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CENTER FOR REPRODUCTION OF ENDANGERED SPECIES

Understanding Reproductive Success: Southern White Rhino Field Study

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For 30 years, the Wild Animal Park has been extremely successful in breeding the southern white rhinoceros. In the early 1970s, 22 rhinos were brought to the Park from South Africa, and since then, 89 births have occurred. However, such positive results can lead to a false sense of security for the captive population, because as the offspring (F1 generation) of these wild-born rhinos became mature, it came as a surprise that the captive-born females were not reproducing. These low to zero reproductive rates in this F1 generation were not isolated to the San Diego herd. In fact, in the United States, in the captive population of white rhinos, only 7 percent of the F1 generation have reproduced. This is a serious situation because the original wild-born population im-

ported in the 1970s is now reaching the end of its reproductive life.

Concern about the aging rhino population led the CRE.S Endocrinology Division, together with the Behavioral Biology Division, to begin a study involving several zoos that would evaluate the reproductive patterns of both normally and subnormally reproducing rhino females. Noninvasive collection of feces samples permitted daily collection of information without disturbing the rhinos and provided details on the reproductive

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What researchers learn about the behavior and reproductive biology of free-ranging southern white rhinos at the Umfolozi Game Reserve in South Africa may help to improve low birthrates in captive-born rhinos.

REPORT

WINTER 2001

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status of each female. From the fecal progesterin data we could determine if a female was ovulating, pregnant, or nonreproductive. These initial studies suggested that some of the rhinos were having infertile cycles, perhaps due to early miscarriage.

In the reproductive or behavioral study of any species in captivity, it is important to understand the normal biology of their free-

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ranging counterparts. With the use of hormone analyses from noninvasively collected samples, this is now a possibility. We organized a collaborative project with Professor Norman Owen-Smith from the University of Witwatersrand in South Africa, because he is renowned for his study of the behavior of free-ranging southern white rhinos. Professor Owen-Smith

Because rhinos are very wary of people, tracking them in dense bush is both difficult and dangerous.

had already established a field study site in the Umfolozi Game Reserve that we were able to join. Funded by several granting organizations, such as the International Rhino Foundation, S.O.S. Rhino, the Amerman Family Foundation, and the Alice C. Tyler Perpetual Trust, we began a project to study the hormonal and behavioral aspects of reproductive biology in wild rhinos.

To be able to find and follow wild rhinos in the bush, we installed radio transmitters in the horns of several female rhinos so that we could track them by radio signals. Females coming into heat were usually accompanied by a dominant bull that attempted to court the female with "hic-pant" vocalizations and tried to rest his chin on her hindquarters. We are currently ana-

lyzing the fecal samples in our lab to see if we find the same type of hormone patterns that we found in our captive population. In our studies with captive rhinos, we had found two types of reproductive cycles, a short one lasting about 35 days and a long one lasting about 70 days. The longer cycles appeared to be associated with subfertilities, but we were uncertain which type was really normal. So far, our behavior data from the field point to a normal cycle of about 30 to 35 days for wild rhinos.



The research team implants small radio transmitters at the base of the horns of several female rhinos so they can be monitored during the breeding season. The radio signal will be emitted for about two years.



CRES researcher Angela White radio tracks white rhinos to collect behavioral data and fecal samples, which are analyzed back at the CRES endocrinology lab.

If this trend holds, then we will have a better understanding of the reproductive problems facing captive rhinos and will be able to apply this information to appropriate management and treatment. These efforts should help prevent the looming crisis in the captive propagation of southern white rhinos, a magnificent species saved from extinction during the last century and one that we hope will begin to breed well in captivity.