

CONSERVATION UPDATE

SAN DIEGO ZOO
INSTITUTE FOR
CONSERVATION
RESEARCH.

LEADING THE FIGHT AGAINST EXTINCTION



TRACKING WHERE THE WILD ONES ROOM

Tracking rare and elusive species in the wild has never been easy, as any field researcher will tell you. But just mention camera traps and you have pinpointed an evolving technology that has revolutionized fieldwork over the last 20 years. In Peru's Amazon, Institute ecologist Mathias Tobler, Ph.D., has installed one of the world's largest camera trap grids to monitor populations of jaguars, tapirs, and peccaries. These devices, which combine a digital camera with a motion sensor, automatically take photos or videos of animals passing in front of them—day or night, sun or rain, and for several months at a time. Now researchers can attach the camera trap, either at a tree's base or high up in the canopy—often after traversing difficult terrain—but at least they don't need to return within a few days to retrieve film.

David Haring/Duke Lemur Center

WINTER 2015

(Continued on page 2)

Cover photo: Diademed sifakas like this mother with her youngster are part of our camera trap field project in Madagascar. (Photo by David Haring/Duke Lemur Center)

Today, camera traps are being used to inventory and monitor mammals and birds around the world, discovering population numbers, range, and use of wildlife corridors or key resources such as water holes or mineral licks. They have helped discover several new species and confirmed the existence of highly endangered species such as the Sumatran rhino in areas where it was thought to be extinct.

San Diego Zoo Global is at the forefront of using this exciting technology in our research and conservation programs around the world. From the forests of China, Cameroon, Madagascar, and Peru to the deserts of California and northern Mexico, our research team has collected millions of photographs providing valuable data on endangered species and contributing to local education efforts.



Abwe Abwe (left) and Zacharie Bekokon set up video camera traps in Cameroon's Ebo Forest.

Bethan Morgan, Ph.D.



CAMEROON

Since 2009, our Central Africa Program team, headed by Bethan Morgan, Ph.D., has deployed video camera traps in the Ebo Forest, an area rich in biodiversity that includes monkeys, elephants, gorillas, and bird and antelope species. Like many wild places, it also faces threats from habitat loss and poachers, and camera traps are a valuable technology in our conservation toolkit.

Initially, the cameras were placed to detect little-known primate species, including the endangered Preuss's guenon that spends much of its time foraging on the forest floor. This video may also be a first for this species. Early results also included a spectacular series of films of a female

forest elephant, her young calf, and an enormous, single-tusked male. He returned to investigate the camera several times, even displaying and charging at it! Because there has been a devastating decline in forest elephant populations in Central Africa over the past decade, we now survey the entire Ebo Forest every four years to gauge our conservation successes.

There's more to come in 2015, as we plan to set up a temporary field camp southeast of Ebo, right on the elephant migration route. Here we can use a new series of acoustic detectors and cameras to monitor elephants in the area and implement conservation programs to protect them.



CHINA AND MADAGASCAR

San Diego Zoo Global is leading the fight against extinction in critical forest areas such as China's Fanjingshan Nature Reserve and Madagascar's Maromizaha region. We continue to find ever-increasing uses for camera traps, an innovative technology for documenting the behavior and habitat needs of wildlife species with small populations that range over fragmented areas or those sensitive to the presence of people.

On a field visit by Chia Tan, Ph.D., senior scientist, and David Rimlinger, San Diego Zoo curator of birds, one of our cameras recorded a rare glimpse of Elliot's pheasants and Tibetan macaques in the same forest patch (top middle and right). Some photos also showed the presence of poachers, so the data help us create effective strategies to lessen their impact on wildlife.

Our camera trap photos also proved that monkeys are active well into the night as well as during the day. While researchers are sleeping, camera traps are working 24/7, giving us an opportunity to peek into the secret lives of China's endangered Guizhou snub-nosed monkeys.

However, camera traps are only useful if properly installed. Madagascar's lemurs, like humans, have routes they habitually travel. Placing our cameras along these "arboreal highways" has yielded beautiful portraits like the image (below right) of two inquisitive brown lemurs. Our knowledge of lemur behaviors helps us maximize our camera trapping efforts. It also gives us an insight into nocturnal hunting habits, because predation is difficult to observe in the wild and virtually impossible in dense forests or at night.





PERU



South America's only bear species, the Andean bear, is getting much-needed conservation research attention because it is vulnerable to extinction. These camera trap photos of an Andean bear and her cub are from northwest Peru's tropical dry forest, where staff scientist Russ Van Horn, Ph.D., collaborates with the Spectacled Bear Conservation Society on conservation efforts. Now we can rely on these photos to give us important information about the bears' movements, food choices, and how mothers raise cubs.

For example, we've previously tracked how quickly cubs (of known birth date) grow in size relative to their mother. In this photo (top) the cub is about the

same distance from the camera trap as its mother was in the bottom photo. We can use this relative size to estimate how old the cub was when the photo was taken (about 163 days old) and calculate the cub's approximate date of birth (around September 5, 2012).

Using camera trap photos in this way, we've learned the bears in this population reproduce in synchrony, probably dependent upon fruit from the sapote tree. Since this tree is considered to be critically endangered in Peru, photos of bear cubs focus our attention on the urgent need to conserve this native plant species—the survival of this unique bear population may depend on it.



SOUTHERN CALIFORNIA

Our team is helping one of the smallest owls in the United States. Camera trap photos have provided invaluable data to help in the recovery of western burrowing owls in San Diego County.

Over the last two years, Lisa Nordstrom, Ph.D., associate director, and her team have used camera trapping to monitor nest burrows during breeding seasons, which gave us information about their reproductive success and foraging behaviors, nest attendance, feeding of chicks, and survival of banded owls.

Camera traps also help us determine how often prey are caught, types of prey preferred, and any other events that might affect them, such as people or other wildlife passing through their

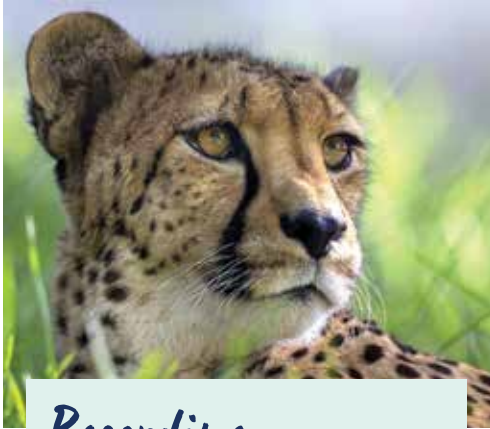
range. All of this information gives us a better understanding of factors that may affect the owls and how we can help recover this dwindling population.

Of course, capturing these photos is relatively easy, but processing thousands of photos can present a challenge! Each year, we have collected more than 1 million photos that need to be examined and recorded. Volunteers have been integral to this process, enabling us to quickly and efficiently extract this data. We definitely look forward to continue using camera trapping to learn more about this California Species of Special Concern and find ways to help conserve this diminutive species in our own backyard.



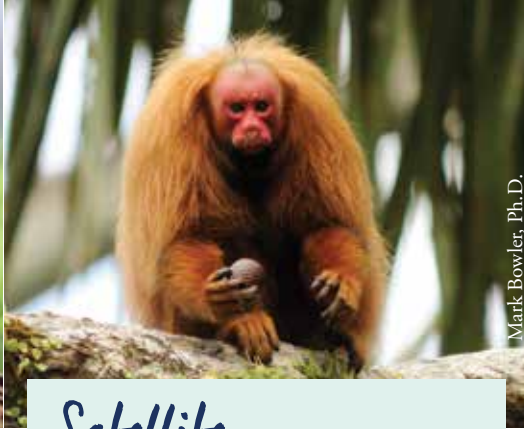
New Technologies Can Save Species

A whole new world has opened up to conservation scientists through advances in monitoring techniques. Because many animals avoid areas where people are present or mask their behavior when being observed, remote monitoring using new technologies is key to giving us a clearer picture of how endangered species are doing in the wild. Now, we can gain fresh insights into animal behavior, including how they use resources, where they range, and social interactions between species. It's also a useful tool in uncovering how poaching or noise pollution affect wildlife. Best of all, monitoring technologies give us data that accurately represent what life is like in the wild.



Recording Equipment

At a special breeding center, our research team uses sensitive recording equipment and microphones to listen to how cheetah vocalizations trigger breeding behavior.



Mark Bowler, Ph.D.

Satellite Photography

In the Amazon, high-resolution satellite photography gives us a bird's-eye view of canopy health, helping our scientists predict how animal movements across a large range are associated with certain plants.

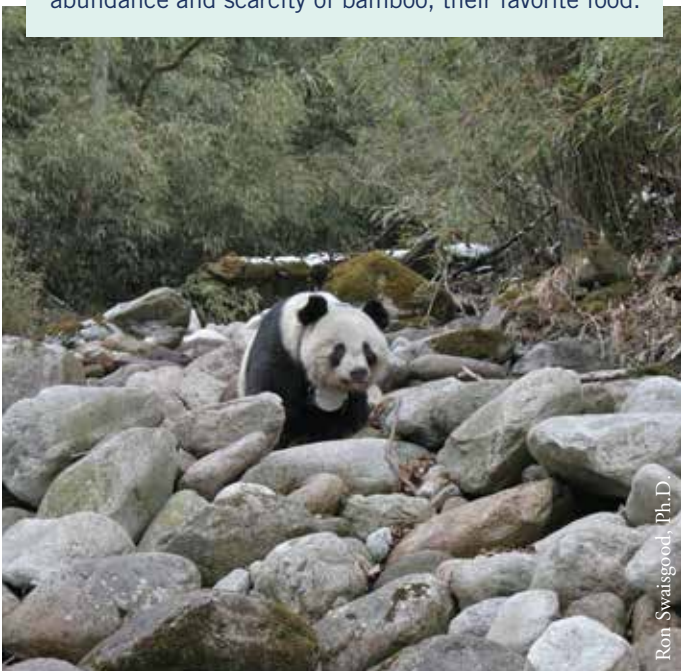


GPS Technology

Across the California-Mexico border, our researchers are using GPS signals and cell phones to create an early-warning system to protect raptors like condors from colliding with wind turbines.

Radio Collars

In China, radio collars on wild giant pandas allow us to follow them throughout their range, even into rough mountainous terrain, as they respond to periods of abundance and scarcity of bamboo, their favorite food.



Ron Swaisgood, Ph.D.

Radio Transmitters

At the Conservation Education Lab summer workshops, middle and high school teachers use radio transmitters to locate tortoise models in the Safari Park's backyard as they learn how remote monitoring helps endangered species conservation.



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

Allison Alberts

Allison Alberts, Ph.D.
Chief Conservation & 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:

Needed equipment for the Genetics Lab was purchased by an **anonymous donor**. The **Atherton Family Foundation** gave a grant in support of the Forest Guardians program in Hawaii, increasing awareness of rare Hawaiian forest birds and our efforts to repopulate them in their native habitat. The **Chester Zoo** contributed to the Forest Guardians program in Peru, where teachers and students learn about the sensitive habitat of the endangered Andean bear and ways to help protect it. The **Conservation International Primate Action Fund** contributed to a primatology workshop for the benefit of endangered leaf-eating monkeys. The **David C. Copley Foundation** gave a grant to enable more than 750 middle and high school students from Title I schools in San Diego County to participate in hands-on scientific research investigations in the Conservation Education Lab. **Walter and Erica Erhorn and her family** made gifts to support a portable scope for the Reproductive Physiology Lab as well as camera trap studies to protect jaguars in Peru. The **Escondido Charitable Foundation** gave a grant for students at Escondido middle and high schools to take hands-on science lessons at the Conservation Education Lab. A grant from the **Joan and Irwin Jacobs Fund of the Jewish Community Foundation** will allow teachers to participate in Summer Teacher Workshops in Conservation Science. The **Max and Yetta Karasik Family Foundation** gave a grant to support the recovery of endangered Hawaiian forest birds. **Nan and Gery Katona** established an endowment to support the efforts of the Conservation Education Division. A grant from the **Lakeside Foundation** will supplement funding for a fellowship in genetics research. The **Margot Marsh Biodiversity Foundation** gave a grant toward conservation of Madagascar lemurs, with an education component for community awareness. The **Kenneth T. and Eileen L. Norris Foundation** provided a grant for the entire 10th grade of the California Academy of Mathematics and Science in Carson, California, to attend Conservation Education Lab research modules. **Polar Bears International** completed their funding commitment for a cortisol research study through the Applied Animal Ecology Division. The **ResMed Foundation** gave a grant to allow San Diego County students to attend Conservation Education Lab research modules. A grant from the **Sahan Daywi Foundation** helped to advance conservation of endangered Andean bears. A gift made by **Janet Waters** will support conservation efforts to help polar bears in the wild.



Helping Ebo Forest's Primates

Tremendous strides have been made in conserving the biodiversity of the Ebo Forest in Cameroon, thanks to the generosity of the **Offield Family Foundation and the Arcus Foundation**.

Funding "Underdog" Projects

A lifelong animal lover, Walter Erhorn makes sure his philanthropy is a family affair. It's hard to visit any exhibit at the Zoo or Park without seeing **Walter and Erica Erhorn and her family** recognized on a donor plaque. Walt's main passion is for wildlife conservation, in particular what he calls "the underdog projects." One such "underdog" that needed rescuing this past year was jaguar ecology fieldwork in Peru. When unseasonable weather prevented our team from collecting vital camera trap data, Walter and the Erhorn family provided emergency funds to send the team back to the field. Without their help, we would have lost significant data and months of hard work. Although there is no plaque listing their name in the Peruvian Amazon, the Erhorn family has eternal thanks from the entire Institute staff, underdogs included!



ZOOLOGICAL SOCIETY OF SAN DIEGO

Development Department
Post Office Box 120551
San Diego, California 92112

Non-Profit Organization
U.S. Postage

PAID

San Diego, California
Permit Number 410

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 Maggie Aleksic at 760-747-8702, option 2, ext. 5762, or email maleksic@sandiegozoo.org.



W. Nai/Singapore Zoo

Camera traps – In Vietnam's Son Tra Nature Reserve, we use camera traps to study endangered red-shanked douc langurs and Asiatic black bears as well as other mammals and birds. We also monitor human activity in this protected area to reduce illegal exploitation of natural resources. **Cost: \$750/set (2 sets needed).**



Remote monitoring cameras and memory cards – The diminutive Pacific pocket mouse was thought to be extinct until a small population was found in Orange County. Since then, we have worked to breed this species and reintroduce it to the wild. These cameras will help us keep track of reintroduced populations in coastal Southern California. **Cost: \$680 each (10 needed).**

High-performance spotting scope – Burrowing owls are not your typical owl, as they are active during the day. One of the smallest owls in North America, they use burrows for nesting that are created by mammals such as ground squirrels. Help us keep an eye on them in San Diego County's grasslands with a new spotting scope. **Cost: \$2,995.**



Satellite transmitters and wing tags – In the remote mountains of Baja California, Mexico, our scientists are working to reintroduce the endangered California condor to the wild. Each condor released is fitted with a GPS satellite transmitter attached to its wing tags. A cornerstone of our reintroduction program, these transmitters let us know how condors travel, where they nest, and when they interact with other birds. **Cost: \$3,500 per transmitter, wing tag, and data feed (8 sets needed for 2015 releases).**



CONSERVATION UPDATE

EDITOR

Mary Sekulovich

SPECIAL THANKS TO CONSERVATION UPDATE CONTRIBUTORS

Allison Alberts, Ph.D.
Maggie Aleksic
Karyl Carmignani
Georgianne Irvine
Judy Kinsell
Bethan Morgan, Ph.D.
Lisa Nordstorm, Ph.D.
David Rimlinger
Chia Tan, Ph.D.
Mathias Tobler, Ph.D.
Russ Van Horn, Ph.D.

GRAPHIC DESIGN

Kara Bigelman Eganhouse

PHOTOGRAPHS/ ILLUSTRATIONS

Ken Bohn, SDZG Photographer
Mark Bowler, Ph.D.
David Haring/Duke Lemur Center
Bethan Morgan, Ph.D.
W. Nai/Singapore Zoo
Ron Swaisgood, Ph.D.

SAN DIEGO ZOO
INSTITUTE FOR
CONSERVATION
RESEARCH