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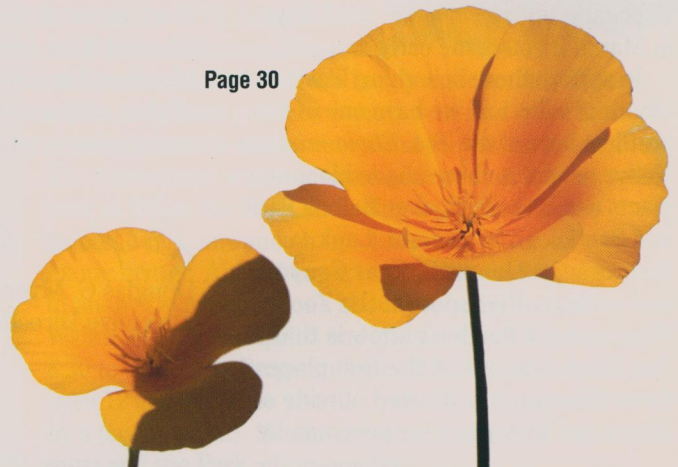
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COVER

Once targeted for culling in their native Swaziland because of overpopulation, seven African elephants *Loxodonta africana africana* that were rescued and brought to the Wild Animal Park are now facing a much brighter future. The one male and six female pachyderms are making the most of their new life, enjoying their three-acre enclosure and flourishing under the progressive elephant management approach taken by the Park's dedicated keepers. Under the protected contact system, the elephants are trained safely in an atmosphere of cooperation between animal and human.

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IS TIME RUNNING OUT FOR

As the skeleton struck the time at the top of the magnificent clock, my mind came back to the reason I was there. This incredible clock is located in the "Old Town" in the city of Prague, the Czech Republic. My mission in July 1998 was to escort a male northern white rhinoceros back to his former home at the Zoological Garden Dvur Kralove, which is not far from Prague. The transfer of this rare rhino was part of a greater plan designed to help save the northern white rhino from extinction. It was my hope that the chiming of the clock would signal a new beginning, not a slow end for these extraordinary rhinos.

THE NORTHERN WHITE RHINO?

Contrary to the successful conservation story of the southern white rhinoceros, the prospects for the northern white rhinoceros *Ceratotherium simum cottoni* are still disheartening. As of August 2002, there were only an estimated 30 northern white rhinos in the wild and 10 in captivity. The wild population of this rare subspecies is found only in the Garamba National Park in the Democratic Republic of Congo (formerly Zaire). In 1900, the northern white rhino was well represented in five African countries, and it was the southern white rhino that was near extinction in South Africa. By 1960, the northern white rhinos were still doing well, with numbers estimated at 1,000 to 1,300 individuals. However, this healthy population was decimated by poaching during the mid-1960s. In 1983, there were only 13 to 20 northern white rhinos left in the wild. Currently, the small wild population still stands at about 30, with no significant increases.

By Lance Aubery
Animal Care Supervisor
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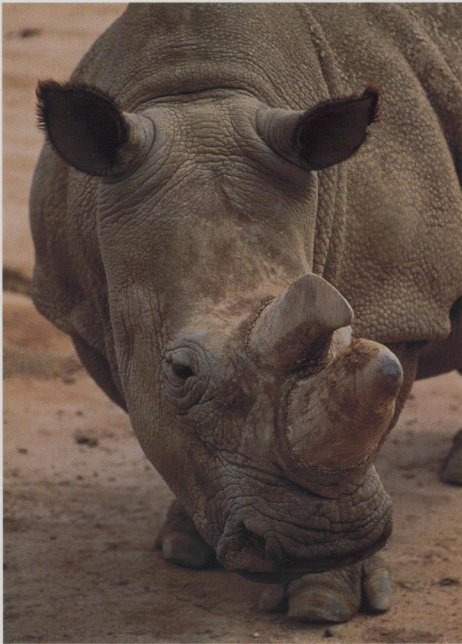
Some may say that saving this northern population of white rhinos isn't worthwhile. Northern and southern white rhinos look very much alike: the only perceptible differences are skull distinctions and the amount of hair on the ears. However, conservation strategies for African rhinos are increasingly focused on establishing and managing protected sanctuaries to hold rhino populations, and genetics may be important when moving animals into and out of these sanctuaries. Recent work on the genetics of declining rhino populations has focused on mitochondrial DNA (mtDNA). To make a long story short, in studies on black rhinos *Diceros bicornis*, mtDNA variations between subspecies were at 0.18 to 0.24 percent. Looking at white rhino mtDNA, there is a significant 1.4 percent difference between the two subspecies. With this evidence, preserving the genetic diversity between the northern and southern white rhinos has become a high priority for rhino conservationists.



Male Saut (right) in a standoff with the two females, Nola and Nadi. Saut tried to approach the females for breeding many times, but they were often less than receptive to his overtures.

The northern white rhino *Ceratotherium simum cottoni* is a critically endangered subspecies now restricted only to the Garamba National Park in the Democratic Republic of Congo (formerly Zaire). The Wild Animal Park has been working with these rhinos since it first opened in 1972, hoping to unlock reproduction secrets that can help increase the population.





Nola is very trusting of her keepers and will allow them to examine her out in the field exhibit, in exchange for apples and a belly scratch. Nadi is also very cooperative.

The first northern white rhinos came into captivity in 1950. These pioneers were a pair that went to Antwerp, Belgium. The only sizable group of northern white rhinos to come into captivity later was a herd of six, imported from southern Sudan into the Zoological Garden Dvur Kralove in Czechoslovakia (now the Czech Republic) in 1975. This herd consisted of four females and two males. In 1977, a fifth wild-caught female was transferred from England to Dvur Kralove. This last female was pregnant when she arrived. From 1977 to 1991, she was the only cow to reproduce in that group.

The lack of reproduction among the other imported females made it necessary to try numerous strategies. In 1989, one male and two female northern white rhinos were loaned from Dvur Kralove to the San Diego Zoo's Wild Animal Park. These were not the first in Southern California. In the mid-1950s, two pairs were imported to zoos in Washington, D.C., and St. Louis, and both of these pairs came to the Wild Animal Park in 1972. All four were aged animals, and when the new rhinos arrived in 1989, only one 1972 male remained.

I remember the day that our three new arrivals exited their crates at the boma in our East Africa exhibit. As one of the cows rushed noisily out of her crate,

she hooked her horn under one of the opened crate doors and tossed it aside. We had to use a forklift to move the door out of the way. The rest of the unloading went smoothly, and in a few days our rare guests were ready to go out on exhibit.

Because of the way these rhinos were handled at Dvur Kralove, they are extremely well behaved, for rhinos. The two females, named Nola and Nadi, are very trusting of humans and will allow keepers to touch them when they are resting. The male, Saut, is also very calm around people but not quite as tolerant as the females. During the past 12 years, the tractable nature of these animals has allowed us to try many procedures that would have been impossible with more aggressive rhinos.

A fourth northern white rhino, a male named Angalifu, came to the Wild Animal Park in 1990. He was not as tractable as the others but has mellowed over the years. Since his arrival, he has spent the most time with Nadi and Nola. He has never bred at the Park but has been a sperm donor, which may be important in the future.

Our various efforts to encourage breeding since 1989 have not produced calves from either of the two cows. Both females were paired with different males,



showing different levels of interest toward each male. On several occasions, Nola and Nadi were separated to see how each would interact with a male alone. Between 1991 and 1997, the two cows were immobilized 10 times for procedures to stimulate breeding. Nola was considered the one with the best chance of calving, and between November of 1995 and March 1997, Saut mated with her four times. At one point she may have been pregnant, according to hormone data, but this pregnancy never developed.

Consultants from several countries have helped us over the years. These authorities on rhino reproduction, along



Nola and Nadi spend much of their time together, grazing or taking a stroll around the exhibit. In 2002, two ultrasound experts from Berlin came to the Park to examine them. Unfortunately, the results were not encouraging, as both females were shown to have problems with their reproductive tracts.



Angalifu (left), approaches one of the southern white rhino females. Because breeding efforts for our three northern whites no longer seem viable, two southern white females joined them to keep them company.

“senile reproductive tract, still some follicular activity on the left ovary. Potential gamete donor.” In other words, the best bet for our two elderly rhinos may be Nola as a possible egg donor.

The technology and expertise involved with the transfer of eggs from one rhino to another has not been developed at this time. As advances in rhino reproductive techniques move forward, our chances of having Nola pass along her genetic material will increase. In the meantime, Nola and Nadi continue their peaceful existence in the South Africa exhibit at the Wild Animal Park.

Nola and Nadi’s former suitor, Saut, now resides in Europe. Not long after my trip to the Czech Republic with him, he




The Park’s rhinos are not always contentious. Here Angalifu (in back) shares an amicable mud bath with two southern white rhino females.

AS OF AUGUST 2002, THERE WERE ONLY AN ESTIMATED 30 NORTHERN WHITE RHINOS IN THE WILD AND 10 IN CAPTIVITY.

with the scientists on our own CRES team, have come up with a variety of strategies to get Nola and Nadi pregnant. From May 1994 to July 2002, nearly a dozen techniques were tried, involving both behavioral and hormonal approaches. Synthetic hormones were tried, and vitamin E was added to their diet. Even sawing off a section of Nola and Nadi’s horns (a painless procedure) so they would be receptive to males has not helped to produce a calf. We’ve tracked hormone levels in feces and used ultrasound examinations in attempts to establish patterns of reproductive activity in Nola and Nadi.

Our most recent examinations took place in July 2002. Two ultrasound experts from Berlin visited the Wild Animal Park to take a look at Nola and Nadi. Drs. Hildebrandt and Hermes used sophisticated ultrasound equipment to visualize our rhinos’ reproductive organs. The results of Nadi’s examination were not very promising: she has cysts on both ovaries. Nola’s examination revealed a

mated with a female at Dvur Kralove, and in the summer of 2000, a female calf was born. This is the first captive northern white rhino birth since 1991. The mother of this calf has again mated with Saut; unfortunately, as of January 2004, conception was not confirmed. These are small steps forward, but at least they provide a glimmer of hope for a subspecies that is on the brink of disappearing forever. 

In 1998, Saut returned to the Czech Republic to be paired with other females there. He fathered a female calf in 2000, giving a glimmer of hope to the conservation program.

