At the Saint Louis Zoo, we not only care about the conservation of animals, but also the conservation of the environment. That's why this report is printed on 10 percent post-consumer recycled content.
Our Goal
is to help create a sustainable future for wildlife and for people around the world.

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Overview

At the Saint Louis Zoo, we are dedicated to caring for animals. We care about animals here at the Zoo, and we care about their wild counterparts around the world — many of which are threatened by shrinking habitats, disease and poaching. Our commitment to saving endangered species and their habitats is exemplified through the work of the Saint Louis Zoo WildCare Institute.

The WildCare Institute, with the support of its partners, takes a holistic approach to troubled ecosystems by addressing three key pillars in conservation success:

Wildlife management and recovery
Conservation science
Support of the human populations that coexist with wildlife
Dear Friends,

I am writing this letter with mixed emotions. This is the last annual report for which I will be writing an introduction as Executive Director of the Saint Louis Zoo WildCare Institute. I have retired as of April 2019.

The WildCare Institute is my professional passion, although I will continue to contribute to conservation in other ways after retirement.

I am thrilled how far we have come in the past 15 years. The WildCare Institute was launched in 2004 with an incredibly generous $19 million commitment from the Zoo Friends Association (now the Zoo Association). Additional support also came from the ridership proceeds of the Mary Ann Lee Conservation Carousel (over 5.4 million people have ridden the Conservation Carousel since 2003). Although some initially wanted us to focus on a single conservation initiative, the best thing we did was ask each curator, researcher and veterinarian what conservation issues mattered to them the most.

In some ways, the mix of projects is analogous to a stock portfolio. Some centers tackle more high-risk conservation issues, often in politically unstable areas, but worth doing all the same. Others are in more stable sites, like here in Missouri. I wish I could say that it was by design that one-third of our programs are Missouri-based, but in reality, it came from staff interests. Local conservation efforts are very important to me. Growing up in southern Ohio, I was taught—incorrectly—that ecology was something that happened in the Serengeti, not the foothills of the Appalachian Mountains.

Another critical role of the WildCare Institute is the commitment to connect local communities to their wildlife. Children in Kenya, Madagascar and Nicaragua have better futures because of the WildCare Institute, and hopefully they have a better appreciation of the animals in their own “backyard.” I believe that a conservation equation without local people is doomed to failure, and one with them markedly increases the chances of long-term success.

A second basic tenet of the WildCare Institute is collaboration. I am proud that we have over 100 partners locally, nationally and internationally (we have partners on six continents).

Conservation in the world of today is complicated. Climate change affects every species on the planet. It is easy to feel hopeless, even despondent. However, the WildCare Institute has offered a way to deal with these critical conservation issues with small, achievable steps, in which we can identify our successes (and yes, sometimes our failures).

In closing, I want to thank each center director and the Assistant Executive Director of the WildCare Institute, for they are the people who have made the WildCare Institute what it is today. Finally, I would like to thank Director Emeritus of the Saint Louis Zoo, Charlie Hoessle, who first allowed me to pursue my passion for conservation, as well as the current administration that has supported it. And I would like to thank Dr. Jeffrey Bonner, Dana Brown President & CEO of the Zoo, who spearheaded the creation of the WildCare Institute.

With the help of our generous supporters, I believe our future is bright. I look forward to following the continued success of the WildCare Institute as it continues to evolve as a force for species preservation.

Sincerely,

R. Eric Miller, DVM, DACZM, DECZM (Hon.)
Executive Director
Saint Louis Zoo WildCare Institute
Animals supported by WildCare Institute Centers

- Polar Bears
- Box Turtles
- Snapping Turtles
- Hellbenders
- Ecuadorian Amphibians
- Galapagos Birds, Tortoises
- Humboldt Penguins
- Andean Bears
- Mountain Vipers

Animals supported by Conservation Programs funded by the WildCare Institute

- Pollinators
- American Burying Beetles
- Box Turtles
- Snapping Turtles
- Hellbenders
- Ecuadorian Amphibians
- Galapagos Birds, Tortoises
- Humboldt Penguins
- Andean Bears

- Mountain Vipers
- Pacific Island Birds
- African Carnivores
- Camels
- Grevy’s Zebras
- Black Rhinos
- Orangutans
- Asian Elephants
- Anoa, Babirusas, Bantengs
- Tasmanian Devils
- Partula Snails

- Chimpanzees
- Gorillas
- Okapis
- Andean Bears
- Mountain Vipers
- Pacific Island Birds
- African Carnivores
- Camels
- Grevy’s Zebras
- Black Rhinos
- Orangutans
- Asian Elephants
- Anoa, Babirusas, Bantengs
- Tasmanian Devils
- Partula Snails
American burying beetles are known as “nature’s recyclers” because they eat carrion (dead animals) and release decomposing components back into the environment. American burying beetles have been declining; reasons for this may include habitat loss and fragmentation.

Through the Center for American Burying Beetle Conservation, Saint Louis Zoo staff and volunteers have released these beetles in southwest Missouri for several years.

Populations of Beetles Grow in the Wild

Before beetles can be released, a population needs to be bred. Since 2005, Zoo staff has successfully bred American burying beetles. As of 2018, the Zoo’s colony has produced over 11,000 beetles.

Each Zoo beetle needs an ID number. From this ID, staff can tell everything from when a beetle was born to who its parents were. In the early days, staff painstakingly examined beetle family trees. Now, thanks to a program written by Invertebrate Keeper Glenn Frei, a computer is able to take on much of this work. These efforts ensure a healthy genetic diversity of beetles.

In addition to IDs, staff safely “notch” part of the beetles’ hard, outer wings so they can be easily identified in the field as Zoo beetles.

Throughout 2018, Zoo staff and volunteers from Zoo ALIVE (the Zoo’s teen volunteer group), ventured to the Wah’ Kon-Tah prairie to release 206 pairs of zoo-bred beetles. Since 2012, 2,824 beetles have been released.

The Center team observed successes that indicate released beetles from past years are surviving in the wild. The first achievement was the steady increase in numbers of beetles found in all stages. These stages include:

- Overwintering beetles: By surviving the winter, these hearty beetles show that the area has the resources for the beetle to make it through the season.
- Recaptures of reintroduced beetles: By finding previously released Zoo beetles, we have data to examine their longevity in the wild.
- Recaptures of beetles produced naturally on the prairie: A clear sign that the beetles are growing their population.

The second achievement is that beetles were found on three other sites away from the Wah’ Kon-Tah prairie, ranging from 2 to 7 miles away.

Bob Merz, Center Director, said these beetles are often underappreciated, but they carry important value. “American burying beetles provide warning if something harmful is brewing in our ecosystem,” he said. “They are sensitive to environmental shifts, and if their population changes, we know something might be up.” Merz continued, “They are the ‘George Baileys’ of the ecosystem—you don’t realize their value until they are gone.”
In April and May 2018, Zoo staff continued to participate in fieldwork in the Mariana Islands. Amanda Hausman, Zoological Manager of Birds, and Bird Keeper KC Donaldson travelled to Saipan to help with the translocation of rufous fantails and golden white eyes to the island of Alamagan. While there, they worked with staff from 10 other zoos (all accredited by the Association of Zoos and Aquariums), Pacific Bird Conservation, and the U.S. Fish and Wildlife Service. The team was able to translocate 52 rufous fantails and 51 golden white eyes.

### Center Directo

Anne Tieber
Curator of Birds, Saint Louis Zoo

The inspiration behind this Center was the accidental introduction of the brown tree snake on the island of Guam. The brown tree snake was the first land predator that birds living on this island had ever faced. This snake ended up devastating the island’s forest bird species. Now, the Center for Avian Conservation in the Pacific Islands helps save native island birds by translocating (or moving) birds to safe islands, among other conservation efforts.

### Involving Saipan Schools in Conservation Efforts

Since the devastation occurred on Guam, animal care experts have worked to save birds on neighboring islands, including the islands of Saipan and Tinian. To help spearhead successful conservation efforts, community involvement is critical.

In 2018, the Center and its partner, Pacific Bird Conservation (a non-governmental organization working in the Mariana Islands), worked together on new educational initiatives to reach public school students and expand conservation efforts on Saipan. The initiatives include:

- **Beginning a teacher workshop**, providing teachers with the knowledge to teach middle and high school students about how to help birds. The workshop will help get teachers into the field to observe biologists who work with wildlife.
- **Taking students to the field** to observe translocation efforts. These field trips will give students an opportunity to see local fieldwork in action.
- **Planting a bird-friendly garden** as a pilot program at a school, with the goal to expand. The goal of this program is to increase native vegetation to improve the quality of habitat for native wildlife. Students will monitor wildlife and post their findings on iNaturalist (a digital platform that will allow students to share their data with biologists).

Keri Lammering, Conservation Education Liaison at the Zoo, became the Center’s lead team member on this initiative. She travelled to Saipan in April 2018 to help organize and run the teacher workshops.

“Ultimately, our goal is to pass the torch to the local people,” Lammering said. “We hope the seeds we plant in the students now will grow into a lifelong passion for helping wildlife and the environment.”

In October 2018, Saipan and Tinian were hit with a typhoon that caused massive damage, so implementation of these initiatives was delayed. However, Lammering noted that community spirit is strong, and the Center is dedicated to helping its partners however possible.
Field researchers looking for birds on Fernandina Island, Galápagos

Avian Health
in the Galápagos Islands

The Galápagos Islands are home to unique species, including many species of birds, that can be found nowhere else. The growing effect of the human population and the introduction of diseases pose a threat to the wildlife on the islands.

The Center for Avian Health in the Galápagos Islands helped develop the first-ever avian health program in the Galápagos. Since 2004, the Center has conducted health evaluations on over 25,000 birds representing 40 Galápagos species. Experts continue to monitor Galápagos birds to prevent the spread of avian diseases.

Preventing Avian Malaria in the Galápagos

Many St. Louis scientists have long worked together to study the health of rare birds in the Galápagos Islands. Center Director Patricia Parker, Ph.D., not only manages this Center, but she also is Des Lee Professor of Zoological Studies at the University of Missouri-St. Louis (UMSL). Her students and staff from the Saint Louis Zoo often collaborate in conservation efforts.

While teams have gone to the Galápagos Islands annually since 2001 to collect pathogen data on wild birds, capacity building has always been a goal of the Center. Capacity building provides local scientists the ability to study pathogens in the Galápagos. This goal became a reality in August 2018.

In 2018, the government of Ecuador’s Agency for Biosecurity Galápagos (ABG) opened the Galápagos Biosecurity Laboratory on Santa Cruz Island. It marked a significant step forward for Ecuadorians providing their own expertise to this critical conservation work, not only with birds but with all animals living on the islands. It is the result of nearly 20 years of collaboration between the Zoo, UMSL and Ecuadorian partners.

“From our perspective, this was a giant breakthrough toward a commitment on the part of Galápagos to control the arrival of new pathogens and stay ever alert to monitoring,” Dr. Parker said. “They can now respond quickly to any reported disease outbreak without having to send for international help or go through the bureaucracy involved in exporting samples, all of which adds costly time, thereby limiting their ability to respond effectively. It marks a huge step forward in being able to protect this irreplaceable environment.”

UMSL and the Zoo both provided training for technical staff members as well as guidance in the design of the new expanded facility.
Africa is home to several endangered carnivores, including cheetahs, lions and painted dogs. Part of conserving carnivores in Africa is helping to mitigate conflicts that arise between communities and animals. The Center for Conservation of Carnivores in Africa works with several partners to find solutions so people can better co-exist with wildlife.

Engaging Communities in Carnivore Conservation

In some cultures in Africa, hunting lions is seen as a "coming of age" ritual; young men gain status and the attention of women through their hunting. To mitigate the negative impact on the lion population, the Center and one of its partners, the Ruaha Conservation Project (RCP), decided to address the issue at its root and engage with women in the community. In 2018, the RCP took a group of young women to Ruaha National Park to give them a first-hand experience of wildlife and talk about the importance of conserving the carnivores. Through this opportunity, the women developed an increased appreciation for lions.

Another important program to help conserve carnivores is the Lion Defenders group, an RCP initiative. One of the primary causes of conflict with lions is when they encounter livestock. Lions and other carnivores wander into pastures looking for food, and community members, trying to protect their livestock, will kill the carnivores. Through the Lion Defenders, men work to reinforce traditional livestock enclosures and locate lost livestock, which helps prevent conflicts before they happen. In return for protecting the lions, the men receive credits. These credits can be redeemed for food, medicine, baby formula and education programs. Since families want these credits, communities see the added value in protecting carnivores.

"Conserving animals cannot happen without the help of the people," said Center Director Steve Bircher. "People need to see value in the animals to want to help them. By giving people incentives, they see animals in a more positive light."

The Center supported the Ruaha Conservation Project in the employment of local villagers to set up and manage camera traps on village land in return for community benefits. This provides vital data on Ruaha’s little-known carnivore populations. To date, over 10,000 carnivore sightings have been recorded.

In 2018, Julie Hartell-DeNardo, Zoological Manager of Carnivores at the Saint Louis Zoo, travelled to Namibia to assist a Center partner, Cheetah Conservation Fund-Namibia, with cheetah conservation programs. She went out with its livestock guarding dog team, which had a recent litter of puppies that were bred for placement with Namibian farmers to help reduce conflict with wild carnivores.

The newest partner to the Center team is Cheetah Conservation Botswana. Its community outreach team also has been busy placing newly trained livestock guarding dogs with farmers. In 2018, it had 50 active working dogs. It’s estimated that one dog can protect its herd from up to 30 cheetahs during its lifetime.

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The Center for Conservation in Forest Park is a program that utilizes the 1,293-acre Forest Park in St. Louis—the seventh largest urban park in the United States—for the study of native wildlife and for conservation education.

This Center works to get more children outdoors—especially children in urban areas who have limited access to parks. The goal of conservation education projects is to develop empathy in participating students toward animals and nature through hands-on activities in the park, as well as classroom visits.

Getting Kids into the Great Outdoors

An important aspect of conservation is inspiring a love of nature in younger generations. This is more of a challenge today than ever before, as fewer children spend time playing outdoors and, instead, spend more time indoors with electronic devices. Studies have shown that adults who spent time in nature as children are more conservation-minded than others, and recent data suggests that time spent in nature has profound effects on childhood development.

The Center has been working closely with the district science coordinator and the elementary school teachers of the School District of University City. The Center and this school district have a multi-year commitment to nature education for every third, fourth and fifth grader in the district. As part of this partnership, Center staff make classroom visits with animals and provide free field trips to Forest Park for all students. These field trips provide opportunities for nature education and exploration.

In 2018, the Center conducted 24 classroom visits and 16 field trips to Forest Park for University City Schools in September and October, which reached 576 children. Students (and teachers) have said their adventures in Forest Park made for some of the best field trips they had ever taken.

The Center’s primary goal for the future is to make this project an integrated component of the University City curriculum for all students in third through fifth grades. The culmination of this multi-year effort will be a career symposium. Students will be introduced to a variety of jobs in conservation, from zookeeping to field research.

“We’re planting the seeds now so, hopefully, children will grow up to have an appreciation for animals and nature,” said Center Director Alice Seyfried.

“Through these field trips to Forest Park, kids are learning while having fun. They use field guides and binoculars to study wildlife, and they make their own discoveries. Nature is often the best classroom of all, and it’s all around us—even in urban St. Louis.”
Herpetarium Keeper Patty Ihring examines the second-generation offspring of zoo-bred Ozark hellbenders.
The Center for Conservation in the Horn of Africa plays a key role in sustaining critically endangered species in Africa, particularly the Grevy’s zebra. By supporting community-based coalitions and actively establishing a variety of conservation, research and education programs, this Center strikes a lasting balance between the needs of community members and the imperiled existence of several rare species.

Great Grevy’s Rally Successes

Grevy’s zebra are in desperate need of help. It’s estimated that approximately 3,000 of these striped beauties are left in the wild due to competition with livestock, habitat loss and climate change. To save these animals, the WildCare Institute participates in the Great Grevy’s Rally in northern Kenya, where 95 percent of the world’s Grevy’s zebras live. This event is a citizen scientist effort (where scientists and citizens work together) to census the endangered zebra population. By gathering data on Grevy’s zebra populations, the WildCare Institute and its Kenyan conservation partners will be in a better position to help save them from extinction.

In 2018, four Zoo team members participated in the Great Grevy’s Rally: Martha Fischer, Center Director; Tim Thier, Zoological Manager of Ungulates; Lauren Harster, Antelope Area Keeper; and Joshua Sydney-Smith, River’s Edge Keeper.

After traveling 33 hours from St. Louis to Kenya, the team sharpened their eyes and practiced taking photographs of the sides of Grevy’s zebra and, included in the Rally for the first time in 2018, reticulated giraffe.

Side photos of every Grevy’s zebra and reticulated giraffe observed are used for photo identification of individual animals. The team also helped Rally efforts by registering participants to take pictures, charging cameras, packing the truck with supplies for the field, and training the rangers to use cameras and photograph zebras.

Over 700 people served on 170 teams that took 100,000 photos, covering 25,000 sq. kilometers. The 2018 Rally was successful; 2,812 Grevy’s zebra were recorded in Kenya. The photographs were downloaded into a national zebra ID database, and a specialized computer program was used to process the photographs and identify each individual—this helps produce a population estimate. With this data, researchers determine whether the Grevy’s zebra population is stable, growing or decreasing.

“I’m very proud of the work of our team, both in their conservation work at the Zoo and around the world,” Fischer said. “It’s always an awe-inspiring sight to see many of our Zoo’s species in their natural habitats, and we feel privileged to have Zoo team members working alongside our conservation partners to preserve these majestic species.”
The Center is spearheading an important conservation project to help save the critically endangered diademed sifaka.

Center Highlights:
In 2018, Dr. Fidy Rasambainarivo, who was the recipient of the joint University of Missouri-St. Louis/WildCare Fellowship, successfully defended his Ph.D. dissertation. His dissertation was titled "Interactions and Pathogen Transmission Between Carnivores in Africa."

In 2018, Dr. Rasambainarivo founded a new laboratory, named Mahaliana, to test for diseases found in wildlife. This lab will allow scientists in Madagascar to process samples in-house, as opposed to sending samples out of the country for testing. This will allow rapid diagnostics during wildlife disease outbreaks, as well as offer a local testing facility for international researchers.

Dr. Rasambainarivo and his team are working with Madagascar National Parks to draft protocols to address the issue of domestic dogs entering wildlife reserves. The Center and the Madagascar Fauna and Flora group are working to obtain necessary authorizations and put protocols in place to monitor efficacy.

Center Director:
Eric Miller, DVM
WildCare Institute Executive Director,
Saint Louis Zoo

The Center for Conservation in Madagascar supports the Madagascar Fauna and Flora Group (MFG), a consortium of international zoos, aquariums, botanical gardens and universities that work together on a multidisciplinary conservation program in Madagascar.

The primary field site of the MFG—Betampona Natural Reserve—is a lowland rainforest fragment located in eastern Madagascar. Although the reserve itself is well-protected, several of the animals that live in the reserve, such as the critically endangered diademed sifaka and the black-and-white ruffed lemur, are still at risk of disappearing because both populations are small and lack genetic diversity. Through the MFG, the Center is working on a translocation project to ensure the future of these species in this reserve.

Determining Population Sizes of Primates in Madagascar

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In September 2018, Fidy Rasambainarivo, DVM, Ph.D, a wildlife veterinarian employed by the Center, worked with the Betampona team to pilot a black-and-white ruffed lemur vocalization survey. Black-and-white ruffed lemurs emit loud calls that, depending on topography, can be heard from a distance of over a kilometer. The team established six stations comprised of three listening posts, collecting data to triangulate calls. The protocol was adapted by adding two people whose roles are to locate the calling group and collect age and sex data of all observed individuals. They also take photos and collect fecal samples for individual profiles.

That November, the team placed 14 camera traps in the northern half of the reserve to locate areas frequented by the diademed sifaka. This was done to obtain a more accurate population assessment of this species, which is currently estimated to be no larger than 25 individuals.

And in December, Dr. Rasambainarivo led a capture mission to place radio collars on a subset of diademed sifakas and black-and-white ruffed lemurs to enable researchers to identify individuals and track social groups. While the lemurs were anesthetized, the team conducted health assessments and collected blood for genetic analysis. The mission was very successful. The team was able to collect data from seven diadema sifakas from four groups and from three individual black-and-white ruffed lemurs. The translocation project will continue through 2019 and beyond.
Center for Native Pollinator Conservation

Pollinators are critical to our life on Earth. Seventy-five percent of crop plants grown worldwide for food, beverages, spices and medicines are pollinated by animals. Many mistakenly think that pollinators will be infinitely available. However, our actions of altering pollinators’ natural habitats and the misuse of pesticides have impacted many species.

The Center for Native Pollinator Conservation works to save pollinators by planting habitat and developing conservation and education programs.

Building Relationships Through Native Foods, Native Peoples, Native Pollinators

Center Director Ed Spevak, Ph.D., said pollinators are often overlooked when it comes to conservation. That’s why having engaging conversations about pollinators is essential. Through the “Native Foods, Native Peoples, Native Pollinators” initiative, Center staff have developed many new partnerships with native tribes.

Cultural beliefs among native people include concepts of harmony and balance in respect to food and the environment. Native people see spiritual relationships with all things on Earth, such as water, the land, plants and animals. Because of these beliefs, native people value the benefits of pollinators and are excited about implementing ways to help them.

“Due to many factors, including economic situations and the structure of the Native American reservations, many people have relatively unhealthy diets and must eat processed commodity foods with lots of flour and sugar,” Dr. Spevak said. “However, through this initiative, we are encouraging people to help the pollinators, which in turn, will help them. Pollinators can help grow traditional foods, which will help people adopt healthier lifestyles, promote better food security and offer economic opportunities.”

The initiative helps develop programs and projects suited to the needs and desires of the people. As a tribe, the community selects what would mean most to them, whether that is an educational initiative or planting heirloom corn seeds (in 2018, 50 pounds of corn seed were delivered to the Ho-Chunk/Winnebago Tribe). Some tribes participate in bison management programs, which ultimately support pollinators. Bison graze on grass more than wildflowers, as opposed to cows, which graze more on flowering plants.

In 2018, Dr. Spevak traveled to many different tribes to discuss and help implement pollinator projects like those listed above. Tribes included the Omaha, Ho-Chunk/Winnebago, San tee Sioux and Ponca Tribes of Nebraska; the Oglala Lakota Nation in South Dakota; the Confederated Salish and Kootenai Tribes in Montana; and the Sac and Fox (Meskwaki) of the Mississippi in Iowa.

“When it comes to any conservation work, building relationships and listening are important,” Dr. Spevak said.
Punta San Juan is home to over 1 million sea birds. It is also home to the largest breeding colony of Humboldt penguins in Peru. The guano (excrement) of the sea birds is often harvested and sold as fertilizer, but this unfortunately affects the penguins. Guano is very important to the penguins' survival as they dig their nests and lay their eggs in burrows.

The Center for Conservation in Punta San Juan, Peru, conducts an annual census of penguins along the Peruvian coast and participates in sustainable guano harvests, as well as manages community outreach.

**Reaching Students Through Distance Learning**

Providing educational programming isn’t necessarily limited to a location. The Saint Louis Zoo has an established distance learning program, which, through technology, helps reach students all over the world. The Center set out to establish a distance learning program in Peru. In 2018, Zoo staff members Emily Bowling, Conservation Education Liaison, and Amanda Hausman, Zoological Manager of Birds, traveled to Pisco, Peru to deliver equipment, help set up the program and see the native wildlife.

"Traveling to Peru to see the animals was a special experience,” they both said. “You need permission from the government to travel to the reserve on the coastline. Considering that very few people get to see these animals, a distance learning program will help connect people to their native wildlife.”

The Center partners with ACOREMA, a Peruvian non-profit organization committed to coastal and marine conservation. ACOREMA staff are the educators who will appear in the educational segments, reaching grade school students across Peru.

As mandated by the Peruvian government, all public schools have a computer lab, so the program will have an extensive reach. Students will have the opportunity to learn about Humboldt penguins, dolphins, sea lions, pelicans and other marine animals. This educational program stays true to the Zoo’s mission of connecting people to animals.

“If people can’t see or don’t know about their wildlife, how will they know it’s important?” Hausman said. “It's important for us to raise awareness and show people why conserving wildlife matters.”

Bowling agreed that an important aspect of the WildCare Institute is including people in the conservation equation. “People want to do the right thing for the planet; we just need to give them the opportunity to learn and do the right thing.”
Center Highlights:
The Center also cares for the Saharan red-necked ostrich. This species is locally extinct in Niger. The Center supports and advises the ostrich recovery and breeding center in Kellé. In 2018, it helped fund the conversion of shipping containers into a solar power station, an office and storage space for the project, and labs for both artificial incubation and hatchery operations. Built by partners in the San Francisco area, these containers have been safely delivered to the site in Kellé. In February 2019, a team of experts finished the installation of the solar power system, commissioned the labs, installed a water distribution system, and established the project’s communications link via VSAT (a satellite communications system) to allow experts in the U.S. to monitor and troubleshoot the power grid and labs remotely. The goal is to use artificial incubation to increase the production of ostrich for eventual release in the wild.

Center Director:
Bill Houston
Assistant General Curator, Saint Louis Zoo

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A scimitar-horned oryx in Chad’s Ouadi Rimé-Ouadi Achim National Game Reserve

Saharan Wildlife Recovery Center

The Saharan Wildlife Recovery Center is one of the leading voices raising awareness about the Sahara’s silent crisis of extinction. Its mission is to link zoo expertise and resources with meaningful conservation action in the Sahara.

Bringing Oryx Back from Extinction
Since late 2016, this Center’s support of the Sahara Conservation Fund has contributed to the reintroduction of scimitar-horned oryx in Chad’s Ouadi Rimé-Ouadi Achim National Game Reserve.

By the early 1990s, this antelope went extinct in the wild. Overhunting, human disturbance, habitat loss to agriculture and competition with livestock led to their extermination.

Fortunately, oryx in human care in zoos and private collections assured the species’ existence.

The Ouadi Rimé-Ouadi Achim Game Reserve is over 73,000 square kilometers of former oryx range. Through the generosity of the Environmental Department of Abu Dhabi in the United Arab Emirates (UAE), animals were brought to Chad from UAE and elsewhere to the site at the Reserve.

The oryx acclimated to this site in specially built pens, then were fitted with satellite radio collars and released to the wild. The collars help locate them and provide data on:
• Whom they associate with in the herd
• Time the animals spend moving/resting/eating
• Animals’ seasonal preferences for different areas in the reserve
• Female behavior and movements related to calving

Roughly 125 animals have been released since 2016, and with calving each year, the wild population grew rapidly. Researchers use data to make informed decisions for subsequent releases. As subsequent groups are released, some oryx have begun to separate and start their own groups. Center Director Bill Houston indicates this was expected and bodes well for expansion of the species to a broader swath of its former range.

There have been some losses along the way as oryx raised in human care relearned the skills needed to survive. However, because of the dedicated monitoring team, the project leaders are able to better understand the challenges “rewilded” oryx will need to face, and leaders will develop strategies to mitigate these challenges.

The goal is to have 500 oryx in the wild by fall 2021.

“Oryx raised in human care by zoos and others made this possible,” Houston said. “They’ve helped us reverse history and restore their species in the wild.”

Saharan Wildlife Recovery Center

A scimitar-horned oryx in Chad’s Ouadi Rimé-Ouadi Achim National Game Reserve
Over the past 13 years, Saint Louis Zoo staff has studied Armenian vipers, which have experienced population declines due to habitat loss, livestock grazing and persecution. The Center’s research team continues to analyze the Armenian viper’s habitat use, genetic diversity and population structure. This data was used, in part, to help establish two new protected areas for Armenian vipers and expand other protected areas.

Armenian Conservation Breeding Center Opens

Through the hard work of Center staff and partners, the world’s first breeding center to work with venomous reptiles opened in 2018. The Armenian Conservation Breeding Center opened near the Armenian capital of Yerevan.

The breeding center’s current focus is on three species: the Armenian viper, Armenian steppe viper and Darevsky’s viper. These breeding groups will be reproduced, raised and released to the area from which they were collected. Eventually, the goal for the breeding center is to house all 11 Armenian species that are Red-Listed by the International Union for Conservation of Nature.

Center Director Mark Wanner said that there are a lot of misconceptions involving venomous snakes, so another goal of this Center is to raise awareness about Armenian vipers.

“Many people associate them as bad; however, everything in an ecosystem has a purpose,” Wanner said. “These snakes fulfill the important role of eating rodents, which is natural environmental control and helps keep everything in balance to prevent outbreaks of disease. Eventually, we would like the breeding center to serve as an educational facility, where people can visit and learn about their wildlife.”

Currently, two Armenian herpetologists, Aram Agasyan, Ph.D., and his son, Levon Agasyan, Ph.D., head the breeding center, with Levon Agasyan as director. Wanner said both scientists are pioneers in herpetology and have made brilliant strides in saving Armenian wildlife. Wanner also said, in the future, the Center hopes to invite college biology students to come learn at the breeding center and possibly help out with the animals’ daily care.

“We are excited about the future of the Armenian viper and our new breeding center,” Wanner said. “We are confident that these programs will make a significant difference for these endangered species.”

Center Highlights:

In June 2018, the Zoo celebrated the birth of six Armenian vipers. The Herpetarium staff created a special temperature-controlled room for the vipers, which was key for breeding this species. Keepers meticulously monitor these snakes throughout the year, observing their health and reproductive status.

In 2018, Center Director Mark Wanner, Herpetarium Keeper Justin Elden and Executive Director/CEO at Sedgwick County Zoo Jeff Ettling, Ph.D., conducted field research at a field site outside the Armenian capital city of Yerevan. Wanner called this their most productive field season to date. These experts examined population sizes of Armenian vipers. While there, they found 30 Armenian vipers, tagged them and released them. Of the 30 vipers, two were recaptures. This is vital information because scientists can evaluate past data in hope of getting a better understanding of the current population size. While conducting this fieldwork, Elden also discovered a new species of viper to the area, a major accomplishment. This was the first documented sighting of an Armenian steppe viper at this particular locality.

– Center Director: Mark Wanner
Zoological Manager of Herpetology and Aquatics, Saint Louis Zoo

Western Asia

A javelin sand boa found during field research
Conservation Medicine addresses disease challenges that threaten the survival of wildlife and negatively impact human health. The Saint Louis Zoo Institute for Conservation Medicine (ICM) conducts research to find solutions to keep people and animals healthy.

One Health Awareness Grows in St. Louis

Increasingly, conservation medicine issues are being addressed via the One Health initiative. One Health recognizes that the health of people, animals and the environment are connected and that collaborative efforts of professionals from multiple disciplines are needed.

Dr. Deem is an advocate for One Health, and her leadership helped establish a One Health minor at Fontbonne University. Students in this program may consider careers in any One Health discipline; many are interested in human or animal medicine, public health, or wildlife management. She also helped establish an online certificate program with Fontbonne for which professionals with bachelor’s degrees may apply to be One Health certified practitioners. This program provides opportunities for these professionals—often scientists, journalists, farmers or teachers—to complete a series of learning modules and then demonstrate their skills as experts of One Health concepts. Last but not least, Dr. Deem co-taught a One Health course at Washington University, completed by 32 students in 2018.

In addition to these academic programs, Dr. Deem and her colleagues at Fontbonne, Dr. Kelly Lane-deGraaf and Dr. Elizabeth Rayhel, authored a textbook: “Introduction to One Health: An Interdisciplinary Approach to Planetary Health.” The textbook is a helpful resource for One Health students and is now available in stores.

One Health received exposure in the popular TEDx talk series. Dr. Deem gave a presentation titled “The Ties That Bind: One Health.” She reminded the audience of how the health of all life is connected.

At the Saint Louis Zoo, the ICM celebrated its fifth annual One Health Fair. At the event, visitors learned about challenges that link wildlife and human health. The ICM team and a group of students in medical and veterinary schools visited with Zoo guests.

“The food we eat, the medicines we use for healing, and the quality of our water and air are all possible because of Earth’s biodiversity,” Dr. Deem said. “The health of our planet and wildlife directly impacts human health. This is why One Health is so important.”

Center Director:
Sharon L. Deem, DVM, Ph.D., DACZM
Saint Louis Zoo Institute for Conservation Medicine Director
Conservation Programs Supported by the Saint Louis Zoo WildCare Institute

Andean Bear Conservation Alliance
Andean bears, an important flagship species for the Tropical Andes ecosystem in South America, face a number of threats, including habitat reduction and fragmentation, and high mortality caused by anthropogenic factors. The Saint Louis Zoo WildCare Institute has supported the Andean Bear Conservation Alliance (ABCa) since 2012. The ABCa works to tackle conservation threats using a multifaceted approach, which includes field research to better understand bear ecology and distribution. It also uses engagement of local protected area management to establish and scale conservation plans on population monitoring and capacity-building projects.

Ecuadorean Amphibians
Ecuador, the fourth smallest country in South America, is said to have over 9 percent of the world’s amphibians, with over 44 percent endemism. This means almost 258 species of amphibians are only found in Ecuador and nowhere else on the planet. It is presumed that Ecuador could have over 700 species of amphibians, many still undiscov red. Since 2006, the WildCare Institute has supported the work of Luis Coloma, Ph.D., founder and director of the Centro Jambatu de Investigación y Conservación de Anfibios (Jambatu Center for Research and Conservation of Amphibians), a breeding and management facility that houses 40 species with over 20 of them listed as endangered or critically endangered. It has one of the largest and most significant assurance populations of amphibians in the western hemisphere. The WildCare Institute is determined to help fight this mass extinction of amphibians by supporting the Centro Jambatu, both through regular visits to Ecuador and through biannual financial contributions. Climate change, habitat destruction and the spread of the deadly amphibian chytrid fungus have wiped out multiple amphibian species in recent years and continue to decimate critical amphibian populations.

Centro Jambatu plans to open to the public as an exhibition in July 2019. In 2018, Zoo staff visited Centro Jambatu and discussed potential collaborations between Saint Louis Zoo, Centro Jambatu and the Quito Zoo in their common goal of conserving Ecuadorean amphibians. During this visit they also conducted two field surveys for remnant populations of rocket frogs and the recently rediscovered long-nosed harlequin frog. In 2018, this Program was awarded funding from the Living Earth Collaborative to develop a workshop for conservationists to identify priority regions of conservation in Ecuador.

Elephant Conservation Program
With the situation for wild elephants so precarious, those who truly care about elephants have an obligation to take action before it is too late. In Asia, the WildCare Institute supports elephant conservation through the International Elephant Foundation (IEF). This organization links dedicated conservationists at zoos with those in the field and fosters collaborative partnerships to provide long-term support to wildlife programs around the world. WildCare Institute support is provided to IEF Conservation Response Units, which are ranger patrols conducted on elephant-back that work to mitigate human-elephant conflict, protect wild Sumatran elephants, and engage members of the communities in and around Way Kambas National Park. In Africa, elephant conservation, including elephant protection and anti-poaching initiatives, is supported through the Northern Rangelands Trust, a community-led initiative that forms a true union of Kenyan communities through field conservation, community development and educational programs.

Great Ape Conservation
The WildCare Institute supports great ape conservation through the Goualougo Triangle Ape Project (GTAP) in the Republic of Congo and HUTAN-Kinabatangan Orangutan Conservation Programme (HUTAN) in Malaysian Borneo. The mission of the GTAP is to promote the long-term conservation of chimpanzees and gorillas. Research projects include behavioral studies, health monitoring and population dynamics within the changing conservation landscape of the Congo Basin. In 2018, the Zoo funded computers and related equipment to allow primate staff at the Saint Louis Zoo to review videos from field site camera traps for an important biodiversity study in an effort to gain greater protection for the Djeke Triangle site adjacent to the Nouabalé-Ndoki National Park. HUTAN develops and implements innovative solutions to conserve orangutans and other species in Sabah, Malaysian Borneo. It now has a team of over 45 community members who work to achieve a holistic strategy of long-term scientific research, wildlife and habitat protection and management, policy work, capacity building, education and awareness, and community outreach and development. HUTAN Co-Director Dr. Marc Ancrenaz visited the Zoo in 2018 and met with and presented to Zoo staff, and he gave a public lecture through the Zoo’s Conservation Conversation series.

Okapi Conservation
Endemic to the Democratic Republic of the Congo, the okapi is an elusive relative of the giraffe. For 27 years, the Zoo and the WildCare Institute have been dedicated to the care of okapi in zoos and in the wild. For okapi in human care, the Zoo has long been an active participant in the AZA Okapi Species Survival Plan. The WildCare Institute supports the Okapi Conservation Project, which works to secure a protected area for okapi in one of the most biologically diverse places on Earth, the Ituri Forest. It also supports local communities by training and equipping wildlife guards, providing community assistance to the people living next to the reserve, and offering conservation education. In 2018, the WildCare Institute sponsored World Okapi Day celebrations in St. Louis and in the Democratic Republic of the Congo in October. At the Zoo, keepers shared okapi conservation messages with visitors, while in Africa, educational programming and races were sponsored in four different villages within the okapi’s range.
The WildCare Institute sponsored the community of Watsa, while other international zoos sponsored races in Epulu, Mambasa and Mungbere. An estimated 15,000 children and adults participated across the four territories. This community celebration was an innovative way to create lasting excitement for protecting the wild okapi.

**Partula Snail Conservation**

Partula snails once populated the South Pacific Islands, from Palau to the Society Islands, including Tahiti and Moorea. These snails, however, experienced a devastating decline when the predatory rosy wolf snails (Euglandina rosea) were introduced to the islands in the 1970s as a form of biological control. In 1990, the Zoo initiated the Partula Species Survival Plan to manage the Partula populations on a national scale. The Zoo works closely with the International Partula Conservation Programme, coordinated by the Zoological Society of London, which is involved in breeding programs for 25 Partula species in 15 zoos, together with field work in the species’ range. In the field, Zoo staff actively participate in the Partula Snail Program through a reintroduction project of Partula nosophos to Tahiti.

**Polar Bear Conservation/The Alaska Initiative**

The WildCare Institute partners with Polar Bears International (PBI)—a non-profit organization dedicated to worldwide conservation of the polar bear and its habitat. The WildCare Institute supports PBI’s maternal den study conducted by scientists in Svalbard, Norway, to document the denning behavior of polar bear mothers that are choosing to den on land, possibly sensing that the sea ice is too unstable for their dens. As part of the Alaska Initiative, the Zoo has partnered with six Alaska Native villages through the Alaska Nanuq Commission to work toward a common goal of climate change mitigation and polar bear conservation. The Zoo works with the U.S. Fish and Wildlife Service to learn more about the status of Alaska’s polar bears and polar bear research.

In 2018, Zoo staff visited Point Lay, Alaska, where the team worked with the Alaska Teen Media Institute to create a video journal for the McDonnell Polar Bear Point exhibit at the Zoo. Staff presented to the Point Lay Tribal Council about the Zoo’s polar bear Kali and the video journal project.

As part of the partnership, Zoo staff travel to villages in Alaska to provide STEM (Science, Technology, Engineering and Math) and conservation-based educational programming, as well as offer free distance learning programs to the villages.

**Save the Tasmanian Devil Program**

The Tasmanian devil was once common throughout the island state of Tasmania; however, the species has experienced a rapid decline since the 1990s due to the rare devil facial tumor disease that has spread throughout the population. The Save the Tasmanian Devil Program (STDP) was established in 2003 by the Tasmanian government in response to the rapid decline of the animals. The STDP joined forces with universities and zoos worldwide in their effort to halt the effects of this disease. The WildCare Institute has provided financial support to the STDP since 2015. In 2018, WildCare Institute funding was used to establish a STDP base camp at Maria Island, home to released, disease-free devils and their progeny. Young animals from Maria Island are translocated to mainland Tasmania to repopulate former devil ranges and to provide needed genetic diversity throughout the population. In addition, the Zoo has had ambassador devils in its care since 2016. These charismatic ambassadors help raise awareness about the challenges facing wild Tasmanian devils.

**Action Indonesia**

Indonesia is one of the world’s biodiversity hotspots and three of its iconic species—anoa, babirusa and banteng—are threatened with extinction. The WildCare Institute supports Action Indonesia, which was created in 2016 to ensure the long-term survival of these imperiled species through a combination of *ex situ* (protecting species outside of natural habitats) and *in situ* (protecting species in natural habitats) activities. Action Indonesia formed the first ungulate Global Species Management Plans and is utilizing this unique framework to take meaningful steps to conserve these unique species.

**Turtle Survival Alliance**

Turtles are the most threatened vertebrate taxa in the world with more than half of the 356 species threatened with extinction. The WildCare Institute supports the Turtle Survival Alliance (TSA), a major force for global turtle conservation. The goals of the TSA include restoring turtle populations in the wild when possible, securing species in captivity through assurance colonies, building local capacity to restore and conserve species in their range countries, and conducting outreach to educate people on the conservation challenges facing turtles and the actions we can all do to help them survive. In 2018, almost 20,000 endangered radiated tortoises native to Madagascar were confiscated by the TSA. Following intense veterinary care and rehabilitation provided by the international conservation community, a number of these turtles were reintroduced back to Madagascar.

**Rhino Conservation Program**

The black rhino is critically endangered with approximately 5,000 black rhinos remaining in the wild. The greatest threat to black rhinos is illegal poaching for their horns, which are in demand for traditional medicine in Asia. The horns are sold illegally on the black market and are currently valued to be worth more than gold pound for pound—even though rhino horn is made of keratin, which is the same protein that makes up hair and fingernails. The WildCare Institute supports conservation initiatives for the black rhino in Kenya and Zimbabwe. New waterholes and solar-powered water pumps have been installed in the Northern Rangelands Trust’s Rhino Sanctuary in the Sera Conservancy in northern Kenya. Here, anti-poaching teams and rhino monitoring rangers protect the black rhinos that were reintroduced to the sanctuary in 2015. In Zimbabwe, the WildCare Institute supports the International Rhino Foundation’s Stop Poaching Now initiative by purchasing equipment, such as binoculars, cameras and GPS devices, to support black rhino conservation and anti-poaching efforts.
2018 Financial Report

Zoo Visitors and Staff Support the WildCare Institute
People can help the WildCare Institute simply by visiting the Zoo. When guests ride the Mary Ann Lee Conservation Carousel, net proceeds directly support conservation efforts both locally and around the globe. Over 5.4 million people have ridden the carousel since 2003. Also, through the Zoo’s Change for Conservation program, front-line staff at select establishments ask visitors if they’d like to add $1 to their purchase to help the WildCare Institute. Last year, $123,265 was raised to support wildlife.

Endowed Fund Helps Zoo Staff Travel the World for Conservation
The WildCare Institute relies on the support of donors to accomplish its goals. In 2018, Zoo staff members were able to travel around the world—from Alaska to Kenya—to help with conservation projects. These trips were made possible thanks to an endowed fund from Zoo supporter Sue Dexter, who passed away in 2015.

Funding Sources: $1,588,415

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2018 Honor Roll

Major Gifts
Major gifts and grants received from generous donors in 2018 in support of the WildCare Institute to be utilized immediately or in the future.

$749,999 – $500,000
Anonymous
Clarence Zacher Family Fund: Miriam P. & Gabriel Ferguson
Mrs. Beverly Zacher
Mr. Chris G. Zacher
Ms. Lynn Zacher-Davis
Mr. & Mrs. Phillip Zacher
Mr. & Mrs. Roger Zacher

$49,999 – $25,000
Anonymous
Chicago Zoological Society
Karen Goelner
San Diego Zoo Global
$24,999 – $10,000
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AZA Zebra Pen
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Mr. Jim Spillane
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Sedwick County Zoological Society, Inc.
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Vivirl & Sandra VanTrease
Dr. Libby Younger
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Sacramento Zoological Society
St. Louis American Association of Zoo Keepers
Stone Hill Winery
Thomas & Betty Tyler
Weills Fargo Advisors
$999 – $250
Ms, Elizabeth A. Bidick
Dr. & Mrs. Terrence W. Bond
Ms. Karla Carter
Christine & David Chadwick
Michael Deem & Elizabeth Ickes
Nanci M. DuBrenn
Tony & Erica J. Ellard
Mrs. Marguerite P. Garrick
Ms. Janet Garrison

Special Gifts
$99,999 – $50,000
Edward K. Love Conservation Foundation
$49,999 – $25,000
Anonymous
Chicago Zoological Society
Karen Goelner
San Diego Zoo Global
$49,999 – $10,000
Ann Case
AZA Zebra Pen
Patricia G. Becker
Dr. Virginia M. Herrmann
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Tony & Erica J. Ellard
Mrs. Marguerite P. Garrick
Ms. Janet Garrison

2018 Honor Roll

Pat Jones Remembered
We would like to honor a leader in conservation, and a good friend, Pat Jones. She passed away on December 17, 2018. Pat had been a generous supporter of the Zoo for many years. Pat, an alum of the University of Missouri-Columbia, was one of the first women in the state to graduate with a degree in agriculture. She and her husband, Ted, became conservationists for many of Missouri’s outdoor spaces. Pat also had a strong interest in the WildCare Institute, specifically the conservation of the American burying beetle.

Jeffrey P. Bossie, Ph.D., Dave Brown President & CEO, reminisced, “Pat was a wonderful advocate for conservation, and her investments helped propel the Zoo’s efforts forward. For that we are deeply grateful.”

Contributions to the WildCare Institute are tax-deductible. They will help propel the Zoo’s efforts forward. To learn more, visit: wildcare.org.
2018 brought new opportunities to protect wildlife in wild places. Old threats remain, and new challenges must be addressed if conservationists across the world are to succeed in saving threatened species and vulnerable ecosystems. All of us have been entrusted to preserve and safeguard these animals and their habitats today and for future generations.

As you have seen through this report, the Saint Louis Zoo WildCare Institute has accomplished a great deal in 2018. This vital work has been undertaken and completed through strategic partnerships, staff expertise and passionate donors. We simply could not have done it without you. Together, we have the chance to make a lasting investment in preserving unique species and their native environments.

By using the enclosed response envelope, you become a conservation champion. The WildCare Institute offers you an opportunity to support programs that help save wildlife directly. You can give to a species that caught your eye or a conservation center that connected with your desire to see things made right—for an animal, an ecosystem or our world. Your gift to the WildCare Institute will make a difference today and for future generations.

For more information on contributing to the work of the WildCare Institute, please visit stlzzo.org/wildcare or contact the Zoo’s Development Office at (314) 646-4691.

Photography provided by: Diego Acosta, Roger Brandt, Christopher Carter, Josh Fonseca, Bill Greenblatt, Ray Melbaun, Jay Shenfield, Robin Winkelman
At the Saint Louis Zoo, we not only care about the conservation of animals, but also the conservation of the environment. That’s why this report is printed on 10% post-consumer recycled content.