

BLACK RHINOCEROS

(*Diceros bicornis*)

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Introduction

The AZA Black Rhino SSP continues its attempts to develop self-sustaining populations of two subspecies or geographical varieties of the species as a back-up to wild populations and as a resource to conduct management-oriented research and generate funds for *in situ* conservation. Updated SSP master plan recommendations were issued as part of the consolidated AZA SSP Rhino Master Plan in February 1996. An update of this master plan will be produced at an AZA Rhinoceros Advisory Group workshop in November 1997 at White Oak Conservation Center.

Target population objectives for black rhino in the AZA SSP were proposed: 90 *michaeli* and 80 *minor*. The goal is to preserve 90 percent of the gene diversity in the population for 110 to 150 years (i.e. 8-10 rhino generations). In 1994, based upon feedback from the regional programs to the GCAP/GASP, these population targets were further refined to reflect a time frame for achievement. This change recognizes the need for more performance measurement and attainable objectives in captive breeding programs for rhino. The seven year/50 year/ and 100 year target population objectives are: *michaeli* 90/90/90 and *minor* 50/80/80.

Data table *D. b. michaeli* (current through 1 July 1997)

	Two years ago	One year ago	Current year
Participating institutions	27	27	31
Total world captive population			87.98 (185)
Total North American captive population	37.29 (66)	39.30 (69)	41.31 (73)
# of SSP animals managed	37.29 (66)	39.30 (69)	41.31 (73)
# of SSP recommended births	4	3	3.0
# of nonrecommended births	0	0	0
# of deaths of SSP animals	6	1	0.3 (3)
# of imports	0	0	0.4 (4)
# of exports	1	0	0
# of founders with descendants	37	38	39

Data table *D. b. minor* (current through 1 July 1997)

	Two years ago	One year ago	Current year
Participating institutions	10	10	10
Total world captive population			29.32 (61)
Total North American captive population	11.17 (28)	13.18 (31)	18.20 (38)
# of SSP animals managed	11.17 (28)	13.18 (31)	18.20 (38)
# of SSP recommended births	0	5	5.2 (7)
# of nonrecommended births	0	0	0
# of deaths of SSP animals	1	2	0
# of imports	0	0	0
# of exports	3	0	0
# of founders with descendants	18	22	27

Current population status

The SSP population of *minor* is now growing vigorously and should attain its desired size of 80 in less than one rhino generation. The *michaeli* population is larger and nearer to its target population size but has been more or less stagnant for a number of years. According to the International Studbook for African Rhinoceros, the global captive population of *michaeli* is 87.98 (185) and of *minor* 29.32 (61) for a total of 116.130 (246)

Wild populations of black rhino appear to have stabilized at about 2,400 and are actually recovering slowly in some areas although the threat of significant poaching remains throughout the range.

Demographic trends

Objectives for reproduction in the master plan are more specific and ambitious than in previous Black Rhino Master Plans. *Michaeli*: seven births per year for next five years, with a total of 29 recommended breedings, and recruitment of eight more of the breeding-age nonbreeder males and 11 more of the breeding-age nonbreeder females to reproduction so there will be 20.17 breeders instead of the current 12.16. *Minor*: Four to five calves per year for next five years, with a total of 14 recommended breedings, and recruitment of three more breeding-age nonbreeder males and especially 6 more of the breeding-age nonbreeder females to reproduction so there would be 7.13 breeders instead of the current 4.7. Reproduction over the last two years appears to be fulfilling these admittedly ambitious goals for *minor* but not for *michaeli*. The skew in sex ratio of *michaeli* calves over the last seven years in conjunction with the aging of the breeder female population is impeding achievement of the demographic objectives.

The greatest demographic problem in *michaeli* is now the serious skew toward males in sex ratio of calves born in the SSP: 20 of the last 25 surviving births have been male. The pattern is now statistically significant. A similar trend, although not yet statistically, may be developing in *minor*. In an endeavor to redress this demographic imbalance, three females were imported over the last year from the *michaeli* population in Addo Elephant National Park in South Africa. An attempt to acquire another female, captive-born, from Japan failed with the death of the rhino to congestive heart failure soon after its arrival in North America. However, a further importation of a female from Japan is being arranged as part of an exchange between the SSP and Species Survival Committee Japan (SSCJ).

There continues to be unsatisfactory survival of black rhino under intensive management due to a complex of health problems (including hemolytic anemia, liver toxicities, encephalomalacia, various infectious disease, etc.). However, with various preventive and therapeutic measures suggested by the continuing research on these problems, mortality has declined appreciably over the last several years.

Population genetics

The genetic foundation of the *michaeli* population seems adequate at this time: There are 39 founders; gene diversity is about .97. The addition of new founder lines with animals imported for demographic reasons will further secure this situation. The genetic status of *minor* in the N.A. population is also sound: There are 27 founders with another potential one; gene diversity is about 0.96.

There is an ongoing effort to increase founder representation through recruitment of reproduction from nonbreeder founders already in the population.

Special concerns

The possible causes of the skew toward males in sex ratio of calves needs to be intensively investigated to determine whether there are possible management factors causing this pattern. Health and husbandry need to be improved to increase survival and reproduction in this species. Additional space for both subspecies needs to be increased and coordinated with each other and with the two other major rhino taxa in SSP programs, i.e. the white and Indian rhino. The Black Rhino SSP has been working in particular with the White Rhino SSP in the hopes of moving white rhino from selected institutions to open up more space for black rhino. Better coordination is the reason for combining the black and white rhino first in the African Rhino SSP Master Plan of 1994 and now in the totally consolidated AZA Rhino Master Plan of 1996. The question of whether or not to keep *michaeli* and *minor* as two subspecies is still pending and the possibility of a workshop on the issue remains under consideration.

Research

There are several major research projects in progress involving black rhino, under the auspices of the AZA Rhinoceros Advisory Group and with funding from the International Rhino Foundation.

- Pathophysiologic basis of diseases affecting captive African black rhinoceros: conducted by Dr. Don Paglia of UCLA and Dr. Eric Harley of the University of Capetown.
- Basic reproductive biology of rhinoceros: conducted jointly by Mike Fouraker of the Fort Worth Zoo, Dr Terri Roth of the Center for Reproduction of Endangered Wildlife at the Cincinnati Zoo, and Dr. Janine Brown of the National Zoo's Conservation and Research Center-Smithsonian Institution.
- Basic rhino nutrition: conducted by Dr. Ellen Dierenfeld at the Wildlife Conservation Society.
- Possible determinants of skew towards males in the sex ration of rhino calves in North American facilities: conducted jointly by Ms. Shirley Atkinson of the Wilds, Dr. Ellen Dierenfeld of the Wildlife Conservation Society and Dr. Tom Foose of the IRF and the Wilds.

Field conservation

The SSP is working with the International Rhino Foundation (IRF) to provide support for selected *in situ* projects throughout Africa. Due to problems in the Department of National Parks and Wildlife Management in Zimbabwe, the major program of support for conservation programs there has been terminated. However, an alternative program through the new rhino center being developed jointly by Chipangali Wildlife Trust in Zimbabwe and the Marwell Preservation Trust in the U.K. is developing. Significant support for *in situ* conservation has commenced in South Africa where a cooperative agreement has been concluded with National Parks Board in South Africa.

Progress toward goals

1. There is a new AZA SSP species coordinator: Dr. Don Farst, who previously served as the sub-species coordinator for southern black rhino.
2. An appreciable number of rhino continue to be relocated in an endeavor to induce more reproduction. There are already positive results from these moves and more relocations are planned.
3. To redress the demographic imbalance caused by the skew toward males in sex ratio of *michaeli* calves born in the SSP, three females have been acquired from the free-ranging population in Addo Elephant National Park, South Africa, to which this subspecies had been translocated in the 1960s from Kenya.
4. Major research projects on health, nutrition and reproduction are in progress with support from the IRF.
5. Captive habitat for black rhino in North America has been and continues to be expanded through coordination with the White Rhino SSP.

Financial report

The Black Rhino SSP does not maintain a separate bank account but works through the AZA Rhinoceros Advisory Group account and the International Rhino Foundation.

Short-term goals for upcoming year

1. The SSP master plan recommendations for black rhino will be updated at a meeting of the Rhinoceros Advisory Group at White Oak Conservation Center in November 1997.
2. Attempts to reproduce all breeding age females will continue and recommendations to wean calves as soon as possible to be able to expose post-lactational cows to bulls will continue.
3. There will be an intensive research effort to determine whether there are management factors causing the skew towards males in the sex ratio of black rhino calves born in the SSP.
4. The SSP will continue to interact with other regional *ex situ* breeding programs as well as *in situ* protection and management efforts. In particular, an additional female *michaeli* will be imported from Japan (under auspices of the SSCJ) to redress the current imbalance in sex ratio in this SSP population. In return, a male *michaeli* will be provided to the Japanese SSCJ population.
5. More space will be sought for both *michaeli* and *minor* in order to achieve the carrying capacity of 170 animals.