

# SMITHSONIAN Zoogoer

For members of **FRIENDS OF THE NATIONAL ZOO**  
NOV | DEC | 2013

## **GOLDEN OPPORTUNITY**

An international program to breed and conserve species started with the Zoo's golden lion tamarins.

- » **Maned Wolves**
- » **Raucous Ravens**
- » **Lighting Up the Zoo**



# matchmaking &

MEHGANI MURPHY/NZP; Facing page: JIM JENKINS



# species saving

BY BRITTANY STEFF

**Across North America and around the world, zoos and aquariums band together to ensure the survival of species large and small.**

**E**arlier this year, Zoo Atlanta celebrated the birth of twin panda cubs. In June, the Denver Zoo welcomed a Grevy's zebra calf. And, in April, the Buffalo Zoo cheered the birth of Alex, a prehensile-tailed porcupine. None of these were National Zoo births, but they are all good news for our Zoo because they directly benefit a program that's close to the heart of the Zoo's mission: the Species Survival Plan.

Species Survival Plan programs are the Association of Zoos and Aquariums' answer to the question: "How do zoos protect species and ensure healthy populations in zoos and in the wild?"

Historically, zoos acquired most of their animals from the wild. Then, as concerns arose about declining wild animal populations, zoos turned toward another solution: captive breeding. In theory, this is perfect.

In practice, it can be extremely difficult. Most zoos do not have the space required to support the number of animals necessary for maintaining a genetically healthy population. Then there's the problem of what to do when you breed more animals than you need—or even have room for. Zoos started trading and selling animals to one another, shuffling them around like baseball cards. But this wasn't sustainable either. Zoos couldn't operate alone—they needed to work together.

## **Live Long and Prosper**

That's where the Association of Zoos and Aquariums (AZA) comes in. They started the Species Survival Plan (SSP) program in the early 1980s based on a model created for golden lion tamarins at the Smithsonian's National Zoo. SSP programs provide the framework for how zoos collaborate

FACING PAGE: Andean bear cubs are adorable, playful, and the result of careful planning.

THIS PAGE: International cooperation is essential when breeding kiwis and many other species.

### Bringing Home Bobcats

**E**ach SSP is different, tailored to the needs of its species. And not all SSPs focus on breeding. Bobcats, for example, are native to North America and aren't endangered. They don't need a captive breeding program. However, numerous orphaned, injured, or otherwise unreleasable bobcats find their way to wildlife rehabilitation centers every year. The AZA's bobcat SSP helps find these animals permanent homes.

Following rehabilitation, bobcats that cannot survive in the wild are often moved to zoos. Great cat keeper Rebecca Stites is the coordinator and studbook keeper for the newly-formed bobcat SSP.

"What I love most," Stites says about her work with the bobcat SSP, "is that we get to work with rescue groups around the country to find homes for animals that couldn't be released. We're providing these animals with full and enriching lives, while also educating our visitors about bobcat behavior and biology."

Recently, Stites was able to bring three bobcats to the Smithsonian's National Zoo. These bobcats, males Yoda and Cheeze and female Ollie, came to the Zoo from the National Bobcat Rescue and Research Foundation in Texas. All three are now on exhibit on Lion/Tiger Hill, just across from the caracals.

on conservation and breeding initiatives. Species by species, SSPs are the arbiters on which animals should breed, which animals should move, and what, in general is best for a particular species.

"SSPs are how zoos all across the country work together to make sure we always have animals in our collections," says Brandie Smith, senior curator at the Smithsonian's National Zoo and former vice president of animal conservation at AZA, where she oversaw the SSP program. "They're also the way we make sure we don't have too many animals."



JESSIE COHEN/ZIP

The scope of SSPs varies widely. Some, such as the Andean bear SSP, manage zoo populations in North America alone. Others, including the giant panda and red panda SSPs, are international in scope, managing animals in zoos and breeding facilities all over the world. And some, like the golden lion tamarin SSP, even track animals in the wild.

All SSPs are managed by one or two elected volunteers: the SSP coordinator and the SSP studbook keeper. (In some SSPs, the studbook keeper and the SSP coordinator are the same person.) The coordinator runs each SSP and acts as the zoo community expert on that particular species. Meanwhile, the studbook keeper

manages a document that tracks every individual in the zoo population: It's both a family tree and a complicated address book of who lives where. Some SSPs may also include advisors on genetics, nutrition, veterinary care, reproduction, conservation, or anything else the coordinator believes will help the species survive and thrive in zoos. SSPs are a way of making a small, intimate circle out of the larger zoo community.

Every one, three, or five years (depending on how fast the species breeds and ages) the studbook keeper and SSP coordinator meet to create, review, and update a master plan for the species. They look at every single animal at each AZA institution. Then, with the help of population biologists at the AZA's Population Management Center at Chicago's Lincoln Park Zoo, they analyze the genetics of each animal. Based on the genetics of potential parents and their hoped-for offspring, the team drafts a Breeding and Transfer Plan for their SSP. The plan outlines breeding recommendations and any relocation plans necessary to create the best pairings. It's as if online dating sites made dating recommendations based on your genome, and then went ahead and contacted moving companies.

"Genetics start the discussion," Smith says, "but SSPs also consider practicality, logistics, husbandry, welfare, and even the animals' personalities."

The goal is to create sustainable, genetically healthy populations. The gold standard is a population that will last 100 years, or 10 generations, with 90 percent of its genetic diversity intact.

### Giving to Receive

The two Sumatran tiger cubs, born at the Zoo on August 5, 2013, are an excellent example of an SSP in action.

Zoo staff worked with the Sumatran tiger SSP to negotiate the arrival of a genetically valuable pair of tigers: Damai, a young female from the San Diego Wild Animal Park, and Kavi, a male from Zoo Atlanta. In order to make space for the young couple, and as part of the agreement with the SSP, we sent Guntur (born here in 2006) to Japan, where he will boost the



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The Zoo's zebras are all studs—literally. The Zoo is a bachelor pad for young male zebras who haven't yet been paired with potential mates.

MEGHAN MURPHY/NZP



The greater rhea SSP is one of many managed by a keeper at the National Zoo.

FACING PAGE: Every single species of the so-called great cats—lions, tigers, leopards, and jaguars—is managed by an SSP.

MEGHAN MURPHY/NZP

genetic diversity of their Sumatran tiger population.

“With the tigers, we worked with the SSP over a period of years to get a good pair of genetically valuable tigers for breeding,” says Smith.

“Part of this cooperation actually involved sending one of our animals overseas. Because we cooperated with the SSP and Japan, we were able to welcome two tiger cubs.”

### The Good of the Many

Sometimes, SSP plans and participating institutions focus on deliberately not breeding. Because, while baby animals are cute, baby animals also grow up.

“One of the most important issues in zoos is managing our space,” Smith says. “We have to make sure that we don’t create too many babies, that we can manage our space and our animals wisely.”

For this reason, an institution’s role in an SSP may be to serve as a holding facility for non-breeding animals. Alert Zoo visitors might note that we never have baby zebras, for example. That’s because our role in the Grevy’s zebra SSP is to be a bachelor pad for young males.

In the wild, male zebras live alone. Managing testosterone-charged animals that are by nature solitary, and by temperament moody, is a challenge. But the Smithsonian’s National Zoo is experienced at keeping male zebras together safely, so that’s what we do: We house young males that either stay with us indefinitely or go on to breed at other zoos, according to SSP recommendations. Though we will never have cute zebra calves, we are helping the species.

That spirit of cooperation is what makes the SSP program such a success.

### Striking Gold

SSPs aren’t exclusively concerned with animals in zoos. Many also conduct important conservation and research on animals in the wild.

As the program that inspired and launched the SSP program, the golden lion tamarin SSP is a prime example. Golden lion tamarins are small, endangered

monkeys native to South America. In the 1970s, the species faced extinction, and zoos struggled with high rates of infant mortality when they attempted to breed their animals. The Smithsonian's National Zoo was instrumental in solving this problem by discovering that male golden lion tamarins are active and essential parents to their young. Prior to this discovery, keepers had been removing fathers from enclosures after their babies were born. Infant mortality rates plummeted when keepers began leaving males with their mates and offspring.

Small Mammal House keeper Kenton Kerns explains that scientists quickly ran into another problem. "Once you get golden lion tamarins to breed, you can't stop them. They're such good breeders, and they often have twins, so you are usually getting two at a time."

With this surplus of tamarins, scientists decided to try reintroducing them to their native habitat in Brazil. Thanks to the efforts of the Smithsonian's National Zoo, and lessons learned from our golden lion tamarins, 153 golden lion tamarins were reintroduced to their native habitat between 1984 and 2007. While reintroductions are currently on hold due to a shortage of suitable habitat, the golden lion tamarin SSP continues to track the movements and genetics of tamarins, both in the wild and in zoos.

### Study Groups

SSPs also make it easier to conduct research, something that may otherwise be difficult for some institutions. "At the Smithsonian's National Zoo, we're a leader in conservation and science," says senior curator Brandie Smith. "But smaller zoos don't always know how to get involved in conservation or research."

Additionally, researchers often need data and support from more than one zoo to complete a research project. It's a numbers game. Most zoos simply do not have enough individual animals of any one species to support a rigorous, statistically significant scientific study. Once an SSP has vetted and approved a research project, it's much easier for researchers to partner with zoos and receive grants.

The Smithsonian's National Zoo participates in SSP-supported research on kori bustards, rheas, lions, tigers, and a wide variety of other species.



JESSIE COHEN/NZP

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### Breeding Without Borders

SSPs foster relationships between zoos and aquariums in the United States, and they're starting to foster international relationships as well.

"Global cooperation is the future of zoos," says Bird House biologist Sara

Hallager, who is SSP coordinator and international studbook keeper for the kori bustard. "Everybody is realizing that these populations aren't sustainable when managed individually. We really need to work globally."

Hallager tracks koris in zoos in Europe, Africa, and the Middle East in addition to North America. Though kori bustards aren't endangered, they are close relatives of the great Indian bustard, a critically endangered species. Lessons learned through the kori bustard SSP may help save its cousin species.

Global cooperation has been key to the survival of another bird in zoos: the kiwi. In the late 1980s, the population of kiwis in zoos outside of their native New Zealand was floundering. National Zoo Bird House keeper Kathy Brader flew to New Zealand to see what could be done. New Zealand had previously kept the studbook for all kiwis globally. In a rare move, they agreed to hand over the management of kiwis outside New Zealand to the SSP program, and to Brader personally.

Now, as a result of Brader's efforts, the non-New Zealand kiwi population has grown from a couple of dozen birds at six zoos to 53 birds at 13 zoos, an all-time world high. This success was only possible through international cooperation, says Brader. "We need Europe, and they need us, and we all need New Zealand. The only way this can work is if we all cooperate."

The movement toward global cooperation mirrors the push for national cooperation that spurred the initial creation of the AZA's SSP program. Zoo professionals and conservationists the world over hope this cooperation means that populations of species in zoos and in the wild will remain healthy, sustainable, and secure.

"The amazing thing about SSPs is that all these zoos voluntarily work together," says Smith. "They sacrifice their individual gain for the greater good. These hundreds of zoos move thousands of animals, and we all work together to make sure there are animals for generations to come." **SZ**

— *Science writer* BRITTANY STEFF *is an editor for the Zoo's website and veteran Smithsonian Zoogoer contributor.*