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**BLACK RHINOCEROS (Diceros bicornis michaeli)
(Diceros bicornis minor)
(July, 1993 thru July, 1994)**

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INTRODUCTION

Original population genetic analyses has shown that the minimum population size (MVP) for black rhinos in order to maintain 90% of original genetic diversity for 200 years is 150 animal spaces split up into 75 michaeli and 75 minor. However, at the 1993 meeting in London when the Global Captive Action Plan for black rhino was proposed, it was decided that the target population objectives for black rhino in the AZA SSP would be 90 michaeli and 80 minor. At the present time, there are 69 michaeli in 27 institutions and 32 minor in 10 institutions for a total of 101 animals in 36 institutions in North America. The goal is to preserve 90% of the average heterozygosity in the gene pool for 110 to 150 years (ie. 8-10 rhino generations).

At present growth rates, michaeli with a population of 69, should be expected to reach the proposed objective of 90 in about 10-15 years. With a current population of minor at 32, it will obviously be some time before the SSP population can attain its objective of 80. It should be noted that if it weren't for the deaths caused by toxic stress during translocation while still in Africa, the current population is 14% greater than the number imported. The black rhino SSP is in the mature stage.

DATA TABLE (Current through 01 July 1994)

<u>D. b. michaeli</u>	2 years ago (end 1992)	1 year ago (end July, 1993)	Current Year (July, 1994)
Total # SSP Institutions with MOP's	24	23	26
Total Captive Population	33.35	36.34	40.29
#SSP animals (non-surplus)	68	70	69
#SSP animals (surplus)	0	0	0
#animals not in SSP but desirable	2	2	2
Total births in SSP program	3	4	4
#surviving to 1 year	3	4	4
#desired births	3	4	4
#undesired births	0	0	0
Total deaths of SSP animals	2	3	3
Total imports	0	0	0
Total exports	0	0	0
Total founders w/represented descendents	78	78	80

DATA TABLE (Current through 01 July 1994)

<u>D. b. minor</u>	2 years ago (end 1992)	1 year ago (end July, 1993)	Current Year (July, 1994)
Total # SSP Institutions with MOP's	10	10	10
Total Captive Population	11.18	10.18	14.18
#SSP animals (non-surplus)	29	28	32
#SSP animals (surplus)	0	0	0
#animals not in SSP but desirable	0	0	0
Total births in SSP program	1	2	4
#surviving to 1 year	1	1	4
#desired births	1	2	4
#undesired births	0	0	0
Total deaths of SSP animals	2	2	2
Total imports	10	0	2
Total exports	0	0	0
Total founders w/represented descendents	13	15	19

CURRENT POPULATION STATUS

Since the black rhino population in the wild dropped 85% in only thirty years, from 60,000 in 1960 to under 2,300 today, more emphasis needs to be focused on captive breeding in order to increase the birth rate for both michaeli and minor. The population of michaeli is very slowly approaching the proposed MVP of 90 animals since it currently numbers 69. The birth rate is limited but animal growth rate is about 1% with only an increase of 4 animals born in 1993 and 4 born in 1994 to date. In 1993, 2 minor were born and in 1994, to date, 4 have been born. There have been 2 imports and no exports in 1993-1994. However, 3 minor males and 1 michaeli male have been identified to move to Australia. All black rhino in the population are SSP non-surplus animals and 2 michaeli in Mexico City have not been included in the North American population because officials there have not signed the Memorandum of Participation so the rhinos are not managed as part of the SSP. As is evident, the MVP for minor needs to be increased.

DEMOGRAPHIC TRENDS

The Black Rhino SSP is attempting to manage two of the four potential evolutionarily significant units (e.s.u.'s) for black rhino: michaeli and minor. Reproduction is occurring as explained above, but at a slower rate than is desirable. In 1993-1994 there were recommendations made to remove four animals from the breeding population (3 minor males and 1 michaeli male recommended for a move to Australia). The Black Rhino Masterplan has been closely followed and almost every recommendation has been quickly accomplished. As of August 1, 1994 a new Masterplan has been completed in order to place unpaired animals in breeding situations and also disperse younger animals to more holding institutions. More specific and ambitious objectives for reproduction have been established (see pages 10-11 of Masterplan, 1 June 1994).

We are attempting to initiate captive management of minor on a global basis and are exploring ways to get males to Australia to breed with their females.

POPULATION GENETICS

At the present time there are only 19 founders with represented descendents of minor in the N.A. population. There continues to be an ongoing effort to increase founder representation.

SPECIAL CONCERNS

The population of minor needs to be increased and currently there is a dearth of space for michaeli which may have an eventual impact on space for minor. The Black Rhino SSP has been working with the White Rhino SSP in hopes of moving white rhino from selected institutions to open up more space for black rhino. The question of whether or not to keep michaeli and minor as two subspecies is still pending and a workshop to reconsider the issue is planned for 1995.

RESEARCH

Current research involves reproduction studies such as hormonal evaluations of urines, bloods, saliva, feces; ultrasound evaluations for pregnancy, ovarian observations and anatomy; semen freezing; anatomical studies at necropsy; development of instrumentation for embryo transfer; nutritional studies involving Vitamin A; disease related studies. There needs to be an increased focus on nutritional studies and problems involving diseases such as hemolytic anemia. A Rhino Research Committee has been identified and is seeking the participation of scientists unrelated to Zoos and rhinos in particular so that new creative directions toward research can be discussed. A major workshop on Diseases of Black Rhino was conducted in August, 1993, and a Masterplan for further research has been developed.

FIELD CONSERVATION

The International Rhino Foundation will be working to develop in situ projects throughout Africa.

PROGRESS TOWARD GOALS

The top 6 specific goals for the black rhino program that are guiding the program are:

1. Propagate black rhino in North America to reinforce wild populations in Africa as part of the IUCN global strategy.
2. Toward this goal, attempt to preserve 90% of the average heterozygosity obtained from wild populations for a period of at least 110-150 years (8-10 black rhino generations) and perhaps longer.
3. Respect, at least initially, the 4 geographical varieties and potential e.s.u.'s recognized by the 1986 Cincinnati African Rhino Workshop.
4. Develop an SSP population of 170 black rhino in North America.
5. Expand the captive habitat for black rhino in North America and emphasize reproduction of black rhino in the management recommendations to insure the self-sustainment and expansion of the captive population against the appreciable mortality still occurring.
6. Establish the black rhino as the flagship species for support of other rhino in situ conservation programs.

Progress toward the above stated goals has been described throughout this report.

SHORT-TERM GOALS FOR UPCOMING YEAR

1. The proposed number of michaeli transfers during the upcoming year should be made as soon as possible.
2. Attempts will be made to breed to conception all open females.
3. Recommendations will be made to wean calves as soon as possible to be able to expose post-lactational cows to bulls.
4. Management of new minor founders will be carefully evaluated to enhance the entire populations.
5. More space will be sought for both michaeli and minor in order to achieve the carrying capacity of 170 animals.

FIVE YEAR GOAL

It will be extremely important to evaluate and determine, over the next five years, the nutritional requirements for captive black rhino as well as continue to provide resources to enhance study of reproduction and disease related problems.