrynosoma solare*), with researchers from the University of Arizona.

The primary goal of this project is to determine the efficacy of translocation of this species. Because of the ongoing habitat loss which this species and so many other species are facing, translocation is a conservation tool being used more often. Ryan was responsible for surveying the translocation sites where the lizards had been released a year prior. Any that were encountered had their locations recorded and checked for markings that would show if they were one of the original releases or offspring from the founders. This information allows the researchers to determine the success of such translocation programs



and what release site characteristics are the most important for this species.

Ryan was able to find 44 horned lizards at the various sites with 60% being recaptures and 40% being new individuals that were marked for future surveys.

# New Interactive Websites

Each of our programs involving conservation and research have a unique educational component. Through our collaboration with the Lamanai Field Research Center, we have created the [“Lamanai Biodiversity Field Camera Project.”](#)



This unique program allows anyone with internet access to assist field researchers in identifying wildlife encountered on game cameras at our study sites in Belize. Individuals are able to log on to the website and scroll through hundreds of photos of jaguars, howler monkeys, and many other species of animals. You never know what species are going to be next!

The game cameras are being used as part of a neotropical cat study in Northern Belize. They are placed in a variety of habitats, in different locations, to document the number of cats, species, habitat use, and a variety of other behaviors.

With the help of website visitors, as citizen scientists, we will be able to analyze these photos in a more timely manner and educate people about the wildlife of Belize.



Zoo Miami and the Zoological Society of Florida are using Project Noah to document the flora and fauna of the zoo's property. This program has both a website and mobile app that allow users to see what species are around them and contribute by taking pictures and documenting what they see. We are using it to help establish an inventory of everything that exists here on zoo grounds and allow users, like you, to explore the wildlife and amazing plants that exist here.

Our first two “missions” are documenting the invertebrates and biodiversity of the pine rocklands.

You can follow us, check out our picture based inventory, or view a map plotting all of the mission's sightings at our Project Noah page [here](#).



# 15th Anniversary of the Zoo Miami Conservation and Research Fund

In 1998, the Zoo Miami Conservation and Research Fund was created to promote efforts toward conservation of wildlife and natural ecosystems throughout the world. 2013 marks the 15<sup>th</sup> year anniversary of this fund awarding grants to individuals, governments, and non-profits locally and internationally to help fulfill this mission. This year we received 54 completed applications for work in 28 different countries. Since its inception, 90 small grants have been distributed to support a wide range of projects from the genetic profiling of the Shovel-Nosed Salamanders, funding activities of wildlife rehabilitation centers in countries such as Belize and Guatemala, supporting anti-poaching patrol forces in Tanzania and Sri Lanka, providing for multiple endangered species recovery programs in their endemic countries such as tree kangaroos in Papua New Guinea and many Caribbean iguana species, and supporting critical habitat preservation programs such as the Kibale Fuel Wood Project in Uganda.

The fund was originally financially supported for many years by an annual contribution by the Zoological Society of Florida and by Zoo Miami by a percentage of all capital improvements. Today, the fund receives donations, primarily solicited and facilitated by Ron Magill, from production companies wanting to utilize Zoo Miami grounds for film shoots and through private donations.

The 2013 awardees are as follows:

“Saving from extinction the Pigmy Three-toed sloth (*Bradypus pygmaeus*) of Escudo de Veraguas island, Panama (Phase II)” - [Fundacion CONAVI](#). Fundacion CONAVI also received a grant in 2012 where they utilized the funds to do the first survey and habitat assessment of this critically imperiled species. This year’s grant will allow them to continue their work on one of the IUCN’s (*International Union for Conservation of Nature*) top 100 most endangered species in the world in 2012.



“Sustainable Innovations with Rural Communities in Uganda” – [New Nature Foundation](#). The New Nature Foundation has been the recipient of multiple grants from the Zoo Miami Conservation and Research Fund through the years for their continued innovative forest preservation programs. They create community based programs that reduce the poaching of forest trees from the Kibale National Forest in Uganda, which is home to multiple endangered species, while enriching the lives of the local inhabitants.

# 15th Anniversary of the Zoo Miami Conservation and Research Fund

“Restoration of Sea Turtle Nesting Habitat on Elliott Key, FL” – [Coastal Cleanup Corporation](#). This local organization demonstrated a successful volunteer based program, in cooperation with the National Park Service, to increase successful sea turtle nesting on Elliott Key in 2012 by removing tremendous amounts of trash that wash up on the shores and entangle or block female turtles during their attempts to lay their eggs. We chose to continue to support their efforts to make a meaningful impact in our local environment.



“Distribution, Habitat Restoration and Utilization, and Educational Awareness Program of Two Endemic, Endangered Species of *Abronia* (*A. campbelli*; *A. frosti*) from Guatemala” – [Zoo Atlanta](#). This project aims to protect and expand the remaining habitat for these two small arboreal lizard species. These specialized lizards exist in only a few dozen remaining trees from a highly fragmented forest.



“Supporting SLCS village scout anti-snaring patrols and veterinary equipment to reduce wildlife mortalities from snaring” – [South Luangwa Conservation Society](#). In Zambia, the SLCS conducts anti-snaring patrols to remove illegal snares that endanger the local wildlife in preserves and local communities while also providing veterinary support for victims of the snares ranging from African wild dogs to African elephants.

Zoo Miami and the Zoological Society of Florida hope that these small grants will help continue the amazing work of organizations like those listed above and many more in the years to come. We receive an abundance of applications every year and we wish we could support many more deserving projects that are doing outstanding work across the globe to preserve imperiled habitats and species.

The following pages show the history of the fund since its beginnings and the variety of projects and programs that it has supported through the last decade and a half.

# 15th Anniversary of the Zoo Miami Conservation and Research Fund

Year	Project Title	Purpose	Awardee
July 1999	Movements of Translocated American Crocodiles	Purchase of 4 land transmitter/receiver units to track 4 crocodiles for one year each.	Miami Metrozoo/FPL (Steve Conners, et al.)
July 1999	Tree Kangaroo Project in Papua New Guinea (Huon Peninsula) (Program of AZA TK-SSP)	Development of management area and education of students/landowners. Scat sampling, radio telemetry.	Rhode Island ZS, for Roger Williams Park Zoo (Lisa Dabek)
<b>Year 2000</b>			
Aug 2000	Tree Kangaroo Project in Papua New Guinea (Huon Peninsula) (Program of AZA TK-SSP)	Development of management area and education of students/landowners. Scat sampling, radio telemetry. Annual earmark in name of Alice Gilley.	Rhode Island ZS, for Roger Williams Park Zoo (Lisa Dabek)
Aug 2000	Jamaica Iguana Conservation & Recovery Program (Hope Zoo)	Vet's expenses in Jamaica and cost of building holding facility for project that protects nest sites, collects/ rears/releases hatchlings & sick iguanas, controls mongoose.	Fort Worth Zoo (Rick Hudson)
Aug 2000	Support for Improved Health Care Management of Elephants in Sumatra	Status assessment, emergency vet care, supplies, healthcare training for Asian elephants held at Elephant Training Centers in Sumatra.	Int'l. Elephant Foundation (Deborah Olson)
Aug 2000	Proyecto Rana Dorado (Project Golden Frog) (Panamá)	Training. Purchase of vehicle. Research and education initiative to study frog's natural history to prevent extinction from chytrid epizootic.	Baltimore Zoo, for Fundación Natura (A. Wisnieski, Vicky Poole)
Aug 2000	Low-Iron Diet Trial in Rhinoceros & Tapir	Foodstuffs and water analyses for an experimental trial of low-iron diet to alleviate chronic iron overload in captive rhinoceros (2 spp.) and tapirs (2 spp.).	Miami Metrozoo (Chriss Miller)
Aug 2000	Vaginal Cytology in a Captive Malayan Sun Bear as Indicative of Estrous Cyclicity	Fecal/urine assays to investigate a possible rapid, in-house predictor of estrus and ovulation in captive Malayan sun bears to aid in artificial insemination.	Miami Metrozoo (Chriss Miller, Andrea Adams)
Aug 2000	Saving the Amazon Parrots of Dominica, West Indies	Purchase of mesh for aviary renovation at Parrot Conservation & Research Center.	Rare Species Conservatory Foundation (Paul Reillo)
Aug 2000	Characterization of the Harpy Eagle Nesting Habitat at Chagras NP, Panamá	Travel expenses and per diem to determine nesting areas through analysis of microhabitat and landscape level variables, and review of historical records. Workshop w/ locals.	National University, Heredia, Costa Rica (Karla Aparicio U.)

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## Year 2001

Aug 2001	Conservation Biology & Population Mngmnt. of the Komodo Dragon (Indonesia)	Student/staff per diem, airfare and boat rental for population size/density, survival rate, age structure, and lineage/sex ratio blood sampling studies.	Yale University (Claudio Ciofi)
Aug 2001	Tree Kangaroo Project in Papua New Guinea (Huon Peninsula) (Program of AZA TK-SSP)	Development of management area and education of students/landowners. Scat sampling, radio telemetry. Annual earmark in name of Alice Gilley.	Rhode Island ZS, for Roger Williams Park Zoo (Lisa Dabek)
Aug 2001	Support for the Wildlife Care Center of Belize	Purchase butane-powered refrigerator and fuel for 6 to 12 months (for howler monkey rehab).	Wildlife Care Center of Belize (Robin Brockett)
Aug 2001	Scarlet Macaw Reintroduction Conservation Initiative (Costa Rica)	Purchase radio collars to monitor rehabilitated released birds which had been poached or captive-raised.	ZCOG/Fundación Zoológica, for Zoo Ave, Costa Rica (Katie Higgins)
Aug 2001	Population Genetics & Geographic Variation in the Shovel-Nosed Salamander	Lab supplies and travel to collect tissue samples of rare populations to check for cryptic species in s. Appalachia.	Clemson University (M. Tilden Jones)
Aug 2001	Conservation Plan for the St. Lucia Iguana	PIT tags, incubation supplies, educational materials for capturing/marketing animals, improving facility, and developing community outreach.	Purdue University (Catherine Malone)
Aug 2001	Cross-Facility Investigation into the Socio-Sexual Behavior of W. Lowland Gorillas	Wages for hired observers at seven zoos to obtain behavioral data on captive lowland gorillas to assist with management of the subspecies.	Zoo New England (Lyna Watson)
Aug 2001	Flamingo Banding Project at Reserva de la Biosfera Ría Lagartos, Yucatán	Travel to/from airport, lodging and banding event expenses to study migration & nutrition & to collect blood & crop samples of <i>Phoenicopterus ruber</i> .	Miami Metrozoo (Michelle Goostree, Pam Monseur)

## Year 2002

Mar 2002	Habitat Selection, Home Range, & Social Structure in the Masked Flying Fox	Travel, lodging and supplies to study natural history of bat that has never been studied scientifically.	Nat'l. History Museum, Papua New Guinea (Frank Bonaccorso)
Mar 2002	Tree Kangaroo Project in Papua New Guinea (Huon Peninsula) (Program of AZA TK-SSP)	Development of management area and education of students/landowners. Scat sampling, radio telemetry. Annual earmark in name of Alice Gilley.	Rhode Island ZS, for Roger Williams Park Zoo (Lisa Dabek)
Mar 2002	Binational Andean Condor Conservation Project (Yerba Loca National Park, Chile)	Half of costs for brochures, posters and coloring books for education of communities surrounding release areas in Chile.	ZCOG, for the Buenos Aires Zoo (N. Luis Jacome)
Mar 2002	Population Survey & Conservation of Bartsch's Iguana	Travel, lodging and meals for trip to survey iguana population for three days. Educating community.	Steve Conners, Joe Wasilewski

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Mar 2002	Support for ARCAS' Wildlife Rehabilitation Activities (Guatemala)	Vet medical equipment or capture supplies for quarantine and rehabilitation center for wildlife of the Maya biosphere.	Asociación de Rescate y Conservación de Vida Silvestre (Colum Mucio)
Mar	Northwestern Namibia	Research/camping equipment for three-year study	Sprina Liu, Todd Maki
Mar 2002	Poaching Effects of the Globally Endangered Nubian Ibex (Sinai)	Travel and guide expenses to profile poaching on Nubian ibex in a refuge.	Blue Earth Alliance (Omar Attum)
Mar	AZA Butterfly Conservation Initiative	Expenses for initial recovery planning workshop.	AZA
Mar	Kabul Zoo Rescue/Recovery Efforts		
Aug 2002	Census of Ricord's & Rhinoceros Iguanas on Isla Cabritos	Equipment to conduct census of iguanas in Dominican Republic	Indianapolis Zoo (Jan Ramer)
Aug 2002	Rapid Assessment on Presence/ Absence of Rodents, Insectivores, Scandents and Lagomorphs of S. Asia	Purchase of traps to be loaned to participants to trap rodents to establish their presence in little-studied areas of India (in prep for management	Zoo Outreach Group, India (Sally Walker)
Aug 2002	Proyecto Rana Dorado (Project Golden Frog) (Panamá)	Training. Purchase of vehicle. Research and education initiative to study frog's natural history to prevent extinction from chytrid epizootic.	Baltimore Zoo, et al. (Kevin Zippel)
Aug 2002	Artificial Insemination of the African Elephant Using Frozen Sperm	Purchase of hormone assay kits to improve AI techniques for captive African elephants.	Indianapolis Zoo & Int'l. Elephant Foundation
Aug 2002	Thailand Clouded Leopard & Fishing Cat Conservation Program	Design and construction improvements for 12 nest-boxes. Materials for shifting and housing separation construction.	Nashville Zoo (Peter Riger)
Aug 2002	The Wildlife Care Center of Belize	Purchase of kayak, car rack, and field equipment for transport and tracking of rehabilitated released animals on Sibun River (Monkey Bay Nat'l Park).	Wildlife Care Center of Belize (Robin Brockett)
Aug 2002	Tree Kangaroo Project in Papua New Guinea (Huon Peninsula) (Program of AZA TK-SSP)		Rhode Island ZS, for Roger Williams Park Zoo (Lisa Dabek)
Year 2003			
Mar 2003	Pilot Study to Assess the Status and Conservation Potential of a Diverse Mammalian Carnivore Guild in an Inland Atlantic Forest Fragment	Ten IR camera traps to assess status of medium & large terrestrial mammals (20 spp.) in order to model a conservation strategy.	Frostberg State University (Anthony Giordano)
Mar 2003	Census of Jaguars in a Tropical Dry Forest of Jalisco, México	Six cameras, supplies and fuel for doctorate research to test camera trapping, and determine sex	Fundación Ecológica de Cuixmala, México

# 15th Anniversary of the Zoo Miami Conservation and Research Fund

Mar 2003	Tree Kangaroo Project in Papua New Guinea (Huon Peninsula) (Program of AZA TK-SSP)	Development of management area and education of students/landowners. Scat sampling, radio telemetry. Annual earmark in name of Alice Gilley.	Rhode Island ZS, for Roger Williams Park Zoo (Lisa Dabek)
Mar 2003	Long Term Response of Rare, Endemic Jamaican Reptiles to the Removal of a Nonnative Predator, the Indian Mon-	Airfare and research items to support 3-month field experiment in Jamaican iguana <i>Cyclura collei</i> habitat.	Int'l. Iguana Foundation (Byron Wilson, U. of West Indies, Jamaica)
Mar 2003	Status Survey of Malayan Tapirs ( <i>Tapirus indicus</i> )—Their Potential in the Ecosystem	Sponsorship for one aboriginal ranger to assess population size and genetics of Malayan tapirs in Krau Wildlife Reserve, Pahang State, and educate locals.	Science University of Malaysia (Siti Khadijah)
Mar 2003	African Elephant Recovery from Poaching (Tanzania)	Field/lab work to determine group composition & genetic relations of adult ♀♀ in 100 families of elephants in heavily poached area.	Univ. of Washington Center for Conservation Biology (Samuel Wasser)
Mar 2003	Population Size & Demography of Komodo Dragons on Gili Motang Island	Cost of permit conditions to transfer animal to Guadalajara. Continuing work (refer to Aug 2001 entry).	Claudio Ciofi
Aug 2003	Proyecto Tagua Habitat Fencing (Paraguay)	Partial fence replacement to project's property to sequester habitat from livestock to protect released (and monitored) <i>Catagonus wagneri</i> .	DePaul University (Dennis Meritt, Jr.)
Aug 2003	Health Assessment of the Alligator Snapping Turtle in Georgia & Florida	Purchase of hanging scale, perform Hemogregarine and leech work, perform West Nile virus serology.	St. Catherine's Island (Terry Norton, DVM, WCS)
Aug 2003	Ecology & Conservation of Two Owl Species in an Agricultural Landscape in Central Kenya	Trapping and climbing equipment to study ecology of <i>Bubo capensis mackinderi</i> (scope of project narrowed) and support local farmer's conservation efforts.	Mpala Research Center, Kenya (Darcy Misurelli-Ogada)
Aug 2003	Conservation Status of a Threatened Primate Community in a Tropical Dry Forest at the Colombian Caribbean Coast	Purchase field materials and equipment and hire 4 field assistants for 2 months to update distribution of howler, spider, capuchin and owl monkeys in disappearing ecosystem (private Los Besotes reserve).	Baranquilla Zoo Foundation (Myriam Salazar-Jaimes)
Aug 2003	Conservation of Maned Wolf & Its Ecosystem in Argentina	Purchase field materials and hire guides to establish distribution and reposition local attitude toward maned wolf.	Institute of Applied Ecology, Italy (Valeria Salvatori)
Aug 2003	Scholarship to Attend IUCN Tapir Conference (Panamá)	Contribution from tapir-holding zoo for one person from a tapir range country in need of funds to attend conference.	Houston Zoo (as sponsor of AZA Tapir TAG)

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## Year 2004

Apr 2004	Food Habits of Giant River Otters ( <i>Pteronura brasiliensis</i> ) in the Influenced Area of Balbina Hydroelectric Power Station, Amazonas, Brazil	Airfare for Dr. Duplaix, gasoline, and per diem for a field biologist to compare otter food preference adaptability between 1987 and 2004.	Instituto Nacional de Pesquisas da Amazônia/ Laboratório de Mamíferos Aquáticos, Manaus (Fernando Rosas)
Apr 2004	Bongo Sanctuary Forest Fence (in Kenya)	Fencing needed to acclimate offspring of repatriated bongo for reintroduction to Mount Kenya.	Fort Worth Zoo (Ron Surratt)
Apr 2004	Natural History & Conservation of the Green Anaconda	Travel expenses to collect mobility and survival stats on <i>Eunectes murinus</i> to consult on possible	Tropical Wildlife, LLC (Jesús Rivas)
Apr 2004	AZA Columbid TAG Tongan Avifauna & Many-Colored Fruit Dove Study	Expenses for Jeff Sailer & staff member from either MetroZoo or FL Museum of Nat. History.	Jeff Sailer
Apr 2004	Survey to Identify Herpetofauna of the Pine Rockland & Disturbed Habitats of Miami Metrozoo Property	\$681.99 used to purchase AI flashing, folding minnow traps, and spring scales. The remaining \$232.17 went to Jeff Sailer for Tongan avifauna project (see above).	Steve Conners, Dave Jimenez, Jo-Ann Jennier
Apr 2004	Scouting Camera Project	Camera trap and batteries to determine status of feral wildlife on zoo property and their interaction	Miami Metrozoo (Kresimir Golenja)
Sep 2004	Proposal for Conserving Aquatic Ecosystems from the Standpoint of Protection of the Giant River Otter ( <i>Pteronura brasiliensis</i> )	Airfare; wages for 2 local field assistants for 2 mos.; travel for 4 researchers; room & board for two researchers for 4 mos.; workshops, posters & coloring book to educate community.	Fundación Zoológica de Cali/CREA (German Corredor, Juan Carlos Botello)
Sep 2004	Long Term Demographic Trends of Endangered Reptiles in a Jamaican Dry Forest: Effects of Controlling the Density of Invasive Mammalian Predators	Ninth year of survey to determine abundance of Jamaican iguana after removal of mongoose.	Int'l. Iguana Fund & University of West Indies, Jamaica (Byron Wilson)
Sep 2004	Diversity and Habitat Use of Panamanian Bats at Two Forest Types in Chagres National Park	Field equipment to study which bat spp. switch (seasonally) between forest habitats and which use only a single forest type.	SOMASPA & STRI (Rafael Samudio)

## Year 2007

Sep 2007	Kori Bustard Ethotrak	\$240 to Friends of the National Zoo for "tech support" and \$214 for purchase of palm pilot to record behavior of captive kori bustards.	Miami Metrozoo (Jim Dunster)
Sep 2007	S. Florida Feral Green Iguana Health Survey	Lab services for histopathological analysis of tissue samples.	Miami Metrozoo (Frank Ridgley)

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Sep 2007	Monitoring Movements of a Relocated American Crocodile by Use of GPS Satellite & VHF Radio Telemetry	Wages for biological technicians (\$150/day for 100 days) to monitor croc movement.	UF/IFAS (Frank Mazzotti)
Sep 2007	Kibale Community Fuel Wood Project, Expansion Phase	Office and transportation expenses, and staff and volunteer stipends for community workshops to encourage locals to plant trees for fuel.	Chimp-n-Sea Wildlife Conservation Fund (Rebecca Goldstone, Michael Stern)
Sep 2007	Semen Cryopreservation for Genome Banking in Otters	Supplies for optimizing semen preservation, improving post-thaw quality, and to bank semen of N. Amer. river & small-clawed Asian otters.	Ctr. for Res. of Endangered Wildlife, Cincinnati Zoo (Helen Bateman)
<b>Year 2009</b>			
Sep 2009	Surveys to Detect the Fungal Pathogen <i>Batrachochytrium dendrobatidis</i> in E. Hellbender Populations in Georgia	Supplies, gasoline for travel, and lab testing expenses.	Atlanta Botanical Garden (Robert Hill)
Sep 2009	Conservation of Amphibians in the Cauca Valley Province	Terrarium supplies for captivity of 7 spp. of endangered amphibians from the Cauca Valley.	Fundación Zoológica de Cali/CREA (German Corredor)
Sep 2009	Pantanal Otters Conservation	Travel, lodging and office supplies to study interaction of 2 spp. and their tolerance of eco-tourism.	Earthwatch Institute (Manoel Muanis)
Sep 2009	Tree Kangaroo Project in Papua New Guinea (Huon Peninsula) (Program of AZA TK-SSP)	Development of management area and education of students/landowners. Scat sampling, radio telemetry. Annual earmark in name of Alice Gilley.	Rhode Island ZS, for Roger Williams Park Zoo (Lisa Dabek)
<b>Year 2012</b>			
Feb 2012	Sea Turtle - Youth Education Program at Crandon Park Visitors and Nature Center	Expansion of the program to underserved schools in the county and purchasing of a laptop and projector with accessories to enable the educational presentations.	Joyce Denny  Miami-Dade County Parks, Recreation and Open Spaces
Feb 2012	Community Based in-situ Sea Turtle Nest Protection Program in Rekawa, Sri Lanka	Salaries of sea turtle nest protectors and patrols of beaches	Perera Mawatha Madakumbura Panadura, Sri Lanka
Feb 2012	Changes in habitat use and survival rates of juvenile bull sharks during recovery after an extreme weather event	Transmitters to track and better understand variability of movements and survival rates of juvenile bull sharks in our local environment	Philip Matrich  Florida International University

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Feb 2012	Predation impacts on caterpillars in urban and suburban Miami: implications for rare and endangered butterflies of south Florida	Field equipment, greenhouse supplies to propagate larval and nectar plant species, and laboratory supplies	Jaeson Clayborn Florida International University
Feb 2012	Saving from extinction the Pigmy Three-Toed Sloth ( <i>Bradypus pigmaeus</i> ) of Ecudo de Verguas Island, Panama	Radio collars, GPS transmitters and field sampling equipment	Fundacion CONAVI Republic of Panama
Feb 2012	Kibale Fuel Wood Project	Upkeep of the current and the construction of a 5 <sup>th</sup> science center, community training workshops and conservation competitions, tree planting materials, and energy efficiency demonstrations.	Rebecca Goldstone and Michael Stern New Nature Foundation
Feb 2012	Biological and Conservation Studies of the Miami Tiger Beetle ( <i>Cicindela florida</i> )	Support the continued field studies of the endangered Miami Tiger Beetle	C. Barry Knisley
Feb 2012	Continuing In-situ conservation of the Burmese roofed turtle in the Chindwin River, Myanmar	Construction materials and labor for a turtle rearing facility at a nesting site for eventual reintroduction efforts, communication costs and equipment purchases.	Turtle Survival Alliance



# Professional Contributions

## Professional Committees

### Association of Zoos and Aquariums Programs:

Taxon Advisory Groups (TAG) – Steering Committee Members, Species Survival Plans, and Studbooks:

Steve Conners – Chelonian TAG, Crocodilian TAG, Cuban Crocodile Studbook Keeper

Terry Webb – Antelope & Giraffe TAG, Marine Mammal TAG, Prosimian TAG, Lion SSP, Stuhlman’s Blue Monkey Studbook Keeper

Dustin Smith – Amphibian TAG, Puerto Rican Crested Toad SSP Co-Chair, Puerto Rican Crested Toad Studbook Keeper

Jim Dunster – Blue Crane SSP Coordinator, Blue Crane Studbook Keeper

Amber Carney – Ocellated Turkey Studbook Keeper

Isabel Sanchez – Giant River Otter SSP Education Advisor

### Professional Program Involvement:

Dr. Frank Ridgley and Dustin Smith – [Everglades Cooperative Invasive Species Management Area \(ECISMA\)](#)

Nicole Atteberry - [International Iguana Foundation](#), IUCN Anolis Lizard Specialist Group

## Presentations and Publications

### Publications

Crocodilian Specialist Group Newsletter – *“Persistence of Maternal and Juvenile behavior in African Slender-snouted Crocodiles”*

### Presentations

World Association of Zoos and Aquariums annual conference – *“The Cats of Belize”*

Association of Zoos and Aquariums annual conference – *“Permits, Permits, Permits”* and *“Annual Report on Activities and Published Records Protocols of the IDMAG/GOWG”*

Florida Reptile and Amphibian Working Group meeting – *“Conservation of the Central American River Turtle in Belize”* and *“Phrynosoma Conservation in Urban Environments and Zoos.”*

Lizard Advisory Group annual meeting - *“Hatching Jamaican Iguanas at Zoo Miami”*



