

CONSERVATION UPDATE

SAN DIEGO ZOO
INSTITUTE FOR
CONSERVATION
RESEARCH.

LEADING THE FIGHT AGAINST EXTINCTION



MANGROVE FINCH SOS

Richard Switzer
Associate Director, Applied Animal Ecology

No one anticipated that a phone call early in 2014 would mobilize our team from San Diego Zoo Global to embark on an exciting new challenge, taking our expertise in bird-rearing techniques across the Pacific to the Galápagos Islands. Our mission: Join forces with the Charles Darwin Foundation (CDF) and Galápagos National Park in an effort to prevent the extinction of the archipelago's most critically endangered bird species.

The mangrove finch *Camarhynchus heliobates* is one of 14 closely related Darwin finch species found throughout the Galápagos and named in honor of naturalist Charles Darwin. But it also has the most limited distribution of any songbird on the planet. The entire population of 60 to 80 birds is now restricted to two tiny patches of mangrove forest on the west coast of Isla Isabela—a habitat fewer than 75 acres.

Michelle Smith/SDZG

FALL 2014

(Continued on page 2)



While islands may seem like paradise, the Galápagos has suffered from destructive species brought in by humans, such as black rats, that were having a major impact on the mangrove finch population. But once efforts had been made to control these, another culprit came along: an introduced botfly, *Philornis downsi*, was laying its eggs in the nests of finches and the voracious larvae were killing chicks!

We needed urgent measures to begin a headstarting program to help chicks survive the vulnerable nestling stage. After months of planning, we established an incubation and hand-rearing room at the Charles Darwin Research Station on Isla Santa Cruz. Meanwhile, our CDF partners were in the mangrove forest on Isabela, searching for wild nests. The first nest collections on February 2 resulted in 8 eggs and 3 newly hatched nestlings, which were installed in a portable incubator on the beach. The precious cargo was flown by helicopter across the spine of Isabela, over the ocean to the Research Station, where we established the eggs in incubators and started the chicks on the hand-rearing regimen—the first time mangrove finches had been managed in captive care. Two more nest harvest trips, later that month, yielded another 15 eggs.



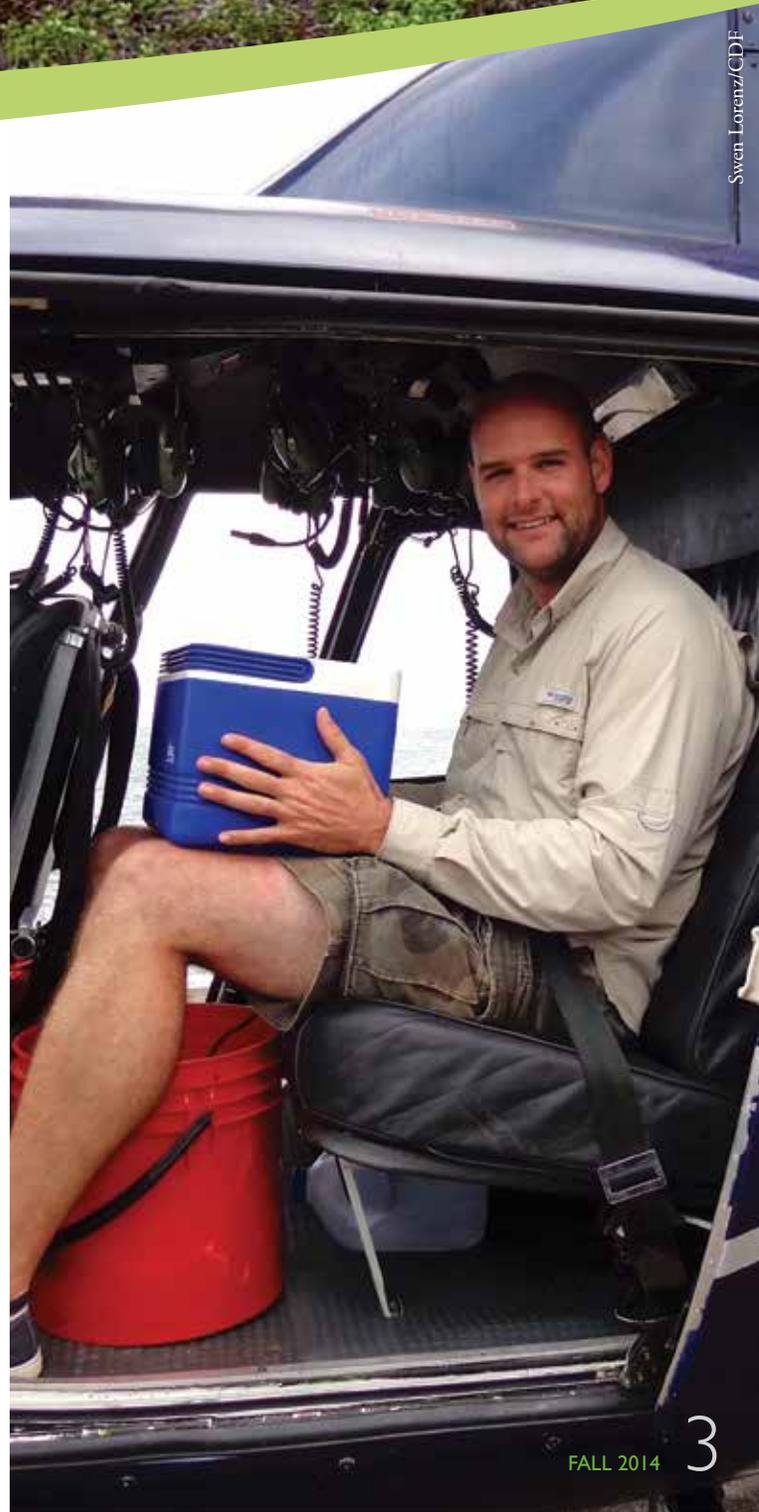
PLAYA TORTUGA NEGRA, OR BLACK TURTLE BEACH:

This remote field camp on Isabela was the base for all the nest collections and bird release activities.

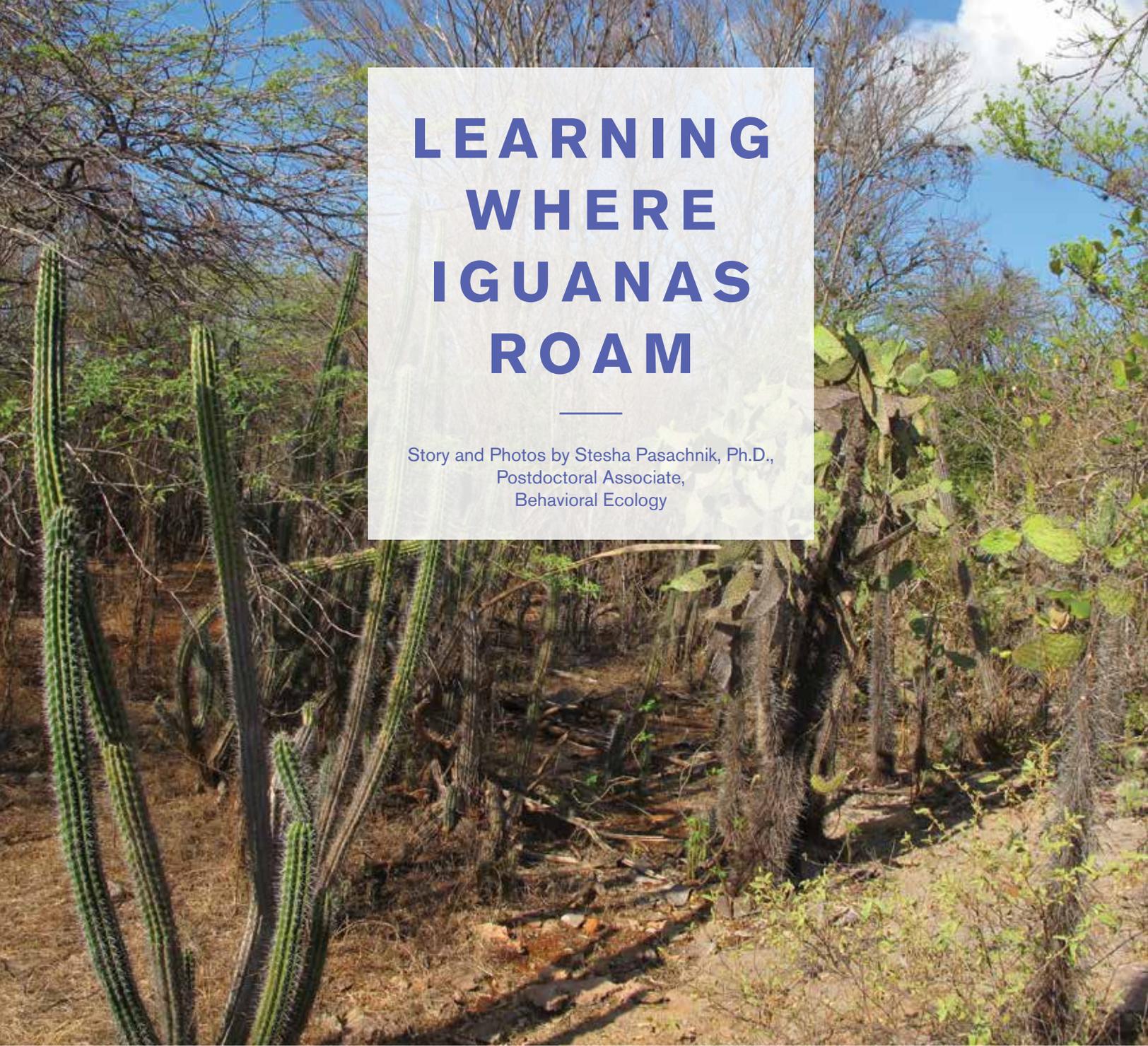
BELOW: Once eggs were carefully collected they were flown by helicopter back to the Charles Darwin Research Station for incubation. Beau Parks, senior keeper with the Zoo's Avian Propagation Center, holds the precious cargo.

Incubating eggs and hand rearing chicks in such a remote location led to problems—fortunately, we were well prepared! Simply finding the right food to feed the chicks required creative tactics, such as harvesting larvae from wild wasp nests or setting moth traps. Because of disease concerns, the chicks were raised under quarantine conditions. All our hard work was rewarded with the successful rearing of 15 fledglings.

On March 13, we transferred the first group of 7 fledglings back to Isabela, where they were established in aviaries in the heart of the mangrove; the second group joined them two weeks later. For a month, the youngsters acclimated to the forest and developed natural foraging behaviors. With celebration and anxiety, the first 7 birds were released on April 20, and the others were released soon after. Over the next four weeks, the team watched the birds return to the aviaries for food and tracked their movements using radiotelemetry. They adapted well to the forest and are doing well, although long-term monitoring will tell us whether these exciting new steps helped to save the mangrove finch. As we lead the fight against extinction, none of us want to lose finches on these islands where Charles Darwin began thinking about the origin of species nearly 200 years ago. 🌿



Swen Lorenz/CDF



LEARNING WHERE IGUANAS ROAM

—
Story and Photos by Stesha Pasachnik, Ph.D.,
Postdoctoral Associate,
Behavioral Ecology

Have you ever stared down an iguana? Looked right into its eyes, trying to figure out its next move? That's how my fieldwork with iguanas began 15 years ago, as I learned to capture critically endangered iguanas in The Bahamas. This was a life-changing experience that has had me island hopping throughout the Caribbean ever since, landing most recently in the Dominican Republic (DR).

When most people envision the Caribbean they think of postcard beaches and oceans. But there is much more to these islands, especially in the DR. Although it has beautiful landscapes, it also has complex ecosystems, including cool, cloud-covered pine forests and an inland lake that is below sea level. But it is the lowland tropical scrub forest, overflowing with cacti and jagged limestone, that defines the Caribbean for me and where I get a glimpse into the secret lives of iguanas.

Caribbean rock iguanas are among the most endangered lizards in the world, with some species reduced to a few hundred individuals because of habitat destruction, harvesting, and invasive species. These magnificent, large iguanas are also important contributors to their ecosystems as seed dispersers, which makes them a conservation flagship species throughout the Caribbean.

MEET A CONSERVATION RESEARCHER

Great strides have been made to preserve these animals and their habitats, but more research and management is needed to ensure their long-term survival.

Because the DR has two species of rock iguanas—a unique situation for these lizards—we want to understand how they successfully share their space and resources. Nearly halfway into a five-year project, we now focus on radio-tracking hatchlings so we can understand dispersal patterns from nests. For example, we hypothesize that one species inhabits the red clay areas, while the other prefers rocky limestone. This would reduce competition between species, allowing them to coexist.

Following the hatchlings' movements is made easier by attaching small (about 1 gram) radio transmitters to the base of their tails. We then try to record their location at least once per day, for the first few weeks of their lives. But remember that this is not the postcard Caribbean: this habitat has cacti, overgrown vines, and poisonous trees, often on top of jagged limestone cliffs. One wrong step and you find yourself stuck on your back in a cactus patch—sadly, I speak from experience!

Since the area is nearly impassable, we are working with University of California, San Diego, engineering students to develop a drone to track iguanas across this hazardous environment. Because this technology is still in the early development stages, we are searching for additional expertise and financial support to see this through and help us protect these spectacular animals. Without their presence, these islands will never be the same. 🌿

READ MORE:

Pasachnik, S. A., and R. Carreras De Leon. 2014. Trouble in paradise. *Reptile and Amphibian Conservation and Natural History* 21:1-8.



STESHA PASACHNIK, PH.D., BEHAVIORAL ECOLOGY

Most of my childhood memories include catching frogs and watching monarch butterflies emerge from their chrysalises. Later, I wanted to learn how to protect species, and one undergraduate experience changed my life forever. During my first year at Earlham College, I went on a spring break trip to The Bahamas to conduct field research with an iguana species found primarily on two tiny islands. As I caught my first iguana in the warm Caribbean sun, I knew this is what I would be doing for the rest of my life—I had found my passion!

During the past 15 years of working in iguana conservation, I have come to realize the importance of approaching conservation in a holistic way. Using aspects of ecology, genetics, and education to create programs in which both the biology of the species and the cultural heritage of the area are taken into account is key to finding sustainable wildlife management strategies. There is a real art to saving species, one that is not developed overnight and one that cannot be learned in a classroom alone: it means working on the ground, completely immersed in the environment and issues at hand.

Growing up in central New York and reading my way through long, cold winters, as well as joyously spending every minute outside in nature when spring hit, prepared me well for my career saving iguanas and learning all I can about them. It's challenging work and never, ever boring. 🌿



Protecting Paradise

Islands harbor a large portion of the world's biodiversity: many of Earth's most distinctive wildlife species call an island their home. Sadly, island species are especially vulnerable to extinction. While working to save the mangrove finches of the Galápagos Islands and Hispaniola's giant rock iguanas, we are also helping imperiled species on other key islands around the world. With your help, we can safeguard these unique island species and many others for future generations.

SAN CLEMENTE ISLAND, SOUTHERN CALIFORNIA:

We have been working for more than 20 years to bring the San Clemente loggerhead shrike back from the brink of extinction. Through our on-site rearing facility, we have successfully grown the wild population from 14 birds to a high of 179 breeding adults.



HAWAIIAN ISLANDS:

Hawaii's forest birds face many threats to their survival. Sadly, many have already been lost forever. In our breeding centers on the Big Island and Maui, we are rearing six species for reintroduction to the wild, including the iconic 'alala, or Hawaiian crow.



FIJI ISLANDS:

In our Genetics lab, we are shedding new light on the genetic relationships among Fiji iguanas in the wild. This gives us a more precise picture of diversity within this unique and endangered group of lizards and helps inform conservation management decisions.



MARIA ISLAND, AUSTRALIA:

Tasmanian devils suffer from a highly contagious facial tumor disease. Together with our Australian colleagues, we have created a disease-free population of Tassie devils on Maria Island that will one day be used to repopulate areas with healthy animals.



CARIBBEAN ISLANDS:

For close to two decades, we have worked to restore critically endangered iguanas to multiple Caribbean islands using a multidisciplinary approach, including headstarting, reducing predator numbers, and genetic monitoring. Our researchers have released over 175 Anegada iguanas (below) into protected areas and have translocated critically endangered Turks and Caicos iguanas to five protected islands.



ARCHIPELAGO OF FERNANDO DE NORONHA, BRAZIL:

Off the northeast coast of Brazil, we are studying limb malformations and other diseases in amphibians. By understanding what leads to health problems, we can design even more effective reintroduction strategies.

HONDURAN BAY ISLANDS:

On Roatan Island, we work hard to protect a native spiny-tailed iguana threatened by habitat loss and poaching. Through habitat mapping, we found this species lives on less than 1 percent of the island.



MADAGASCAR:

On the island of Madagascar, we are using camera traps to understand behavior and microhabitat use in 13 species of endangered Malagasy lemurs, including the little-known nocturnal aye-aye. Community education is an important cornerstone of our work.



Please consider giving to conservation research today. Together, we can make a difference!

Allison Alberts

Allison Alberts, Ph.D.,
Chief Conservation and Research Officer
San Diego Zoo Global

CONSERVATION RESEARCH GIFTS & GRANTS

The Institute for Conservation Research is grateful to the following for their investments in endangered species conservation:

Anonymous donors sponsored a summer learning program for local students and provided funds for the Conservation Education Lab. A grant from an **anonymous foundation** advanced our conservation and training work at the Cocha Cashu Biological Field Station in Peru. **Rose E. “Ronnie” Cook** made a contribution to provide classroom visits at the Conservation Education Lab. **Department of the Interior** funding for the San Diego National Wildlife Refuge Complex will provide teachers from San Diego and Los Angeles County schools with conservation science training, as well as enable them to bring their school groups to the Beckman Center for hands-on science learning. A grant from the **Disney Worldwide Conservation Fund** will benefit the endangered Guizhou snub-nosed monkey in the Fanjinshan National Nature Reserve in China. A grant from **Joan Embery, Duane Pillsbury, and the Embery Institute for Wildlife Conservation** will purchase a drone for use by the California condor reintroduction field team in Baja California, Mexico. **John S. Farnsworth** made a donation to support reintroduction of California condors in Baja. **Maureen K. Hamilton** supported ongoing efforts to conserve the endangered Przewalski’s horse. The **William H. and Mattie Wattis Harris Foundation** gave a grant to the Wildlife Disease Laboratories Division to investigate diseases affecting desert tortoises in the Mojave Desert. A gift made in loving memory of **Mitchell Jerome** will benefit cheetah breeding and bioacoustic research. A grant from the **Margot Marsh Biodiversity Foundation** will help the Central Africa program by garnering community support for the conservation of endangered primates in the Ebo Forest of Cameroon. A discretionary grant from **William May, Arnold and Mabel Beckman Foundation**, will provide “headstarted” iguanas with transmitters in the Turks & Caicos Islands. A grant from the **McBeth Foundation** will enable the Wildlife Disease Labs to purchase a thermocycler to test for chytridiomycosis, which is a major underlying factor in global amphibian population decline. The **McCarthy Family Foundation** gave a grant that will bring middle school science classes in San Diego County to the Conservation Education Lab for hands-on science investigations. **Clayton and Roxanne Sissons** made a gift to support African elephant conservation. A grant from the **John and Beverly Stauffer Foundation** will advance the research of the Genetics Division, benefiting several endangered species. The **Charles and Shirley Sykes Family** made a donation to support the efforts of the Molecular Diagnostics branch of Wildlife Disease Laboratories. **U.S. Bancorp Foundation** awarded a grant for San Diego County teachers to participate in Summer Teacher Workshops in Conservation Science. A grant from the **U.S. Fish and Wildlife Service–Great Ape Program** will assist in conserving gorillas and chimpanzees in Cameroon. A grant from the **Don and Marie Van Ness Fund** will assist the work of the Bud Heller Conservation Fellow in genetics studies. **WWF Switzerland** awarded a grant for a study of jaguar population density in the southwest Amazon region.



Shirley Sykes meets Daphne emu and Kathy Marmack, Animal Training Supervisor.



SUPPORTING OUR WILDLIFE DISEASE LABS

With help from two generous and dedicated San Diego Zoo Global members, Charles and Shirley Sykes, our Wildlife Disease Laboratories have grown significantly since 2000. When Chuck and Shirley were considering their next gift to us, Chuck had an epiphany: “Everyone is interested in warm and fuzzy, so let’s give to something else that needs help just as much.” This “something” became the Charles and Shirley Sykes Family Molecular Diagnostics Lab, which has thrived from their continued support. Although Chuck is no longer with us, his memory is strong in the Sykes lab, and Shirley continues to take an active role in supporting this work that is “so important and so unknown.”

A HELPING HAND FOR HAWAIIAN FOREST BIRDS

“We at the Moore Family Foundation support the Hawaii Endangered Bird Conservation Program because we were aware for so many years that native birds were headed for extinction, and we hope to help the few that are still with us to repopulate and recover.”

—Steven Moore, Executive Director, Moore Family Foundation



Puaiohi are just one of many songbirds that our research team with the Hawaii Endangered Bird Conservation Program has worked to breed and release back to the wild.

ZOOLOGICAL SOCIETY OF SAN DIEGO

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WILDLIFE WISH LIST: HOW YOU CAN HELP!

Our field research team all over the world relies on the generosity of donors to help achieve San Diego Zoo Global's vision to lead the fight against extinction. Below are Wish List items that can help us right now. If you are interested in funding any of these, or learning about other ways to help, please call 760-747-8702, option 2, ext. 5762, or email maleksic@sandiegozoo.org.

iPads for wildlife lessons – In China and Vietnam our team is introducing schoolchildren to wildlife-themed lessons that foster appreciation of local animal species. The perfect learning tool is a 32GB iPad Air with wifi. Cost: \$655 each



Field GIS and mapping studies – The iSXBblue II GNSS Receiver will help our team conduct sub-meter accuracy mapping in real time, with no need for post-processing, with our jaguar conservation program in Peru. Cost: \$3,300 each



Enrichment for rare Hawaiian birds – Our bird conservation centers on the Big Island and Maui need 600 feet of perching rope for species like 'alalas and puaiohi. These enrichment items help birds transition to the wild. Cost: \$1,900

Nikon Digital Sight Fi2 L3 Camera System – Looking at cells under a microscope will be much easier with this camera. Its touch screen monitor offers high definition images and helps us understand how environmental chemicals affect endangered species like condors and rhinos. Cost: \$6,930

Camera traps – A great noninvasive way to study wildlife that also helps save species. In Madagascar, camera trap data reveal lemur behaviors, and in Peru we observe Andean bears and jaguars to learn if they are thriving (5 per set/10 sets needed). Cost: \$1,000/set



Radio transmitters – Saving Caribbean iguanas has been one of our priorities for more than 20 years, including following juvenile iguanas after release by tracking their radio transmitters (5 per set/5 sets needed). Cost: \$1,000/set

CONSERVATION UPDATE

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