CONSERVATION & RESEARCH UPDATES FROM THE NATIONAL AVIARY

flightpaths

FALL 2024

The Long Road to the Guam Kingfisher Reintroduction

by Kurt Hundgen, Senior Director of Animal Care and Conservation Programs

Nine Guam Kingfisher hatchlings (known locally as sihek) are in their new home on the predator-free and fully protected island of Palmyra Atoll, making them **the first wild population in four decades.** We are thrilled to have participated in the international project that helped to facilitate their release. Through the Sihek Recovery Program, we hatched, hand-reared, and transported three of the nine chicks to the Biosecurity Translocation Facility at the Sedgwick County Zoo located in Wichita, Kansas. They remained there in quarantine until being transferred to Palmyra Atoll in the Pacific Ocean in late August. The chicks stayed in temporary outdoor aviaries acclimating to their new home; being fed and under close monitoring by project staff. Then, they were fitted with radio transmitter devices and released into the nearby forests!

Guam Kingfisher (sihek) Sindålu Flying into the Wild - Courtesy of The Smithsonian's National Zoo and Conservation Biology Institute (NZCBI)

Guam Kingfishers have been Extinct in the Wild for nearly forty years; decimated to the brink of total extinction on the island of Guam by the arrival of an invasive species: the Brown Tree Snake. Since then, their populations have been maintained under the expert care of organizations within the Association of Zoos and Aquariums (AZA) Species Survival Plan® (SSP®). We have been actively working within the SSP® and the Sihek Recovery Program towards the now-completed reintroduction of the species to Palmyra Atoll, which is Brown Tree Snake-free and located about 6,000 km (3,729 miles) from Guam. In addition to the National Aviary, the program includes partners from the U.S. Fish and Wildlife Service, Guam Department of Agriculture's Division of Aquatic and Wildlife Resources, Zoological Society of London, The Nature Conservancy, AZA, Disney's Animals, Science and Environment, Brookfield Zoo, Sedgwick County Zoo, the Cincinnati Zoo and Botanical Gardens, Smithsonian's National Zoo and Conservation Biology Institute, and the International Union for the Conservation of Nature.

Since 2016, 22 sihek have hatched at the National Aviary as part of the SSP®. This year, our very own Senior Aviculturist Brianna Crane played a crucial role in ensuring three of them made it through the delicate process of release into the wild.

Our impressive track record with sihek hatchlings led fellow AZA-accredited Cincinnati Zoo to entrust us with their fertile Guam Kingfisher egg earlier this year. The male chick, Sindålu (sin-duh-loo), meaning "warrior," hatched in our Breeding Center in May and shortly after was transported to Sedgwick County, marking the first time Brianna would make such an incredible journey.

Then in June, Brianna oversaw the artificial incubation process of two fertile eggs in our Breeding Center, produced by our adult Guam Kingfisher pair in the public-facing habitat, *Canary's Call Presented by Dollar Bank*.

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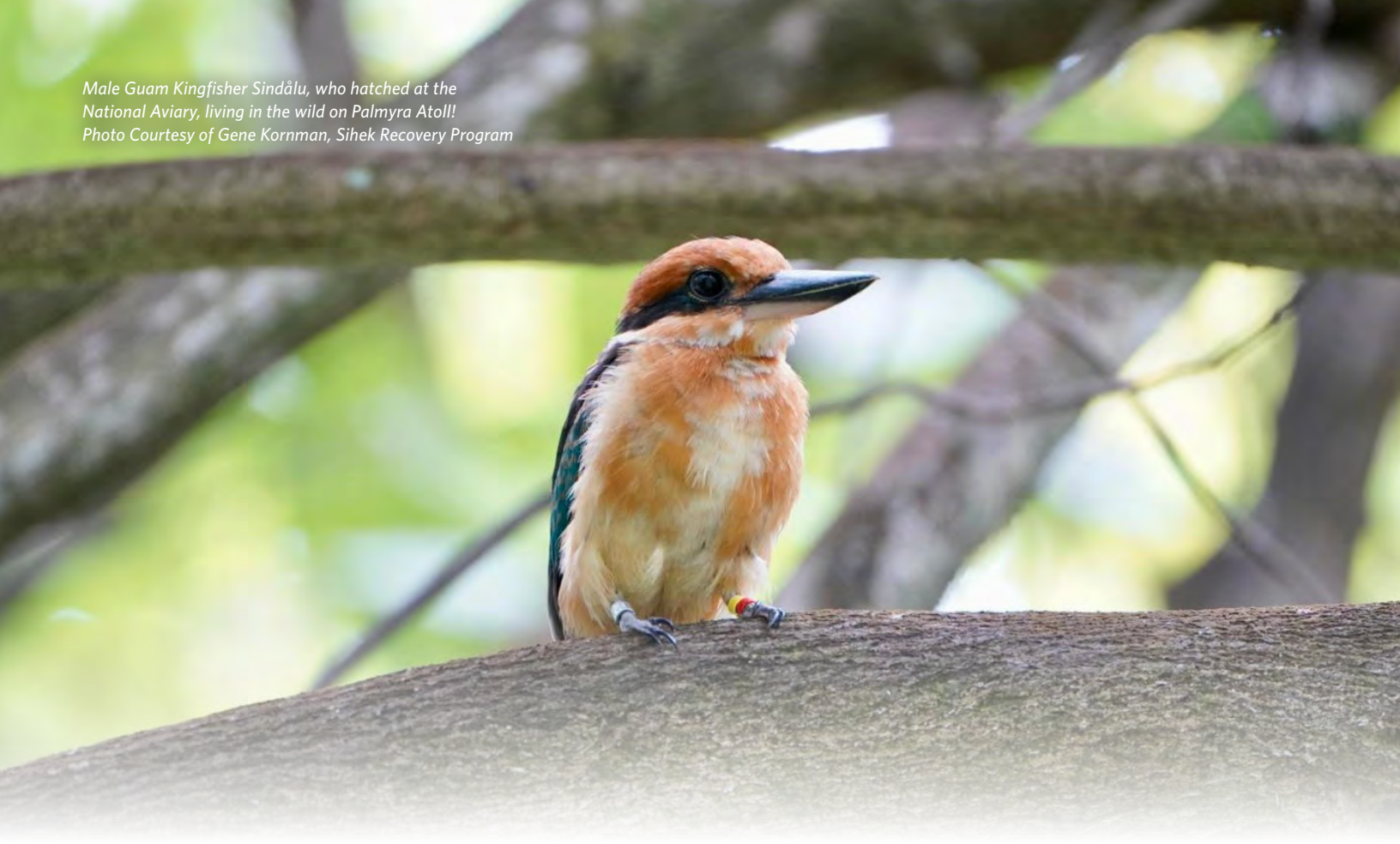

Male Guam Kingfisher Sindålu, who hatched at the National Aviary, living in the wild on Palmyra Atoll! Photo Courtesy of Gene Kornman, Sihek Recovery Program

The Long Road to the Guam Kingfisher Reintroduction *Continued*

Brianna personally transported the two chicks to Wichita on a Delta Airlines flight out of Pittsburgh International Airport: a female affectionately named Långet (lan-get), which means "heaven" or "sky" in CHamoru—the language of the Marianas Islands indigenous people—and a male named Mames (ma-mays), which means "sweet."

Without Brianna and our expert care team's unwavering dedication and attention to detail, these chicks may have very well not even hatched.

"Similar to woodpeckers, Guam Kingfishers are cavity nesters, which means they require a sheltered chamber of some kind to lay eggs and raise their young in," says Brianna. "To replicate this natural nesting behavior, we provided our adult Guam Kingfisher pairs with nest boxes filled with materials, such as wood chips and leaves. The nest boxes were then sealed with cork, allowing our Guam Kingfishers to mimic the nest-building process they would perform in the wild and getting us one step closer to producing viable chicks for the reintroduction."

Before the sihek were released from their temporary homes, they were outfitted with radio transmitter telemetry devices. FlightPaths readers may recall that the National Aviary was one of only four institutions that participated in the important pilot study to help prepare some of the sihek population for release into the wild. The kingfishers in our Breeding Center trialed the same "backpack" radio telemetry devices that these sihek are using in the wild. These tiny trackers will help field researchers to monitor the birds' movements and survival for several weeks after they are released. We are excited to see what insights the telemetry units will provide to help guide conservation and land management practices in the future.

On Friday, September 20, six of the nine sihek were released followed by the remaining three on Monday, September 23. We, alongside other Sihek Recovery Program partners plan to continue providing sihek offspring again in 2025, with the ultimate goal to have the wild sihek pair off and produce offspring of their own!

This process has been a continued labor of love for the Aviary and all other institutions involved, and we remain hopeful that with our support the wild Guam Kingfisher population will continue to grow —potentially allowing them to become the third species to have their International Union for Conservation in Nature (IUCN) status downgraded from **Extinct in the Wild** to **Critically Endangered.** ■

NATIONAL AVIARY
PITTSBURGH, PA

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

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Your donations support the National Aviary's work to save birds and protect their habitats.

FROM THE EDITOR

The preservation of bird populations and their habitat requires the active support of human populations and is best ensured when we are inclusive in working alongside local community and international partners. Here at the National Aviary, our national and international field conservation programs are strengthened by collaborations with organizations based in the states and abroad. This continued success includes our efforts to bolster the future of avian science through educating students of all ages, and training of young professionals to serve as tomorrow's conservation leaders. It also includes actively working within projects that are geared to helping save species from extinction.

This issue of *FlightPaths* highlights these professional partnerships and our approach to conservation programs through collaborations and capacity building. Here you can read in-depth illustrations of our work from the Pacific Islands, Latin America, Africa, and North America.

Our Curator of Education Katie Manion writes of her recent work with educators and students on the island of Guam, where public support for the reintroduction of the Guam Rail, the Guam Kingfisher, and other endangered species has grown to become a source of national pride. Readers will also learn more about our groundbreaking work with partners in Guam and others across the nation to help re-establish a wild Guam Kingfisher population through the Sihek Recovery Program, which successfully re-introduced nine chicks of the species onto the predator-fee island of Palmyra Atoll earlier this fall.

In Latin America, our long relationship with Ecuador's Bioparque Amaru and the Andean Condor Working Group has resulted in our securing a grant to use satellite-based transmitters to study the movement of condors in southern Ecuador for the first time. In Costa Rica, a more recent partnership with the Rescate Wildlife Rescue Center was strengthened by reciprocal visits of veterinary staff for mutual training and technique sharing between our facilities.

The National Aviary continues to lead the way in the conservation of the African Penguin. In Namibia, a growing relationship with the Namibian Foundation for the Conservation of Seabirds (NAMCOB) has resulted in our construction of 200 critically important artificial nest burrows for use in the field. In 2025, they will be placed on two Namibian islands where they will expand the availability of safe nesting sites for the penguins in an effort to slow the species' population decline. The design of the artificial burrow provides a comfortable environment for penguins to safely raise their young, remain cool, and prevents access from predators. Independent Senior Conservation Scientist Dr. Patty McGill and Senior Director of Animal Care and Conservation Programs Kurt Hundgen traveled to Namibia this fall to help with the deployment of the first batch of 50 artificial burrows.

Closer to home, Aviary staff have supported a breeding and reintroduction program for the Eastern Loggerhead Shrike, one of the most endangered songbirds in Canada. Led by Wildlife Preservation Canada, a conservation organization based in Ontario, the Aviary has played an integral role in introducing young shrike chicks born under expert care to the natural grasslands the species prefers and keeping their population within AZA-accredited institution genetically diverse. In Pittsburgh, we have grown our visionary program of monitoring Northern Saw-whet Owls in urban areas and are now partnering with three more locally based organizations to band more species of owls across a wider geographic range in southwest Pennsylvania.

Finally, the success of this approach—of integrating research to support conservation efforts, educating students of all ages, and continuing to foster relationships for the future—was recently recognized through our work in the Caribbean Islands. At the 2024 international conference of BirdsCaribbean, I was honored with their *Lifetime Achievement Award* for "exceptional efforts to build local capacity for avian science and conservation in the Dominican Republic."

I hope you will enjoy this issue of *FlightPaths* and learn more about the National Aviary's dedication to avian conservation through a strong spirit of collaboration.

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

Eastern Loggerhead Shrike flying near temporary aviary in Ontario

Working to Keep Eastern Loggerhead Shrike Populations Genetically Diverse

by Brianna Crane, Senior Aviculturist

The Eastern Loggerhead Shrike, one of Canada's most endangered songbirds, has fewer than 25 breeding pairs left in Ontario. This unique subspecies, named for its disproportionately large—or "logger"—head, is in dire need of support. One of the ways in which organizations like ours and others are helping is by working tirelessly behind-the-scenes to help ensure an increase of healthy populations for the species within expert care with the hope that future chicks will be reintroduced into the wild.

Recently-hatched Eastern Loggerhead Shrike chicks at the National Aviary

In partnership with Wildlife Preservation Canada, a conservation organization whose work supports multiple species' recovery efforts across Canada, we were able to successfully breed new Eastern Loggerhead Shrike chicks. This exciting collaboration, which began in 2022, culminated to the long-awaited and recent reintroduction of a chick brood to the open grasslands of Ontario.

In the fall of 2022, we welcomed an adult Eastern Loggerhead Shrikes pair in a behind-the-scenes naturalistic habitat that provided optimal shrike nesting. The pair successfully hatched and parent reared three chicks that were safely transported to a specially crafted habitat at the *African Lion Safari* based in Ontario by our very own Senior Director of Animal Care and Conservation Programs, Kurt Hundgen.

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Kurt Hundgen and Aviary Educator, Mike Faix completing shrikes transfer with African Lion Safari

Working to Keep Eastern Loggerhead Shrike Populations Genetically Diverse *Continued*

Prior to the transfer, the juvenile shrikes underwent thorough health examinations by our experienced veterinary team to help ensure they would thrive in other zoos or potentially in the wild. "The three, 11-month-old shrikes had pre-shipment health assessments before traveling to Canada," says Dr. Shannon Smith, Associate Veterinarian. "During these exams, we checked for signs of infections or other conditions that may need treatment before their journey and looked for all symptoms, beak to tail!"

Dr. Smith further explained, "Before potentially being introduced to other birds at other zoos or in the wild, it was important for them to have a clear health screen to make sure that they were free from infectious diseases like Avian Influenza. With normal exams and negative test results in hand, we were able to sign their health certificates so that they could travel from the US into Canada!" Eastern Loggerhead Shrikes are very susceptible to West Nile Virus, but vaccination provides protection; thus the three chicks were also given West Nile Virus vaccine boosters and a dose of antiparasitic as a preventative before their travels.

After residing in the Safari habitat for some time, it was determined that our shrike chicks were of ideal genetic viability for placement into fellow AZA-accredited institutions. There, the chicks will continue to grow and develop in expert care and potentially produce even more chicks to help continue to re-establish their wild population in Ontario in the near future. In the meantime, the National Aviary obtained a second shrike pair for this program and expect to contribute offspring from both pairs for possible reintroduction in 2025. ■

Shrike juvenile in habitat at the our Breeding Center

Shrike undergoing health exam with Dr. Shannon Smith

Dr. Rubbi Carpio examining a juvenile Eurasian Eagle-Owl.

Aviary Bolsters Continuing Partnership with Sister Zoo Amaru BioParque

by Pilar Fish, DVM

The National Aviary works with six Ecuadorian facilities housing breeding programs for condors in collaborative efforts to improve Andean Condor husbandry: that is every Ecuadorian facility currently working toward sustaining and growing the **Critically Endangered** condor population.

As part of these collaborative efforts, the National Aviary has a long-term, strategic partnership with Bioparque Amaru, a wildlife conservation center in Cuenca, Ecuador. These joint efforts focus on conservation research, education, breeding and healthcare concerning the Andean Condor. Over the last several years, Aviary veterinarians and animal care staff have traveled to Ecuador to work at the wildlife rescue center and assist with field biology studies tracking condor populations, establish a wildlife hospital, and organize successful condor breeding programs.

The National Aviary has partnered with Bioparque Amaru in the past for the construction of a breeding center for one pair of Andean Condors. Innovative habitats incorporate native plants, natural rock outcrops, and an existing ravine, providing for a very natural environment that encourages breeding. In our last *FlightPaths* issue, Senior Director Kurt Hungden shared our travels to the IV Congreso Internacional de Cóndor Andino (the 4th International Congress on the Andean Condor) held in Quito, Ecuador last fall, where we shared findings on single parent rearing with our female condor, Lianni and her offspring, Marijo.

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Members of the National Aviary Veterinary Staff with Amaru-Bioparque Veterinarian, Dr. Rubbi Carpio

Aviary Bolsters Continued Partnership with Sister Zoo Amaru BioParque *Continued*

This summer, we were pleased to welcome Amaru's Executive Director, Ernesto Arbelez, and Veterinarian, Dr. Rubbi Carpio, during two separate visits to the National Aviary. Ernesto presented an intriguing Members Talk as well as a lecture for Aviary staff on the multi-faceted work taking place in Ecuador to help wildlife populations recover from decline from human disturbances such as deforestation. Of course, one of the species he highlighted was the **Critically Endangered** Andean Condor. After this educational and inspiring lecture, Ernesto spent time with each department at the Aviary discussing education, conservation, training, and healthcare programs.

Prior to Ernesto's arrival, Dr. Rubbi Carpio spent a week in the National Aviary's Teaching Hospital with our veterinary team, gaining experience in our specialized and innovative avian medicine procedures. Amaru receives thousands of injured, ill, and orphaned wild birds each year spanning from the Galapagos Islands and the Amazon Rainforest to the Andes Mountains. The new medical skills acquired at the National Aviary will provide Dr. Carpio extra leverage to treat a variety of birds, including parrots, eagles, toucans, and, naturally, Andean Condors.

The partnership between the National Aviary and Bioparque Amaru continues to grow and be fruitful. It demonstrates the power of teamwork, and how working together internationally can have a positive impact on conservation efforts for endangered species around the world. We are excited to be at the helm of what's to come. ■

Top: *Ernesto Arbelez speaking to National Aviary Members about his work in Ecuador*

Bottom: *Ernesto Arbelez, Aviary expert David Kaser, and Dillon the Marshall Eagle*

Aviary Vet Staff Offers Trainings in Costa Rica to Members of Rescate Wildlife Rescue Center

In March of this year, Dr. Pilar Fish, National Aviary Senior Director of Zoological Advancement and Avian Medicine, and Jess Lindberg, Manager of Veterinary Education and Patient Care, traveled to the Rescate Wildlife Rescue Center in Costa Rica for the Wildlife Life Medicine Project. Rescate helps to save more than 3,000 animals per year and specializes in two endangered species programs for Scarlet and Great Green Macaws. During their visit the expert duo hosted a plethora of trainings, an avian medicine seminar, and donated several medical supplies to the Rescate's veterinary team. These trainings included hands-on workshops on laboratory, hospital habitat redesign, and neonatal medicine best practices; how to treat wing fractures and care for orphaned parrots; and preparing Scarlet Macaws for reintroduction back into the wild. The Aviary was more than happy to welcome Jeanne Marie Pittman, Conservation Manager at Rescate Wildlife Center, to Pittsburgh this summer to continue building this partnership. Jeanne had the opportunity to present Rescate's ground-breaking conservation efforts to Aviary staff and discuss key takeaways from Dr. Pilar's and Jess's visit. ■

Dr. Pilar Fish and Jess Lindberg with Rescate Wildlife Rescue Center Veterinary staff

Missing out on the National Aviary's upcoming Costa Rica trip with AAA Travel and Dr. Pilar Fish?

Subscribe to our email list to stay up to date on exciting travel offers at aviary.org.

Endangered Hooded Vulture chick

The Hatching of the Aviary's First Endangered Hooded Vulture Chick

by Cathy Schlott, Director of Animal Programs and Experiences

On April 20, 2024, we welcomed our very FIRST Endangered Hooded Vulture chick. An unfortunate example of how quickly bird populations can dwindle in the wild, the species that was of Least Concern according to the International Union for Conservation of Nature (IUCN) more than 20 years ago, is now considered **Critically Endangered**—making this hatching all the more important. The chick is not only our first Hooded Vulture hatchling but the first for parents male Ralf and female Opal.

The Hooded Vulture population continues to decline in the wild due to habitat loss, collisions with electrical infrastructure, and intentional and unintentional lead poisoning. Vultures are known for being "nature's clean-up crew" and are so vital to our shared environment. Ever since the Hooded Vulture species went into population decline, we have been diligently working toward a successful pairing and laying of a fertile egg. Very few Association of Zoos and Aquariums (AZA)-accredited zoos have been able to hatch Hooded Vulture chicks for a variety of reasons – the lack of viable adult breeding pairs in expert care (male Hooded Vultures are more common in zoos) and the amount of time it takes for a pair to reproduce (the average being about one egg per year).

The National Aviary received our first Hooded Vultures from other AZA-accredited institutions in the early 2000s as a part of the Species Survival Plan® (SSP®) and incorporated them as Animal Ambassadors in an array of educational programming. However, it would take more than a decade for an adult female Hooded Vulture, named Opal, to arrive. Female Hooded Vultures typically take about five years to begin showing an interest in breeding, during that time, our care team worked hard to build a positive relationship between Ralf and Opal with their pairing being the ultimate goal.

To finally have a chick hatch here means so much to us, and we are incredibly excited to determine the gender of the chick through a DNA feather test that will be given at a later date. In the meantime, Ralf and Opal have excelled in setting a heartwarming example for their chick to observe and learn from, and the family continues to live together behind-the-scenes. Stay tuned to our social media channels and subscribe to our e-mail list for updates! ■

National Aviary Staff Present Observations in Andean Condor Conservation at AZA Mid-Year Conference

by Sylvia Ronquillo, Assistant Manager of Animal Care

This past spring, I had the opportunity to share some of the recent observations our animal care team has made with our Andean Condor flock to Association of Zoos and Aquariums (AZA) colleagues from around the nation during AZA's mid-year conference, thanks to a grant from the Avian Scientific Advisory Group and the support of Executive Director, Cheryl Tracy. The in-depth presentation titled *"From Hatch to End of Life, Andean Condor Management at the National Aviary"* included key takeaways that have driven our management strategies for Andean Condors. These strategies include best practices for rearing offspring, developing relationships between male and female condors, and ensuring they are thriving as their authentic, condor selves.

In pre-historic times, condors with sweeping 23-foot wingspans that specialized in scavenging large megafauna (also known as mammals) were often found throughout the Americas. As that diversity of megafauna declined, so did their obligatory scavengers, including the giant condors (Argentavis magnificens). Today, Andean and California Condors are the only extant (remaining) species of condors in the world. Although found on different continents, these species have both a shared history and are mirror-images of modern conservation efforts.

Andean Condors in AZA-accredited institutions are part of a Species Survival Plan® (SSP®) and have remained in expert care throughout North America as early as the 1950s. Under this plan, Andean Condor pairs began breeding, which helped program leaders (like us!) learn more about condor reproduction and behavior, as condors are notoriously challenging at reproduction. With this knowledge in hand, similar breeding and reintroduction plans for California Condors were created in the 1990s.

Andean Condor Lianni with juveniles Marijo and Illimani

At that point in time, the decision was made by the U.S. Fish and Wildlife Service (USFWS) and various other stakeholders to bring all California Condors into expert care as their population in the wild had hit a critical low of 22. The experience gained from managing these charismatic vultures within expert care helped to improve the recovery California Condors and led to their reintroduction into the wild. In the mid-2000s, the International Union for Conservation in Nature (IUCN) downgraded the status of the California Condor species from **Extinct in the Wild** to **Critically Endangered** (the first to ever receive this status change).

While that's a great outcome for the California species, the Andean Condor species still needs our support. In their native range of the Andes Mountains, Andean Condors are spiritually significant animals in multiple indigenous cultures and continue to be a symbol of cultural pride for many

Bud, adult male Andean Condor

people, myself included. This pride, combined with the many opportunities I've had to interact with them at other AZA-accredited zoos, has positively impacted my work at the National Aviary. It's also helped me to adjust my management strategies here, so that the condors in my care are able be exactly that: condors.

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National Aviary Staff Present Observations in Andean Condor Conservation at AZA Mid-Year Conference *Continued*

Guests visiting Condor Court habitat at the National Aviary

At the National Aviary, our condor flock resides in the outdoor, expansive and naturalistic habitat, Condor Court, where passersby can view them any time of the day, free of charge. Our matriarch condor Lianni mentors two juveniles: her own offspring, Marijo, and friend to Marijo, Illimani (ee-yee-mah-nee)—the only two Andean Condors to hatch in North American zoos in 2022. The flock also includes adult male Bud, who came to the Aviary earlier this year as an ideal potential mate for Lianni. This miniature flock has allowed us to observe all ages of behavior based on: the condor's ability to communicate effectively with other members of the flock as well as our expert care team, their ability to problem solve, to successfully rear offspring, and to distinguish environmental enrichment.

Similarly to the collaborative nature which helped to save the California Condor, our observations are shared with our South American colleagues *(you've already read more about these partnerships on pages 6-7!)*, who are also championing the preservation of this iconic species. Through this shared admiration and common goals, we can work together towards ensuring a world where the Andean Condor can continue to thrive in expert care and in the wild. ■

Aviary to Partner in 3-year-long Satellite Telemetry Project for Andean Condors

Andean Condor fitted with Eobos Satellite Transmitter

Starting this fall, the National Aviary in partnership with the Andino Condor Fundacion and Amaru BioParque will embark on a 3-year satellite telemetry project for Andean Condors (Vultur gryphus) in southern Ecuador. During this time, six Andean Condors will be fitted with Eobos Satellite Transmitters. Our Senior Director of Animal Care and Conservation Programs, Kurt Hundgen, will be making the journey to Ecuador in mid-November to start this project.

The satellite transmitters will allow researchers to understand the spatial ecology of Andean Condors in the southern Andes region of Ecuador. Spatial ecology involves the study of their movement patterns, habitat use, feeding and resting areas, breeding and nesting areas, as well as interactions amongst Andean Condors as individuals, and with other species. In addition, the project will work to identify the main threats facing the condor population in the region and develop effective conservation strategies based on the information gathered.

The importance of this project lies in the need to protect this iconic and critically **Endangered** species, as well as its role in the ecosystem as an important indicator of health. The Andean Condor is an emblematic species of the Andes, but as mentioned in Sylvia's article on pages 9-10, its population has declined significantly in recent decades due to several challenges, and this project will potentially bring the species one step closer from the brink of extinction. ■

Project Owlnet Receives Funding for Banding Expansion

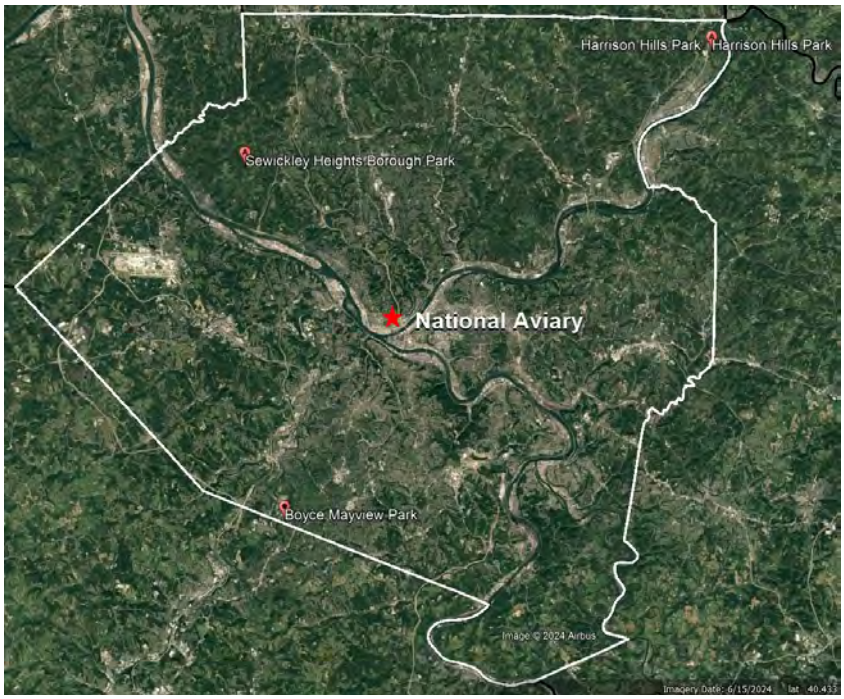
Project Owlnet is a cooperative study of Northern Saw-whet Owl migration helping those involved, like the National Aviary, to better understand the migration patterns of these enigmatic little owls across Southwestern Pennsylvania. Joining the study in 2013, National Aviary Ornithologist Robert Mulvihill set up a migration monitoring station at Sewickley Heights Borough Park.

More recently, two other area nonprofits, Powdermill Avian Research Center and Bird Lab, have initiated Project Owlnet monitoring at Boyce Mayview Park and Harrison Hills Park in southwest and northeast Allegheny County, respectively. 2023 was the first time the monitoring programs operated concurrently, thanks to a grant given to the National Aviary from the Wild Resources Conservation Program.

In addition to operating the three sites on the same 22 nights for the same number of hours, the three stations standardized their mist net arrangements and the audio lures used to attract owls into them. This gives us a broader and more detailed picture of how these owls move across the local landscape. It may reveal preferences for certain wind and weather conditions, underlying habitats, and avoidance of artificial lights at night (light pollution), as well as natural moonlight.

Excitingly, in 2024 another opportunity has been made possible through the WRCP grant: the addition of monitoring at all three sites for two more enigmatic owl species—the Long-eared Owl and the Barn Owl—both of which are species of conservation concern for Pennsylvania. All three stations will operate mist nets in two separate locations: one for Northern Saw-whet Owls alone, and one with an alternating audio lure for the Long-eared and Barn Owls.

Not much is known about these two species, especially during migration, because they are nocturnal and rarely vocalize outside of their nesting season.



Allegheny County Owlnet Network

Simply determining for the very first time the owls' presence or absence during fall migration in Allegheny County will be a major advancement in our ability to address the species' conservation concerns. The Northern Saw-whet Owl story points to past successes with this type of study: prior to 2013, we had no knowledge that Northern Saw-whet Owls migrated in large numbers across the county. Now we know they DO, sometimes traveling through Allegheny County from as far away as Alberta, Canada!

Ahead of the 2024 season, we have banded 278 Saw-whet Owls, with high counts of 61 in 2020 and 2022. We have learned that the peak movement for the species occurs between October 24 and November 3, when we have banded nearly half of our total number of Saw-whets. We've also learned the owls prefer to travel on nights with a northerly tail wind. In fact, on one such night in late October 2022 we banded our highest single night total: 15 Saw-whet Owls. We are looking forward to another good flight year in 2024 with your support! ■

Robert Mulvihill holding a Northern Saw-whet Owl

The Search for the Ivory-Billed Woodpecker Continues

by Dr. Steven Latta, Director of Conservation and Field Research at the National Aviary

Established in 2018, Project Principalis is a partnership between the National Aviary and Project Coyote, co-founded by National Aviary Research Associate Mark Michaels. Since 2018, the team has been working in the field to establish the Ivory-billed Woodpecker at an undisclosed site in Louisiana.

This year I continued to lead a small but highly dedicated team in Louisiana in search of incontrovertible evidence of the continued existence of the **Critically Endangered** Ivory-billed Woodpecker (Campephilus principalis). The Ivory-billed Woodpecker is an iconic species that has encouraged countless people to become engaged in conservation efforts. Our hope is that in documenting the persistence of these birds despite the odds, we will inspire others to care about not only the Ivorybill, but the countless species also relying on their bottomland forest habitat.

On September 30, 2021, the U.S. Fish and Wildlife Service (USFWS) formally announced their intention to declare the Ivory-billed Woodpecker extinct, but public comment periods have been extended without formal action taken. The latest delay occurred following the May 18, 2023, publication by Project Principalis highlighting results from our search effort.

The paper, *"Multiple lines of evidence suggest the persistence of the Ivory-billed Woodpecker in Louisiana,"* presents personal accounts, audio recordings, trail camera images, and drone footage depicting multiple birds. Data was gathered over an intensive, multi-year search effort at our research site provided, for the first time since the 1940s, multiple lines of evidence indicating that more than one Ivory-billed Woodpecker has lived at our study site for several years.

Dr. Steven Latta completing field research in Louisiana

In 2024, the focus of our fieldwork has been on finding a nesting or roosting site for this iconic species. Finding a nest would provide substantial visual proof of the species' existence and advance studies of their behavior, ecology, and natural history that may support conservation efforts. Access to our remote study area is difficult because of flooding, rough terrain, rattlesnakes, cottonmouth, hogs, and alligators. However, our team of professional ornithologists and community scientists from around the country are up to the task and each offers unique skillsets, diversity, and passion to contribute to our success.

During the January to June field season, we collected samples to test for environmental DNA (eDNA). eDNA has become a powerful tool to document the presence of many extraordinarily rare or cryptic species that might otherwise remain hidden. Collaborating with Dr. Brady Porter's lab at Duquesne University, we are processing samples from abandoned cavities, foraging sites, feces, water, and other materials.

A figure used in the Project Principalis research study to show the existence of the Ivory-billed Woodpecker

Establishing that the Ivorybill continues to survive at our Louisiana study site is just the beginning of our work. We believe that our methodologies can be translated, thus offering opportunities for additional documentation of the species. With this goal in mind, we have begun explorations at a second site where we have received several independent reports of Ivory-billed Woodpecker sightings.

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The Search for the Ivory-Billed Woodpecker Continues *Continued*

These preliminary surveys are designed to assess habitat and access to the area to better develop a potential search strategy. Utilizing my extensive experience in the Caribbean, our next step is to reach out to Cuban colleagues about a potential search there. The Ivory-billed Woodpecker in Cuba, despite looking very similar to the North American species, is considered a distinct subspecies (Campephilus principalis bairdii) or even a unique species. Like the North American Ivory-bill, this bird is widely believed to be extinct, with the last universally accepted sighting occurring in 1986. However, there are vast areas of remote habitat in the mountains of Cuba, and we believe that providing Cuban ornithologists with our techniques, equipment, and experience may be a productive effort.

Our findings in our search for the Ivory-billed Woodpecker have been tremendously productive and encouraging to many people across the country. Our results also begin to tell a larger story not just of whether the Ivory-billed woodpecker persists in Louisiana, but how it has survived, why its survival has been so difficult to document, and what we can do to ensure its survival far into the future. We are inspired to continue our strategy of using multiple research tools and diverse approaches to documenting the survival, ecology, and conservation of the Ivory-billed Woodpecker in 2025. ■

Dr. Steven Latta collecting eDNA samples at research site

Forest Gap Project Assesses Pennsylvania Forest Management

In spring and summer 2024, Dr. Steven Latta concluded field research in northwestern Pennsylvania in his research study, *Using Forestry to Increase Bird Diversity for Conservation.* It is well established that large, stand-replacement clear cuts (an area of forestry mostly devoid of trees) provide important habitat for a suite of early successional bird species. Recent work has also shown that very large areas (less than 40 acres) of this type of forestry benefits birds that have been thought to require extensive, mature forests. Although fledglings use clear cuts for better access to food and dense ground cover for a short, but vitally important, time in their life cycle, these areas are also detrimental to lots of other wildlife.

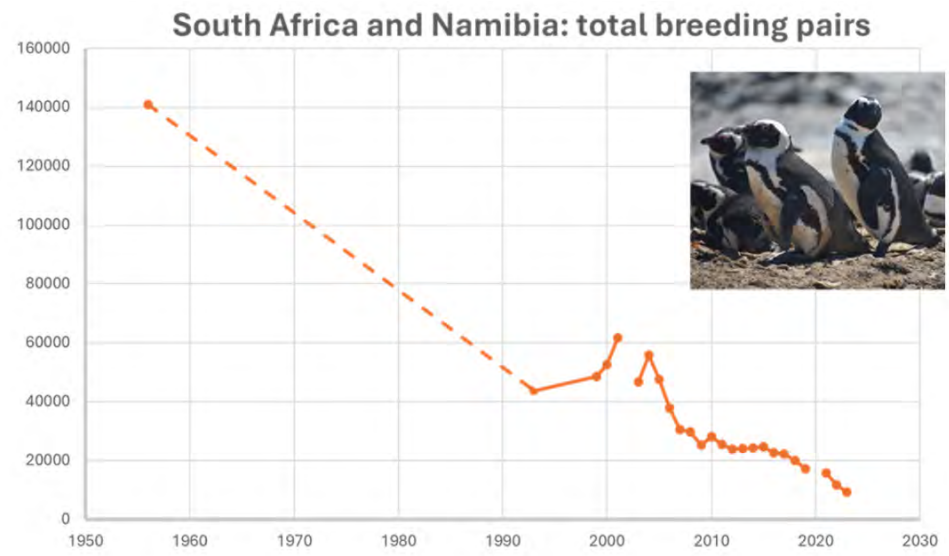
Dr. Latta and other researchers in the study are testing a different model of sustainable forest management that uses multiple entries into the forest for very light timber harvests. Utilizing family-owned forest plots managed by the Foundation for Sustainable Forests, the team hypothesizes that by creating very small, one to five-acre gaps in the forest through group selection cuts, they can provide habitat opportunities for important early-successional species, as well as habitat for dispersing fledglings of mature forest species. If successful, this approach will have the added benefit of restoring forests to an uneven-aged condition that is beneficial to many more species that require structurally diverse habitats. This forest management style also supports families and landowners with small forest plots, and the economic viability of rural communities through the restoration of working forests. Early results of the study are very promising and once completed and published in peer-reviewed literature, Dr. Latta and team remain hopeful that the project results will be applied to the management of public and private forests in Pennsylvania and beyond. ■

Nancy Ransom of Foundation For Sustainable Forests holding a molting Ovenbird

Nest Burrows Help African Penguins Beat the Heat

by Dr. Patricia McGill, Independent Senior Conservation Scientist

The decline of African Penguins has been dramatic, with multiple threats—unsustainable fishing, climate change, and poor nesting conditions to name a few—compounding one another and leading to a loss of more than 99 percent of the species' total population since 1908. It is estimated that the species, now officially listed as **Critically Endangered** by the International Union for Conservation in Nature (IUCN), will be functionally extinct in the wild by 2035. Stabilizing African Penguin populations and reversing the decline will require a multifaceted approach that starts with ensuring penguin chicks can thrive.



The National Aviary is the leader of the Association of Zoos and Aquariums (AZA): Saving Animals From Extinction (SAFE) program for African Penguins. Coordinated by myself on behalf of the Aviary, the program's partners and I remain hard at work identifying, funding, and addressing some of the most severe threats facing the species, many of which are wickedly complex and will require serious effort and time. However, African Penguins need our help now and boosting the population's dwindling numbers will ensure the species survives as we work concurrently on long-range plans to ameliorate the harms caused by overfishing, climate change, and disturbances at nesting sites. The Aviary's Curator of Education Katie Manion also serves as the leader of the Education and Engagement Working Group for the SAFE African Penguin program.

The African Penguin colony at the Aviary is a part of the AZA's Species Survival Plan® (SSP®) for African Penguins, coordinated by Chris Gaus, the Vice Chair of the African Penguin SSP® and Assistant Manager of Animal Care at the National Aviary. The SSP® helps to keep the African Penguin population within AZA-accredited zoos and aquariums healthy and genetically diverse to support larger efforts towards conserving the **Critically Endangered** species.

Historically, African Penguins burrowed into the guano left behind by huge colonies of seabirds to make their nests. In these burrows, penguins were afforded protection both from the blistering sun and from predation of eggs and chicks. Unfortunately, the unsustainable harvesting of guano for fertilizer has forced penguins to nest in less-than-ideal places, often out in the open or under sparse vegetation causing nesting success rates to plummet rapidly.

But there is a solution: the artificial nest burrow. After several years of testing among the African Penguin colonies in South Africa, and those in expert care in the SSP®, SAFE has landed on a design that penguins have taken to quite readily, with an astounding 96 percent occupancy rate. The design keeps penguins cool, prevents access by predators, and is inexpensive and simple to create, deploy, and assemble. And it's working! We were thrilled to see 57 percent of chicks reared in the artificial burrows have survived to fledging age. In the fall of 2022, the National Aviary welcomed the African Penguin Pierogi, who hatched in one such burrow!

Thermal imaging has allowed us to see inside the nests and monitor the temperature – one of the greatest challenges facing penguins nesting in the open is the heat, which can be brutal. Dedicated parents will endure extreme temperatures to continue incubating their eggs, leading to heat stress. An African Penguin nesting in the open reached an unthinkable 69° C (155° F). Ultimately, penguins in this situation may end up abandoning their nests. However, thermal imaging on an artificial nest showed penguins resting at a comparatively cool 25° C (77° F).

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National Aviary African Penguin juveniles Dave and Rita Mae

Nest Burrows Help African Penguins Beat the Heat *Continued*

With the highly successful launch of artificial nest burrows in South Africa, SAFE's attention is now turning to the population of African Penguins nesting in Namibia. Once comprising one-third of the world's African Penguins, this population is now down to 982 breeding pairs. The current low seabird numbers on all Namibian islands are of great concern and the continuous decline in the main four colonies (Possession, Halifax, Ichaboe and Mercury Islands) needs investigation and actions to reduce it. Among other conservation actions, SAFE is working to bring 200 artificial nest burrows to Namibia to slow the decline and provide a comfortable environment where penguins can safely raise young.

The National Aviary's Senior Director of Animal Care and Conservation Programs Kurt Hundgen secured a grant to pay for the costs of this important project. He and I traveled to Namibia this fall with our partners from the Namibian Foundation for the Conservation of Seabirds (NAMCOB) to deploy the first of the 50 artificial nests to two islands in the region. Subscribe to the *Aviary's e-mail list* for exciting updates! ■

Help support the building of an artificial nesting burrow.

Give Now!

An artificial nest burrow in the National Aviary's Penguin Point habitat

Dr. Steven Latta with Lifetime Achievement Award and members of BirdsCaribbean

Aviary's Conservation Director Receives Coveted Conservation Award and Appointment

Dr. Steven Latta, Director of Conservation and Field Research at the National Aviary provided a keynote address to more than 400 avian researchers, educators, and conservationists at the *BirdsCaribbean 24th International Conference* in Santo Domingo in July. He was honored with their *Lifetime Achievement Award* for "exceptional efforts to build local capacity for avian science and conservation in the Dominican Republic." Dr. Latta has worked in the country for more than 30 years, where he employs his "conservation tripod" approach, using avian research and monitoring programs to affect land and resource management plans, and to build capacity through training of young professionals and outreach to local communities. He also authored the only complete field guide to the birds of Hispaniola, which he published in English, Spanish (for Dominican birders), and French (for Haitian birdwatchers). An additional award at the BirdsCaribbean conference was given to our local partner organization in the Dominican Republic, *Grupo Acción Ecológico*. The *President's Prize* noted the group's "exceptional contributions to monitoring and conservation of birds in wetlands in the Dominican Republic."

Dr. Latta was also recently honored through his election as a Fellow of The Explorers Club. Fellows are chosen based on their documented contributions to scientific knowledge through field expeditions aimed at exploring unfamiliar or poorly understood locations or phenomena to acquire knowledge for the benefit of humanity. Founded in 1904, The Explorers Club has honored some of the most renowned explorers of the Earth and beyond as Fellows. Dr. Latta's election noted his pursuit of research and conservation projects across Latin America and the Caribbean, including Hispaniola, the Amazon basin, and the High Andes. Most recently, he was credited with leading a small team that has provided the first evidence since the 1940s that the iconic Ivory-billed Woodpecker still survives in remote forested old-growth swamps of Louisiana. ■

Aviary Works to Save Endangered Species through Marianas Avifauna Conservation (MAC) Project

by Katie Manion, Curator of Education

The National Aviary closely collaborates with the Commonwealth of the Northern Mariana Islands' Division of Fish and Wildlife, the U.S. Fish and Wildlife Service (USFWS), the Pacific Bird Conservation, and Association of Zoos and Aquariums (AZA) accredited zoos to address threats to birds on the Marianas islands through the Marianas Avifauna Conservation (MAC) Project. This project aims to breed threatened species and work to establish populations in the wild. The Aviary is home to several species involved in the project including the Saipan White-eye, the Golden White-eye, the Marianas Fruit Dove, and the White-throated Ground Dove.

Our very own Senior Aviculturist Brianna Crane has worked on the ground in the Marianas Islands to conduct research and lend her breeding expertise, particularly during her trip to the island of Rota in 2023, which we talked about in the last ***FlightPaths***.

While the Aviary sends Animal Care staff, like Brianna, abroad regularly, 2024 was the first time that we have sent an Educator to work directly with the island's education team. I had the pleasure and honor of being chosen for this inaugural trip! Educating the local community and staff is an integral component of a successful conservation program. It's crucial to inspire people who work within the environments of and with the birds directly to care for and protect their local species. It was an honor to work within these communities of people who have such deep understanding and connections to the species and their environment.

Katie Manion, Curator of Education in the Mariana islands; Photo courtesy of Joe Smith

The field program that we worked on this year involved the Saipan Reed Warbler, locally known in CHamoru as gå'ga' karisu, which is a **Critically Endangered** species threatened by the invasive Brown Tree Snake. Their habitat is made up of tall grasses and dense vegetation in both upland areas and wetlands. This was our first time working with this species. The Saipan Reed Warblers are very territorial and are often found in pairs rather than large groups. The project required small teams going to individual locations where pairs had been spotted rather than larger field sites. The team in Saipan spent time studying the birds and learning their specific needs and food preferences as well as banding some of the birds, all in preparation for a future translocation of the species to ensure survival. This is similar to what Brianna did in 2023 in Rota!

Due to the nature of these birds, the educational program for this year's MAC Project was different than previous years. Normally, school groups would be taken to the field sites and participate in various projects and observe the animal care experts. This year, group visits were not an option, so instead time was spent building community relationships and planning programs for future years. In order to find out more about the needs of the community, we met with officials from the Commonwealth Northern Mariana Islands Public School System and conducted strategic planning sessions for future education programs. This included discussing ways to involve groups from multiple islands in the project to be as inclusive as possible and provide equal opportunities for kids all throughout the commonwealth.

Top: *Members of the MAC Project inspecting a Saipan Reed Warbler*

Bottom: *Katie attending career fair at the MAC Conference; Photo Courtesy of Tiffany Evans*

I also attended the *Mariana Islands Conservation Conference* and networked with conservation scientists, educators, and community leaders and hosted a table at a career fair on behalf of the Aviary. In conjunction with the conference, the career fair helped students learn about work opportunities in local conservation organizations right there on the island. This allowed them to see that there were many opportunities to help conserve species right in their own backyard. Connecting the community with the local ecosystems and species that inhabit them highlights the direct link between the well-being of the community and birds like the Saipan Reed Warbler. Inspiring younger generations to continue the work being done to save species is the ultimate goal of education programs both in the Marianas Islands and at the National Aviary. ■

Support the National Aviary's local and international conservation efforts to save birds and protect their habitats.

Give Today!