



OCTOBER 2016



OUR
ACTIONS
MATTER

ABQ BIOPARK
CONSERVATION
SPOTLIGHT

Abidjan 2016

by Matt Eschenbrenner

On August 29, 2016, a five-member team from the ABQ BioPark took the first steps on what would be a 6,706 mile journey to Abidjan, Cote d'Ivoire. Team Abidjan 2016 consisted of Josh Davis and Matt Eschenbrenner from the herpetology department, Kim Ward from the silvery minnow refugium, Lindsey Eagan from the elephant department and Chaz Moxley from the mammal department. The diverse expertise of Team Abidjan allowed individuals to work on numerous projects at once covering the entire Zoo National d'Abidjan (ZNA). The main goals for the 2016 trip were to re-test the adult and juvenile African slender-snouted crocodiles (*M. cataphractus*), construct a filtration system for the pigmy hippo exhibit, tweak the crocodile filtration system installed in 2015, set up new crocodile egg incubators, introduce new enrichment ideas for all zoo animals and train animals and keeper staff. Continuing to strengthen the relationship between our two facilities is also paramount, and one of our main focuses.



M. cataphractus is listed as critically endangered by the IUCN and fewer than 50 are known to exist in the wild-ZNA has become the best hope for survival of the species in central West Africa. With 35 breeding age adults, ZNA boasts the largest captive population of *M. cataphractus* in the world. Add the 38 juveniles born in 2014-15 with the help of the BioPark-and you are

looking at some seriously high numbers of critically endangered crocs. The BioPark conducted the first known health exams on *M. cataphractus* in this part of the world in 2015. Through blood analysis, we found clinically healthy adults and ionized calcium deficient juveniles. Diet changes were implemented and we chose to re-test the crocodiles again in 2016 to see if there was any change in blood values. For this trip we caught 10 adult *M. cataphractus* at random and performed blood draws from the supraverterbral venous sinus. After this, we conducted the same procedure on 22 juvenile and yearling crocodiles. The blood sample was then inserted into a cartridge, and the cartridge placed into an iSTAT blood analyzer. After two minutes, the iSTAT displays the blood values for each individual and prints out a copy of the data. From this, we discovered that the juvenile crocodiles' ionized calcium levels rose significantly over the past year. This is wonderful news and a direct result of the diet change. We now know that when the time comes to release these crocodiles into the wild they will be internally healthy, which gives them the greatest chance to thrive. We are expecting large numbers of croc eggs to be laid in early 2017, so we set up and calibrated two new incubators. Each is set for a different temperature since sex of the embryo is determined by incubation temp. We have one set at 28 degrees Celsius in order to produce females and the other at 32 degrees Celsius to produce males.

The quest to build anything substantial from scratch in Abidjan can be a tall order. The filtration systems constructed over the past two trips are evidence of this. While we are now familiar with the stores to utilize in acquiring supplies and equipment, no one store has all that you need. Sometimes we travel to one store for a coupler and another for one valve. It can be very time consuming. That being said, with our crack squad on the case it went about as smooth as it could have. Within a few days, the crocodile filtration system was up and running, which it did for nearly the duration of our visit. From there, we turned our attention to the pigmy hippo system. We were lucky enough to find a sand filter and pump combo and from there we added basins to catch larger debris before water enters the pump. Another hurdle was the dry time on the PVC cement. Here in the US it takes minutes to half an hour-there it takes a full 24 hours. After

assembling all of the pieces into place we had to wait until the following day to test the system. If we had to make changes there was another full day of waiting. By the end of our visit, the ZNA had a brand new functioning hippo filter. This is huge for them because even though they live in a very tropical environment that receives 72.7 inches of rain a year, their water bills are astronomical. Using these two filtration systems and combined with limiting the amount of times they dump and fill the pools, it has been estimated that the ZNA will save more \$10,000 (US) annually in water costs.

ZNA had a tuberculosis scare earlier this year, which they suspect took the lives of a few of their chimps. Luckily after testing the keepers, everyone came back negative. The exhibit these chimps were being held in has been empty since this scare and in a zoo where space is limited, getting this exhibit operational and giving the chimps more space became very important. The team, with the assistance of keepers and volunteers, carefully emptied out the old furniture and disinfected the entire exhibit. From there they shored up the windows and constructed a wall separating the exhibit into two. Within a few days of our departure the construction was complete and chimps were moved in.

The majority of the rest of the visit was spent on various projects around the zoo. We introduced a leopard pair that was previously separated and conducted exams on four lion cubs that were deemed healthy. We also introduced new elephant and chimp enrichment, and laid out an exercise plan for a severely obese chimp named Judith. We wrote protocols on everything we worked on during our 12 days on grounds. We were also fortunate enough



to meet many influential people in the area including 56 people from the US Embassy (including the acting ambassador), the Canadian ambassador and folks from the Italian embassy. Best of all, we were able to spend an hour with the Deputy Chief of Staff with the Ministry of Water and Forests in Cote d'Ivoire. We discussed with the minister the issues at ZNA and wildlife issues in their country how they might handle them. It is my hope that the breakthroughs this year will lead to increased interest in Cote d'Ivoire and ZNA from people all over the world.

In closing, I would like to thank Team Abidjan for all of their hard work. Together we accomplished a great deal and I am very proud of them. I would also like to thank the New Mexico BioPark Society and the tremendous support they have given this initiative over the past three years. Lastly I would like to thank Matt Shirley, PhD, for his tireless and continued work in central West Africa saving *M. cataphractus* and developing Project Mecistops.



SCORE

by Sara Hamilton

It is 10 p.m. in Curaçao and the sun has set hours ago. The island slows down as people relax and get ready to call it a night, but my day has just started. Along with eight others, I don my wetsuit and tank and head out into the water. We turn on our lights and enter into the underwater world. Night may have come, but the reef never sleeps. I watch as an octopus hunts around for its prey, searching in cracks and crevices. An eel pokes its head out to look, guarding its territory, as I swim by. We reach our location at about 20 feet—now it's time to work. My group of three fans out in different directions, searching amongst the corals for our desired prize. We may be underwater,

but the reef is buzzing with excitement and activity. Brittle stars, Christmas tree worms, and other various polychaetes start exploding and releasing their reproductive juices. It is quite a sight, but that's not why we are there. Minutes go by and suddenly our search is rewarded. In front of us a colony of *Diploria strigosa* (brain coral) is releasing egg bundles. These bundles, containing both the egg and sperm from the colony, float up to the surface where they break apart to become fertilized. These bundles are what we were there for. We quickly set up our collection tent and tube and watch in awe as the small bundles are collected. Once the containers are full it's a different game. Instead of leisurely swimming around the reef, we book it back to the shore to get the freshly caught gametes to the lab. The goal is to fertilize the eggs, raise coral larvae into juvenile coral, and return them to the reef to grow into large adult colonies. This is SCORE.

SCORE is a non-profit conservation organization working for the restoration of coral reefs. This year I was fortunate enough to participate in the 2016 Curaçao workshop. I spent 10 days living and working at the CARMABI research station located on the island. Together with other aquarists, students, and scientists, I learned about and actively participated in their coral reef conservation and restoration efforts. We spent the first few days in lecture learning about the lifecycle of corals, different types of reproduction and how to raise coral larvae from gametes to juveniles. We explored the dive site, orienting ourselves to the location and identifying the target species for collecting. We spent the following days and nights diving, setting up rearing pools and preparing the lab. Finally, five nights after the full moon, we saw our first spawning and successfully collected the gametes. Then the real work began.



Raising coral larvae in a lab is not simple work. First the egg and sperm brought back from the reef must be mixed in order to fertilize the eggs. This is a waiting game of about an hour and a half of letting the sperm and eggs sit still in a container of filtered seawater. After fertilization, the eggs must be separated from the sperm and

moved to a nice clean environment. We accomplished this by using plastic gravy boats. The eggs are buoyant and you can use the gravy boat to pour the contaminated water out from the bottom while the eggs are floating on top. Repeat this step a few times and you finally have clean water free of sperm where the eggs can mature. Once this was finished, we divided the eggs up into deli containers, each labeled for the different species'. The containers had to be kept perfectly clean to give the larvae the best chances of survival. Any excess fats, oils, or waste could cause the whole container to crash, and the fragile larvae inside could be lost. We spent hours delicately cleaning each container. As the fertilized egg begins to develop you can actually see it dividing and becoming a coral larva under the microscope. As the larvae starts to develop, it begins moving in tiny circles before actively swimming around the container. When the larvae start swimming to the bottom of the containers

instead of floating, it indicates they are searching for a place to settle and begin their life as a coral. We put some of the larvae into large settlement pools that were anchored directly in the ocean and filled with substrate for them to settle on. Others, which were provided with the same substrate, were added into tanks inside the local aquarium. The settlement substrates are handmade tetrahedron concrete tiles. These tiles have grooves down the sides of the arms to give safe spots for the larvae to settle on. The tiles must also be conditioned ideally on the reef itself. This allows the tiles to collect the right biofilm and enough crustose coralline algae to become desirable settlement spots for the larvae. It is very important to provide the best possible settlement substrate because once the larvae settle, they are sessile for the rest of their lives. These recruits are then left alone until they are large enough to be returned to the reef to grow from juveniles into thriving adults. The tiles are added back to the reef by attaching them to a sturdy area with epoxy. During one of my last days there, we dove out in the reef to observe the growth of previous' years recruits as well as epoxy some new ones.



The work days were long, sometimes going from 10 a.m. until 4 a.m. the next morning. We were not allowed to wear any mosquito or bug repellent since it could be harmful to the coral larvae. In fact, we were not allowed to use any chemicals except deodorant-this regulation was strongly stressed. The lab was hot and crowded. They kept the temperature 80 degrees for all the larvae, which meant we were sweating pretty badly when we were working. The one thing I missed was air conditioning, although since I have been back I haven't

even turned mine on. Despite these downsides, the experience was something I would never trade even for air conditioning. Not only was I able to be part of an organization that is actively restoring coral reefs, but the knowledge I gained is priceless. In the future, I hope to translate what I learned about coral sexual reproduction into our conservation efforts here at the ABQ BioPark.



Photo acknowledgements: Paul Selvaggio, Pittsburg Zoo and Aquarium.

Ahirna-At Last!

By Diane Longenecker/Senior bird keeper

The interpretation of artwork is subjective. When we visit an art museum and admire a painting by a great master, we take in the painting as a whole. If you break it down, you have a frame, a canvas, paint and brush strokes. All this together combined with talent and observation will bring the masterpiece to fruition. The same can be said with breeding endangered species. You can have a nest box, food, an enclosure, perching and enrichment. But if you do not 'know' the animal and their natural tendencies and history, the accomplishments

will evade your best efforts. I've always had the personal mantra of 'give them what they need and they will show you what they're all about.'

I started at the BioPark in November 2010. At that time, the wrinkled hornbills were displayed in the pheasantry area. They had a whiskey barrel as a "nest log." There was never any activity with the barrel. A nest box that was accessible from the exhibit was added and still there was no activity. Having come from a zoo where my hornbills would double and triple clutch, I knew something was missing with this pair. In 2013, I requested that the pair be moved off exhibit, thinking that more privacy was needed for any courtship and reproduction. We moved the pair and their nest box to the propagation area in the bird department.



In the wild, hornbill species nest in deep forest and tend to move away from human disturbances and deforested areas. After a couple of failed modifications to the nest box entrance, we observed the male checking it out the nest box. A couple of months later, the female was busy creating the seal that would keep her and any developing chicks in the nest box for two and a half months. On or about the June, 20 2014, at least one-possibly two-chicks hatched. The female and one chick emerged from the box after 70 days. Unfortunately, after a few weeks, the chick succumbed to an aspergillosis infection and passed away. This is not unheard of with this species. But even in death, we learn and adapt.



In fall 2014 we pulled the nest box and replaced it with a new one. We believed that the new box, which was taller and vented at the top, would mimic the 'chimney' effect of the large trees that these birds naturally nest in and thereby minimize aspergillosis spore growth. We modified the opening to how the birds had preferred it earlier that year. But when spring 2015 rolled around, nothing happened.

This past February, with cautious optimism, I watched and waited as our female and male wrinkled hornbills started inspecting and pecking around the opening of the new nest box. Finally, the seal, which consists of fecal, food and mulch, started to widen. They were going to nest! Sometime in late May, the female remained in the box and the male fed her through the 1 ½ inch wide gap in the seal. We changed their diet to include more berries, grapes and papaya. We added crickets during the second week of June. When the male starts feeding crickets first to the female, this usually means there is a chick. Around June 23, the male started grabbing crickets first out of the food bowl. And, on the 26th, we opened the observation door on the back of the box and saw one ugly chick and a couple of eggs! Many times the extra eggs are laid as insurance in case the oldest and largest chick/egg does not survive. None of the extra eggs ever hatched.

But this year's chick continued to grow. And each time we checked the nest, we were amazed at how fast and large he was growing. It would have been nice to be able to weigh the chick, but the female was not accommodating to us even looking. During incubation and chick rearing the female molts her tail and some of her flight feathers so that when she breaks out she has fresh new feathers to fly with to help find food for the chick(s). That day came in mid-September-the female, which had been in the nest for almost 120 days, and her 83 day old chick emerged!

When the chick was a week old, Dr. Carol Bradford drew blood and did a quick check up and weighing. The chick was already heavier than the female and it was determined that it was a male, but also might have the same fungal issues that took the life of the 2014 chick. Thus, we started antifungal and antibiotics propalacticy since he was not exhibiting any clinical symptoms. But it was a challenge to get the meds into a chick that did not yet eat on his own and would not come near staff (not to mention mom and dad were fiercely defensive over him). But of course, these birds like grapes and have a tendency to feed the chick first. We bought some large green grapes and put the meds in three of them and fed them to the adult male. The grapes that

were in their normal diet were red, so if we stood and watched, we would know if the chick got the medicine. It worked like a charm and to-date the chick appears to be healthy and thriving. We continue to monitor his health and watch his appearance change as he matures. In a few months, the chick will be separated from the adults-in the wild, they would drive him off to start courtship again. With luck, we will be waiting for another chick to emerge next year.

On a broader note, hornbills worldwide are under extreme pressure. In Asia, deforestation and forest fragmentation, poaching, human population growth, hunting for food, inadequate government policies and protections and political conflicts contribute to the demise of these birds. Fewer than 30 percent of the original forests of Asian hornbills remain and their habitat is highly fragmented. As we approach the holiday season, know that many of the spices used in holiday cooking are made possible by hornbills that have seeded the trees of these spices. Pharmaceuticals from trees seeded by hornbills are still being discovered. But if we continue to alter our planet by changing the climate and cutting down trees, and continue turning these birds into medicines and trinkets, then their outlook is dismal-for us and for the birds.



October Conservation Hero - Kathryn Venzor ABQ BioPark Education Curator, 2011 - 2016



In her five years at the BioPark, KV has worked diligently to bring conservation to the forefront. She has been a strong member of the BioPark Conservation Committee, including being the Chair of the Education Committee and starting the Our Action Matter Trainings now held every Jan. She was part of the team that implemented the Science Cafés, bringing beer and education to the multitudes. Her energy and enthusiasm has made committee events more fun and better organized, including the annual Gift Swap, Growers Exchange, monthly meetings, and many more.

In addition to her work on the conservation committee, she has inspired the entire core of volunteers with her passion for stewardship. Her presentations at Docent Trainings and Volunteer Meetings, her write up in the Volunteer Newsletter and her attitude every day brings her passion to light. She is out spoken in her advocacy which also inspires her staff and her fellow BioPark employees.

Not to be left out is the work that she has provided for our guests. She contributes to conservation signage at exhibits, brings in new ideas for events, secures biofacts that make messaging 'come alive' and puts a smile on everything she does.

Her drive and passion will surely be missed.

More Reasons To Keep Fighting

[Sharks Still In Trouble](#)

[Zoos Aren't Meant To Be Maximum Security Prisons And Sometimes There Will Be An Escape](#)

[A Win In The Battle Against Elephant Poachers](#)

[Cites 2016](#)

[The Great Barrier Reef Isn't Dead... Yet](#)

Upcoming Events

Mon., Oct. 31, 2 p.m.

Underwater Pumpkin Carving
Aquarium Shark Tank

Sat., Nov. 12, 10 a.m. - 2 p.m.

Orangutan Awareness Day
Zoo

Wed., Nov. 16, 6:30 p.m.

Science Cafe: "Talking Drums, Talking Wildlife Trafficking"
Talking Drums African Cuisine

About the Conservation Spotlight

Contact any member of the ABQ BioPark Conservation Committee to share your success stories and tips in an upcoming Conservation Spotlight. And join us on the last Tuesday of each month at 2 p.m. We meet for one hour and work to make the BioPark a greener place!

Conservation Committee Chair

Holly Casman
hcasman@cabq.gov
or 505-848-7176

Sub-committee Chairs

Education: Kathryn Venzor
Operations: Jon Stewart
In-Situ Conservation: Matt Eschenbrenner
Policy Advocacy: Barry Bitzer

Community Engagement: Keith Crow
In-House Conservation: Josh Davis

Treasurer: Greg Swyden
Secretary: Virginia Ludvik
Marketing: Tina Deines
Conservation Spotlight: Holly Casman

The Conservation Committee meets the last Tuesday of every month at 2:00 p.m., alternating between the Shark Reef Café and the Parq Cafe. Join the greening fun!

Green Awards: to nominate someone for next month's award, contact a Conservation Committee member.



City of Albuquerque, Cultural Services Department,
400 Marquette Ave NW, Albuquerque, NM 87102

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