

RHINOS

IN THE ARK

By Randy Rieches, Curator of Mammals/Wild Animal Park

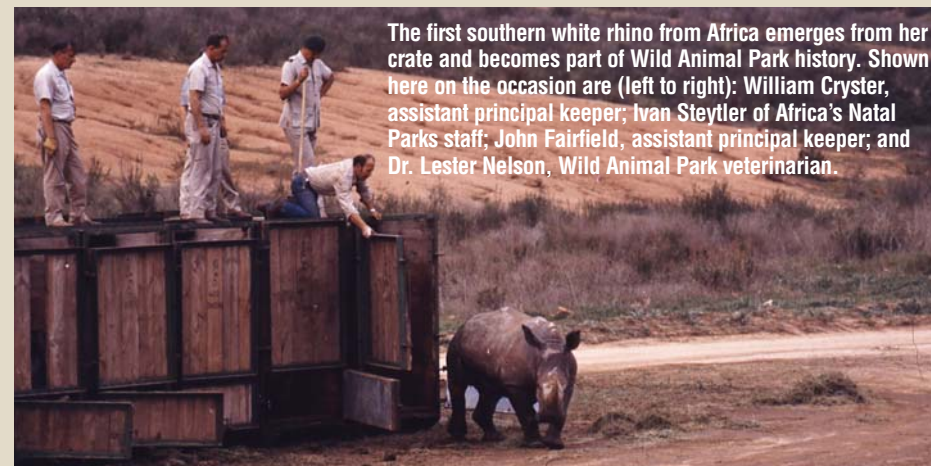
Right: The "Rhino Express," 18 southern white rhinos from South Africa, arrived by train in San Diego on February 17, 1971. The next morning, the rhinos in their crates were transferred on flatbed trucks up the highways to their new home at the Wild Animal Park.

On February 17, 1971, several large trucks drove into a large fenced field in the San Pasqual Valley. Men stepped out of the trucks and carefully unloaded 18 huge shipping containers. The containers were placed in a line, with the openings facing into the 100-acre expanse. Some of the animal care staff climbed up on the crates to open them, while others took refuge in the relative safety of the trucks parked around them. One by one, each of the crates was opened, and a southern white rhino emerged into its new home. I wasn't at the Wild Animal Park at the time, but Dr. Larry Killmar, our deputy director of collections, has told me what a sight it was.

As Dr. Killmar describes it, this historic scene was one of the many interesting ones that happened during the construction of the Wild Animal Park, and it marked a significant change in the way animals were managed in zoological settings. "We are so used to it now and so we forget that managing animals in large open settings was new in the 1970s," said Dr. Killmar. "Having an animal environment where animal care staff drove in and around large animals like rhinos and giraffes had seldom been done before in North America. It was a brand-new approach to keeping wildlife."



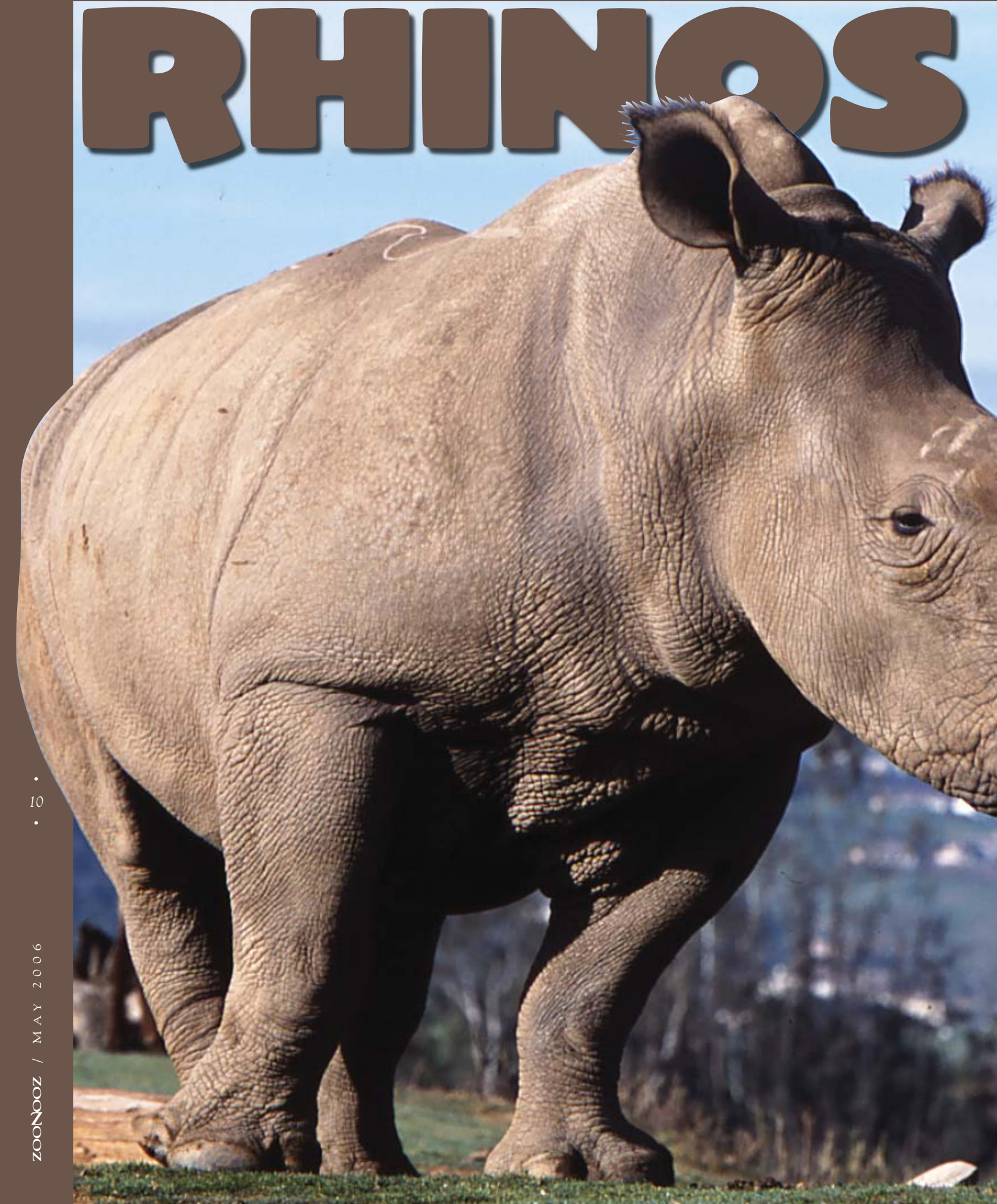
Above: Within the Wild Animal Park's fenced area, the 18 crates were lined up side by side. The rhinos were hosed clean and fed before the staff got ready to open the doors. Right: The rhinos acclimated quickly to their new territory.



The first southern white rhino from Africa emerges from her crate and becomes part of Wild Animal Park history. Shown here on the occasion are (left to right): William Cryster, assistant principal keeper; Ivan Steytler of Africa's Natal Parks staff; John Fairfield, assistant principal keeper; and Dr. Lester Nelson, Wild Animal Park veterinarian.

A large part of this new approach included the goal of breeding animals that had traditionally not bred well in zoological settings. In the early 1970s, rhinos had only produced offspring in a few zoos. Conservationists like Dr. Schroeder, the Wild Animal Park's founder and Zoological Society's director, knew that rhinos were increasingly endangered in the wild. There was also a concern that they were not represented sufficiently in the zoological "ark."

To address this problem, a group of rhinos was imported to San Diego from South Africa. These rhinos, unlike the rhinos





Sadly, there are less than 10 northern white rhinos left in the world, 3 of which are at the Wild Animal Park. This handsome fellow is Angilifou, the Wild Animal Park's male.

in reserves today, were not accustomed to being around people and trucks. They were wary of their new Wild Animal Park home, and the animal care staff was cautious around them as well. "I remember going out into the field enclosure to fix a drinker," said Dr.

Killmar. "I had to get out of the truck, and just a few feet away was a large, several-ton white rhino watching me. It was very unnerving, but after awhile, the rhinos got used to us."

This first group of southern white rhinos *Ceratotherium simum simum*, the founders of

the Wild Animal Park's breeding program, consisted of a male and eight females. On October 11, 1972 the first calf, a male named Zibulo (which means "first fruits of man" in Swahili), was born into this herd. The first calf was a big event for us, and animal care

We now know that it is not so much the size of the space they live in but the company they keep that inspires white rhinos to breed.

White rhinos are relatively social animals that live in herds of related females. Studies indicate that the pres-

ence of these females helps regulate breeding among the group. White rhinos kept as only one female paired with one male do not have the same breeding success as those kept in herds. The best grouping seems to be a herd of females with a few males that can move in and out of the presence of the herd. It appears that breeding behavior is strongly linked to the size of the female herd. By creating a herd of females

in a large enough space that allowed males to mingle or not, Dr. Schroeder overcame the barrier that was hindering the reproduction of this species in zoos. Since our first calf, the Wild Animal Park has successfully had more than 90 southern white rhino births. This represents more births of this species than any zoological institution in the world and has earned the Park recognition from the American Zoo and Aquarium Association (AZA). Of our founding herd, a number have passed away due to old age. We still have three founders, Nthombi, Komaas, and Mjuba. These three females, each over 30 years of age, are some of the oldest rhinos in the world and have given birth to 32 calves between them.

This is a success story for the Park, yet we still have a lot to learn about rhino reproduction. In 2006, researchers from the Zoological Society's department of Conservation and Research for Endangered Species (CRES) are launching a new study into white rhino reproduction. This study—which is supported in the United States by the Heller Foundation and in Africa by the International Rhino

Foundation—will look at reproduction in later generations of captive rhinos. Scientists hope to determine if there are social effects at work, if older animals like our three remaining founders influence the reproduction of their adult children. They also plan to investigate if nutrition plays a role in reproductive success.

Southern white rhinos are doing well in zoological settings. With protected reserves and laws against poaching, their numbers also appear stable in the wild. Unfortunately, not all rhino groups have been so lucky. The northern white rhino *Ceratotherium simum cottoni* is a subspecies that has reached a critical juncture and may go extinct in our lifetime.

Northern white rhinos are found only in a small area of Africa, around the Democratic Republic of Congo. They are very similar in appearance to southern white rhinos, although they tend to have larger horns and heads. The real difference, however, is in their DNA. In 1983, Dr. Oliver Ryder, a geneticist at CRES, characterized the differences. He published a paper making it clear that northern and southern white rhinos were two subspecies that would not normally interbreed. A survey

TACKLING WHITE RHINO BREEDING CHALLENGES

Ronald Swaisgood, Ph.D., Head, Division of Applied Conservation/Conservation and Research for Endangered Species (CRES)



A group of female southern white rhinos lounges by the waterhole at the Wild Animal Park.

The white rhinoceros captive breeding program faces one of the most mysterious and intractable problems in the zoo community. Many of the founding population reproduced well, but reproduction among first generation females has been extremely limited in zoos. Most of the wild-caught females that drove population growth are beginning to die off from old age. Now a looming crisis faces the worldwide captive population—if this problem is not solved soon, it will be necessary to bring in more wild rhinos to keep the captive population from going extinct.

I began to address this problem nearly 10 years ago, working with CRES endocrinologists on both captive and wild populations. While there have been many advances, we still cannot answer the elusive question, "Why don't captive-born females reproduce?" Apparently the problem starts during the early development of the females. We know that mating behavior is normal, so the problem is either poor conception or premature pregnancy termination. In a new development, I have just commenced a study funded

by the International Rhino Foundation trying to "mine the data" in the hands of managers of small private game reserves in South Africa. Two assistants will spend the next year traveling the country interviewing these managers about the history and breeding success of these rhinos.

On the home front, Lisa Nordstrom, funded by a generous donation from the Heller Foundation, will join us at CRES to tackle this problem from different angles. Lisa comes to us from Utah State University, where she is finishing her dissertation on rhino and tapir management and breeding. As the Heller Fellow, she will develop and circulate a questionnaire to zoos around the world. It will address the precise management circumstances that each captive-born female experienced during development, and determine how this influenced reproduction later in life. She will also analyze data from rhino "stud-books" and re-examine some of our behavioral data collected at the Wild Animal Park. With a little luck and a lot of hard work, Lisa may help us finally to get to the bottom of this perplexing conservation problem.

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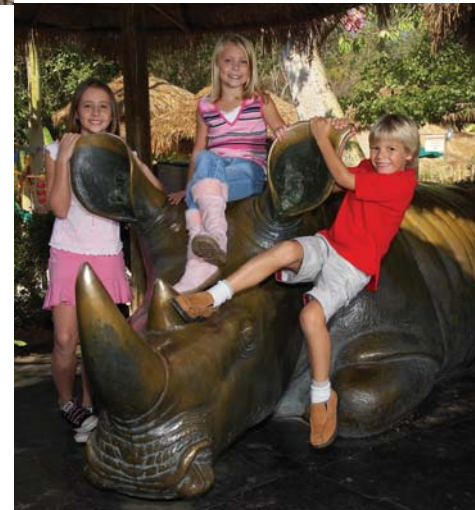
staff from all over the Park came out to see him. Pretty soon there were a number of other white rhino calves, and each one was a significant event and an important addition to the world population.

The Wild Animal Park's success appeared to indicate that large spaces were necessary for white rhinos to breed. A number of accredited zoos began following the Park's lead, building larger spaces for the rhinos in their care.

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The herd of southern white rhinos at the Wild Animal Park has done very well in the last 34 years, and more than 90 frisky little calves have been born there.



More than a big statue: Since 1985, this life-sized bronze of a southern white rhino has been a big hit with children at the Wild Animal Park. It is also the symbol of the Park and a tribute to the late Anderson Borthwick, who as president of the Society's board of trustees arranged for the rare southern white rhinos to come to the Park from South Africa. Rancho Bernardo artist Wilfred Boettiger was commissioned to sculpt the one-ton bronze, which reminds us of a species that was once endangered and is now thriving.



Both northern and southern white rhinos have the two horns and straight, "square" upper lip characteristic of white rhinos. They are grazers, and this lip shape allows them to get close to the ground as they clip off grass.

of accredited zoos discovered that very few northern white rhinos were represented in captive populations.

At the Wild Animal Park, we currently have three northern white rhinos, two females and a male. The two females, named Nola and Nadi, are well known characters at the Park. An inseparable pair, they are often seen together. In the afternoons, the animal care staff will often find them sunning, lying down with legs



The northern (seen here) and southern white rhinos are two subspecies of *Ceratotherium simum*, separated by geography and some physical and genetic differences.

spread out from their sides. Keepers, along with animal care supervisors like Lance Aubery, who have worked with them for many years are able to approach them, scratching their backs and feeding them apples. The pair are so used to human interaction that they even allow their feet to be trimmed during these afternoon sessions. Observing these two, it saddens me to think that there are less than 10 northern white rhinos left in the world.

Our work with northern white rhinos began too late and with too few individuals. In April 1972, the Wild Animal Park received a pair

The northern white rhino is a subspecies that has reached a critical juncture and may go extinct in our lifetime.



of female northern white rhinos from the National Zoo in Washington D.C.. These two females had never bred. The Wild Animal Park introduced them to a male from the Khartoum Zoo in Sudan. We hoped that these two females would be enough of a herd to stimulate breeding behavior. We also hoped they would find the male attractive. We all watched anxiously, hoping that breeding would occur. Unfortunately, the females showed no interest in the male.

Reproductive physiologists from the Society's CRES department began

working with the northern white rhinos to help stimulate breeding. Because of the female rhinos' advanced age and lack of prior breeding, the scientists felt that their lack of interest was due to a state similar to menopause. These physiologists attempted to reawaken the rhinos' dormant reproductive systems with hormone treatments. After several months, one of the females, Nola?, began to show signs of cycling. One instance of breeding behavior occurred, but no calves were produced. The advanced age of the females and the few numbers in the herd worked against the hope for success.


In the meantime, war, famine, and genocide were occurring in the Democratic Republic of Congo. The last herd of northern white rhinos in the wild was seriously affected by the human events around them. Poaching for rhino horn and bushmeat took its toll, and in 2006, there are only about four of this subspecies

Nola and Nadi, the Wild Animal Park's two northern white rhino females, are almost always together, sunning, grazing, or taking a mud bath.



left in the wild. Including the three elderly northern white rhinos at the Wild Animal Park and the five individuals that remain at Dvur Kralove in the Czech Republic, the population of northern white rhinos has been reduced to fewer than 10.

Here at the Wild Animal Park, we are continuing our commitment to the conservation of rhinos. We will continue to work with other accredited zoos to maintain sustainable captive populations of southern white rhinos, Indian rhinos, and black rhinos. We worry about those species we are not working with, the ones that are not well

represented in the zoological ark: the Javan rhino and the Sumatran rhino. We know that like the northern white rhino, these species are increasingly endangered in the wild and may only survive if people can find the means to support them in zoos and continue funding conservation projects in the wild. 



A HOPEFUL FUTURE FOR INDIAN RHINOS

In addition to the southern white and northern white rhinos, the Wild Animal Park also has a herd of Indian rhinos *Rhinoceros unicornis*. As the meaning of the scientific name indicates, this species is a "one-horned rhinoceros," as opposed to the two-horned white rhinos. Indian rhinos are also distinctive for their armored appearance, looking as if they are covered in heavy plates. These are really thick, overlapping folds of skin, which do afford some protection but are still sensitive to bug bites and sunburn. That's why you'll often find rhinos lolling comfortably in a pool or mud wallow.

The Wild Animal Park currently cares for a herd of 6 male and 11 female Indian rhinos, several of which are growing calves. We reached a significant milestone in December 2005, when our 50th Indian rhino was born (pictured at right), which was also the first fifth-generation rhino birth in the world. Lali, which means "precious girl," is growing by leaps and bounds and is venturing away from



for hormone analysis, or helping veterinarians with health care procedures when necessary.

The Zoological Society of San Diego's first Indian rhinos arrived at the Zoo in 1963, and this species was there at the opening of the Wild Animal Park in May, 1972. They began a breeding program that has now spanned several decades, with the goal of increasing the number of Indian rhinos in both United States and international zoos to create a stable and sustainable population.

This year we will send two of our females to the Patna and Dehli zoos in India to contribute to the breeding programs there, and they will send us three males that will provide new genetic bloodlines for the North American population. The Society will also provide funding and support for two conservation programs: the North American Save the Rhino

Campaign and Indian Rhino Vision 2020, a program in India working to increase the wild rhino population there to 3,000 by the year 2020.



Indian rhinos are an endangered species, with current estimates of only about 2,000 left in the wild. However, the conservation work taking place worldwide in facilities like the Wild Animal Park provides hope for this remarkable species. We hope to see their handsome, lumbering figures trotting along well into the future.

her mother to spend time with the other calves. Most recently, we've had another birth, a male named Khali, born on February 24. Because his mother was not able to produce enough milk for him, he is being raised at the Park's Animal Care Center and is doing very well.

Our herd of Indian rhinos is located in the Park's Asian Plains exhibit, and the females tend to spend their time with their young adults and youngest calves. These groups then join up to share meals at the feeders and to lounge in the mud wallows. Our adult male prefers to be off by himself, unless he is courting one of the females. You might also notice keepers working in the exhibit area, filling the feeders with hay and herbivore pellets, collecting fecal samples

