

A CONSERVATION STRATEGY FOR RHINOS

By Thomas J. Foose

[Editor's Note: In Part One of this article, which appeared in the previous issue of AROUND THE HORN, Dr. Foose discussed the environmental, demographic and genetic problems of small populations. Viable populations depend on the genetic and demographic objectives of the conservation program, the biological characteristics of the species, and the kinds and intensity of stochasticity operating in the environment.]

The population biology considerations discussed in Part One, in conjunction with the acuteness of the crisis for rhinoceros species, suggests a conservation strategy for rhinos that consists of two major components.

(1) Intensive management and protection of viable populations in the wild.

In other words, concentrate field efforts, and available resources, on those wild populations that are large and/or protectable enough to be viable for the long-term. Based on the discussion in Part One, this goal would translate into trying to secure enough subpopulations, normally of at least 100 rhinos each, to produce a metapopulation at least equivalent to the viable population size recommended for the species.

This kind of strategy has been adopted for conservation of the Sumatran rhino by the IUCN Asian Rhino Specialist Group under Chairman Mohd. Kahn of Malaysia. Although the estimated 900 Sumatran rhinos are widely distributed over much of Southeast Asia, five main sanctuaries and populations, each capable of accommodating 100 or more rhino for a total of 2,000, have been recognized as viable in terms of priorities for allocation of resources and effort on the species in the wild.

The African Elephant and Rhino Specialist Group has also developed priorities for conservation efforts based in large part on population viability considerations.

Collectively, for all five species of rhino, there are perhaps 30 populations and, hence, significant sanctuaries in eight countries that could provide sufficient numbers and distribution of animals to insure viability, and that therefore should receive strategic priority for conservation action and resources. A relatively few millions of dollars per year could sustain these populations and sanctuaries, which accommodate many other species.

Population viability considerations also emphasize the importance of national, or better, regional and continental, strategies and programs for rhino conservation. Again, both the Asian and African Rhino Specialist Groups have proposed and delineated such strategies. Zimbabwe and South Africa are applying these considerations in formulation of their national conservation strategies for the black rhino.

(2) Captive propagation to reinforce wild populations.

Animals that are located outside the viable populations and sanctuaries can be employed for captive propagation or careful translocation into larger or securer areas. Such animals have been designated "doomed" in the Sumatran rhino conservation strategy. A rhino is doomed if it cannot contribute to the long-term survival of the species, because it cannot be protected from poachers and/or it is not part of a population large enough to be viable genetically or demographically. (Often,

there is not even another rhino of the opposite sex around for breeding.)

Captive propagation can and must contribute to the conservation strategies for rhinos. There are a number of advantages to captivity: animals can be protected from poachers; environmental problems can be moderated; there can be more genetic management, specifically the N_e of any given number of animals can be maximized.

The zoos of the world are organizing programs to respond to this need. In North America, the AAZPA has accorded captive propagation of rhino species its highest priority. Four of the 53 species in the formally organized programs, known as Species Survival Plans (SSPs), are rhinos. The fifth species, the Javan, is expected to be added soon. Indeed, the rhino has been adopted as the official logo of the SSP. In Europe, the EEP has organized a program for the black rhino. In Japan, the black, white and greater one-horned Asian rhinos have been designated for their SSP programs. In Australia/New Zealand, the SMP (Species Management Program) is developing programs for both the black and the white, with interest high for one of the Asian species.

All of these captive programs are organized to intensively manage the captive populations genetically and demographically to maximize preservation of the gene pool. Moreover, there is increasing cooperation and coordination among these regional programs to form international captive programs and plans for these species. Indeed an attempt is in progress to organize an International Black Rhino Trust that would provide a better mechanism for coordinating the captive programs on a worldwide basis as well as a vehicle for significant contribution from the *ex situ* community for *in situ* conservation.

Species	North America	World
Black	150	300
White	100-150	200-300
Greater One-Horned Asian	75	150
Sumatran	75	150
Javan	75	150
TOTAL	475-525	950-1050

The importance of international captive programs can be appreciated again through population viability considerations. Currently, there are about 250 rhinos of four species in North American zoos; about 720 in zoos worldwide. These numbers are considerably below the viable population objectives for captive programs that have been established through appropriate population viability analyses (Table 1). More space and resources, i.e. money, are required if *ex situ* programs are going to be able to fulfill their function in rhino conservation strategies. There would be great value in trying to establish some large rhino propagation centers in the United States in areas similar to the natural habitats of these species. There already has been some interest and activity in this possibility for black rhino on the part of some ranchers. However, to really contribute to global (See STRATEGY on Page 6)

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strategies, it would be important that such developments (1) be part of the captive propagation programs already in progress; and (2) be administered in such a way as to insure perpetuation of the facility beyond the lifetimes and changing interests of private owners.

It must be emphasized that the purpose of captive propagation is to reinforce, not to replace, wild populations of rhino, i.e. populations of rhinos surviving in natural habitats within their historic range. In other words, zoos must serve as reservoirs of both genetic and demographic material that can be periodically transfused into natural habitats to re-establish species that have been extirpated or to revitalize populations that have been debilitated by genetic, demographic, or environmental problems.

Indeed, what appears optimal and inevitable are conservation strategies for the rhino species incorporating both captive and wild populations that are interactively managed for mutual support and survival. This type of strategy is already being developed for the Sumatran rhino and attempts are in progress to develop similar programs for the black and Javan rhino.

The concept of interacting captive and wild populations accentuates another point. Zoos are becoming larger and more naturalistic. Sanctuaries in the wild are becoming smaller and more artificial, becoming, in essence, megazoo. The same kinds of intensive management in genetic and demographic terms will need to be applied to both kinds of places where rhinos are being preserved. Another way zoos can contribute to conservation of rhinos is by transfer of this intensive-management, i.e. captive-type, technology to wildlife managers in Africa

and Asia. A start in this direction was generated out of the African Rhino Workshop conducted in Cincinnati in 1986.

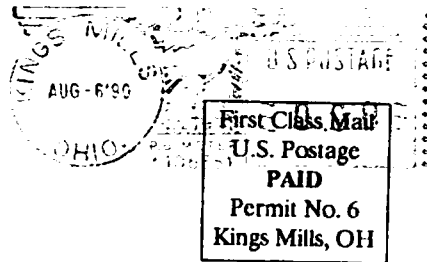
One more area where zoos can contribute is in research applicable to conservation of rhinos. Some research of note includes: nutrition, where vitamin E deficiencies are being elucidated; disease, where a strange hemolytic anemia syndrome afflicting wild as well as captive black rhino is being investigated; and reproductive technology, where development of artificial insemination and embryo transfer techniques could greatly facilitate management of rhino in the wild as well as captivity and especially in interactions between the two. The North American SSP has recently organized a comprehensive and coordinated program of research in these areas on rhinos and has recruited a researcher whose sole responsibility is to coordinate the various projects. However, this kind of activity is expensive and it would be most beneficial if funding agencies, such as the National Science Foundation, provided more support for conservation research.

Finally, there are many organizations, agencies, institutions, and individuals interested in rhino conservation. But resources are still limited. Moreover, the crisis for rhino survival is intensifying. It is time for the most effective and efficient action possible. The kind of global strategy delineated above is intended to respond to this need.

It is also time for better mobilization of the home front for the rhino war effort. There would be, in my opinion, great benefit in organizing a coalition or network of those parties interested and involved in rhino conservation so that they could at least communicate and perhaps coordinate their efforts. This Newsletter may be able to contribute toward this objective.



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