

flightpaths

SPRING 2017

HUMAN IMPACTS

It's Not Easy (and sometimes it's messy) Being Green!

by Jenny Walsh, Green Team Coordinator



Conservation at the National Aviary is not just about long days in the field monitoring bird populations, assessing habitat characteristics, or even enticing endangered birds at the Aviary to breed. We also strive to make our own living environment as sustainable as possible, and to set a good example for our visitors, through our in-house Green Team.

The National Aviary's Green Team is made up of devoted staff members from various departments who develop and support sustainability initiatives throughout the National Aviary. The Green Team was founded under the idea that the Aviary is an institution that is focused on saving species, and saving species requires the protection of habitats through the conservation of natural resources. Together we hope to show our visitors that each of us can practice conservation in small but meaningful ways every day.

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ANIMAL PROGRAMS

Guam Kingfishers Gone Wild! *Readying birds for reintroduction*

by Travis Henderson, Senior Aviculturist

The successful reintroduction into native habitat of birds that originate from zoos is one of the greatest goals conservationists face. But one of the biggest obstacles that may need to be overcome is getting those birds to hunt and eat natural prey, especially when they may have never had the opportunity to hunt in the wild! Do predators lose that innate ability?

Guam Kingfishers (*Todiramphus cinnamominus*) are a well-known example of an avian species substantially affected negatively by humans through the introduction of the brown tree snake (*Boiga irregularis*) to Guam from Australia. This efficient arboreal predator quickly became invasive in a setting where none of the native avifauna had evolved defenses against a snake predator, and where the snakes themselves had virtually no natural predators. In just a few decades, several endemic birds disappeared, and others had declined to the point of imminent extinction. By 1985, this dire situation necessitated drastic action: biologists captured every single remaining wild kingfisher in an effort to prevent extinction of the species.

For 30 years, the Guam Kingfisher has been carefully managed and bred in accredited zoological organizations selected to participate in a Species Survival Program®. Participants in this program look forward to the day that offspring of the few remaining wild-caught birds will be able to be reintroduced into the wild on a snake-free island near Guam — perhaps as soon as 2018. Under zoological care, kingfishers that are three or four generations removed from their wild ancestors subsist largely on inactive prey, such as mealworms and



pre-deceased vertebrate prey. This raises a serious question: do zoo-bred birds retain the instinctive prey-hunting behaviors needed for survival?

At the National Aviary, we have been working closely with this species in an off-exhibit breeding center. Two of our pairs together produced a total of four chicks in 2016, and we have subsequently focused on a project to assess whether these birds can still capture live prey. As classic sit-and-wait predators, Guam Kingfishers observe the world around them and keep a sharp eye out for any potential prey. They attack suitable prey by diving at it and capturing it in their beaks. Before swallowing it whole, they subdue their prey by striking it against a branch or the ground.

To find out if the hunting instinct and skills persist even in zoo-reared kingfishers, we ensured that our Guam Kingfishers' habitat replicated their natural living space, including a simulated natural forest floor of leaves, mulch, rocks, branches and natural food. Guam Kingfishers eat green anoles (*Anolis carolinensis*), a reptile species that is

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NATIONAL AVIARY

The National Aviary inspires respect for nature through an appreciation of birds.

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FROM THE EDITOR

Zoos are S.A.F.E. Places

Many National Aviary members and regular readers of *FlightPaths* will certainly be aware of the importance of zoos as a repository for many threatened and endangered species. These birds, and many other animals, too, are maintained under Species Survival Plans®, whereby collaborating zoos agree to cooperatively manage species in order to insure the greatest possible genetic variability. Such variability is required for healthy zoo populations and greatly increases the chances for success when reintroductions are made to the wild.

Reintroducing birds from zoos back into the wild is a major conservation goal of the National Aviary, which has been achieved for a number of species. For example, Andean Condors hatched at the National Aviary have been returned to the mountains of Colombia, and we have laid the groundwork for future condor chicks hatched here to be released into the Ecuadorian wilds. In addition, we have hatched and raised some 25 birds for the Guam Rail reintroduction program, one of the largest contributions by any zoo. And in this issue, you will read about our innovative techniques to assess the natural hunting behaviors of our Guam Kingfishers — a critical step before returning these predators to their rightful place in a natural ecosystem.

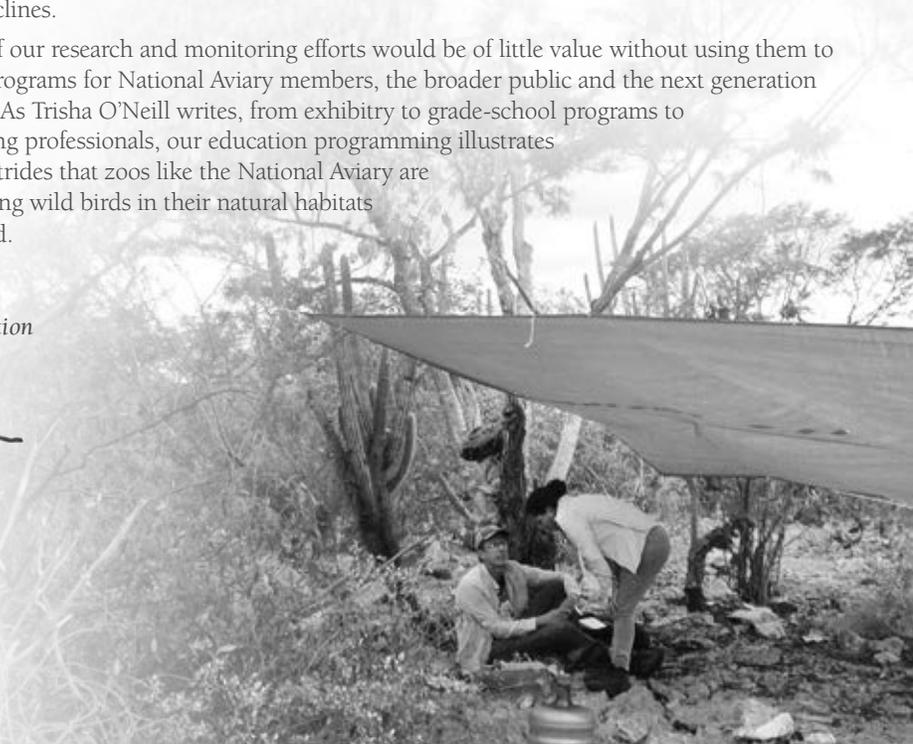
We are a supporter of the Association of Zoos and Aquarium's Saving Animals From Extinction (SAFE) efforts, which include building capacity to increase direct conservation spending, as well as saving species through research work in the field. At the National Aviary we work to conserve many other species not found in our collection, but which are of real conservation significance in the wild. After all, our goal is to identify, stabilize, and reverse declining populations before they become threatened to the point of needing to be saved by zoos.

Our research, monitoring and education programs support conservation at local, national and international levels. Many of these efforts focus on the need to understand how growing human populations and resource consumption affect birds and their habitats. Birds are among the best indicators of these crucial impacts and true sentinels for problems that human communities face. For example, if birds bioaccumulate heavy metals found in aquatic habitats, humans participating in the same food web may also face grave dangers originating from similar sources.

Long-term monitoring also serves conservation objectives as seen in our efforts to understand population trends of species occurring in threatened habitats of the Caribbean, tropical forests and the high Andes of Ecuador. As highlighted in this issue, results of our monitoring efforts in the Dominican Republic — one of only two long-term data sets from the Caribbean region — may be critically important for documenting population declines of Neotropical migratory birds and for devising ways to address those declines.

Of course, all of our research and monitoring efforts would be of little value without using them to inform education programs for National Aviary members, the broader public and the next generation of conservationists. As Trisha O'Neill writes, from exhibitry to grade-school programs to internships for young professionals, our education programming illustrates and reinforces the strides that zoos like the National Aviary are making toward saving wild birds in their natural habitats all around the world.

Steven Latta, Ph.D.
Director, Conservation
and Field Research



Bird Monitoring in Latin America: Some Better News for a Change

by Steven Latta

Not far from the Caribbean Sea, amid coastal thorn scrub forest barely shading a dog-tooth limestone floor, I work to gently extract a delicate Cape May Warbler from a mist net. I am coordinating another year of monitoring of overwintering Neotropical migratory birds, as well as resident and endemic species in the border region of the Dominican Republic (DR) and Haiti that I first visited in 1994.

Monitoring bird populations using mist netting is a proven tool for measuring changes in bird populations. With the right study design, it can even help us to understand what factors may be contributing to changes that we observe. Furthermore, monitoring often opens the door to focal studies on the ecology and conservation of key species of conservation interest, which in turn, can provide the basis for sound management of birds and their habitats.

The National Aviary's Department of Conservation and Field Research monitoring programs always partner strategically with local conservation organizations. For example, in the DR, we work alongside the Grupo Acción Ecológica; in Costa Rica, the San Vito Bird Club. Once partnerships are in place, we identify monitoring priorities and design and conduct collaborative monitoring to document the status of key bird species. As data accumulate, we help interpret results to support the effective follow-up research and conservation measures.

On-site training is a major emphasis of our monitoring efforts. Opportunities to learn how to use mist nets are rare in many countries and, as anyone who has held a bird in the hand can attest, there is nothing like it for turning an interest in birds into a passion for the cause of their conservation! Many of our monitoring and banding interns have gone on to study biology or ornithology, or to become key leaders in natural resource management agencies in their home countries.

Our monitoring programs in the DR build upon and extend similar efforts by colleagues in nearby Puerto Rico, where precipitous declines in both overwintering migratory birds and permanent resident birds have been documented. We recently have returned to study sites in similar habitats in the DR to see if these trends are local or widespread in the Caribbean region.

Of course, answers to important questions like this never come quickly or easily. Many weeks of work placing mist nets, capturing and banding hundreds of birds, and accounting for the effects of weather, climate trends and habitat are required before final conclusions can be made. While more work is still required, initial results suggest that while a few migratory species are declining, populations of most of the species in our system appear to be relatively stable. This does not negate what is happening with birds in Puerto Rico, but it offers a rare glimmer of hope in a long-term bird monitoring dataset,

whose take-home messages are all-too-often discouraging.

Similar encouraging news has come from a recent analysis of our 10-year monitoring dataset from southern Costa Rica. Here, independent studies of changes in land use have noted the decline of human impacts in the region. A decline in agricultural activities, in particular, has led to reforestation in the region containing our study plots. Although the habitat of our long-term monitoring plots within forests did not change substantially, we recorded more forest-loving species and fewer species typical of disturbed habitats and scrub, suggesting that increases in forest availability at the landscape level can have a relatively quick and significant impact on bird communities. Certainly this is an upbeat message for bird conservation!

As humans reduce their impact on the environment and create healthier natural habitats, birds do respond! Healthy habitats in Latin America help support populations of declining Neotropical migrants; they also support resident birds and endemic species that make a significant contribution to global biodiversity. Finally, healthy habitats provide many vital ecological functions that support our own well-being and help sustain local economies and cultures. For all of these important reasons, the National Aviary remains committed to continuing to play a large role in monitoring birds throughout Latin America. ■

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EDUCATION

Conservation Inspiration

by Trisha O'Neill, Director of Education

Conservation education is a fundamental part of our mission at the National Aviary. Whether our guests are wide-eyed preschoolers or seasoned birdwatchers, we embrace the challenge of providing the educational building blocks and inspirational experiences for future conservation action.

The building blocks we use are environmental literacy and emotional connections. Our educational philosophy is that knowledge-building and direct experiences are springboards for positive human impacts on the environment. So we tailor all of our classes and activities to expand awareness and understanding of birds and their conservation, and we always try to emphasize the real-world bird conservation efforts going on behind the scenes here. For example, we may highlight our Guam Rails in programs. They have been such prolific breeders that we have been one of the most important providers in the world of young rails for reintroduction programs!

Every National Aviary education program addresses critical conservation content as recommended by the Conservation Education Committee of the Association of Zoos and Aquariums. We facilitate programs that not only address ecological concepts and healthy ecosystems, but also which stress the negative environmental impacts of an ever-growing



human population and the responsibility that each of us has to reduce those impacts.

For example, our guests may learn how increases in the human population results in increased conversion of native habitats to agriculture, and the loss of critical resources for species like the Rhinoceros Hornbill. Or, as detailed in an article on page 7, we may address how climate change has led to the premature abandonment of African Penguin chicks by molting adults, exacerbating the plight of that imperiled species.

Of course, many of our guests arrive already possessing great knowledge about life sciences. Consequently, we offer the widest possible range of immersive and interactive demonstrations that showcase dynamic bird species and illustrate engaging and emotional conservation stories. Whether it's our very

own "Mother Nature" teaching kids about beak adaptations, or our resident ornithologist detailing how a bioindicator bird species serves as a bellwether of environmental impacts associated with energy consumption in Pennsylvania, we seek to meet our youngest visitors as well as our more educated and experienced adult visitors at their unique points of interest and to offer them a fulfilling and memorable experience.

But we hope, too, that our education efforts don't end when our visitors depart the Aviary. We provide resources

to enable our guests, and especially parents, to sustain and expand upon their National Aviary experiences when they return home. We also seek to create a multiplier effect by encouraging our guests to spread our conservation messaging to others in their social networks.

Every visitor to the National Aviary is a welcome guest! We are committed to providing the utmost in hospitality, to helping children become more open-minded to science and conservation concepts, and, most of all, to providing emotional connections for all of our guests. In return, we hope that National Aviary visitors leave us a little more ready, willing and able to serve the natural world with nurturing care and a positive impact. ■

RECENT LITERATURE

Cat Wars: The Devastating Consequences of a Cuddly Killer

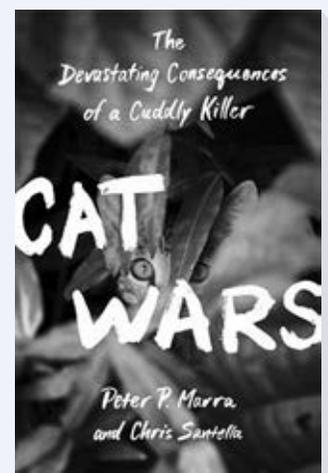
by Robert Mulvihill

Quickly lauded by bird lovers and immediately lambasted by cat lovers, *Cat Wars* explores the historical and present-day ecological and human health impacts of free-roaming cats. It concludes, "Inside, cats make excellent pets; [but] loose on the landscape they are, by no fault of their own, unrelenting killers and cauldrons of disease."

In their painstakingly researched book, co-authors Dr. Peter Marra, director of the Smithsonian Migratory Bird Research Center, and Chris Santella address a topic they undoubtedly knew would ruffle the feathers of many cat lovers. I congratulate the authors for bravely undertaking their task with an unabashedly

straightforward approach that I honestly believe serves the best interests of wildlife and pet and stray cats alike.

The authors present a large amount of scientific and historical evidence supporting the conclusion that in natural environments throughout the world, free-roaming cats — including an estimated 100



STUDENTS, FIELD ASSOCIATES AND RESEARCH ASSOCIATES

Kate Jordan Wallace: A Passionate Champion for Birds

by Steven Latta

At 55 years young, many people are looking forward to retirement, play-dates with grandchildren or Caribbean cruises. But instead, in 1994 Kate Wallace arrived in the Dominican Republic (DR) as a Peace Corps volunteer. With a bachelor's in art history and a master's in early childhood education, Kate raised a family, worked as a bookseller, ran a family day care center, and served for years as a teacher-naturalist for the Massachusetts Audubon Society.

After facing funding cuts and a job loss, “running away from home to explore the world” seemed like an exciting idea, so Kate joined the Peace Corps, and from 1994-97, she served as an environmental educator in the DR.

After meeting the National Aviary's Steven Latta, then a doctoral student living in the country, as well as some Dominicans interested in birds, Kate became a founding member of a new bird club: Club de Observadores de Aves Anabelle Dod, named after another prominent woman of bird conservation.

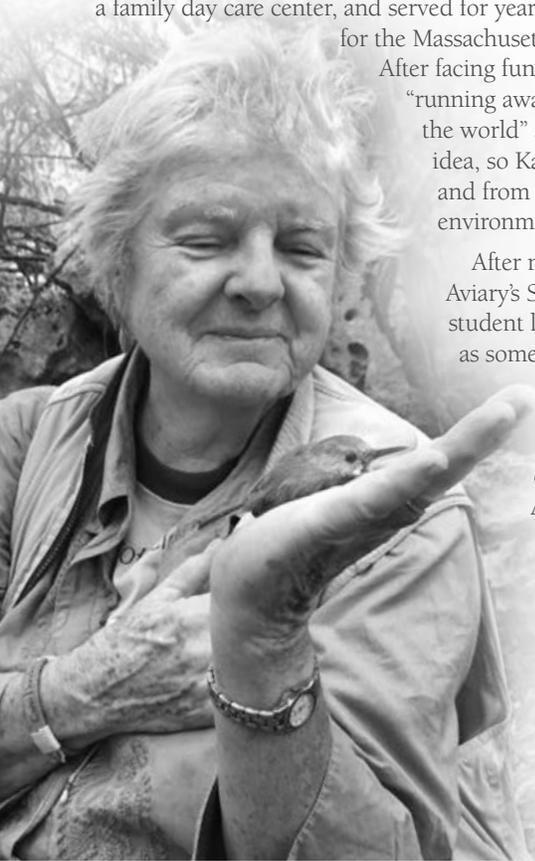
From that moment, Kate says, “my whole

life changed.” With new friends and colleagues, Kate started exploring the country and learning about birds. With a small grant, she moved her Peace Corps assignment to the Laguna de Cabral, an extremely important site for waterfowl, where she used her artistic skills to create teaching tools and public art to bring her bird conservation message to communities around the lake, and to create an interpretive trail for visitors. Next Kate teamed up with Latta to bring similar programs to communities across the Sierra de Bahoruco National Park, the most important site for bird conservation anywhere on Hispaniola. As Kate's knowledge and reputation grew, she became an invaluable local source of bird information for researchers, educators and conservationists working in the DR, and she hosted many of these same folks, too!

Kate was instrumental in coordinating campaigns to protect the threatened West Indian Whistling-Duck and its wetland habitats, and she promoted and participated in annual celebrations and activities associated with International Migratory Bird Day, Christmas Bird Counts, Caribbean Endemic Bird Day, and the Caribbean Waterbird Census. She did much to promote the fledgling ecotourism industry, co-authoring with Latta *Ruta Barrancoli: A bird-finding guide to the Dominican Republic*, and she created her own eco-tour service, called *Tody Tours*. She responded to a management plan's call for infrastructural improvements for tourists in areas surrounding Sierra de Bahoruco National Park by building six cabins and creating Villa Barrancoli at Rabo de Gato, which has become a must-visit spot for birders who want to see the rarest endemics on the island. Ten years later, Kate has “three fat guest books filled with messages of appreciation from visitors.”

At the National Aviary, we celebrate the many accomplishments of “Doña Kate” and thank her for her generous commitments of time and effort to champion bird conservation, education and tourism in the DR. ■

A key collaborator in National Aviary education and outreach efforts, and a critical facilitator of our research efforts, Kate Wallace (seen here with a Broad-billed Tody or Barrancoli) came to the Dominican Republic in 1994 as a 55-year-old Peace Corps volunteer and never left.



million unowned, so-called feral cats and an additional 50 million pet cats regularly given outdoor access by their owners — are an invasive species highly detrimental to native wildlife. Especially on islands, they are not just detrimental, they frequently are lethal, having contributed to or caused the global extinction of more than 30 species of birds, mammals and reptiles.

I thought this book was fair and thought-provoking. As a birder, an ornithologist and a

cat owner, I easily see the many sides of this issue: pet cats are wonderful, and so are native birds (and mammals and reptiles, too). The authors make a very strong case that there needs to be change in our approach to the problems facing outdoor cats and the problems created by them. It will take new ideas and innovative actions to achieve results equally acceptable to bird lovers and cat lovers — and beneficial to the objects of both their affection.

For example, the authors

suggest we need to question the status quo for pet dogs and cats. Dog licensing, leash laws and designated supervised off-leash dog parks are the norm almost everywhere, and few dog owners find these common sense requirements and restrictions to be in any way unfair. The authors purport that there needs to be a paradigm shift that once and for all erases societies' double standards regarding dogs and cats. Both are domesticated companion animals, and both are equally

deserving of all the comforts of a loving home. I agree that if cats were protected by the same mandatory licensing and leashing laws as dogs, this would go a long way toward promoting more peaceful coexistence among lovers of cats, dogs and wild animals alike!

In conclusion, notwithstanding its sensational title, I think that *Cat Wars* is a very important step in a better direction for this controversial topic, and I hope that every bird and cat lover will read it with an open mind. ■

STUDENTS, FIELD ASSOCIATES AND RESEARCH ASSOCIATES

From Teen Volunteer to Wildlife Major

by Becca Ralston

When I was 14, I began volunteering with the National Aviary. Initially, I was shy and knew little about the birds. Luckily, everyone I worked with was very open with their knowledge, and they taught me a lot that I could pass on to guests. Once I learned, I quickly began to do the same for newer volunteers.

In 2013, I heard about another program conducted through the Aviary: Neighborhood Nestwatch. Interested, I began volunteering there, and I watched Bob Mulvihill, the National Aviary's ornithologist, band wild birds with "bracelets" for a study. Everything I learned was fascinating, and I found that I loved sharing my knowledge as much as I loved learning it myself. From 2013-2016, I spent hundreds of hours with Bob, banding songbirds during early summer mornings and owls during late fall nights. He taught me how to band birds, and I am grateful for his patience while I learned. In 2016, I became a field technician for Neighborhood Nestwatch, and I went to sites independently to band birds and educate homeowners.

Near the same time, I interviewed for a scholarship at the University of Delaware. Armed with pictures and stories of my banding experiences, I impressed the interviewers and was given a full scholarship, worth over \$160,000, to study Wildlife Ecology and Environmental Humanities. In the future, I hope to combine both fields to research wildlife and educate people. My interests have been inspired by the National Aviary and its programs, and I am grateful for all that I have learned in the past four years. ■



Now studying wildlife at the University of Delaware, the author (here holding a Northern Saw-whet Owl captured for Project OwlNet) found her calling through her experiences as a National Aviary volunteer and field assistant.

It's Not Easy (and sometimes it's messy) Being Green!

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Initially, the Green Team worked to improve awareness about sustainability amongst the staff by educating employees about the importance of recycling and waste prevention. In the fall of 2015, the team conducted a waste audit, taking a very messy look at what the National Aviary was throwing away by sorting through one whole day's worth of trash. Learning what was in our trash helped the team to figure out how to improve waste management and recycling. Trash was collected and sorted by each area of the facility, so that we could see what areas needed improvement the most.

Outside, we set up two long tables covered with tarps and dumped the garbage onto the tables. Rubber-gloved team members and several volunteers sorted the waste into separate bins labeled recyclable, compostable and landfill garbage. After the day's refuse from each of the Aviary's main areas had been separated, the bins were weighed and the data recorded. We determined that the National Aviary sends more than 150 lbs. of trash to the landfill on an average weekday (Fig. 1), but with additional recycling and new composting efforts, we could reduce that amount to about 40 lbs (Fig. 2). Importantly, the added costs for composting and recycling services will be more than balanced by savings in waste hauling services — a win-win for the Aviary and the planet, too! ■

FIGURE 1.
Our Current Waste Profile

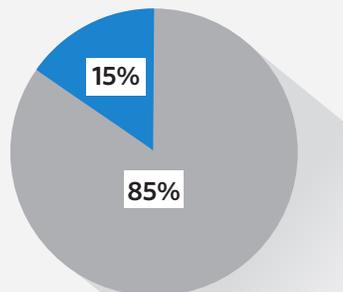
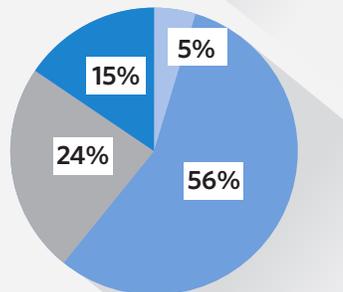


FIGURE 2.
What it Could Be!



- Landfill
- Recycled
- Compostable kept from landfill
- Recyclable kept from landfill

Guam Kingfishers Gone Wild!

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found in the Northern Mariana Islands where Guam Kingfishers once lived.

The microhabitat provided the birds with their very first opportunity to see and potentially capture live prey. Monitoring with motion-triggered cameras revealed that our Guam Kingfishers almost immediately recognized the anoles as prey. The birds quickly improved their hunting techniques, and both the adults and juveniles began to successfully capture anoles.

We are excited by these findings and look forward to sharing them with other zoos breeding the Guam Kingfisher. As we move closer to the day when we can reintroduce the kingfisher to its natural habitat, we expect that accustoming those birds targeted for release to prey capture techniques will be a critical part of the reintroduction effort. ■

NOTES FROM THE FIELD

Saw-whets in the City

by Robert Mulvihill

Until very recently, we knew virtually nothing about the status of the Northern Saw-whet Owl in the Pittsburgh region, which lies well south and west of well-known Saw-whet flyways along the Great Lakes and Appalachian ridges. Then again, nobody had ever looked for them here. Using the Project Owl-net protocol, a line of up to five, 40-foot-long bird-banding mist nets are set up in forest understory habitats and near them a very loud audio lure — a recording of the owl's own “toot-toot-toot...” call — is broadcast continuously from just before dark until midnight. The nets are checked frequently, and any captured owls are carefully untangled and returned to a nearby banding location for processing and release.

In fall 2013, when I established a Project Owl-net banding station in Sewickley Heights Borough Park, 10 miles northwest of the National Aviary, I did so in the hope of filling in a big geographic gap in our knowledge concerning the migratory movements of the species and also to understand how this owl utilizes small fragments of suitable habitat in an urban landscape.

By conducting Project Owl-net in this brand new area, my volunteers and I were pretty much guaranteed to learn something new about Saw-whets. Importantly, if we had based our conclusions on the results

NORTHERN SAW-WHET OWL ENCOUNTERS

Years	Banded	Foreign Retraps	Local Retraps	Totals
2013	10	1	1	12
2014	15	0	5	20
2015	8	1	1	10
2016	32	1	3	36
2017	5	0	0	5
Totals	70	3	10	83

of the first 10 days of sampling in October 2013, we might well have erroneously concluded that the species simply does not occur here at all. Instead we persisted, and in the remainder of the fall 2013 season and over the course of the next three spring and fall seasons, we banded 70 Northern Saw-whet Owls and recaptured 14 banded owls! Eleven of those recaptures were re-encounters with our own banded birds, including two that were caught in successive fall and spring seasons, providing the first evidence of over-wintering for the area. However, three were foreign retraps of birds banded elsewhere, including one from Elkwater, Alberta, Canada, 1,600 miles to the northwest!

Now, with four fall and three spring seasons of banding efforts under our belt, we have established the Northern Saw-whet Owl as a fairly common fall migrant, a rare winter resident, and a regular but less common spring migrant in and around the city of Pittsburgh (and presumably other urban landscapes as well). Just as importantly, we have had the opportunity to share the wonder of discovery about this amazing little bird with many hundreds of enthralled visitors of all ages who, rather than watching TV at night, chose the experience of scientific discovery in the great outdoors! ■

Hands-on Helping Wild African Penguins

by Chris Gaus, Senior Aviculturist

After working with African Penguins for 14 years and helping to raise funds for the South African Foundation for the Conservation of Coastal Birds (SANCCOB) for that length of time, I finally had the amazing opportunity to get hands on. From October 31 to November 12, I worked side by side with wildlife rehabilitators at the facility in Cape Town, Western Cape, South Africa, at the beginning of what is always a busy and difficult time at the center. This was “chick season.”

Because of global climate change, adult African Penguins are initiating their annual catastrophic molt sooner than they ever have before. As a result, the parents are abandoning their eggs and chicks prematurely, leading to a large increase in chick mortality over the past decade. Models suggest that with the continuing drastic decline in the species, African Penguins could be extinct in the wild in the next 10 to 15 years; for this reason, the species is one of 10 signature “AZA SAFE”

species (see p. 2). One way we are combatting these dire trends is by bringing abandoned eggs and chicks to one of two SANCCOB centers (Eastern and Western Capes) to be raised and released back into the wild.

The chicks need to be cared for through four to five feedings per day of formula (i.e. fish put through a blender with added

vitamins) and whole fish, and also given chances to swim once they are ready. The chicks also receive vet care for any illness from which they might be suffering. SANCCOB was interested to learn about some of the preventative treatment courses that we use that we use at the National Aviary, including nebulization treatments to prevent respiratory infections.

When I arrived at SANCCOB, there were about 40 penguin chicks receiving care. By the end of my stay, close to 200 chicks had been admitted. Thankfully, with help of staff from the National Aviary and other zoo and aquarium facilities from across the United States, about 80 percent of the birds brought into SANCCOB will be released back into the wild. Working in partnership with SANCCOB, and other AZA facilities, has been, and continues to be, a priority for members of the African Penguin Species Survival Plan®, like the National Aviary. ■





NATIONAL AVIARY

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Migration Game

Through an ongoing collaboration between the San Vito Bird Club and the National Aviary, students from a dozen elementary schools in San Vito de Coto Brus, Costa Rica, have been able to participate in Cornell University's BirdSleuth-International educational program, *Detectivos de aves en Latin America*. So far, more than 400 students have raced through the *Migration Game*, learned how to use binoculars, and taken field trips to the nearby Wilson Botanical Garden at the Las Cruces Biological Station of the Organization for Tropical Studies.