



# SavingSpecies™

VOL. 2 | 2019

SAN DIEGO ZOO GLOBAL

INSTITUTE FOR CONSERVATION RESEARCH

Community Engagement  
Partnering for Conservation Solutions

While people have caused many of today's conservation challenges, they are also the driving force behind past and present conservation solutions. Engaging community support has never been more important.





*“The more years I spend working in this field, engaging with community members on the causes of species decline, the more it solidifies my belief that conservation is inherently a human issue.”—MAGGIE REINBOLD*

## ENGAGING COMMUNITIES

\\ Allison Alberts, Ph.D., Chief Conservation and Research Officer

At San Diego Zoo Global, we believe that engaging people is the cornerstone of any successful conservation endeavor. In this issue, you will explore how we are working together with people of all ages, locally and globally, to learn from each other and nurture a shared passion for becoming the best possible stewards of wildlife.

Young people everywhere possess a sense of curiosity about nature that, if encouraged, can turn into lifelong advocacy. As part of our mission to save species from extinction, we seek to grow and sustain a deep sense of stewardship for all life on Earth. Our new reimagined Denny Sanford Children’s Zoo is designed to build lasting connections to the natural world for our youngest visitors. Our Conservation Education and Outdoor Learning Labs are inspiring middle and high school students to use science to solve real-world conservation problems. Our partnership with Miami University helps implement its Advanced Inquiry Program (AIP) leading to a master’s degree, which is helping graduate students find their purpose as members of the global conservation community.

We also focus on teachers—not only traditional classroom teachers but educators in the broadest sense of the word. We have learned through experience that people who have chosen to devote their lives to sharing knowledge with others can be our most powerful advocates for positive societal change. Whether working with a U.S.-based high school teacher or an environmental interpretation specialist from another country, our goal is to engage learners everywhere by using innovative and authentic methods that can be replicated to extend our reach thousands of times over.

Join us on the front lines of conservation, traveling all the way to northern Kenya, where we work side by side with community conservancies to understand traditions, honor and appreciate local knowledge, and co-develop solutions to the conservation challenges they face on a daily basis. Ultimately, it is by encouraging diverse voices, finding common ground, and working with shared purpose that we will make a lasting difference for wildlife.

### HOW YOU CAN HELP

Our field research teams all over the world rely on the generosity of donors like you to help achieve San Diego Zoo Global’s vision to lead the fight against extinction. To learn ways you can help, please call Maggie Aleksic at 760-747-8702, ext. 5762, or email [maleksic@sandiegozoo.org](mailto:maleksic@sandiegozoo.org).

### ON THE COVER

The Sarara Camp Orphanage in Kenya’s Namunyak Conservancy cares for young reticulated giraffes that have lost their mothers. After rejoining their groups, some calves have returned to greet *Twiga Walinzi* (Giraffe Guards) like Lexson Larpei.

## WITHOUT PEOPLE, THERE’S NO SAVING SPECIES

\\ Maggie Reinbold, Director, Community Engagement

I’ll never forget Annie Buchwald. She had been a dedicated and effective science teacher in San Diego County for many decades before attending one of our Teacher Workshops in Conservation Science. Like many of our workshop participants, Annie was tremendously passionate about her work, but she had also become run down with the ongoing pressures and lack of support that most teachers face on a daily basis. As she thanked her sponsoring donor at the end of the workshop, she broke down in tears as she tried to articulate what the experience had meant to her. Spending those immersive days with our team and with devoted educators from around the world had completely reinvigorated Annie for her calling as a science teacher. The experience had firmly reminded her of the importance of her efforts and her critical role in the fight against extinction. This memory, and many others like it, is why we do this work.

Our team focuses on building skills and motivations that produce positive outcomes for people and wildlife; we work on driving conservation action through science education and community collaborations. Our student-centered efforts focus on building skills and understanding around contemporary conservation issues, often coupled with opportunities to deploy those acquired skills in the field, in local open spaces and reserves. Our teacher-centered efforts connect educators here and abroad to innovative content, hands-on experiences, and instructional strategies for effectively engaging students in conservation action. And our community-centered efforts focus on leveraging local knowledge

and shared priorities to co-generate solutions that produce positive conservation outcomes.

But the conservation landscape did not always look this way. The conservationists of past years arrived in communities with the message of “Step aside—we’re here to save wildlife!” Not only did that message treat community members as separate entities from the wildlife around them, it also discounted the preexisting knowledge and practices that had been cultivated in those communities for many years, even millennia. We now openly acknowledge that communities must be actively involved in the generation of conservation solutions that can succeed in producing positive outcomes for both people and wildlife. We also recognize that building understanding and awareness alone is not sufficient to effectively fight extinction. We must strive to make positive conservation action the expected norm in communities worldwide.

The more years that I spend working in this field, engaging with community members on the causes of species decline, the more it solidifies my belief that conservation is inherently a human issue. People have caused the vast majority of the conservation challenges that we now face—but that is only half the story. People are also the driving force behind past, current, and future conservation solutions. As we face unprecedented loss of global biodiversity and worldwide degradation of the natural environment, recognizing the importance of people for conservation success has never been more important. Honoring this will enable us to save the species we cherish.



# GLOBAL IMPACT

\\ Jenny Glikman, Ph.D., Associate Director, Community Engagement

Many individuals, foundations, corporations, and others have generously funded our work to foster the ecological literacy, stewardship, and understanding needed to support species conservation and coexistence between people and the natural world. We are also fortunate to work alongside dedicated partners as we forge solutions to the world's most intricate conservation challenges. In fact, our work to engage communities in the fight against extinction is reliant on trusting relationships. Below are some of our key partners:

ACCA—Peru (Asociación para la Conservación de la Cuenca Amazónica)  
ACEAA—Bolivia (Asociación para la Conservación e Investigación de Ecosistemas Andino Amazónicos)  
Animals Asia  
Free The Bears  
Giraffe Conservation Foundation  
Lewa Wildlife Conservancy  
Loisaba Conservancy  
Namunyak Wildlife Conservation Trust  
The Nature Conservancy-Africa

Northern Rangelands Trust  
Oxford Martin School, University of Oxford  
Project Dragonfly at Miami University (Oxford, OH) and associated informal learning institutions  
U.S. Fish and Wildlife Service  
Volcano Charter School of Arts & Sciences, Hawai'i  
Wildlife Conservation Research Unit (WildCRU), University of Oxford  
WWF Peru



## HAWAII

The 'āla'ā is endemic to Hawai'i Island and is one of the most critically endangered birds on the planet. It not only plays a key role in regeneration of native forests but also has major significance in Hawaiian culture as an 'aumakua (family god or ancestor).

With efforts to reestablish wild populations of 'āla'ā currently under way, the support and understanding of local communities will be critical to its successful recovery. We are partnering with Hawai'i Island science teachers to provide local students with opportunities to examine firsthand the ecological and cultural significance of this iconic species as well as share their discoveries with the broader community.



## PERU

In the Peruvian Amazon rain forest, local communities have been sharing the landscape with jaguars, giant otters, and other species. We are supporting Population Sustainability and Recovery Ecology teams to understand local residents' perspectives on improving their coexistence with wildlife.

Specifically, we are assessing communities' attitudes and knowledge of jaguars and giant otters, as well as perceptions of human land use and impact from activities like Brazil nut harvesting, wildlife hunting, and illegal gold mining.

Curriculum was designed to support local teachers and evaluate the impact of education activities at our Cocha Cashu Biological Station in Manu National Park.



## BOLIVIA

A growing illegal wildlife trade in jaguar parts threatens jaguar conservation efforts in the Bolivian Amazon. In 2017, we started a collaboration with ACEAA-Conservación Amazónica, a Bolivian NGO, to examine local community attitudes, knowledge, and beliefs toward jaguars. Since then, our research has focused on potential solutions with residents that will reduce jaguar killings and also create an assessment of the role of predator body parts in the illegal wildlife trade. Recognizing that fear and dread of the big cat are closely linked to jaguar killings, we are engaging with school teachers to increase awareness and reduce fear of jaguars.



## KENYA

In northern Kenya, people and livestock live alongside wildlife in savanna grassland and bush habitats. Sometimes the actions of people or the behavior of animals can negatively impact the other. We are working to find ways for people and wildlife to coexist in these spaces. We are training and conducting social science research to understand pastoralists' attitudes, beliefs, values, and behaviors. The results help us work with communities to develop strategies and interventions to improve human-wildlife interactions. In addition, we share the conservation messages at community gatherings and festivals, deliver outreach materials, and increase access to education in local schools.

## SOUTHEAST ASIA

Throughout Southeast Asia, wildlife species are disappearing rapidly, often because of the widespread consumption of animal products used for medicine throughout the region. We work primarily to understand the use of products made from sun bear and moon bear body parts in Cambodia, Laos, and Vietnam, with the ultimate goal of reducing demand for these products. We collaborate with Free The Bears and other organizations to train and conduct social science research in each country to understand who uses these products, which products they primarily use, and why they use them. This information has helped us design and pilot a behavioral change intervention in Cambodia.





The Teacher Workshops in Conservation Science have been a key Institute program since 2006. Through these workshops, more than 1,500 middle and high school teachers have learned about wildlife conservation and shared the curricula with more than 1 million students across 50 states and 20 countries.

This year, Anne and Barry Munitz made the largest education-focused endowment gift in our organization's history, so we can continue to share this program with more teachers than ever. We are proud to establish the Munitz Academy for the Teaching of Science (MATS), with the Teacher Workshops as a hallmark program. Through this new Academy, we will continue to grow while bringing exciting and innovative science curricula to millions more students throughout the United States and around the globe.

**1,500+**  
teachers have  
attended our Teacher  
Workshops in Conservation  
Science, impacting over  
1 million students  
worldwide!



*“Our goal in working with teachers, students, and other community members is to ignite passion for wildlife and help fight extinction worldwide.” —JOSIE BLUE*

## GOING BEYOND THE CLASSROOM

\\ Josie Blue, Senior Research Coordinator, Community Engagement

It was an atypical morning as my colleague and I sat in our office telecommunicating with a young student named Gauri. She was poised, polite, and professional at the front of her classroom as her peers eagerly watched her interview us on screen. Gauri was in 6th grade, learning and practicing real-life skills in front of her classmates in Michigan. Her teacher, Mr. Cottone, had attended one of our Teacher Workshops in Conservation Science during the previous summer. Every year he challenges his students to go beyond the classroom by getting them involved in their communities, and after attending our workshop, he was inspired to reach out so we could join that endeavor.

The path that led us to Mr. Cottone and his students began back in 2006 when we hosted our inaugural Teacher Workshop with a dozen local high school science teachers. Now, 13 years later, we have built a comprehensive, multidisciplinary program that has engaged over 1,500 educators from all 50 states and 20 countries, all at no cost to participating teachers. Much like Mr. Cottone's students are reaching beyond the classroom, we have taken our workshops on the road to Michigan, Hawai'i, West Virginia, and Kenya. We feel strongly that teachers are critically important community stakeholders and vital in shaping future generations. To date, our workshop alumni have impacted more than 1 million students with the tools we provide.

Our Conservation Education Lab (CEL), located at the Arnold and Mabel Beckman Center for Conservation Research, not only supports

educators, it also engages more than 5,500 middle school, high school, and undergraduate students each year through our Exploring Conservation Science field trips. Students and their teachers visit from all over Southern California to learn about real-world challenges through hands-on experience with conservation science methods and technologies. Our curricular modules focus on iconic species like the polar bear, African elephant, California condor, and desert tortoise.

In addition to the CEL, we also maintain an Outdoor Learning Lab that supports conservation of plant and animal species from critically endangered coastal sage scrub habitat, bringing environmental education to the forefront. This year we piloted a new program called Save Our Species (SOS) in partnership with sixth grade teachers across Escondido and the Escondido Creek Conservancy. SOS gives students the opportunity to learn about their native ecosystems, develop research questions, carry out investigations, spend time in nature, and develop a conservation-related project. All of our modules follow a similar format: students explore the plight of a particular species, work with new research techniques, evaluate current threats, and consider what actions they can take to help.

Our goal in working with teachers, students, and other community members is to ignite passion for wildlife and help fight extinction worldwide. We couldn't do it without hard-working educators like Mr. Cottone, who train and inspire students every day and help us to save species!





**62,000**  
students benefited from Zoo assembly and classroom projects

**35,500**  
students participated in the Price Family Watershed Heroes Program



# ANNUAL EDUCATION HIGHLIGHTS

**16,000**  
students were "wowed" by the Zoo's Second Grade Program

**100**  
innovative program choices at the Zoo and Safari Park

**210,000**  
students visited and attended special youth programs

## IMAGINING NEW WORLDS

Imagining and then creating a bridge between technology and the natural world is behind a complete redesign of the new Denny Sanford Children's Zoo at the San Diego Zoo. This enchanting corner of the Zoo, which debuts in 2021, will offer new ways to play and discover natural wonders as kids connect with tiny animal worlds that fascinate them: they will see like a bug with insect vision, crawl through a tunnel like a naked mole-rat, and become part of a giant beehive through a large video feed. Habitats from deserts to wetland marshes and forests will set the stage for kids to wade in a stream, crawl in a cave, or climb in a tree house. Children will meet animal ambassadors with their handlers and learn that every kind of animal and plant has its own valuable role in nature.





# ADVANCED INQUIRY PROGRAM: ECHOING OUR ROAR

\\ Mackenzie Borau, Ph.D., Associate Director and Graduate Programs Adviser, Community Engagement

I recently had a conversation with a friend who is an elementary school teacher. She was brainstorming ideas for setting up her classroom and decided on the theme, “Who do you want to be?” Her idea was to encourage kids to recognize that they can shape the person they will become through their interests and actions—kind, compassionate, neighborly.

Flash forward: It’s the first day of class for a new cohort of anxious but eager graduate students in the Advanced Inquiry Program (AIP). Within the context of nature and conservation, I ask, “Who do you want to be?” The answer is sometimes more difficult to articulate as adults than it was when we were children. While many of us can visualize big picture ideals such as “living in harmony with nature,” the path to get there and our perception of the role we play may not be clear. We can all be powerful agents of social and ecological change by taking collective action on issues for which we share passion and engagement—and AIP is designed to guide us on that journey.

The Community Engagement team designs hands-on experiences for AIP students to share the innovative approaches we use at San Diego Zoo Global to address current conservation issues. In project-focused classes delivered in partnership with Miami University (Oxford, Ohio), students personalize their goals by building the knowledge and skills to explore the natural world with their community. The idea of “community” differs for each student, ranging from K-12 students to neighbors to colleagues with shared research interests. By addressing issues in individually meaningful and collaborative ways, students find clarity regarding “who they are.”

To date, we have trained more than 175 AIP students working in a variety of education and industry settings. They extend our reach as an organization, inspiring in themselves and others a strong sense of stewardship and a concrete plan to take action for the conservation of the local land and species that we love.

*“This program honed my identity as a conservationist, empowering and inspiring me to act on my knowledge.” –BENJAMIN ROLLAND (AIP GRADUATE, 2018)*





## LISTENING TO DIFFERENT VOICES: ENGAGING WITH COMMUNITIES AROUND THE WORLD

\\ Kirstie Rupert, Researcher, Community Engagement

In northern Kenya's Namunyak Community Conservancy, I stood in a clearing of acacia trees as the sun set over the Mathews Range and I reflected on a daylong festival for giraffes with the local Samburu community. I watched as local chiefs and leaders gave speeches about the importance of conservation, women's groups and school clubs performed with song and dance for giraffes, and the *Twiga Walinzi* (Giraffe Guards)—a group of 13 local research scouts—shared stories about their work and findings with their community. At one point, I spoke about how honored we are at San Diego Zoo Global to support them as they protect their giraffes. That day, I witnessed a celebration of pastoralist culture, wildlife, and the land they share together. This gathering was distinctively local, yet everywhere in the world, the future of many species will be determined by the people who live alongside them.

On our Community Engagement team, and more broadly at San Diego Zoo Global, we believe that conservation projects can both reduce threats to species and respond to the needs and interests of local communities. This approach, called community-based conservation, recognizes that people are not separate from nature. It places value on local knowledge about wildlife and the environment, and emphasizes the role and capacity of local community members to manage their conservation programs.

An important component of our community-based conservation approach is conducting social science. Through human dimensions research, we can better understand the ways that people interact with wildlife. Knowing how people feel about wildlife informs the design of community engagement efforts. Everywhere in the world, people's thoughts, feelings, and behaviors will differ across communities and environments. Human dimensions research helps us understand this diversity of perspectives, so that conservation programs can be tailored to location and audiences as diverse as high school students, community leaders, or those who use wildlife parts.

San Diego Zoo Global is working with pastoralists and other conservation partners in Kenya's northern rangelands, with our community-based conservation efforts underpinned by both research and engagement initiatives. We study pastoralists' attitudes and beliefs about giraffes as well as behaviors related to the use of giraffe parts. This information has been integrated into conservation messaging that the *Twiga Walinzi* deliver to build pride for their reticulated giraffes. Because giraffes are tolerated by local communities, encouraging pride is an effective avenue for giraffe conservation in these areas.

However, not all wildlife species are always viewed in a positive way. While working on our human-giraffe



**DID YOU KNOW?**  
Conservation in Kenya is a true community endeavor, which includes protecting their livestock as well as local wildlife that share the land with them.



*"This gathering was distinctively local, yet everywhere in the world, the future of many species will be determined by the people who live alongside them."* —KIRSTIE RUPPERT

dimensions study, we repeatedly heard about the challenges that community members face from living with their livestock alongside carnivore species. From this finding, we began a leopard conservation program to better understand human-leopard interactions and learn about leopard ecology. After collecting data on patterns of human-leopard conflict, we now work together with herders to test strategies—such as boma (corral) reinforcements and predator deterrents—to learn how they can best protect their livestock

and how community engagement efforts can increase local tolerance for leopards.

Collaboration with communities is what drives each of these initiatives forward, in an effort to represent different voices and value the deep knowledge and skills embedded at the local level. Through this community-based conservation approach, we are working toward a more peaceful coexistence between wildlife and people, all part of our goal to end extinction.



# CONSERVATION ACHIEVEMENTS

## HONORS AND AWARDS

The San Diego Zoo Global Library & Archives and the Center for Plant Conservation jointly received a **Collection Preservation Assessment Program Award** from the California Preservation Program.

Trinity College Dublin graduate student **Andrew Mooney** was awarded a Fulbright Scholarship to work with the Conservation Genetics and Biodiversity Banking teams to identify priority species for cryobanking cell cultures.

**Maggie Reinbold**, Director of Community Engagement, was appointed to a four-year term as Commissioner on the San Diego County Fish and Wildlife Advisory Commission.

**Dr. Gabriel Miller**, Senior Scientist in Population Sustainability, was appointed as a Visiting Scholar at Parsons School of Design, where he is co-teaching a graduate course on how design and technology can address biodiversity loss and inspire empathy.

## HIGHLIGHTED PUBLICATIONS

The fight to end extinction happens on a variety of fronts. Our San Diego Zoo Global conservation scientists and researchers work to lead this fight in every capacity, whether studying the smallest cells or working with the largest animals. From studying how to resolve human-wildlife conflicts, to increasing the role of social marketing in biodiversity conservation, to understanding how to decrease the demand for bear parts in Cambodia, here's what we've published lately:

Frank, B. F., **J. A. Glikman**, and S. Marchini. 2019. *Human-Wildlife Interactions: Turning Conflict into Coexistence*. Cambridge University Press, Cambridge.

This book explores a variety of theories and methods currently used to address human-wildlife interactions, illustrated by case studies from around the world. It presents key concepts in the field and a variety of insights and solutions to turn conflict into coexistence, including conservation marketing, incremental and radical innovation, strategic planning, and socioecological systems.

**Verissimo, D.** 2019. The past, present, and future of using social marketing to conserve biodiversity. *Social Marketing Quarterly* 25(1): 3–8.

One area receiving very limited attention in the social marketing literature has been biodiversity conservation, despite a history of practice beginning in the 1940s. This editorial reflects on the history of social marketing in biodiversity conservation, the current challenges it faces in emerging as part of the social marketing community, and the obstacles that will need to be overcome to ensure its relevance into the future.

**Davis, E. O.**, B. Crudge, T. Lim, **D. O'Connor**, V. Roth, M. Hunt, and **J. A. Glikman**. 2019. Understanding the prevalence of bear part consumption in Cambodia: A comparison of specialized questioning techniques. *PLOS ONE* 14(3): e0214392.

Use of bear products is a sensitive issue, with individuals reluctant to admit to using bear parts, possibly due to concerns over illegality or worries about being criticized by others. In Cambodia, our team used innovative questioning techniques designed to overcome such issues. They have found that bear products are in demand by as much as 20 percent of the population.

Note: San Diego Zoo Global staff names are bolded above.

## PHOTO CREDITS:

Getty Images: p. 4 giant otter, wrangel/iStock/Getty Images Plus; p. 4 jaguar, tane-mahuta/iStock/Getty Images Plus; p. 14-15 giraffe and landscape, Shams/iStock/Getty Images Plus; p. 16 red ruffed lemur, Enjoylife2/iStock/Getty Images Plus.





# WHAT'S News



## RECOVERY ECOLOGY

In Peru, we collected critical environmental data, including fish samples, water quality metrics, and drone images, to quantify lake habitat destruction by illegal mining activities.



## PLANT CONSERVATION

We visited historical sites between Tijuana and San Quintín, Mexico, to study and preserve rare cross-border plants, including Otay Mountain buckbrush, Mexican flannelbush (pictured), and San Diego ambrosia.



## POPULATION SUSTAINABILITY

Eleven red ruffed lemurs in Madagascar's Masoala National Park were given health checks and fitted with radio collars as part of our monitoring efforts for this critically endangered primate.



## CONSERVATION GENETICS

Results from a high-quality, whole genome sequence of the critically endangered Sumatran rhino indicated there are likely fewer than 80 individuals remaining.



## REPRODUCTIVE SCIENCES

We successfully isolated full-length gene sequences for estrogen receptors from black rhinos, the first time estrogen receptors have been identified and cloned in this species.



## DISEASE INVESTIGATIONS

We tested eastern spadefoot toad samples from the Hebrew University of Jerusalem as part of new screening procedures for a captive-breeding population destined for reintroduction.



## COMMUNITY ENGAGEMENT

Through the Wildwatch Kenya school challenge, 280 students classified more than 300,000 trail camera photos, helping us study and conserve giraffes, leopards, and other species.



## BIODIVERSITY BANKING

Recently, 57 new cell lines were accessioned into the Frozen Zoo®, including 8 from species not previously represented in our collections, such as the Sambava tomato frog.

# SavingSpecies™

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ISSN: 2578-5346

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