

BLACK RHINOCEROS (*Diceros bicornis michaeli* and *D. bicornis minor*)

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Introduction

Population genetic analyses have shown that the minimum viable population size (MVP) for black rhinos necessary to maintain 90% of original genetic diversity for 200 years is 150 animals split up into 75 *michaeli* and 75 *minor*. At the present time, there are 67 *michaeli* in 23 institutions and 19 *minor* in seven institutions for a total of 86 animals in 30 institutions in North America. Even though the goal is to preserve 90% of the average heterozygosity in the gene pool for 200 years, in the case of the black rhino, there seems to be some "intuitive logic" in modifying this objective in terms of rhino generations; 10 rhino generations would represent 150-170 years.

At present growth rates, *michaeli*, with a population of 67, should be expected to reach the target "carrying capacity" of 75 in about five years. With a current population of *minor* at 19, it will obviously be some time before the SSP population can attain its target "carrying capacity" of 75. The black rhino SSP is in the mature stage.

In summary, the long-term goals of the Black Rhino SSP are: (1) to propagate black rhino in North America to reinforce wild populations in Africa as part of the IUCN global strategy; (2) toward this goal, to attempt to preserve 90% of the average heterozygosity obtained from wild populations for a period of at least 170 years (10 black rhino generations) and perhaps longer; (3) to respect, at least initially, the four geographical varieties and potential e.s.u.'s recognized by the 1986 Cincinnati African Rhino Workshop; (4) to develop an SSP population of 150 black rhino in North America; (5) to 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.

Data Table (current through 1 July 1991)

	<i>D.b. michaeli</i>	
	One year ago	Current year
Participating institutions	22	23
Captive Population	31.35	31.36
# SSP animals managed	66	67
# SSP animals not required to meet goals	0	0
# animals in non-participant collections but desirable to SSP	2	2
Total births in SSP program	5	1
# surviving to one year	4	1
# of desired births	5	1
# of undesired births	0	0
# of deaths of SSP animals	2	1
# of imports	0	0
# of exports	0	0
# of founders with represented descendants	78	78

D.b. minor

	One year ago	Current year
Participating institutions	7	7
Captive Population	7.12	7.12
# SSP animals managed	19	19
# SSP animals not required to meet goals	0	0
# animals in non-participant collections but desirable to SSP	0	0
Total births in SSP program	1	1
# surviving to one year	1	0
# of desired births	1	1
# of undesired births	0	0
# of deaths of SSP animals	0	1
# of imports	0	0
# of exports	0	0
# of founders with represented descendants	11	11

Current Population Status

The population of *michaeli* is approaching the proposed MVP of 75 animals as it currently numbers 67. The birth rate is minimum at best with an increase of only three animals in 1990 and one born in 1991 to date. Because the black rhino population in the wild dropped 85% in only thirty years, from 60,000 in 1960 to under 3,000 today, more emphasis needs to be focused on captive breeding in order to increase the birth rate for both *michaeli* and *minor*. In 1990, only one *minor* was born and in 1991, to date, only one has been born but it died the same day. There have been no imports or exports in 1990-1991. All black rhinos in the population are SSP non-surplus animals and two *michaeli* in the Mexico City Zoo have not been included in the North American population because they have not signed a Memorandum of Participation. The population size of *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. There have been no recommendations made to remove any animals from the breeding population. The Black Rhino Master Plan has been closely followed and almost every recommendation has been quickly accomplished.

Population Genetics

The addition of ten new founders of *minor* for the North American population is being planned through the International Black Rhino Foundation agreement with the Zimbabwean government. The U.S. Fish and Wildlife Service received a permit number on 1 July 1991 and it is anticipated that they will issue the permit by October. At the present time there are only 11 founders with represented descendents of *minor* in the North American population. There is an ongoing effort to increase founder representation. In Malaysia at Zoo Negara there is an adult male *michaeli* that may become available for import (in exchange for a pair of white rhino) and there is a 15 year-old female *michaeli* at the Buenos Aires Zoo, Argentina that may be available (in exchange for a young pair of black rhino).

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 Black Rhino SSP may be forced to send some animals out of the U.S. in order to solve this problem. Presently there is a request from the San Diego Zoo to send a male to Japan. This male will probably be sent with the prerequisite that the Yokohama Zoo participate in the SSP. The question of whether or not to keep *michaeli* and *minor* as two subspecies still begs an answer and genetic analyses are ongoing even though there are no apparent morphological differences. Also, biochemical analyses to date have not yet demonstrated any differences between *michaeli* and *minor*.

It will be extremely important to evaluate and determine, over the next five years, the nutritional requirements for captive black rhino.

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 E; and disease related studies. There needs to be an increased focus on nutritional studies and problems involving diseases such as hemolytic anemia.

Field Conservation

The International Black Rhino Foundation agreement with the Zimbabwean government will help support field operations in Zimbabwe. Monies raised from the efforts of Michael Werikhe as he walks across the U.S. will benefit black rhino conservation in Africa.

Progress Toward Goals

(1) Completion of negotiations (through the Black Rhino Foundation) with the Zimbabwean government to obtain 10 new founders for the SSP population.

Short-term Goals for Upcoming Year

- (1) Make all recommended transfers. The proposed number of *michaeli* transfers during the upcoming year should be approximately six or more depending upon numbers of births and sexes of calves.
- (2) Attempt to breed to conception all recommended females.
- (3) Make and communicate recommendation to wean calves as soon as possible to be able to expose post-lactational cows to bulls.
- (4) Carefully evaluate management of new *minor* founders so that the entire population will be enhanced.
- (5) Seek more space for both *michaeli* and *minor* in order to achieve the MVP of 150 animals.