AZA SSP

AFRICAN RHINO

MASTERPLAN

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OVERVIEW OF THE CONSERVATION CRISIS FOR RHINO

- Since the AZA SSPs for Rhino were initiated in 1982, the 5 surviving species of rhino have become even more critically threatened.

- Only about 10,000 rhino survive in the wild; about 1,000 in captivity (Table 1).

- However, over half of these rhino, both in the wild and in captivity, are of one species, i.e. the southern white rhino. Even with this subspecies there is no cause for complacency as concerns grow that the southern white rhino may be on the verge of a catastrophic decline due to political upheaval in South Africa where over 95% of them reside.

- There are fewer than 5,000 of the other 4 species combined:

African Black Rhino	2,400	Sumatran Rhino	500
Indian Rhino	2,000	Javan Rhino	< 100

- The situation is even worse because some of the rhino species are believed to have distinctive subspecies, for example there are only 33 of the Northern White Rhino surviving in a single national park in the wild and only 9 in captivity where they are not reproducing.

- Without drastic action, the rhino will be extinct in the wild by the year 2000.

- The most spectacular decline in recent years has been suffered by the Black Rhino, down from 60,000 in 1970 to just over 2,000 today. The number continues to decrease. Perhaps even more relevant is the fact that in 1982 when the SSP for African rhinos was initiated there were an estimated 15,000 black rhino in Africa. Today there are barely 3,000, a reduction of 80 %.

- In Africa, there has been a spectacular domino effect as the rhino population has crashed in country after country due to poaching.

Uganda:	The rhino, black and white, were exterminated during the 1970's.
Kenya:	Numbers of black rhino declined from an estimated 20,000 in 1970 to a low of perhaps 500 by 1980. (Numbers have stabilized and may be recovering, temporarily.)
Zaire:	The northern white rhino was reduced from several thousand to a low of 16 by 1984.
Zambia:	The 4,000 black rhino in the Luangwa Valley was annihilated from 1980-1985.
Tanzania:	Black rhino declined from an estimated 5,000 to perhaps 200 in the late 1980's
Zimbabwe:	Only 300 black rhino survive from an estimated 1,700 just 2 years ago; in 1993, 50% of the estimated 200 white rhino, the largest population outside South Africa and most of them dehorned, have been lost.

- After Zimbabwe, only South Africa, Namibia, and perhaps Kenya remain as rhino strongholds in Africa.

- The pressure is intensifying in other countries and on other species:
  - Appreciable poaching is occurring for the first time in decades in South Africa.
  - The second largest population (Manas) of Indian/Nepalese rhino in India has been decimated and the largest population (Kaziranga) is under increasing assault.
  - Significant numbers of Sumatran rhino horn continue in illegal trade and the species has virtually vanished from some "protected" areas where populations had been most dense.
  - The population of Javan rhino in Indonesia is stagnating and one conclusion is that poaching is preventing increase.

- Rhinos are also in crisis in captivity.

- Currently, there are 275 rhino of 4 species (Black, White, Indian, Sumatran) comprising 6 "subspecies" (Eastern Black, Southern Black, Southern White, Northern White, Indian, and Western Sumatran) in 69 institutions participating in AZA SSP programs for rhino. Another 12 institutions have indicated interest/intention to participate. (Table 2).

- Target population objectivess established by the SSP rhino programs (Table 3) for demographic and genetic reasons aspire to a total SSP population of 430 rhinos (an increase of 155 spaces or about 55%) over the next 7-10 years (~ one-half of a rhino generation). Achievement of the target population objectives will not require expansion of space, but also its reallocation among the species. This expansion seems feasible considering the ultimate capacity that has been recommended for and/or indicated by the 69 institutions currently participating in and 12 additional facilities expected to participate in the future in AZA Rhino SSPs. (Table 2).

- However, attempts to develop SSP programs for genetic and demographic support of wild populations have been problematic at best (Tables 4-6):

Eastern Black Rhino: This species reproduces rather reliably in captivity but management has not maximized the reproductive potential and health/husbandry problems continue largely to negate the breeding success that has occurred. The result is the species is in demographic crisis with a real imperative to increase reproduction through improved management.

Southern Black Rhino: Reproduction has been moderate, but many of the births were conceived in the wild. Captive reproduction may be on the increase, but mortality has been high (30%) of rhino imported.

Southern White Rhino: Reproduction in this subspecies has been very uneven with only a few facilities, particularly those able to maintain larger social groups, propagating well but with the majority of rhino and institutions not breeding at all with the result that the population is in demographic and consequent genetic crisis due to the age structure is senescing and not enough of the original wild-caught rhino have reproduced.

Northern White Rhino: The program for this subspecies has been a failure with only 4 individuals and founders which have not reproduced and which are beyond reproductive prime.

Indian/Nepalese Rhino: This program has been relatively successful with the annual population growth rate about equal to what is occurring in the wild. However, much of the reproduction to date has been by a limited number of breeders. Hence the genetic diversity contained in the captive-born population (i.e., the so-called living descendant population) is inadequate. Prospects do seem good for recruitment of more breeders from the existing captive population.

Sumatran Rhino: Although not in captivity as long as the other forms, this program also has been a total failure so far with numbers of individuals and founders low, no reproduction occurring, and the death rate high (30% of the rhino imported).

- In summary, the SSP populations of Eastern Black, Southern White, Northern White, and Sumatran Rhino appear to be in demographic difficulty, perhaps crisis. It is too early in the history of the Southern Black Rhino SSP to assess if this population is also in demographic difficulty. There are genetic challenges for all SSP rhino populations. (Tables 4-6).

- The bottom line is that much improvement of captive husbandry is needed which will require more research and intensive management if SSP programs are to contribute significantly to rhino conservation.

BACKGROUND ON THE AZA AFRICAN RHINO SSP

- The SSP programs for black (*Diceros bicornis*) and white rhino (*Ceratotherium simum*), as well as Indian (*Rhinoceros unicornis*) and Sumatran rhino (*Dicerorhinus sumatrensis*), were established in 1982.

- Based on recommendations from the IUCN African Rhino Specialist Group, the SSP programs to date have been managing two conservation units as separate populations within each species:

  Black Rhino: Eastern Black Rhino (*Diceros bicornis michaeli*)
  Southern Black Rhino (*Diceros bicornis minor*).

  White Rhino: Southern White Rhino (*Ceratotherium simum*)
  Northern White Rhino (*Ceratotherium simum cottoni*).

- The first formal masterplans for black and white rhino were formulated in 1986 with major revisions in 1989. Updates on status and sets of recommendations were distributed at the AZA (AAZPA) Annual Conferences each year.

- From the outset, it was realized that SSP programs for all rhino species would need to be closely coordinated. Coordination was considered especially important and appropriate for the two African species.

  - Analysis indicated that the large number of white rhino (the majority of the population) that had been imported from South Africa as young animals in the 1960s and 1970s and maintained in captive facilities as pairs, or even trios, had failed to reproduce.

  - In 1988 and 1989, 34 potential founder southern white rhino were transferred to new locations in an attempt to stimulate reproduction.

  - However, another objective of the coordinated white and black rhino SSP programs was to remove white rhino from facilities that could maintain only a pair and replace them with black (or Indian) rhino because these latter two species appeared to reproduce adequately as pairs.

- These early versions of the masterplans established genetic and demographic objectives and emphasized captive propagation to provide a reservoir for support of the species in the wild.

The original goals of the SSP programs for both black and southern white rhino were to maintain 90% of genetic diversity (as measured by gene diversity) for 10 rhino generations or 150-175 years. The numbers both of founders and of ultimate population sizes (target populations) required to achieve these genetic objectives were determined from the CAPACITY program developed by Jon Ballou in conjunction with the GENES program developed by Bob Lacy. As the science of genetic management of captive populations has evolved and other Regions have established organized breeding programs over the last decade, the population targets have been adjusted.

- In general, the scientific basis for SSP programs has become more sophisticated and diversified over the last 10 years.

  - The SSP recognizes husbandry, genetics, and demography as equally important and very interactive components of scientific management.

HUSBANDRY

DEMOGRAPHY GENETICS

  - A protocol for general application of these considerations in formulation of SSP masterplans and recommendations is provided by the AZA SSP Central Dogma (Box 1).

  - The Dogma recognizes that there must be a balance and trade-offs between genetics and demography. Ideal genetics are not realistic. However, genetics should not be ignored completely unless there is a demographic imperative. Genetic decisions tend to have longer-term consequences and be more difficult to change.

  - A rigorous review of the interactive application and consequences of husbandry, demography and genetics in relation to the eastern black rhino population has been conducted by Smith and Read (1992) and Read (1993).

- To facilitate coordination at the Regional level, the AZA Rhinoceros (Taxon) Advisory Group (popularly known as the AZA Rhino TAG) was established in 1991.

- The RAG has been active in development of collective and coordinated approaches to problems. In particular, the RAG has organized a Research Committee that is actively developing a number of disciplinary and inter-disciplinary subcommittees on various major research problems: health, nutrition, husbandry, behavior, reproduction, genetics.

- In recognition of the importance of husbandry, an extensive manual is being compiled and is near completion.

- Concurrently, captive conservation programs for rhinos have also expanded their scope to increase the emphasis placed on research and *in situ* activities in addition to captive propagation.

- To facilitate coordination among Regions as well as to catalyze further development of programs within some Regions, a Global Captive Action Plan (GCAP) for Rhinos was initiated at a Workshop convened under CBSG auspices at the London Zoo in 1992 (Foose 1992). The GCAP has also expanded rapidly into initiation of Global Animal Survival Plans (GASPs), i.e. integration at the international level of Regional Breeding Programs for each of the rhino species. A further GCAP\GASP session was conducted in 1993. The AZA SSPs and RAG have been actively participating in this early development of the Rhino GCAP/GASP through an interactive and iterative process that permits both Regional and global programs to evolve synergistically.

- Finally, to further facilitate coordination of the SSP programs for black and white rhino, it has been decided to combine these revised versions of the SSP masterplans for the two species into a single document.

CURRENT SITUATION FOR SSP RHINO POPULATIONS

An overview of the demographic and genetic status of AZA SSP African rhino populations is presented in Table 6.

The captive populations of Eastern Black, Southern White, Northern White rhino appear to be in a demographic difficulty, perhaps crisis. It is too early in the history of the population to assess if the AZA Southern Black Rhino SSP is also in demographic difficulties.

Clearly, there appears to be a demographic imperative for African rhino in the AZA SSP.

Eastern Black Rhino:

There are 39.29 rhino in 23 institutions (Table 7)

- This population has been self-sustaining or slightly increasing. The growth rate of this population is just barely positive, but a reversal could be impending (Table 6, Appendix III).
- Reproduction has been moderate (on the average, births = 15% of the adult female population).
- 80% of the population is captive born (Table 4).
- However, mortality has been quite high due to the health problems for this species under intensive management

  About 65% (18 of 29) of the adult females are breeders; 60% of current female breeders are also captive born. However, two-thirds of the current breeders are > 22 years of age, beyond the real prime of reproductive life as indicated by demographic analysis of the species. (Table 8, Appendix I).
- The age and sex structure is not healthy. **There is only 1 female in the population < 4 years of age. 12 of the 14 surviving births since 1-1-1990 have been male; 14 of the 21 total births have been male.** (Figure 1, Appendix III)

Southern Black Rhino:

- There are 10.19 rhino in 10 institutions. (Table 7).
- This population may be just sustaining itself. The growth rate of this population is at best 0. (Table 6, Appendix IV).
- Only 17% of the population is captive born and bred; 41% is captive born if rhino bred in the wild but born in captivity are also considered. (Table 4).
- 60% (9 of 15) of the adult females are breeders; at least two of the nulliparous are probably pregnant. (Table 9).
- Currently, the age structure is favorable since most individuals are within reproductive prime. (Figure 2, Appendix IV).

Southern White Rhino:

There are 53.72 rhino in 38 institutions. (Table 10).

- This population is not self-sustaining. In part, the negative growth rate has been deliberate in order to reduce the population size and hence the amount of facility space devoted to this species. However, many individuals have not reproduced and serious problems are developing due to intrinsic changes in age structure (Table 6, Appendix V).
- Only 33% of the population is captive born and bred. (Table 4).
- Only 36% of the adult females are breeders (Table 11, Appendix II).
- The age structure is senescing. (Figure 3, Appendix V)

The average age of individuals in the population has increased from 11 years in 1980 to 21 years today. In a healthy population, the average age should be less than the mean age of reproduction (measured by the generation time, i.e. ~ 15 years.) (K. Willis, personal communication)

Northern White Rhino:

- There are only 2 females and 2 males in the SSP population. None have reproduced and all are of rather advanced age > 20 years in terms of what appear (from information on southern white rhino) to be the prime reproductive years for the species. (Figure 4, Appendix VI).

- There are also genetic challenges in part due to the demographic difficulties (Table 6, Appendices II(-VI):

Eastern Black Rhino:

- The genetically effective size of the population is near satisfactory: $N_e/N = .6$ or a genetically effective size of about 40. An N_e of 50 would be preferable and may be achievable if the attempts at improved reproduction succeed.

Southern Black Rhino:

- The genetically effective size of the population is probably satisfactory: the N_e/N ratio is 1.1 but is artificially high because most of the population is of breeding age and a high percentage are breeding. If reproduction continues as indicated an N_e/N of about 1 for the next few years and then about .7 should be possible and acceptable. Again an N_e of about 50 will be optimal.

Southern White Rhino:

The genetically effective size of the population has been very low: $N_e/N = .18$ or a genetically effective size of about 25. An N_e of 50 and N_e/N ratio of .5 would be necessary to achieve genetic goals and may be achievable if the attempts at improved reproduction succeed.

Northern White Rhino:

- Without reproduction and with the meager number of founders, there seems little hope that this population is viable genetically.

- Facility space (captive habitat) for rhino is limited; hence, it is important consider the trajectories as well as the targets of population.

GOALS & OBJECTIVES OF THE AFRICAN RHINO SSP

The goal of the AZA SSP for African Rhinos is to develop a self-sustaining captive population of black and white rhino to provide genetic and demographic support for wild populations as the need and opportunity occur.

The objectives of the AZA African Rhino SSP to achieve this goal are:

(1) Currently, develop such self-sustaining populations for two conservation units of black rhino (eastern African and southern African) and one conservation unit of white rhino (southern African); salvage anything possible from the northern white rhino nucleus for contribution to the global population of this subspecies.

(2) Ensure that the captive populations are managed demographically to ensure they can be sustained and expanded.

(3) Attempt to maintain 90% of the gene diversity obtained from the wild for each conservation unit for a period of 10 rhino generations (= 170 years).

(4) Attain target population sizes adequate to achieve the genetic objectives (Table 3, Box 2).

Eastern Black Rhino	90
Southern Black Rhino	80
Southern White Rhino	100 (+ 20 research individuals)
Northern White Rhino	Target population objectives are considered premature or inappropriate at this time; immediate objective is 8 offspring from existing animals before they die.

These objectives will entail creation or conversion of 65 spaces for African rhinos.

(5) Coordinate attainment of target population sizes with the SSP Programs for India/Nepalese and Sumatran Rhino.

Target objectives for these species are:

Indian/Nepalese Rhino	90
Sumatran Rhino	50

Target population size objectives for all rhino will entail creation of 157 additional rhino spaces and reallocation of some spaces to different species.

(5) Manage rhino populations as much as possible according to AZA Central Dogma (Box 1) as the best means available at this time of achieving SSP objectives.

(7) Conduct research useful to management of self-sustaining populations in captivity and viable populations in the wild.

(8) Employ the captive populations as flagship species for conservation of rhino and the ecosystems they occupy.

(9) Communicate, cooperate, and coordinate with breeding and conservation programs for rhino in other regions of the captive world.

SUMMARY OF THE AFRICAN RHINO SSP MASTERPLAN RECOMMENDATIONS

The tables of recommendations for breedings, relocations, and surplus present both the mean kinship M_k of individuals and the mean of M_ks in the population. Very generally, breeding an individual with an M_k < population M_k will improve preservation of gene diversity, breeding individuals with M_ks > the population M_k will not.

Eastern Black Rhino

(1) There currently are 68 rhino in this population; the target population is 90 by the year 2000.

(2) There currently are 28 females and 26 males of breeding age in the population.

(3) There is a need to attempt production of an average of 7 calves/year for the next 6 years.

- Toward this objective, 11 more of the adult female non-breeders and 8 more of the adult male non-breeders should be recruited to reproduce.

- This rate of reproduction will require reduction of the birth interval on reproducing females to no more than 3 years and optimally to 30 months. As described by Smith and Read, ways to accomplish this reduced birth interval are:

  - Weaning calf at 6 months of age

  - Partial weaning of calves so they can be separated from females during days that they are in estrus so they can be placed with males.

  - In some cases, reintroduction of males to females while they are still with their calves.

(4) A total of 29 breedings of adult females and 1 future breeding of a juvenile female are recommended: 12 for females which have not reproduced previously (Table 12); 18 for females which have bred before (Table 13).

(5) The current situation or masterplan recommendations will place all adult females with an adult male:

- 70% of the adult females will be with proven breeders.

(6) To achieve management objectives, moves of 16 individuals are recommended (Table 14).

(7) A flow chart of the expected population trajectories produced by these recommendations is presented in Table 15.

Southern Black Rhino

(1) Currently there are 29 individuals in this population: the goal of the SSP is 50 by the Year 2000.

(2) There currently are 15 females and 4 males of breeding age in the population.

(3) There is a need to attempt production of an average of 4 calves/year for 1994-1996 and 5 calves/year for 1997/1999.

- Toward this objective, 6 more of the adult female non-breeders and 4 more of the adult male non breeders should be recruited to reproduction.

- Again, this rate of reproduction will require reduction of the birth interval on reproducing females to no more than 3 years and optimally to 30 months. As described by Smith and Read, ways to accomplish this reduced birth interval are:

  - Weaning calf at 6 months of age

  - Partial weaning of calves so they can be separated from females during days that they are in estrus so they can be placed with males.

  - In some cases, reintroduction of males to females while they are still with their calves.

(4) A total of 15 breedings of adult females and 4 future breedings for juvenile females are recommended: 9 for females which have not reproduced previously (Table 16); 10 for females which have bred before (Table 17).

(5) The current situation or masterplan recommendations will place all adult females with an adult male. At least 40%, and perhaps 60%, of the adult females will be with proven breeders.

(6) To achieve management objectives, relocation of 7 individuals are recommended (Table 18).

(7) For both demographic and genetic reasons, the immigration of 2 at least more adult males from Zimbabwe is recommended to replace rhino that died soon after the last importation and the export of 2 males to the Australasian ASMP to ameliorate a severe demographic problem (lack of any males for their 6 adult females) there.

(8) A flow chart of the expected population trajectories produced by these recommendations are presented in Table 19.

Southern White Rhino

(1) There currently are 127 individuals in this population; the objective (population target) is to stabilize but reorganize the population at 100 breeder animals and 20 research animals.

(2) 15 of the 35 wild-caught nulliparous females and 8 of the wild caught non-breeder males should reproduce to provide an acceptable level of genetic diversity. (Box 2)

(3) A total of 19 breedings of adult females and 3 future breedings for juvenile females are recommended: 14 for females which have not reproduced previously (Table 20); 8 for females which have bred before (Table 21).

(4) A number of wild-caught non-breeder females < 27 years of age are not currently recommended for breeding (Table 22). Considering the demographic and genetic needs of this population, this situation should perhaps be reconsidered.

(5) A number of rhino will be moved especially into larger enclosures and social groups to induce reproduction. (Table 23).

(6) Facilities that have been recommended for or indicated interest in conversion from white to black rhino in the immediate future are indicated in Table 24.

(7) 12 female southern white rhino have been designated for the research program as identified in Table 25.

(8) To achieve management objectives, 24 relocations are recommended (Table 26).

(9) For the immediate future, the level of reproduction recommended to achieve genetic objectives will greatly exceed what is necessary to produce a demographically self-sustaining population (i.e. an average of births/year are needed for demographic self-sustainment. To accommodate the relatively large number of births required for genetic reasons over the next several years, a number of surplus must and can be removed from SSP facilities each year. Southern white rhino that have been already designated surplus and the reasons for this designation are summarized in Table 27.

(10) A flow chart of the expected population trajectories produced by the masterplan recommendations are presented in Table 28.

Northern White Rhino

(1) There currently are 4 (2.2) individuals in this population; no target number has been established; the objective is to produce 8 calves before these rhino are lost.

(2) An additional objective is to develop reproductive technology (AI and ET) in time to salvage germplasm from these rhino. Hence, the program in progress to reproductively evaluate, investigate, and perhaps stimulate these rhino as well as to conduct reproductive research on southern white rhino is encouraged.

Table 1

WILD AND CAPTIVE POPULATIONS OF RHINO

1 January 1994

SPECIES OR SUBSPECIES	WILD POPULATION	CAPTIVE POPULATION
Southwestern Black Rhino	560	0
Northwestern Black Rhino	40	0
Eastern Black Rhino	500	165
Southern Black Rhino	1,300	45
Northern White Rhino	+ 30	9
Southern White Rhino	5,600	+ 630
AFRICAN RHINO SPECIES	*8,000*	*850*
Indian/Nepalese Rhino	1,900	124
Javan Rhino	< 100	0
Eastern Sumatran Rhino (Borneo)	100	5
Western Sumatran Rhino (Sumatra/Malaya)	400	19
ASIAN RHINO SPECIES	*2,500*	*149*
ALL SPECIES	***10,500***	***1,000***

TABLE 2

CURRENT AND TARGET NUMBERS OF RHINO IN AZA SSP RHINO INSTITUTIONS

INSTITUTION	CURRENT NUMBER				RECOMMENDED NUMBER				ULTIMATE CAPACITY (within 7 yrs)			
	BLACK	WHITE	INDIAN	SUMTRN	BLACK	WHITE	INDIAN	SUMTRN	BLACK	WHITE	INDIAN	SUMTRN
ATLANTA	1.1								2.1			1.2
ALBUQUERQUE		1.1			1.1				1.1			
ASHEBORO		2.2								2.2		
BALTIMORE		1.1			1.1				1.1			
BATON ROUGE		1.2					1.1				1.1	
BIRMINGHAM		1.2					1.1				1.1	
BROWNSVILLE		3.2				2.2				2.2		
BUFFALO			1.0				1.1				1.2	
CALGARY		1.1				1.2				1.2		
CHICAGO - BROOKFIELD	2.2				2.2				2.2			
CHICAGO - LINCOLN PARK	1.2				1.2				1.2			
CINCINNATI	2.1		1.0	1.1	2.2		1.1	1.2	2.2		1.2	1.2
CLEVELAND		1.1			1.1				1.1			
COLORADO SPRINGS	2.1								2.2			
COLUMBIA - RIVERBANKS	1.1								1.1			
COLUMBUS	2.1				2.2				2.2			
CUMBERLAND - THE WILDS		3.6				3.12*	1.1			3.12**	2.4	
DALLAS	1.3				1.3				2.3			
DENVER	3.2								2.2			
DETROIT	1.1								1.2			
EL COYOTE RANCH - BASS	1.4				3.7				3.7			
FORT WORTH	1.1	1.1	1.1		1.2	2.4	1.1		1.2	2.4	1.1	
FRESNO	0.1											
GARDEN CITY	1.0				1.1				1.1			
GLEN ROSE - FOSSIL RIM	1.2	4.5			2.4	5.5			2.4	5.5		
HONOLULU		1.0					1.1				1.1	
HOUSTON		1.2					1.1				1.1	
JACKSON		1.1					1.1				1.1	
JACKSONVILLE		1.1				2.3				2.3		
KNOXVILLE		2.6				2.6				2.5		
LACOMA RANCH - BENSTEN	1.5				1.4				1.4			
LANSING - POTTER PARK	1.0				1.1				1.1			
LOS ANGELES	1.2		1.2	0.1	1.2		2.2	1.1	1.2		2.2	1.2

TABLE 2 (con't)

CURRENT AND TARGET NUMBERS OF RHINO IN AZA SSP RHINO INSTITUTIONS

INSTITUTION	CURRENT NUMBER				RECOMMENDED NUMBER				ULTIMATE CAPACITY (within 7 yrs)			
	BLACK	WHITE	INDIAN	SUMTRN	BLACK	WHITE	INDIAN	SUMTRN	BLACK	WHITE	INDIAN	SUMTRN
LOUISVILLE		1.2			1.1				1.1			
MADISON		1.1				1.2				1.2		
MEMPHIS		2.1					1.1				1.1	
MIAMI	4.3		2.1		4.3		2.2	2.2	4.4		2.2	2.2
MILWAUKEE	1.1		1.0		2.2				2.2			
MONROE		1.1										
NEW ORLEANS		1.1			1.1				1.1		3.3	3.3
NEW YORK			2.3				2.4	1.1			2.4	1.1
NORFOLK		1.1				2.4				2.4		
OKLAHOMA CITY			1.1		1.1		1.1		1.1		1.1	
OMAHA		1.1			1.1				1.1			
PHILADELPHIA			1.1				1.1				1.1	
PHOENIX		1.1			1.1				1.1			
PITTSBURGH		1.1			1.1				1.1			
PORTLAND	1.1				1.1				1.1			
ROCKTON - AFRICAN SAF		2.2				2.2						
ST. LOUIS	2.2				2.2				2.2			
SALT LAKE CITY		1.1			1.1				1.1			
SAN ANTONIO	1.2	1.3			1.2	1.2			1.2	1.2		
SAN DIEGO - WAP	4.1	5.12	6.6		4.4	4.12	4.4	2.2	4.4	4.12	4.4	2.2
SAN DIEGO - ZOO	4.2		1.0	1.1	2.4		2.2		2.4		2.2	
SAN FRANCISCO	1.1		1.1			1.1	1.2		1.1		1.2	
SANTILLANA - MCALLEN	1.1				2.2				2.2			
TAMPA - BUSCH GARDENS	2.1				2.1				2.2			
TAMPA - LOWERY PARK			1.0				1.1				1.1	1.1
TOLEDO		1.1			1.1				1.1			
TORONTO		2.2	1.2			2.2	1.2			2.2	1.2	
TULSA		1.2					1.1				1.1	
TUCSON		1.1			1.1				1.1			
TYLER - CALDWELL ZOO	2.2				2.2				2.2			
VALLEJO - MARINE WORLD		1.1				1.2				1.2		
WACO - CENT TEXAS ZOO		1.1				1.2						

TABLE 2 (con't)

CURRENT AND TARGET NUMBERS OF RHINO IN AZA SSP RHINO INSTITUTIONS

INSTITUTION	CURRENT NUMBER				RECOMMENDED NUMBER				ULTIMATE CAPACITY (within 7 yrs)			
	BLACK	WHITE	INDIAN	SUMTRN	BLACK	WHITE	INDIAN	SUMTRN	BLACK	WHITE	INDIAN	SUMTRN
WASHINGTON DC			1.2				1.2				1.2	
WICHITA - SEDGEWICK	2.1				1.1				1.1			
WINSTON - WILDLIFE SAF		2.1				2.5				2.5		
YULEE - WHITE OAK	0.1	2.3			3.6	4.12*		1.1	3.6	4.16**		5.5
SUBTOTAL	48.49	55.74	22.20	2.3	56.74	38.79	29.34	8.9	66.85	36.80	33.42	17.20
POTENTIAL PARTICIPANTS												
GRANBY					1.1				1.1			
LITTLE ROCK							1.1				1.1	
KANSAS CITY					1.1				1.1			
MINNESOTA							1.1				2.2	
MINOT - ROOSEVELT PK					1.1				1.1			
MONTGOMERY					1.1				1.1			
ORLANDO - DISNEY					2.2	2.4	2.2		2.2	2.4	2.2	2.2
RACINE					1.1				1.1			
ROLLING HILLS RANCH						1.2			2.2			
SACRAMENTO					1.1				1.1			
SEATTLE					1.1		1.1		1.1		1.1	
SIOUX FALLS - GRT PLNS					1.1				1.1			
TOTAL	48.49	55.74	22.20	2.3	66.84	41.85	34.39	8.9	78.97	38.84	39.48	19.22
RCP/GCAP TARGET									170	120***	90	50

Table 3

TARGET POPULATION AND FOUNDER OBJECTIVES

AFRICAN RHINO TAXON	TARGET POPULATIONS			ADDITIONAL FOUNDERS NEEDED		
	1987	1989	1994	1987	1989	1994
Eastern Black	75	75	90	0	0	0
Southern Black	75	75	80	25+	15+	4.0
Southern White	100	100	120	0	0	?
Northern White	---	---	8	20	20	20
TOTAL	250	250	298	45	35+	24?

Table 4

WILD AND CAPTIVE ORIGINS OF RHINO IN CAPTIVITY IN NORTH AMERICA

TAXON	TOTAL NUMBER	WILD BORN	CAPTIVE BORN	% CAPTIVE BORN
Eastern Black	68	14	55	80
Southern Black	29	24(17*)	5(12)	17 (41*)
Northern White	4	4	0	0
Southern White	125	85	42	33
Indian	42	12	30	71
Sumatran	5	5	0	0
TOTAL	273	144(137*)	130 (137*)	48 (50*)

* 7 born in captivity but conceived in wild

Table 5

RHINO BIRTHS AND DEATHS IN CAPTIVITY NORTH AMERICA

YEAR	EASTERN BLACK RHINO				SOUTHERN BLACK RHINO				SOUTHERN WHITE RHINO			
	BIRTHS	DEATHS	NET CHANGE	POPLN 31/12	BIRTHS	DEATHS	NET CHANGE	POPLN 31/12	BIRTHS	DEATHS	NET CHANGE	POPLN 31/12
1984	0	1	-1	62	0	1	-1	7	7	2	+5	129
1985	7	4	+3	60	0	2	-2	5	7	3	+4	132
1986	7	7	0	63	0	0	0	5	9	2	+7	137
1987	2	5	-3	63	1	1	0	6	6	6	0	135
1988	5	2	+3	60	0	0	0	6	7	3	+4	135
1989	5	6	-1	63	3 (2*)	2	+1	18	2	3	-1	131
1990	6	3	+3	64	1 (1*)	0	+1	19	4	4	0	124
1991	6	5	+1	67	2	1	+1	20	7	5	+2	126
1992	4	3	+1	68	2	4	-2	28	4	2	+2	125
1993	5	5	0	69	2	1	+1	29	1	0	+1	125
10 YR TOTL	47	41	+6		11 (3*)	12	-1		54	30	+24	

* 3 rhino were born in captivity but conceived in the wild
** Net = Births - Deaths / Imports & Exports excluded
*** Popln. 12/31 includes results of imports and exports

Table 6

DEMOGRAPHIC AND GENETIC OVERVIEW OF AZA SSP AFRICAN RHINO POPULATIONS

RHINO TAXON	NUMBER	BREEDERS	LAMBDA	% LAST QTR LIFE	GENE DIVERSITY	F.G.E.	MEAN M_k	N_e/N
Eastern Black	39.29	13.17		25%	.969	15.8	.0308	.65
Southern Black	10.19	4.9	0	0	.950	9.9	.0503	1.1
Southern White	53.74	17.24	~ -10%	25%	.966	16.5	.0345	.18
Northern White	2.2	0.0	0	0	0	0	0	0
Indian Rhino	22.20	7.8	~ +3%	10%	.906	5.3	.0934	.35
Sumatran	2.3	0	0	?	0	0	0	0

Table 7
BLACK RHINOCEROS (LIVING) IN NORTH AMERICA

Diceros bicornis michaeli

INSTITUTION	ANIMALS	(MALE AGES)	(FEMALE AGES)
Atlanta Zoo	1.1	(7 yrs.)	(3 yrs.)
Brookfield Zoo	2.2	(<1, 7 yrs.)	(8, 23 yrs.)
Busch Gardens	2.1	(3, 7 yrs.)	(4 yrs.)
Caldwell Zoo	2.2	(6,7 yrs.)	(<1, 7 yrs.)
Cheyenne Mountain	2.1	(<1, 12 yrs.)	(10 yrs.)
Cincinnati Zoo	2.1	(1, 23 yrs.)	(25 yrs.)
Columbus Zoo	2.1	(4, 42 yrs.)	(4 yrs.)
Dallas Zoo	0.1		(19 yrs.)
Denver Zoo	3.2	(1, 10, 21 yrs.)	(10, 22 yrs.)
Detroit Zoo	1.0	(41 yrs.)	
Garden City, Kansas Zoo	1.0	(4 yrs.)	
Lincoln Park Zoo	1.2	(11 yrs.)	(10, 12 yrs.)
Los Angeles Zoo	1.2	(14 yrs.)	(16, 30 yrs.)
Metro Miami Zoo	4.3	(<1, 2, 5, 16 yrs.)	(8, 21, 24 yrs.)
Potter Park Zoo	1.0	(6 yrs.)	
Riverbanks Zoo	1.1	(7 yrs.)	(5 yrs.)
San Antonio Zoo	1.2	(23 yrs.)	(7, 23 yrs.)
San Diego Zoo	2.1	(<1, 26 yrs.)	(21 yrs.)
San Diego WAP	4.1	(2, 3, 13, 13 yrs.)	(24 yrs.)
San Francisco Zoo	1.1	(2 yrs.)	(22 yrs.)
Sedgewick County Zoo	2.1	(<1, 13 yrs.)	(31 yrs.)
St. Louis Zoo	2.2	(1, 19 yrs.)	(11, 17 yrs.)
Washington Park Zoo	1.1	(6 yrs.)	(4 yrs.)
Sub-Total	**39.29 = 68**		

BLACK RHINOCEROS (LIVING) IN NORTH AMERICA
(Continued)

Diceros bicornis minor

INSTITUTION	ANIMALS	(M)	(F)
Bass Ranch, Texas (El Coyote Ranch)	1.4	(8 yrs.)	(2, 3, 9, 16 yrs.)
Bentsen Ranch, Texas (LaComa Ranch)	1.5	(21 yrs.)	(<1, 1, 10, 14, 21 yrs.)
Dallas Zoo	1.2	(11 yrs.)	(3, 19 yrs.)
Ft. Worth Zoo	1.1	(3 yrs.)	(4 yrs.)
Fossil Rim WC	1.2	(5 yrs.)	(.6 yrs.)
Los Angeles Zoo	0.1	(19 yrs.)	(10, 16 yrs.)
Milwaukee Zoo	2.1	(<1, 8 yrs.)	(11 yrs.)
San Diego Zoo	2.1	(<1, 7 yrs.)	(7 yrs.)
Santillana Ranch (McAllen Ranch)	1.1	(2 yrs.)	(2 yrs.)
White Oak Plantation	0.1		(16 yrs.)
Sub-Total	**10.19 = 29**		
TOTAL	**49.48 = 97**		

Table 8

REPRODUCTIVE SUMMARY OF EASTERN BLACK RHINO IN NORTH AMERICA

	TOTAL ADULT	BREEDERS	NONBREEDERS	ADDITIONAL BREEDERS NEEDED	TOTAL BREEDERS
MALES (>6YRS)					
WILD BORN	5	3	2	1	4
CAPTIVE BORN	21	10	11	7	17
TOTAL	26	13	13	8	21
FEMALES (>4YRS)					
WILD BORN	9	8	1	1	9
CAPTIVE BORN	20	10	10	10	20
TOTAL	29	18	11	11	29
FEMALES (>22YRS)					
WILD BORN	8	8	0	0	8
CAPTIVE BORN	4	4	0	0	4
TOTAL	12	12	0	0	12

Table 9

REPRODUCTIVE SUMMARY OF SOUTHERN BLACK RHINO IN NORTH AMERICA

	TOTAL ADULT	BREEDERS	NONBREEDERS	ADDITIONAL BREEDERS NEEDED	TOTAL BREEDERS
MALES (>6YRS)					
WILD BORN	6	4	2	4**	8
CAPTIVE BORN	0	0	0	0	0
TOTAL	6	4	2	4**	8
FEMALES (>4YRS)					
WILD BORN	11	9	2	2	11
CAPTIVE BORN	4*	0	4*	4	4
TOTAL	15	9	6*	6	15

* 3 born in captivity but conceived in wild
** Reason for import of 2 more males from Zimbabwe

Table 10
WHITE RHINOCEROS
SSP INSTITUTIONS

INSTITUTION	ANIMALS	(MALE AGES)	(FEMALE AGES)
Ceratotherium simum simum			
Albuquerque (Rio Grande)	1.1	(29 yrs)	(28 yrs)
Asheboro	2.2	(24 yrs, 24 yrs)	(24 yrs, 26 yrs)
Audubon Park Zoo	1.1	(3 yrs)	(4 yrs)
Baltimore Zoo	1.1	(30 yrs)	(26 yrs)
Birmingham Zoo	1.2	(23 yrs)	(23 yrs, 23 yrs)
Brownsville	3.2	(3 yrs, 22 yrs, 26 yrs)	(26 yrs, 28 yrs)
Calgary Zoo	1.1	(22 yrs)	(31 yrs)
Cleveland Metroparks Zoo	1.1	(10 yrs)	(9 yrs)
Fort Worth Zoological Park	1.1	(24 yrs)	(24 yrs)
Fossil Rim Wildlife Center	4.5	(2.5 yrs, 27 yrs, 29 yrs, 36 yrs)	(1.5 yrs, 21 yrs, 27 yrs, 31 yrs, 31 yrs)
Fresno	0.1		(26 yrs)
Greater Baton Rouge Zoo	1.2	(28 yrs)	(22 yrs, 24 yrs)
Honolulu Zoo	1.0	(9 yrs)	
Houston Zoological Gardens	1.2	(26 yrs)	(15 yrs, 24 yrs)
Jackson Zoological Park	1.1	(21 yrs)	(25 yrs)
Jacksonville Zoological Park	1.1	(25 yrs)	(23 yrs)
Knoxville Municipal Zoo	2.6	(22 yrs, 25 yrs)	(2 yrs, 17 yrs, 22 yrs, 26 yrs, 26 yrs, 28 yrs)
Louisville Zoological Garden	1.2	(8 yrs)	(10 yrs, 11 yrs)
Madison (Henry Vilas) Zoo	1.1	(26 yrs)	(26 yrs)
Marine World Africa U.S.A.	1.1	(28 yrs)	(28 yrs)
Memphis Zoological Garden	2.1	(3 yrs, 26 yrs)	(24 yrs)
Metro Toronto Zoo	2.2	(3 yrs, 21 yrs)	(15 yrs, 21 yrs)
Monroe (La. Purchase)	1.1	(24 yrs)	(22 yrs)
Omaha's Henry Doorly Zoo	1.1	(8 yrs)	(31 yrs)
Pittsburg	1.1	(19 yrs)	(19 yrs)
Rockton (A.L.S.)	2.2	(25 yrs, 25 yrs)	(25 yrs, 25 yrs)

Table 10
WHITE RHINOCEROS
SSP INSTITUTIONS

INSTITUTION	ANIMALS	(MALE AGES)	(FEMALE AGES)
Ceratotherium simum simum (Continued)			
Salt Lake City	1.1	(18 yrs)	(15 yrs)
San Antonio Zoo	1.2	(29 yrs)	(24 yrs, 29 yrs)
San Diego Wild Animal Park	3.10	(2 yrs, 2.5 yrs, 26 yrs)	(1.5 yrs, 10 yrs, 10 yrs, 11 yrs, 31 yrs, 31 yrs, 31 yrs, 31 yrs, 31 yrs)
Toledo Zoological Gardens	1.1	(21 yrs)	(26 yrs)
Tulsa Zoological Park	1.2 *	(23 yrs)	(14 yrs, 14 yrs)
Tuscon Zoo	1.1	(22 yrs)	(21 yrs)
Virginia Zoological Park	1.1	(22 yrs)	(22 yrs)
Waco	1.1	(7 yrs)	(23 yrs)
White Oak Consrvtn Cntr	2.3	(26 yrs, 26 yrs)	(2.5 yrs, 15 yrs, 20 yrs)
Wildlife Safari	2.1	(20 yrs, 35 yrs)	(34 yrs)
The Wilds	3.6	(15 yrs, 25 yrs, 25 yrs)	(23 yrs, 23 yrs, 23 yrs, 25 yrs, 26 yrs, 34 yrs)
Subtotal	**53.72 = 125**		
Ceratotherium simum cottoni			
San Diego Wild Animal Park	2.2	(20 yrs, 22 yrs)	(22 yrs, 22 yrs)
Subtotal	**2.2 = 4**		
TOTAL SSP POPULATION	**55.74 = 129**		

* 1.1 at Pittsburg and 1.2 at Tulsa declared surplus to SSP population

Table 11

REPRODUCTIVE SUMMARY OF SOUTHERN WHITE RHINO IN NORTH AMERICA

	TOTAL ADULT	BREEDERS	NONBREEDERS	ADDITIONAL BREEDERS NEEDED	TOTAL BREEDERS
MALES (>6YRS)					
WILD BORN	33	16	17	8	24
CAPTIVE BORN	10	1	9	10	11
TOTAL	43	17	26	18	35
FEMALES (>4YRS)					
WILD BORN	50	19	31	15	34
CAPTIVE BORN	16	5	11	11	16
TOTAL	66	24	42	26	50
FEMALES (>25YRS)					
WILD BORN	33	16	17	7	23
CAPTIVE BORN	0	0	0	0	0
TOTAL	33	16	17	7	23

Table 12

BREEDINGS RECOMMENDED FOR EASTERN BLACK RHINO FEMALES THAT HAVE NOT REPRODUCED BEFORE

Population Mean M_k = .0308

LOCATION	#	ORIGIN	AGE	M_k	MATE	AGE	M_k	MATE BRED	ORIGIN	YRS TOGETHER	REMARKS
Atlanta	426	C	4	.0388	388	7.5	.0263	No	C	0	Breed ASAP
Brookfield	365	C	9	.0231	363	9	.0411	No	C	1	Breed ASAP
Busch	418	C	5	.0408	356	8	.0116	No	C	?	Breed ASAP
Caldwell	2092	C	.75	.0365	457	1.5	.0243	No	C	0	Move to Potter Park
Columbus	397	C	5.5	.0411	389	5.5	.0208	No	C	4.5	Breed ASAP
Dallas	311	W	20	0	110	26.5	.0185	Yes	C	0	Move to SDWAP
Lincoln Park	294	C	13	.0278	3087	13	.0411	Yes	C	11?	?
Miami	351	C	8.5	.0388	259	17	.0324	Yes	C	?	Breed ASAP
Riverbanks	383	C	5.5	.0388	381	7.5	.0171	No	C	2.5	Breed ASAP
San Antonio	364	C	8	.0370	169	24	.0185	Yes	W	6+	?
St. Louis	330	C	12	.0093	251	20	.0046	Yes	W	2.5	Repro. workup or to SDWAP to breed with 110 or 292
Washington Park	396	C	5.5	.0231	376	7	.0388	No	C	3	Breed ASAP

Table 13

BREEDINGS RECOMMENDED FOR EASTERN BLACK RHINO FEMALES THAT HAVE REPRODUCED BEFORE

Population Mean M_k = 0.0308

LOCATION	#	ORIGIN	AGE	M_k	MATE	AGE	M_k	MATE BRED	ORIGIN	YRS TOGETHER	REMARKS
Brookfield	235	W	24	.0185	363	8.5	.0411	No	C	1	M_k Male = Mean
Caldwell	359	C	8	.0301	362	8	.0336	Yes	C	4+	Breed ASAP
Cheyenne	331	C	11	.0301	305	13	.0266	Yes	C	4+	Breed ASAP
Cincinnati	225	W	26	.0093	247	23	.0301	Yes	W	15+	Breed ASAP
Denver	163	C	23	.0289	161	22	.0394	Yes	C	15+	Breed ASAP
	328	C	11	.0411	332	11	.0434	Yes	C	10+	Breed ASAP
Lincoln Park	317	C	11	.0394	308	12.5	.0411	Yes	C	10	Breed ASAP
Los Angeles	76	W	31	.0046	285	15.5	.0203	Yes	C	15	Breed ASAP
	267	C	18	.0370	285	15.5	.0203	Yes	C	15	Breed ASAP
Miami	202	W	22	.0208	259	17	.0324	Yes	C	5+	Breed ASAP
	255*	W	25	0	259	17	.0324	Yes	C	?	Change Mates Repro. Exam.
San Antonio	190	C	24	.0278	169	22	.0185	Yes	W	10	Breed ASAP
SDZ	192	C	22	.0284	110	26	.0185	Yes	C	5+	Breed ASAP
SDWAP	233	W	24	.0093	292	14	.0231	Yes	C	5+	Breed ASAP
San Francisco	213	W	23	.0278	377	6.5	.0344	No	C	0	Move Mate from Lansing
Sedgewick	53	W	32	.0116	301	14	.0394	Yes	C	5+	Breed ASAP
St. Louis	212	C	18	.0185	251	18	.0046	Yes	W	10	Breed ASAP

* None of 4 offspring have survived to adulthood

Table 14

RELOCATIONS RECOMMENDED FOR EASTERN BLACK RHINO

Population Mean M_k = .0308

CURRENT LOCATION	DESTINATION	#	SEX	AGE	M_k	BREEDER ?	PURPOSE
Cincinnati	Cleveland	457	M	1.5	.0243	No	Future Breeding
Colorado Springs	?	2099	M	.5	.0330	No	?
Dallas	SDWAP	311	F	19	0	No	Breed with 110
Denver	Honolulu	458	M	2	.0469	No	Holding?
Lansing	San Francisco	377	M	1	.0344	No	Breed with 213
Miami	Hitachi, Japan	472	M	3.5	.0312	No	?
	Great Plains	2090	M	1	.0312	No	?
San Diego Zoo*	New York	473	M	1.5	.0281	No	?
San Diego WAP	Australia	302	M	13	.0434		Holding
	Brookfield	427	M	4	.0243	No	?
	Lansing	435	M	3.5	.0208	No	?
San Francisco	Honolulu	443	M	2.5	.0388	No	Holding?
St. Louis	SDWAP?	330	F	12	.0093		Breed with 110 or 259
	OKC	459	M	2.5	.0162	No	?
Sedgwick	?	2095	M	1	.0301	No	?
Tyler	Lansing	2092	F	1	.0365	No	Future Breeding

*current physical or legal owner objects

Table 15

TARGETS AND TRAJECTORIES OF REPRODUCTION REQUIRED/DESIRED FOR EASTERN BLACK RHINO IN NORTH AMERICA

	1994	1995	1996	1997	1998	1999	2000
INITIAL NUMBER IN SSP POP THIS YEAR	68	71	73	76	77	82	85
# SURPLUS THAT CAN BE REMOVED	0	0	0	0	0	0	0
EXPECTED DEATHS DURING YEAR	4	4	4	4	4	4	4
# BIRTHS FOR DEMOGRAPHIC OBJECTIVES	7	7	7	7	7	7	7
# BIRTHS FOR GENETIC DIVERSITY	---	---	---	---	---	---	---
NEW SPACES FOR BREEDING	3+	3+	3+	3+	3+	3+	3+
NEW SPACES FOR RESEARCH	---	---	---	---	---	---	---
SPACES CONVERTED TO OTHER RHINO SPECIES	0	0	0	0	0	0	0
FINAL NUMBER IN SSP BREEDING POP THIS YR	71	73	76	79	82	85	88

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Table 16

BREEDINGS RECOMMENDED FOR SOUTHERN BLACK RHINO FEMALES THAT HAVE NOT REPRODUCED BEFORE

Population Mean M_k = .0503

LOCATION	#	ORIGIN	AGE	M_k	MATE	AGE	M_k	MATE BRED	ORIGIN	YRS TOGETHER	REMARKS
Dallas	433	W/C	4	.0417	399	12	0	Probable	W	< 1	Breed ASAP
El Coyote	424	W/C	4.5	.0417	401	9	0	?	W	< 1	Breed ASAP
	462	W/C	3	.0417	401	9	0	?	W	-	Breed ASAP
La Coma	447	C	3	.0729	403	5	.0521	No	W/C	-	Move to Fort Worth
	2097	C	.5	.0729	?	?	?	?		-	To White Oak?
Fort Worth	411	C	5	.0729	403	5	.0521	No	W/C	-	Breed in Future
Fossil Rim	466	W	17	.0208	467	6	0	?	W	2	Breed ASAP
Los Angeles	336	W/C	11	.0417	390	8	.0208	Yes	W	0	To SDWAP
Santillano	464	W/C	3	.0417	465	3	.0417	No	W	2	Breed ASAP
White Oak	468	W	17	0	New Male or 467 at Fossil Rim	-	-	-	-	-	Mate with new male from Zimbabwe if arrives by 4/94; otherwise

Table 17

BREEDINGS RECOMMENDED FOR SOUTHERN BLACK RHINO FEMALES THAT HAVE REPRODUCED BEFORE

Population Mean M_k = .0503

LOCATION	#	ORIGIN	AGE	M_s	MATE	AGE	M_k	MATE BRED	ORIGIN	YRS TOGETHER	REMARKS
Dallas	400*	W	20	.0208	399	12	0	Probable	W	5	Continue
El Coyote	414	W	10	.0208	401	9	0	?	W	5	Breed ASAP
	461	W	17	.0208	401	9	0	?	W	-	Breed ASAP
La Coma	379	W	22	.0417	378	22	.0625	Yes	W	10	Breed ASAP
	402	W	15	.0417	378	22	.0625	Yes	W	5	Breed ASAP
	410**	W	11	0	378	22	.0625	Yes	W	5	Breed ASAP
Los Angeles	334	W	17	.0280	469	6	0	?	W	< 1	Breed with 465 or new male from Zimbabwe
Milwaukee	405	W	12	.0280	404	9	.0208	Yes	W	5	Breed again ASAP (late 94)
San Diego Zoo	392	W	8		390	8	.0208	Yes	W	5	Breed again ASAP (early 95)

* Probably pregnant
** Has reproduced but offspring died

Table 18

RELOCATIONS RECOMMENDED FOR SOUTHERN BLACK RHINO

Population Mean M_k = .0503

CURRENT LOCATION	DESTINATION	#	SEX	AGE	M_k	BREEDER ?	PURPOSE
Los Angeles	Fossil Rim (Already)	334	F	17	.0208	Yes	Breed with 469
	SDWAP	336	F	11	.0417	No	Breed with 390
	Australia (Died)	333	M	20	---	No	Breeder - For 6 ♀♀
La Coma	Ft. Worth	447	F	3	.0729	No	Breed with 403
	White Oak?	2097	F	.5	.0729	No	?
Milwaukee	Australia	463	M	1.25	.0417	No	Breeder - to be replaced by male from Zimbabwe
Fossil Rim	Australia	467	M	6	0	No	Breeder - to be replaced by male from Zimbabwe

Table 19

TARGETS AND TRAJECTORIES OF REPRODUCTION REQUIRED/DESIRED FOR SOUTHERN BLACK RHINO IN NORTH AMERICA

	1994	1995	1996	1997	1998	1999	2000
INITIAL NUMBER IN SSP POP THIS YEAR	29	32	34	37	39	43	46
# SURPLUS THAT CAN BE REMOVED	0	0	0	0	0	0	0
EXPECTED DEATHS DURING YEAR	1	2	1	2	1	2	1
# BIRTHS FOR DEMOGRAPHIC OBJECTIVES	4	4	4	4	5	5	5
# BIRTHS FOR GENETIC DIVERSITY	---	---	---	---	---	---	---
NEW SPACES FOR BREEDING	3+	2+	3+	2+	3+	2+	3+
NEW SPACES FOR RESEARCH	---	---	---	---	---	---	---
SPACES CONVERTED TO OTHER RHINO SPECIES	---	---	---	---	---	---	---
FINAL NUMBER IN SSP BREEDING POP THIS YEAR	32	34	37	39	43	46	50

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Table 20

BREEDINGS RECOMMENDED FOR SOUTHERN WHITE RHINO FEMALES THAT HAVE NOT REPRODUCED BEFORE

Population Mean M_k = .0345

#	ORIGIN	AGE	M_k	MATE	AGE	M_k	♂ BREEDER	ORIGIN	♀ LOCATION	♂ LOCATION	YRS TOGETHER	BREED LOCATION
190	W	26	0	189	26	.0066	Yes	W	Brownsville	Brownsville	24	Brownsville
83	W	27	0	618	28	.0197	Yes	W	Fossil Rim	Baton Rouge	0	Fossil Rim
467	W	22	0	473	25	0	Yes	W	Knoxville	Knoxville	3	Knoxville
619	W	28	0	473	25	0	Yes	W	Knoxville	Knoxville	6	Knoxville
696	W	26	0	?	?	?	?		Madison	?	0	?
387	W	22	0	?	?	?	?		Monroe	?	0	?
565	W	26	0	413	24	0	Yes	W	N. Carolina	N. Carolina	7	N. Carolina
466	W	22	0	187	26	.0197	Yes	W	Baton Rouge	SDWAP	0	SDWAP*
587	W	24	0	187	26	.0197	Yes	W	Baton Rouge	SDWAP	0	SDWAP*
188	W	24	0	187	26	.0197	Yes	W	Fresno	SDWAP	0	SDWAP
582**	C	15	0469	143	31	.0166	Yes	W	Toronto	Toronto	2	Toronto
T008	C	3.5	0230	177	26	0		W	White Oak	White Oak	1	White Oak
417	W	23	0	754	25	.0066	Yes	W	K. Island	K. Dominion	0	Wilds
750	W	25	0	754	25	.0065	Yes	W	K. Island	K. Dominion	0	Wilds

* Physical or legal owner objects to Masterplan recommendation

** High M_k, 50% of genome unknown at this time.

Table 21

BREEDINGS RECOMMENDED FOR SOUTHERN WHITE RHINO FEMALES THAT HAVE REPRODUCED BEFORE

Population Mean M_k = .0345

#	ORIGIN	AGE	M_k	MATE	AGE	M_k	♂ BREEDER	ORIGIN	♀ LOCATION	♂ LOCATION	YRS TOGETHER	BREED LOCATION
147	W	31	0	618	28	.0197	Yes	W	Fossil Rim	Baton Rouge*	0	Fossil Rim
620	W	28	.0132	189	26	.0066	Yes	W	Brownsville	Brownsville	6	Brownsville
452	W	26	.0132	473	25	0	Yes	W	Knoxville	Knoxville	6	Knoxville
453	W	26	.0132	473	25	0	Yes	W	Knoxville	Knoxville	6	Knoxville
575	C	17	.0132	473	25	0	Yes	W	Knoxville	Knoxville	6	Knoxville
218	C	21	.0740	143	31	.0066	Yes	W	Toronto	Toronto	20	Toronto
416	W	23	0	754	25	.0066	Yes	W	K. Island	K. Dominion	0	Wilds
418	W	23	0	754	25	.0066	Yes	W	K. Island	K. Dominion	0	Wilds

* Physical or legal owner objects to Masterplan recommendation

Table 22

SOUTHERN WHITE RHINO
WILD CAUGHT NONBREEDER FEMALES < 27 YEARS
NOT CURRENTLY RECOMMENDED FOR BREEDING
Mean M_k = .0345

LOCATION	NUMBER	AGE	M_k	MATE	AGE	M_k	MATE BRED
Birmingham	470	24	0	469	23	0	No
	471	24	0	469	23	0	No
Baltimore	380	26	0	80	30	0	No
Jackson	475	25	0	707	25	0	No
Jacksonville	318	23	0	390	25	.0164	Yes
Fort Worth	464	24	0	463	24	0	No
Houston	192	24	0	191	26	0	No
Norfolk	696	22	0	687	22	0	No
Toledo	381	26	0	790	10	.0230	No
Waco	392	23	0	898	7	.0164	No

Table 23

FACILITIES CAPABLE OF MAINTAINING MINIMUM/OPTIMUM NUMBER OF SOUTHERN WHITE RHINOS RECOMMENDED TO PROMOTE REPRODUCTION

INSTITUTION	CURRENT NUMBER			TO BE ADDED			TOTAL		
	BREEDERS	CALVES	RESEARCH	BREEDERS	CALVES	RESEARCH	BREEDERS	CALVES	RESEARCH
Brownsville	2.2	2		0			2.2	2	
Fort Worth	1.1			1.3	3		2.4	3	
Fossil Rim	4.4	3		0.2			3.6	3	
Jacksonville	1.1			1.2	2		2.3	2	
Knoxville	2.5	2		0.1			2.5	2	
Norfolk	1.1			1.3	2		2.4	2	
North Carolina	2.2	2		0.1	?		2.3	2	
San Antonio	1.2	2		1.0			2.2	2	
SDWAP	2.10	5		0			2.10	5	
Toronto	2.2	2		0			2.3	2	
White Oak	2.3	3		2.3	3	0.10	4.6	6	0.10
Wildlife Safari	2.1			1.5	3		2.6	3	
Wilds			0.2	3.4	6	0.8	3.6	6	0.10
TOTAL	22.34 = 56	21	0.2 = 2	10.24 = 34	19	0.18 = 18	30.60 = 90	40	20

There are a total of 86 adult and 35 calf spaces in facilities that can maintain at least 2.3 = 5 breeders. These numbers are close to the target population for breeding (100) adults.

Table 24

PLACES INDICATING INTEREST IN CONVERTING FROM WHITE TO BLACK RHINO

INSTITUTION	# WHITE RHINO (Now)	# BLACK RHINO (Future)
Albuquerque	1.1	1.1
Baltimore	1.1	1.1
Baton Rouge (Not in Agreement)	1.2	?
Cleveland	1.1	1.1
Columbus	1.2	2.2
Honolulu	1.0	1.1?
Louisville	1.2	1.1
New Orleans	1.1	1.1
Omaha	1.1	1.1
Phoenix	1.1	1.1
Pittsburg	1.1	1.1
Salt Lake City	1.1	1.1
Toledo	1.1	1.1
Tuscon	1.1	1.1

Table 25

WHITE RHINO DESIGNATED FOR RESEARCH
Mean M_k = .0345

NUMBER	SEX	AGE	M_k	BREEDER	CURRENT INSTITUION	RESEARCH LOCATION
842*	F	8.5	.0197	No	Cleveland	Wilds
148*	F	26	.0066	Yes	Columbus	Wilds
788	F	10	.0674	No	SDWAP	Wilds
819	F	9.5	.0576	No	SDWAP	Wilds
822	F	9.5	.0576	No	SDWAP	Wilds
750?*	F	15	0	No	Kings Dominion	Wilds
772*	F	11	.0230	No	Louisville	White Oak
791	F	10	.0230	No	Louisville	White Oak
691*	F	13.5	.0300	No	Tulsa	White Oak
693	F	14	UNK	No	Tulsa	White Oak
533	F	15	.0263	Yes	White Oak	White Oak
T008	F	2.5	.0230	Yes	White Oak	White Oak

* Low M_k

Table 26

RELOCATIONS RECOMMENDED FOR SOUTHERN WHITE RHINO

Population Mean M_k = .0345

CURRENT LOCATION	DESTINATION	#	SEX	AGE	M_k	BREEDER ?	PURPOSE
Brownsville	? within SSP	T009	M	3.5	.064	No	?
Cleveland	Wilds	842	F	9	.0197	No	Research
Cleveland	Toledo (for summer)	790	M	10	.0230	No	Breed 381
Columbus	Argentina via Wilds	81	F	30	0	No	Surplus
Columbus	Wilds	148	F	26	.0066	Yes	Research
Columbus	Memphis	146	M	26	0	No	?
Fossil Rim	? within SSP	82	M	27	0	No	?
Fossil Rim	Houston	219	F	21	.576	No	?
Fresno	SDWAP	188	F	26	0	No	Breed with 187?
Houston	Fossil Rim	612	F	15	.0132	No	Breed Later
Houston	Fossil Rim	192	F	24	0	No	Breed ASAP
Kings Dominion	Wilds	750	F	25	0	No	Breed 753 or 754
Kings Dominion	Wilds	753	M	25	0	No	Breed ♀'s
Kings Dominion	Wilds	755	M	15	.0132	No	Hold
Kings Dominion	Wilds	754	M	25	.0066	Yes	Breed ♀'s
Kings Island	Wilds	418	F	23	0	No	Breed 753 or 754
Kings Island	Wilds	417	F	23	0	No	Breed 753 or 754
Kings Island	Wilds	416	F	23	0	No	Breed 753 or 754
Knoxville	Marine World	T004	F	3	.0197	No	?
Marine World	SDWAP	336	M	28	0	No	?
Marine World	SDWAP	337	F	28	0	No	?
Memphis	Marine World	T006	M	3	.0197	No	?
SDWAP	Marine World or Germany	T016	F	1.5	.0214	No	?
SDWAP	Marine World	T010	M	2.5	.0197	No	?

Table 27

SURPLUS - SOUTHERN WHITE RHINO

Mean M_k = .0345

#	SEX	AGE	M_k	ORIGIN	INSTITUTION	BREEDER	SIBLINGS	OFFSPRING	REASON
790**	M	10	.0230	C	Cleveland	No	0.3	0	?
81*	F	30	0	W	Wilds	No	0	0	Age
31	M	36	0	W	Fossil Rim	No	0	0	Age
841	M	9	.0395	C	Honolulu	No	2.1	0	High M_k
876*	M	8	.0197	C	Louisville	No	0.12	0	?
950	M	4	.0469	C	Toronto	No	2.1	0	High M_k
220	M	20	.0576	C	Toledo	No	5.10	0	High M_k
280	M	20	.0543	C	Winston	No	5.10	0	High M_k
157*	F	31	.0329	W	SDWAP	Yes	0	1.3	Age
187*	M	26	.0197	W	SDWAP	Yes	0	2.1	Age
T015	M	1.5	.0329	C	SDWAP	No	1.4	0	?
219	F	21	.0576	C	Fossil Rim	No	8.9	0	High M_k
335	M	17	.0576	C	Salt Lake City	No	5.10	0	High M_k
542	F	15	.0674	C	Salt Lake City	No	7.9	0	High M_k
481	M	9	Unk	C	Pittsburg	No	---	0	Unknown Pedigree
482	F	9	Unk	C	Pittsburg	No	---	0	Unknown Pedigree

* Low M_k

** Recommendation to declare surplus at Masterplan Workshop changed in this Plan because of low M_k

Table 28

TARGETS AND TRAJECTORIES OF REPRODUCTION REQUIRED/DESIRED FOR SOUTHERN WHITE RHINO IN NORTH AMERICA

	1994	1995	1996	1997	1998	1999	2000
INITIAL NUMBER IN SSP POP THIS YEAR	125	106	100	106	112	118	123
# SURPLUS THAT CAN BE REMOVED	5	6	3	3	3	3	3
EXPECTED DEATHS DURING YEAR	3	3	3	3	3	4	4
ANIMALS SEQUESTERED FOR RESEARCH	12	8	0	0	0	0	0
# BIRTHS FOR DEMOGRAPHIC OBJECTIVES	---	---	---	---	-	---	---
# BIRTHS FOR GENETIC DIVERSITY	---	12	12	12	12	12	10
NEW SPACES FOR BREEDING	20	12	0	0	0	0	0
NEW SPACES FOR RESEARCH	12	8		0	0	0	0
SPACES CONVERTED TO OTHER RHINO SPECIES/USES BREEDERS	11	2	2	4	4	4	4
TOTAL SPACES FOR BREEDERS	136	146	144	140	136	132	128
FINAL NUMBER SSP BREEDERING POP THIS YR	105	100	106	112	118	123	126

BOX 1

SSP[2] CENTRAL DOGMA

I. The first priority is to breed individuals of lowest Mean Kinship (MK) which are underrepresented and, therefore, possess the rarest alleles in the population.

II. Among individuals with low MK, the second priority is to breed those whose alleles may be lost soon. This prioritization should be determined by the manager's knowledge of individuals' age, health, and/or reproductive condition. In the absence of other information low Kinship Value (KV), printed on the Master Plan Report, can be used.

III. During pairing, pair individuals according to the following ordered criteria:

1ST mate individuals with roughly similar MK to avoid combining rare and common alleles in offspring which reduces long-term gene diversity.

2ND mate individuals whose offspring will have low inbreeding coefficients (f), for the best probability of viable, healthy offspring.

3RD maximize mating success based on the species' biology including suitable age of individuals, mate choice, social structure, etc.

4TH minimize logistical difficulties of moves (e.g. distance, cost, quarantine).

5TH maximize interinstitutional harmony and minimize political conflicts, hopefully this will never enter into the final decision which should be based upon science.

BOX 2

The number of additional breeders needed/desired from among the non-breeder wild borns has been derived by using the CAPACITY Program (Version 3.0) to generate the table below.

Assumption/values for the purposes of the calculations are:

Generation Time	15 Years
Length of Program	150 Years
Current Year	Program considered to be in 10th year
% Diversity Retained To Date	In the living descendant population, the gene diversity retained is 97%, i.e. the amount of diversity contained in 16.5 Founder Genome Equivalents. There are, however, 32.5 founder genome surviving. If the founder representation of all 32.5 could be perfectly equalized, then 32.5 FGE's would be possible. However, it is assumed here that the amount of gene diversity that can be redeemed by adjusting founder lineages is about half of the total, or approximately, 24 FGE's which is equivalent to 97.9% retention of genetic diversity, which is the initial value used. As each new breeder is added, the diversity retained to date is recalculated assuming that each new breeder will add .5 to the FGE's of the population used to calculate the % diversity retained to date. (This increment to the FGE's assumes that future descendents of these founders will be preferrentially and not randomly reproduced in the population.)
Effective Size of Population	The number that the CAPACITY Program expects here is the current effective size of the population. Using the simple formula N_e based on the number of male (17) and female (24) breeders, the N_e is actually about 40. To be more conservative, a second set of calculations has been performed using 25 as the initial N_e(i.e., the total number 127 X .2 the N_e/N ratio suggested by the amount of diversity retained in the living descendent population.) As additional wild-born non-breeders do reproduce, it is assumed that each more or less immediately adds 1 to the effective size of the population.
Estimated N_e/N Ratio	Currently for white rhino it is low, probably about .2; the value used here is .5, believed to be an achievable objective.
% Diversity To Be Retained	90%
N_u	The Ultimate Population Size needed to achieve the Genetic Objectives, i.e. 90% of gene diversity for 150 Years.
Growth Rate*	1.05 However, growth rate is not in population size since the total numbers of the population are actually greater that what are needed. Rather the growth rate is the expansion of the genetically desirable population or from another perspective the improvement in the effective size of the population due to improved management. At 5% per year, N_e would double about every rhino generation (14-15 years).

EFFECTS OF RECRUITING ADDITIONAL NON-BREEDER WILD-BORN TO REPRODUCE
FGE Initial N_e = 40

# OF NEW BREEDERS	N_e NOW	FGE	% DIVERSITY RETAINED	ULTIMATE N_e NEEDED
0	40	24	97.9	112
4	44	26	98	108
8	48	28	98.2	104
12	52	30	98.3	102
16	56	32	98.4	102
20	60	34	98.5	100
24	64	36	98.6	100
28	68	38	98.7	98

EFFECTS OF RECRUITING ADDITIONAL NON-BREEDER WILD-BORN TO REPRODUCE
Initial N_e = 25

# OF NEW BREEDERS	N_e NOW	FGE	% DIVERSITY RETAINED	ULTIMATE N_e NEEDED
0	25	24	97.9	130
4	29	26	98	118
8	33	28	98.2	112
12	37	30	98.3	108
16	41	32	98.4	104
20	45	34	98.5	102
24	49	36	98.6	100
28	53	38	98.7	98

There are currently 31 non-breeder, wild-born females and 17 non-breeder, wild-born males in the population. A reasonable objective may be to try recruiting about half of them, i.e. 15 females and 8 males for a total of 23 additional breeders, each of which might produce 2 offspring. Equivalently, more wild-born non-breeders might be recruited to reproduce but produce only 1 offspring before death since many of the wild-caughts are rather old.

The amount of gene diversity retained depends not only on the number of founder lineages represented but also on their relative representation. The more even this representation, the greater the diversity retained. Hence, it should be possible to increase the gene diversity retained by adjusting the relative representation of founders in particular by removing some of the representatives the very over-represented lineages as replacements become available from other breedings.

The bottom line is that a target population of 100 does seem capable of achieving the genetic objectives if genetic management can be applied at the level described.

CAPACITY CALCULATIONS FOR SOUTHERN WHITE RHINO SSP

Capacity 3.0

Effective Size and Population Size Necessary for Maintaining the Specified Amount of Genetic Diversity for the Specified Amount of Time

No. of Years per Generation (T):	15.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.050	Length of Program (Years):	150
% Diversity Retained to Date:	97.4	% Hetero. To Retain:	90.0
Effective Size of Population:	25.0		
Estimated Ne/N Ratio:	0.50	Growth rate per Generation:	2.08
Current Year:	10	# Generations during 150 Years:	10

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 150 Years: 72

Actual Population Size Required (Based on Ne/N Ratio): 144

Effective Size and Population Size Necessary for Maintaining the Specified Amount of Genetic Diversity for the Specified Amount of Time

No. of Years per Generation (T):	15.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.050	Length of Program (Years):	150
% Diversity Retained to Date:	98.5	% Hetero. To Retain:	90.0
Effective Size of Population:	68.0		
Estimated Ne/N Ratio:	0.50	Growth rate per Generation:	2.08
Current Year:	10	# Generations during 150 Years:	10

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 150 Years: 50

Actual Population Size Required (Based on Ne/N Ratio): 100

Effective Size and Population Size Necessary for Maintaining the Specified Amount of Genetic Diversity for the Specified Amount of Time

No. of Years per Generation (T):	15.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.050	Length of Program (Years):	150
% Diversity Retained to Date:	97.4	% Hetero. To Retain:	90.0
Effective Size of Population:	40.0		
Estimated Ne/N Ratio:	0.50	Growth rate per Generation:	2.08
Current Year:	10	# Generations during 150 Years:	10

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 150 Years: 60

Actual Population Size Required (Based on Ne/N Ratio): 120

Effective Size and Population Size Necessary for Maintaining the Specified Amount of Genetic Diversity for the Specified Amount of Time

No. of Years per Generation (T):	15.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.050	Length of Program (Years):	150
% Diversity Retained to Date:	98.5	% Hetero. To Retain:	90.0
Effective Size of Population:	53.0		
Estimated Ne/N Ratio:	0.50	Growth rate per Generation:	2.08
Current Year:	10	# Generations during 150 Years:	10

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 150 Years: 50

Actual Population Size Required (Based on Ne/N Ratio): 100

=03/26/94========== j.ballou Feb'92 ===

APPENDIX I

REPRODUCTIVE HISTORY OF LIVING FEMALE EASTERN BLACK RHINO IN SSP POPULATION

APPENDIX I

EASTERN BLACK RHINO
REPRODUCTIVE HISTORY OF EACH FEMALE

STBK #	NO. OF OFFSPRING	AGE	OFFSPRING		
			STBK #	Sex	Fate
53	2		189	1/0	Dead
			212	0/1	Alive
			2095	1/0	Alive
55	7		138	0/1	Dead
			192	0/1	Alive
			208	1/0	Dead
			258	1/0	Havana
			319	1/0	Dead
			361	1/0	Dead
			418	0/1	Alive
67	0				
76	4		152	0/1	Dead
			206	0/1	Dead
			209	1/0	Japan - Dead
			381	1/0	Alive
121	5		179	0/1	Dead
			186	0/1	Dead
			232	0/1	Dead
			252	1/0	Zurich-Alive
			353	0/1	Dead
125	3		126	0/1	Dead
			163	0/1	Alive
			204	1/0	Dead

EASTERN BLACK RHINO
REPRODUCTION HISTORY OF EACH FEMALE
(Continued)

STBK #	NO. OF OFFSPRING	AGE	OFFSPRING		
			STBK #	Sex	Fate
163	6		246	0/1	Dead
			279	0/1	Dead
			304	1/0	Dead
			328	0/1	Alive
			376	1/0	Alive
			432	1/0	Alive
180	5		268	1/0	Dvur Kralove - Alive
			302	1/0	Alive
			332	1/0	Alive
			363	1/0	Alive
			397	0/1	Alive
190	4		300	1/0	Dead
			294	0/1	Alive
			331	0/1	Alive
			359	0/1	Alive
192	0				
202	3		272	1/0	Dead
			362	1/0	Alive
			395	1/0	Alive
			472	1/0	Alive
			2070	1/0	Alive

EASTERN BLACK RHINO
REPRODUCTIVE HISTORY OF EACH FEMALE
(Continued)

STBK #	NO. OF OFFSPRING	AGE	OFFSPRING		
			STBK #	Sex	Fate
212	3		367	0/1	Dead
			423	0/1	Dead
			459	1/0	Alive
213	8		250	1/0	Sri Lanka - Alive
			281	1/0	Dead
			308	1/0	Alive
			337	1/0	Dead
			351	0/1	Alive
			383	0/1	Alive
			426	0/1	Alive
			443	1/0	Alive
225	6		226	0/1	Dead
			243	1/0	Dead
			309	0/1	Dead
			343	0/1	Dead
			356	1/0	Alive
			457	1/0	Alive
233	2		389	1/0	Alive
			435	1/0	Alive
235	4		365	0/1	Alive
			372	1/0	Alive
			396	0/1	Alive
			444	0/1	Dead
			2098	1/0	Alive

EASTERN BLACK RHINO
REPRODUCTION HISTORY OF EACH FEMALE
(Continued)

STBK #	NO. OF OFFSPRING	AGE	OFFSPRING		
			STBK #	Sex	Fate
255	4		257	1/0	Dead
			348	1/0	Dead
			382	0/1	Dead
			398	0/1	Dead
267	1		360	0/1	Dead
294	0				
297	0				
311	0				
317	1		419	1/0	Alive
328	2		460	0/1	Dead
			458	1/0	Alive
330	0				
331	0				
351	0				
359	0				
364	0				

EASTERN BLACK RHINO
REPRODUCTIVE HISTORY OF EACH FEMALE
(Continued)

STBK #	NO. OF OFFSPRING	AGE	OFFSPRING		
			STBK #	Sex	Fate
365	0				
383	0				
396	0				
397	0				
418	0				
426	0				
T2065	0				

APPENDIX II

REPRODUCTIVE HISTORY OF LIVING FEMALE SOUTHERN WHITE RHINO IN SSP POPULATION

APPENDIX II

SOUTHERN WHITE RHINO
REPRODUCTIVE HISTORY OF EACH FEMALE

STBK #	NO. OF OFFSPRING	AGE	OFFSPRING		
			STBK #	Sex	Fate
51	3	21	876	M	Alive
		27	T012	M	Died
		27	T013	F	Alive
147	9	11	282	F	Dead
		13	286	M	Europe
		14	535	M	China
		16	543	M	UAE
		18	668	M	China
		20	784	F	Alive
		21	821	F	New Zealand
		23	860	M	Dealer
		25	926		
148	2	6	280	M	Alive
		7	409	F	Germany-Dealer
150	9	10	238	F	Alive
		11	284	M	Out SSP
		13	333	F	Out SSP
		14	536	M	Japan
		16	540	F	New Zealand
		17	649	F	Germany
		19	783	M	Out SSP
		21	822	F	Alive
		23	877	F	Dead

SOUTHERN WHITE RHINO
REPRODUCTION HISTORY OF EACH FEMALE
(Continued)

STBK #	NO. OF OFFSPRING	AGE	OFFSPRING		
			STBK #	Sex	Fate
153	5	10	219	F	Alive
		12	468	M	Japan
		20	700	F	IAE
		26	898	M	Alive
		29	963	M	IAE
154	8	10	220	M	Alive
		11	283	F	Dead
		13	335	M	Alive
		16	541	M	New Zealand
		20	774	F	Dead
		22	824	F	Dead
		23	863	F	Dealer
		25	930	F	N. Zealand-Dealer
156	4	14	599	F	Alive
		22	825	F	Dead
		24	909	M	Dead
		29	991	F	Alive
157	8	10	218	F	Alive
		14	537	M	Japan
		16	542	F	Alive
		17	648	F	Cuba
		19	689	M	Dead
		20	788	F	Alive
		2 25	928	F	Germany-Dealer
		29	990	M	Alive

SOUTHERN WHITE RHINO
REPRODUCTIVE HISTORY OF EACH FEMALE
(Continued)

STBK #	NO. OF OFFSPRING	AGE	OFFSPRING		
			STBK #	Sex	Fate
159	9	11	281	M	Dead
		14	534	M	Germany
		18	667	F	China
		19	773	F	Dealer
		21	820	F	New Zealand
		23	864	M	Germany-Dealer
		25	929	F	Germany-Dealer
		28	980	M	Alive
		9	212	F	Dead
181	3	11	275	F	Guatemala
		15	583	F	Germany
		7	202	M	Alive
182	9	10	237	F	Dead
		11	398	M	Guatemala
		13	763	M	Dealer
		14	549	M	Russia-Dead
		20	831	F	New Zealand
		22	897	M	New Zealand
		24	968	M	Mexico
		26	T007	M	Dead
		28	T020	F	Alive
218	4	22	826	M	Germany-Dealer
		27	950	M	Alive
		6	582	F	Alive
		9	748	M	Out SSP

SOUTHERN WHITE RHINO
REPRODUCTION HISTORY OF EACH FEMALE
(Continued)

STBK #	NO. OF OFFSPRING	AGE	OFFSPRING		
			STBK #	Sex	Fate
277	10	11	285	M	IAE
		12	288	M	Mexico
		13	529	M	Quinn?
		15	539	M	Japan
		17	647	M	China
		18	701	M	Europe
		20	775	M	Dealer
		21	823	M	New Zealand
		23	862	M	Germany-Dealer
		25	925	F	Germany-Dealer
391	2	10	533	F	Alive
		16	809	F	Germany-Dealer
391	3	18	921	M	New Zealand
		20	T003	F	Dead
		22	T005	M	Audubon
397	7	11	771	M	Dead
		12	795	M	Dead
		13	842	F	Alive
		15	914	M	New Zealand
		19	981	M	Alive
		7	924	F	Dead
		9	627	M	Germany-Dealer
416	10	1	590	F	S. America

SOUTHERN WHITE RHINO
REPRODUCTIVE HISTORY OF EACH FEMALE
(Continued)

STBK #	NO. OF OFFSPRING	AGE	OFFSPRING		
			STBK #	Sex	Fate
418	1	9	589	M	Germany
452	5	11	588	M	Dead
		12	623	F	IAE
		16	790	M	IAE
		18	882	F	IAE
		23	T004	F	Alive
453	5	11	793	F	Dead
		13	626	F	Dealer?
		15	772	F	Alive
		22	T002	F	Alive
		24	T014	M	Dead
474(Dead)	1	14	922	F	Dead
533	4	16	879	M	Dead
		17	878	F	Dead
		19	927	M	Germany-Dealer
		23	T008	F	Alive
574	1	7	575	F	Alive
575	1	21	T011	F	Dead
599	2	7	841	M	Alive
		9	947	F	Alive

SOUTHERN WHITE RHINO
REPRODUCTIVE HISTORY OF EACH FEMALE
(Continued)

STBK #	NO. OF OFFSPRING	AGE	OFFSPRING		
			STBK #	Sex	Fate
620	6	12	621	M	Dead
		13	622	M	IAE
		16	676	M	Germany
		18	791	F	Alive
		21	920	M	Dead
		22	T009	M	Alive
751(Dead)	1	10	756	F	Dead
752(Dead)	1	10	755	M	Alive

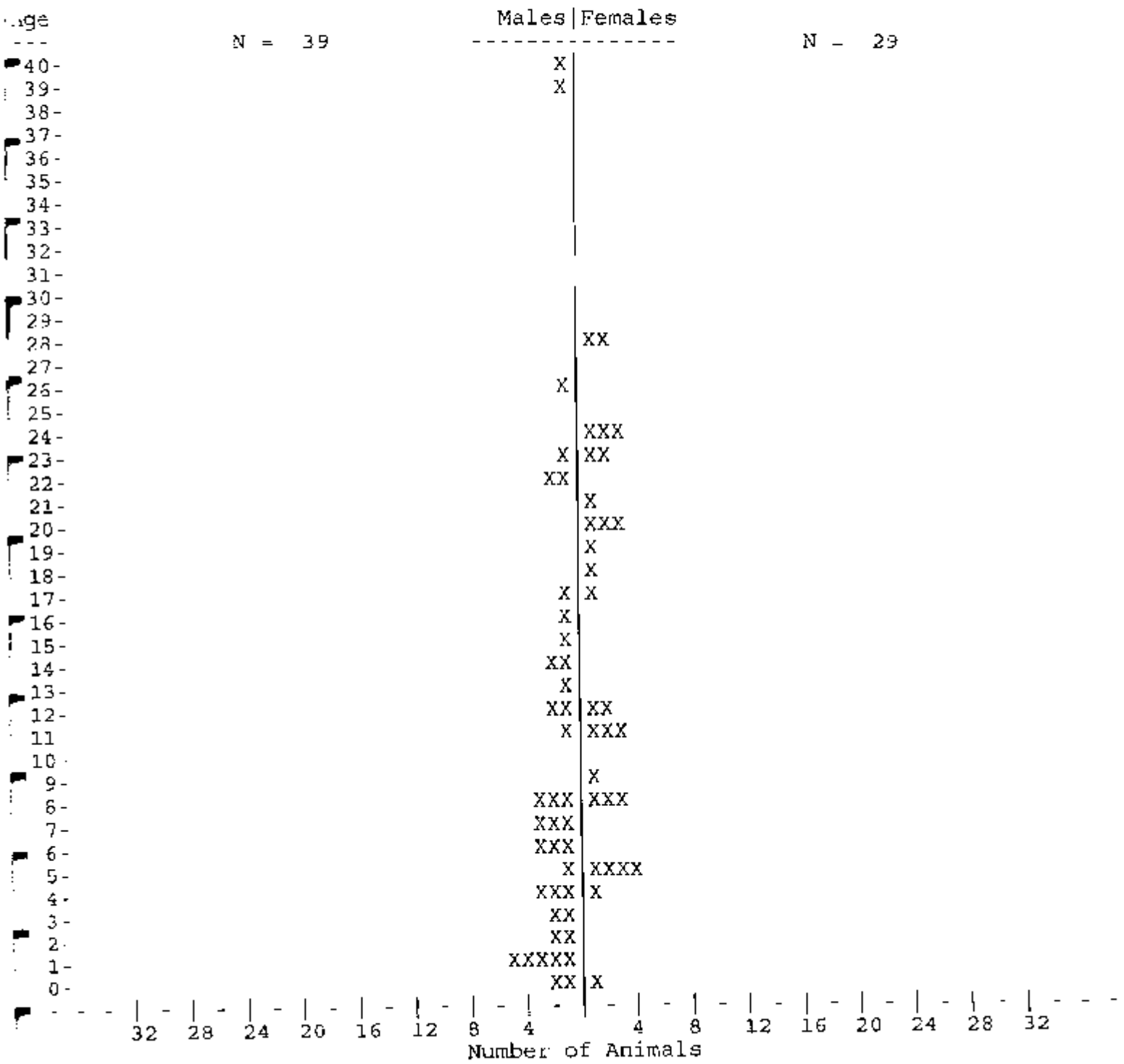
APPENDIX III

POPULATION ANALYSES FOR EASTERN BLACK RHINO SSP POPULATION

Age Pyramid Report

Restricted to: EASTERN BLACK RHINO Studbook
Locations: N.AMERICA/
Dates: As of End of 24/03/1994 <= date
Status: Living by

Taxon Name: **DICEROS BICORNIS MICHAELI**



Compiled by: B. Read and T. Foose for R. Frese thru The Wilds
Data current thru: 31 Dec 1993 International Studbook

SPARKS v1.3
25 Mar 1994

Age Pyramid Report

Restricted to: EASTERN BLACK RHINO Studbook
Locations: N.AMERICA/
Dates: As of End of 24/03/1994 <= date
Status: Living by

Taxon Name: **DICEROS BICORNIS MICHAELI**

Age	Studbook Numbers >>> Male				
40	68				
39	409				
38					
37					
36					
35					
34					
33					
32					
31					
30					
29					
28					
27					
26	110				
25					
24					
23	247				
22	161	169			
21					
20					
19					
18					
17	251				
16	259				
15	285				
14	292	301			
13	302				
12	305	308			
11	332				
10					
9					
8	356	362	363		
7	372	381	388		
6	376	377	395		
5	389				
4	419	427	432		
3	435	472			
2	443	459			
1	457	458	473	2090	2095
0	2098	2099			

Total= 39

Age Pyramid Report

Restricted to: EASTERN BLACK RHINO Studbook Page 4
Locations: N.AMERICA/
Dates: As of End of 24/03/1994 <= date
Status: Living by

Taxon Name: DICEROS BICORNIS MICHAELI

Age	Studbook Numbers >>> Female			
40				
39				
38				
37				
36				
35				
34				
33				
32				
31				
30				
29				
28	53	76		
27				
26				
25				
24	190	225	255	
23	163	213		
22				
21	192			
20	202	233	235	
19	311			
18	212			
17	267			
16				
15				
14				
13				
12	294	330		
11	317	328	331	
10				
9	365			
8	351	359	364	
7				
6				
5	383	396	397	418
4	426			
3				
2				
1				
0	2092			

Total= 29

Fecundity and Mortality Report

Restricted to: EASTERN BLACK RHINO Studbook
Locations: N.AMERICA/
Dates: During 01/01/1980 <= date

Taxon Name: **DICEROS BICORNIS MICHAELI**

Age Class	Fecundity [Mx]... Male	N	Female	N	Mortality [Qx]... Male	N	Female	N
0- 1	0.00	28.8	0.00	22.4	0.17	37.3	0.19	28.8
1- 2	0.00	26.0	0.00	18.7	0.04	26.8	0.09	21.8
2- 3	0.00	24.5	0.00	16.3	0.04	25.5	0.16	19.0
3- 4	0.00	23.9	0.00	16.6	0.00	23.9	0.06	17.3
4- 5	0.00	22.3	0.00	16.3	0.00	22.3	0.06	16.9
5- 6	0.00	20.8	0.00	15.2	0.00	20.8	0.00	15.2
6- 7	0.08	19.0	0.06	17.2	0.05	19.8	0.00	17.2
7 8	0.12	16.7	0.05	21.5	0.00	16.7	0.00	21.5
8- 9	0.11	13.1	0.02	23.0	0.07	14.1	0.00	23.0
9-10	0.27	13.0	0.06	23.6	0.07	13.5	0.08	25.2
10-11	0.22	13.8	0.09	26.5	0.00	13.8	0.11	27.9
11-12	0.11	13.3	0.11	22.3	0.07	14.2	0.04	23.3
12 13	0.22	13.5	0.15	19.6	0.00	13.5	0.05	20.6
13-14	0.11	13.5	0.08	16.5	0.00	13.5	0.05	19.0
14-15	0.12	12.0	0.13	19.4	0.08	12.4	0.10	20.1
15-16	0.25	10.0	0.03	19.0	0.10	10.4	0.10	19.5
16-17	0.11	9.0	0.14	17.5	0.00	9.0	0.05	18.7
17-18	0.06	8.1	0.11	18.3	0.00	8.1	0.00	18.3
18-19	0.06	8.0	0.06	17.2	0.00	8.9	0.06	18.1
19-20	0.06	8.1	0.15	16.3	0.12	8.1	0.06	17.7
20-21	0.06	8.6	0.17	14.4	0.11	8.8	0.00	14.4
21-22	0.00	7.2	0.08	12.9	0.13	8.0	0.00	12.9
22-23	0.08	6.2	0.04	12.0	0.00	6.2	0.00	12.0
23-24	0.15	6.9	0.00	10.5	0.00	6.9	0.09	11.3
24-25	0.08	6.5	0.13	7.8	0.13	7.6	0.00	8.4
25-26	0.08	6.0	0.07	7.0	0.15	6.5	0.00	7.3
26-27	0.15	6.6	0.00	7.0	0.00	6.6	0.00	8.0
27-28	0.00	4.4	0.17	6.0	0.33	6.0	0.14	7.0
28-29	0.13	4.0	0.00	4.0	0.00	4.0	0.21	4.8
29-30	0.13	4.0	0.00	3.0	0.00	4.0	0.00	3.0
30-31	0.00	4.0	0.00	3.5	0.00	4.0	0.25	4.0
31-32	0.13	4.0	0.00	3.0	0.00	4.0	0.00	3.0
32-33	0.00	4.0	0.00	2.6	0.00	4.0	0.33	3.0
33-34	0.15	3.4	0.00	2.0	0.20	5.0	0.00	2.0
34-35	0.17	3.0	0.00	2.0	0.33	3.0	0.00	2.0
35-36	0.00	2.0	0.00	1.1	0.00	2.0	0.50	2.0
36-37	0.00	2.0	0.00	0.5	0.00	2.0	1.00	1.0
37-38	0.00	2.0	0.00	0.0	0.00	2.0	0.00	0.0
38-39	0.00	2.0	0.00	0.0	0.00	2.0	0.00	0.0
39-40	0.00	1.7	0.00	0.0	0.00	1.7	0.00	0.0
40-41	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0
41 42	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
42-43	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

Fecundity and Mortality Report

Locations: N.AMERICA/
Dates: During 01/01/1980 <= date

axon Name: **DICEROS BICORNIS MICHAELI**

T = 14.322	T = 15.251	30 day mortality: 17%
Ro = 1.383	Ro = 0.627	(11 out of 64)
lambda=1.02	lambda=0.97	
r = 0.023	r = -0.031	

62 birth events to known age parents tabulated for Mx...

60 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

Smoothing pass 1

Age Class	Fecundity [Mx]... Male	N	Female	N	Mortality [Qx]... Male	N	Female	N
0- 1	0.00	28.8	0.00	22.4	0.17	37.3	0.19	28.8
1- 2	0.00	26.0	0.00	18.7	0.04	26.8	0.13	21.8
2- 3	0.00	24.5	0.00	16.3	0.03	25.5	0.10	19.0
3- 4	0.00	23.9	0.00	16.6	0.01	23.9	0.09	17.3
4- 5	0.00	22.3	0.00	16.3	0.00	22.3	0.04	16.9
5- 6	0.03	20.8	0.02	15.2	0.02	20.8	0.02	15.2
6- 7	0.07	19.0	0.04	17.2	0.02	19.8	0.00	17.2
7- 8	0.10	16.7	0.04	21.5	0.04	16.7	0.00	21.5
8- 9	0.17	13.1	0.04	23.0	0.05	14.1	0.03	23.0
9-10	0.20	13.0	0.06	23.6	0.05	13.5	0.06	25.2
10-11	0.20	13.8	0.09	26.5	0.05	13.8	0.08	27.9
11-12	0.18	13.3	0.12	22.3	0.02	14.2	0.07	23.3
12 13	0.15	13.5	0.11	19.6	0.02	13.5	0.05	20.6
13-14	0.15	13.5	0.12	18.5	0.03	13.5	0.07	19.0
14-15	0.16	12.0	0.08	19.4	0.06	12.4	0.08	20.1
15-16	0.16	10.0	0.10	19.0	0.06	10.4	0.08	19.5
16-17	0.14	9.0	0.09	17.5	0.03	9.0	0.05	18.7
17-18	0.08	8.1	0.10	18.3	0.00	8.1	0.04	18.3
18-19	0.06	8.0	0.11	17.2	0.04	8.9	0.04	18.1
19-20	0.06	8.1	0.13	16.3	0.08	8.1	0.04	17.7
20-21	0.04	8.6	0.13	14.4	0.12	8.8	0.02	14.4
21 22	0.05	7.2	0.10	12.9	0.08	8.0	0.00	12.9
22 23	0.08	6.2	0.04	12.0	0.04	6.2	0.03	12.0
23-24	0.10	6.9	0.06	10.5	0.04	6.9	0.03	11.3
24-25	0.10	6.5	0.07	7.8	0.09	7.6	0.03	8.4
25-26	0.10	6.0	0.07	7.0	0.09	6.5	0.00	7.3
26-27	0.08	6.6	0.06	7.0	0.16	6.6	0.05	8.0
27-28	0.09	4.4	0.06	6.0	0.11	6.0	0.12	7.0
28-29	0.09	4.0	0.06	4.0	0.11	4.0	0.12	4.8
29-30	0.09	4.0	0.00	3.0	0.00	4.0	0.15	3.0
30-31	0.09	4.0	0.00	3.5	0.00	4.0	0.08	4.0
31-32	0.04	4.0	0.00	3.0	0.00	4.0	0.19	3.0
32 33	0.09	4.0	0.00	2.6	0.07	4.0	0.11	3.0
33 34	0.11	3.4	0.00	2.0	0.18	5.0	0.11	2.0
34-35	0.11	3.0	0.00	2.0	0.18	3.0	0.17	2.0
35-36	0.06	2.0	0.00	1.1	0.11	2.0	0.50	2.0
36-37	0.00	2.0	0.00	0.5	0.00	2.0	0.50	1.0
37-38	0.00	2.0	0.00	0.0	0.00	2.0	0.33	0.0
38-39	0.00	2.0	0.00	0.0	0.00	2.0	0.00	0.0
39-40	0.00	1.7	0.00	0.0	0.00	1.7	0.00	0.0
40-41	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0
41 42	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
42 43	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
43-44	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 14.391 T = 15.235 30 day mortality: 17%
Ro = 1.399 Ro = 0.625 (11 out of 64)
lambda=1.02 lambda=0.97
r = 0.023 r = -0.031

61 birth events to known age parents tabulated for Mx...plus...
1 births to UNK or MULT sires...

60 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

Fecundity and Mortality Report

Restricted to: EASTERN BLACK RHINO Studbook Page 1
Locations: N.AMERICA/
Dates: During 01/01/1984 <= date

Taxon Name: **DICEROS BICORNIS MICHAELI**

	Fecundity [Mx]...				Mortality [Qx]...			
Age Class	Male	N	Female	N	Male	N	Female	N
0- 1	0.00	22.7	0.00	15.6	0.14	27.7	0.23	21.6
1- 2	0.00	20.0	0.00	16.9	0.05	20.2	0.05	18.4
2- 3	0.00	17.1	0.00	15.7	0.00	17.1	0.16	18.4
3- 4	0.00	17.3	0.00	14.2	0.00	17.3	0.07	15.0
4- 5	0.00	18.2	0.00	12.7	0.00	18.2	0.08	13.2
5- 6	0.00	18.1	0.00	9.6	0.00	18.1	0.00	9.6
6- 7	0.09	17.2	0.06	8.0	0.00	17.2	0.00	8.0
7- 8	0.13	15.0	0.09	11.2	0.00	15.0	0.00	11.2
8- 9	0.14	10.5	0.05	10.8	0.09	11.4	0.00	10.8
9-10	0.25	10.0	0.05	10.9	0.00	10.0	0.00	10.9
10-11	0.20	10.0	0.07	13.4	0.00	10.0	0.07	14.2
11-12	0.11	9.2	0.07	13.7	0.00	9.2	0.07	14.6
12-13	0.20	10.1	0.11	13.1	0.00	10.1	0.00	13.1
13-14	0.11	9.1	0.04	13.8	0.00	9.1	0.07	14.2
14-15	0.20	7.4	0.15	16.2	0.13	7.8	0.12	16.9
15-16	0.42	6.0	0.03	15.0	0.16	6.4	0.07	15.0
16 17	0.08	6.1	0.18	14.2	0.00	6.1	0.06	15.4
17-18	0.07	6.7	0.15	13.5	0.00	6.7	0.00	13.5
18-19	0.07	7.0	0.07	14.7	0.00	7.9	0.00	14.7
19-20	0.00	7.0	0.18	14.2	0.14	7.0	0.06	15.6
20-21	0.09	5.8	0.18	11.4	0.17	6.0	0.00	11.4
21-22	0.00	4.5	0.09	10.7	0.19	5.3	0.00	10.7
22-23	0.13	3.8	0.05	10.6	0.00	3.8	0.00	10.6
23-24	0.17	2.9	0.00	8.9	0.00	2.9	0.10	9.7
24-25	0.00	3.3	0.15	6.8	0.23	4.3	0.00	7.4
25-26	0.17	3.0	0.08	6.0	0.00	3.0	0.00	6.3
26-27	0.00	2.6	0.00	6.0	0.00	2.6	0.00	7.0
27-28	0.00	1.6	0.18	5.7	0.64	3.1	0.15	6.7
28-29	0.25	2.0	0.00	4.0	0.00	2.0	0.21	4.8
29-30	0.20	2.5	0.00	3.0	0.00	2.5	0.00	3.0
30-31	0.00	4.0	0.00	2.5	0.00	4.0	0.33	3.0
31-32	0.13	4.0	0.00	2.0	0.00	4.0	0.00	2.0
32-33	0.00	4.0	0.00	1.6	0.00	4.0	0.50	2.0
33-34	0.15	3.4	0.00	1.0	0.20	5.0	0.00	1.0
34-35	0.17	3.0	0.00	2.0	0.33	3.0	0.00	2.0
35-36	0.00	2.0	0.00	1.1	0.00	2.0	0.50	2.0
36-37	0.00	2.0	0.00	0.5	0.00	2.0	1.00	1.0
37-38	0.00	2.0	0.00	0.0	0.00	2.0	0.00	0.0
38-39	0.00	2.0	0.00	0.0	0.00	2.0	0.00	0.0
39-40	0.00	1.7	0.00	0.0	0.00	1.7	0.00	0.0
40-41	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0
41-42	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
42 43	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

Fecundity and Mortality Report

Restricted to: EASTERN BLACK RHINO Studbook
Locations: N.AMERICA/
Dates: During 01/01/1984 <= date

Taxon Name: **DICEROS BICORNIS MICHAELI**

T = 13.430	T = 15.761	30 day mortality: 17%
Ro = 1.647	Ro = 0.719	(8 out of 47)
lambda=1.04	lambda=0.98	
r = 0.037	r = -0.021	

47 birth events to known age parents tabulated for Mx...

42 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

Smoothing pass 1

Age Class	Fecundity [Mx]... Male	N	Female	N	Mortality [Qx]... Male	N	Female	N
0- 1	0.00	22.7	0.00	15.6	0.14	27.7	0.23	21.6
1- 2	0.00	20.0	0.00	16.9	0.03	20.2	0.11	18.4
2- 3	0.00	17.1	0.00	15.7	0.02	17.1	0.09	18.4
3- 4	0.00	17.3	0.00	14.2	0.00	17.3	0.10	15.0
4- 5	0.00	18.2	0.00	12.7	0.00	18.2	0.05	13.2
5- 6	0.03	18.1	0.02	9.6	0.00	18.1	0.03	9.6
6- 7	0.07	17.2	0.05	8.0	0.00	17.2	0.00	8.0
7- 8	0.12	15.0	0.07	11.2	0.03	15.0	0.00	11.2
8- 9	0.17	10.5	0.06	10.8	0.03	11.4	0.00	10.8
9-10	0.20	10.0	0.06	10.9	0.03	10.0	0.02	10.9
10-11	0.19	10.0	0.06	13.4	0.00	10.0	0.05	14.2
11-12	0.17	9.2	0.08	13.7	0.00	9.2	0.05	14.6
12-13	0.14	10.1	0.07	13.1	0.00	10.1	0.05	13.1
13-14	0.17	9.1	0.10	13.8	0.04	9.1	0.06	14.2
14-15	0.24	7.4	0.07	16.2	0.10	7.8	0.09	16.9
15-16	0.23	6.0	0.12	15.0	0.10	6.4	0.08	15.0
16-17	0.19	6.1	0.12	14.2	0.05	6.1	0.04	15.4
17-18	0.07	6.7	0.13	13.5	0.00	6.7	0.02	13.5
18-19	0.05	7.0	0.13	14.7	0.05	7.9	0.02	14.7
19-20	0.05	7.0	0.14	14.2	0.10	7.0	0.02	15.6
20-21	0.03	5.8	0.15	11.4	0.17	6.0	0.02	11.4
21-22	0.07	4.5	0.11	10.7	0.12	5.3	0.00	10.7
22-23	0.10	3.8	0.05	10.6	0.06	3.8	0.03	10.6
23-24	0.10	2.9	0.07	8.9	0.08	2.9	0.03	9.7
24-25	0.11	3.3	0.08	6.8	0.08	4.3	0.03	7.4
25-26	0.06	3.0	0.08	6.0	0.08	3.0	0.00	6.3
26-27	0.06	2.6	0.09	6.0	0.21	2.6	0.05	7.0
27-28	0.08	1.6	0.06	5.7	0.21	3.1	0.12	6.7
28-29	0.15	2.0	0.06	4.0	0.21	2.0	0.12	4.8
29-30	0.15	2.5	0.00	3.0	0.00	2.5	0.18	3.0
30-31	0.11	4.0	0.00	2.5	0.00	4.0	0.11	3.0
31-32	0.04	4.0	0.00	2.0	0.00	4.0	0.28	2.0
32-33	0.09	4.0	0.00	1.6	0.07	4.0	0.17	2.0
33-34	0.11	3.4	0.00	1.0	0.18	5.0	0.17	1.0
34-35	0.11	3.0	0.00	2.0	0.18	3.0	0.17	2.0
35-36	0.06	2.0	0.00	1.1	0.11	2.0	0.50	2.0
36-37	0.00	2.0	0.00	0.5	0.00	2.0	0.50	1.0
37-38	0.00	2.0	0.00	0.0	0.00	2.0	0.33	0.0
38-39	0.00	2.0	0.00	0.0	0.00	2.0	0.00	0.0
39-40	0.00	1.7	0.00	0.0	0.00	1.7	0.00	0.0
40-41	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0
41-42	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
42-43	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
43-44	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 13.744
Ro = 1.712
lambda=1.04
r = 0.039

T = 15.767
Ro = 0.713
lambda=0.98
r = -0.021

30 day mortality: 17%
(8 out of 47)

47 birth events to known age parents tabulated for Mx...plus...

42 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

INBREEDING COEFFICIENTS AND MEAN KINSHIPS FOR EASTERN BLACK RHINO SSP

Fri Mar 25 18:43:38 1994

Inbreeding and kinship calculations assume UNKNOWNs are founders.

MEAN KINSHIP OF LIVING ANIMALS TO LIVING NON-FOUNDERS

STUDBOOK	SIRE	DAM	INBREEDING	MEAN KINSHIP	KINSHIP VALUE	GENOME KNOWN
53 F	WILD	WILD	F = 0.0000	mk = 0.0116	kv = 0.0096	1.0000
68 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
76 F	WILD	WILD	F = 0.0000	mk = 0.0046	kv = 0.0057	1.0000
110 M	46	47	F = 0.0000	mk = 0.0185	kv = 0.0159	1.0000
161 M	74	75	F = 0.0000	mk = 0.0394	kv = 0.0417	1.0000
163 F	124	125	F = 0.0000	mk = 0.0289	kv = 0.0237	1.0000
169 M	WILD	WILD	F = 0.0000	mk = 0.0185	kv = 0.0197	1.0000
190 F	16	17	F = 0.0000	mk = 0.0278	kv = 0.0213	1.0000
192 F	54	55	F = 0.0000	mk = 0.0284	kv = 0.0225	0.5000
202 F	WILD	WILD	F = 0.0000	mk = 0.0208	kv = 0.0234	1.0000
212 F	52	53	F = 0.0000	mk = 0.0185	kv = 0.0156	1.0000
213 F	WILD	WILD	F = 0.0000	mk = 0.0278	kv = 0.0323	1.0000
225 F	WILD	WILD	F = 0.0000	mk = 0.0093	kv = 0.0105	1.0000
233 F	WILD	WILD	F = 0.0000	mk = 0.0093	kv = 0.0100	1.0000
235 F	WILD	WILD	F = 0.0000	mk = 0.0185	kv = 0.0209	1.0000
247 M	WILD	WILD	F = 0.0000	mk = 0.0301	kv = 0.0329	1.0000
251 M	WILD	WILD	F = 0.0000	mk = 0.0046	kv = 0.0048	1.0000
255 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
259 M	182	181	F = 0.0000	mk = 0.0324	kv = 0.0285	1.0000
267 F	56	207	F = 0.0000	mk = 0.0370	kv = 0.0351	1.0000
285 M	199	126	F = 0.0000	mk = 0.0203	kv = 0.0171	1.0000
292 M	79	293	F = 0.0000	mk = 0.0231	kv = 0.0230	1.0000
294 F	169	190	F = 0.0000	mk = 0.0278	kv = 0.0255	1.0000
301 M	56	207	F = 0.0000	mk = 0.0394	kv = 0.0372	1.0000
302 M	247	180	F = 0.0000	mk = 0.0434	kv = 0.0447	1.0000
305 M	182	181	F = 0.0000	mk = 0.0266	kv = 0.0226	1.0000
308 M	74	213	F = 0.0000	mk = 0.0411	kv = 0.0456	1.0000
311 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
317 F	56	207	F = 0.0000	mk = 0.0394	kv = 0.0395	1.0000
328 F	161	163	F = 0.0000	mk = 0.0411	kv = 0.0401	1.0000
330 F	261	262	F = 0.0000	mk = 0.0093	kv = 0.0100	1.0000
331 F	169	190	F = 0.0000	mk = 0.0301	kv = 0.0274	1.0000
332 M	247	180	F = 0.0000	mk = 0.0434	kv = 0.0455	1.0000
351 F	74	213	F = 0.0000	mk = 0.0388	kv = 0.0438	1.0000
356 M	155	225	F = 0.0000	mk = 0.0116	kv = 0.0138	1.0000
359 F	169	190	F = 0.0000	mk = 0.0301	kv = 0.0283	1.0000
362 M	259	202	F = 0.0000	mk = 0.0336	kv = 0.0341	1.0000
363 M	247	180	F = 0.0000	mk = 0.0411	kv = 0.0441	1.0000
364 F	56	207	F = 0.0000	mk = 0.0370	kv = 0.0370	1.0000
365 F	271	235	F = 0.0000	mk = 0.0231	kv = 0.0260	1.0000
372 M	271	235	F = 0.0000	mk = 0.0231	kv = 0.0267	1.0000
376 M	161	163	F = 0.0000	mk = 0.0388	kv = 0.0385	1.0000
377 M	302	239	F = 0.0000	mk = 0.0344	kv = 0.0364	1.0000
381 M	285	76	F = 0.0000	mk = 0.0171	kv = 0.0172	1.0000
383 F	74	213	F = 0.0000	mk = 0.0388	kv = 0.0447	1.0000
388 M	268	282	F = 0.0000	mk = 0.0263	kv = 0.0292	1.0000
389 M	292	233	F = 0.0000	mk = 0.0208	kv = 0.0228	1.0000

395	M	52	202	F =	0.0000	mk =	0.0208	kv =	0.0231	1.0000
396	F	271	235	F =	0.0000	mk =	0.0231	kv =	0.0270	1.0000
397	F	247	180	F =	0.0000	mk =	0.0411	kv =	0.0445	1.0000
409	M	WILD	WILD	F =	0.0000	mk =	0.0000	kv =	0.0000	1.0000
418	F	281	55	F =	0.0000	mk =	0.0408	kv =	0.0443	1.0000
419	M	308	317	F =	0.0000	mk =	0.0449	kv =	0.0482	1.0000
426	F	74	213	F =	0.0000	mk =	0.0388	kv =	0.0447	1.0000
427	M	292	239	F =	0.0000	mk =	0.0243	kv =	0.0251	1.0000
432	M	161	163	F =	0.0000	mk =	0.0388	kv =	0.0380	1.0000
435	M	292	233	F =	0.0000	mk =	0.0208	kv =	0.0220	1.0000
443	M	74	213	F =	0.0000	mk =	0.0388	kv =	0.0437	1.0000
457	M	247	225	F =	0.0000	mk =	0.0243	kv =	0.0265	1.0000
458	M	332	328	F =	0.0000	mk =	0.0469	kv =	0.0475	1.0000
459	M	251	212	F =	0.0000	mk =	0.0162	kv =	0.0150	1.0000
472	M	256	202	F =	0.0000	mk =	0.0312	kv =	0.0310	1.0000
473	M	110	192	F =	0.0000	mk =	0.0281	kv =	0.0236	0.7500
2090	M	259	202	F =	0.0000	mk =	0.0312	kv =	0.0303	1.0000
2092	F	362	359	F =	0.0000	mk =	0.0365	kv =	0.0360	1.0000
2095	M	301	53	F =	0.0000	mk =	0.0301	kv =	0.0278	1.0000
2098	M	271	235	F =	0.0000	mk =	0.0231	kv =	0.0246	1.0000
2099	M	305	331	F =	0.0000	mk =	0.0330	kv =	0.0287	1.0000

ORDERED LISTS OF MEAN KINSHIP BY SEX:

Rank	MALES	MK	Age	Known	FEMALES	MK	Age	Known
1	68	0.0000	10	1.000	255	0.0000	24	1.000
2	409	0.0000	40	1.000	311	0.0000	19	1.000
3	251	0.0046	18	1.000	75	0.0046	28	1.000
4	356	0.0116	8	1.000	225	0.0093	24	1.000
5	459	0.0162	2	1.000	233	0.0093	20	1.000
6	381	0.0171	8	1.000	330	0.0093	12	1.000
7	110	0.0185	27	1.000	53	0.0116	29	1.000
8	169	0.0185	23	1.000	235	0.0185	20	1.000
9	285	0.0203	15	1.000	212	0.0185	19	1.000
10	395	0.0208	6	1.000	202	0.0208	21	1.000
11	389	0.0208	6	1.000	365	0.0231	9	1.000
12	435	0.0208	3	1.000	396	0.0231	5	1.000
13	292	0.0231	14	1.000	190	0.0278	24	1.000
14	372	0.0231	7	1.000	213	0.0278	23	1.000
15	2098	0.0231	0	1.000	294	0.0278	13	1.000
16	427	0.0243	4	1.000	192	0.0284	22	0.500
17	457	0.0243	2	1.000	163	0.0289	23	1.000
18	388	0.0263	8	1.000	331	0.0301	11	1.000
19	305	0.0266	13	1.000	359	0.0301	8	1.000
20	473	0.0281	1	0.750	2092	0.0365	1	1.000
21	247	0.0301	24	1.000	267	0.0370	18	1.000
22	2095	0.0301	1	1.000	364	0.0370	8	1.000
23	472	0.0312	3	1.000	351	0.0388	9	1.000
24	2090	0.0312	1	1.000	383	0.0388	6	1.000
25	259	0.0324	17	1.000	426	0.0388	4	1.000
26	2099	0.0330	0	1.000	317	0.0394	11	1.000
27	362	0.0336	8	1.000	418	0.0408	5	1.000
28	377	0.0344	7	1.000	328	0.0411	11	1.000
29	376	0.0388	7	1.000	397	0.0411	5	1.000
30	432	0.0388	4	1.000				
31	443	0.0388	3	1.000				
32	161	0.0394	22	1.000				
33	301	0.0394	14	1.000				
34	308	0.0411	12	1.000				
35	363	0.0411	8	1.000				
36	302	0.0434	14	1.000				
37	332	0.0434	11	1.000				
38	419	0.0449	5	1.000				
39	458	0.0469	2	1.000				

GENETIC SUMMARY OF POPULATION

Descendant population Mean Kinship:	0.0308
Gene Diversity:	0.9692
Founder Genome Equivalents:	16.2337
Desc. population mean Kinship Value:	0.0319
Gene Value:	0.9681

INBREEDING COEFFICIENTS AND MEAN KINSHIPS FOR EASTERN BLACK RHINO SSP

Fri Mar 25 18:43:38 1994

Inbreeding and kinship calculations omit genes from UNKNOWN ancestors.

MEAN KINSHIP OF LIVING ANIMALS TO LIVING NON-FOUNDERS

STUDBOOK	SIRE	DAM	INBREEDING	MEAN KINSHIP	KINSHIP VALUE	GENOME KNOWN
53 F	WILD	WILD	F = 0.0000	mk = 0.0117	kv = 0.0097	1.0000
68 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
76 F	WILD	WILD	F = 0.0000	mk = 0.0047	kv = 0.0058	1.0000
110 M	46	47	F = 0.0000	mk = 0.0188	kv = 0.0161	1.0000
161 M	74	75	F = 0.0000	mk = 0.0399	kv = 0.0420	1.0000
163 F	124	125	F = 0.0000	mk = 0.0293	kv = 0.0238	1.0000
169 M	WILD	WILD	F = 0.0000	mk = 0.0188	kv = 0.0196	1.0000
190 F	16	17	F = 0.0000	mk = 0.0282	kv = 0.0215	1.0000
192 F	54	55	F = 0.0000	mk = 0.0364	kv = 0.0349	0.5000
202 F	WILD	WILD	F = 0.0000	mk = 0.0211	kv = 0.0235	1.0000
212 F	52	53	F = 0.0000	mk = 0.0188	kv = 0.0158	1.0000
213 F	WILD	WILD	F = 0.0000	mk = 0.0282	kv = 0.0325	1.0000
225 F	WILD	WILD	F = 0.0000	mk = 0.0094	kv = 0.0106	1.0000
233 F	WILD	WILD	F = 0.0000	mk = 0.0094	kv = 0.0110	1.0000
235 F	WILD	WILD	F = 0.0000	mk = 0.0188	kv = 0.0210	1.0000
247 M	WILD	WILD	F = 0.0000	mk = 0.0305	kv = 0.0331	1.0000
251 M	WILD	WILD	F = 0.0000	mk = 0.0047	kv = 0.0048	1.0000
255 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
259 M	182	181	F = 0.0000	mk = 0.0329	kv = 0.0287	1.0000
267 F	56	207	F = 0.0000	mk = 0.0376	kv = 0.0354	1.0000
285 M	199	126	F = 0.0000	mk = 0.0205	kv = 0.0173	1.0000
292 M	79	293	F = 0.0000	mk = 0.0235	kv = 0.0232	1.0000
294 F	169	190	F = 0.0000	mk = 0.0282	kv = 0.0257	1.0000
301 M	56	207	F = 0.0000	mk = 0.0399	kv = 0.0375	1.0000
302 M	247	180	F = 0.0000	mk = 0.0440	kv = 0.0451	1.0000
305 M	182	181	F = 0.0000	mk = 0.0270	kv = 0.0228	1.0000
308 M	74	213	F = 0.0000	mk = 0.0417	kv = 0.0459	1.0000
311 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
317 F	56	207	F = 0.0000	mk = 0.0399	kv = 0.0397	1.0000
328 F	161	163	F = 0.0000	mk = 0.0417	kv = 0.0403	1.0000
330 F	261	262	F = 0.0000	mk = 0.0094	kv = 0.0101	1.0000
331 F	169	190	F = 0.0000	mk = 0.0305	kv = 0.0276	1.0000
332 M	247	180	F = 0.0000	mk = 0.0440	kv = 0.0458	1.0000
351 F	74	213	F = 0.0000	mk = 0.0393	kv = 0.0441	1.0000
356 M	155	225	F = 0.0000	mk = 0.0117	kv = 0.0139	1.0000
359 F	169	190	F = 0.0000	mk = 0.0305	kv = 0.0285	1.0000
362 M	259	202	F = 0.0000	mk = 0.0340	kv = 0.0343	1.0000
363 M	247	180	F = 0.0000	mk = 0.0417	kv = 0.0444	1.0000
364 F	56	207	F = 0.0000	mk = 0.0376	kv = 0.0373	1.0000
365 F	271	235	F = 0.0000	mk = 0.0235	kv = 0.0262	1.0000
372 M	271	235	F = 0.0000	mk = 0.0235	kv = 0.0269	1.0000
376 M	161	163	F = 0.0000	mk = 0.0393	kv = 0.0388	1.0000
377 M	302	239	F = 0.0000	mk = 0.0349	kv = 0.0367	1.0000
381 M	285	76	F = 0.0000	mk = 0.0173	kv = 0.0173	1.0000
383 F	74	213	F = 0.0000	mk = 0.0393	kv = 0.0450	1.0000
388 M	268	282	F = 0.0000	mk = 0.0267	kv = 0.0294	1.0000

389 M	292	233	F = 0.0000	mk = 0.0211	kv = 0.0230	1.0000
395 M	52	202	F = 0.0000	mk = 0.0211	kv = 0.0232	1.0000
396 F	271	235	F = 0.0000	mk = 0.0235	kv = 0.0271	1.0000
397 F	247	180	F = 0.0000	mk = 0.0417	kv = 0.0448	1.0000
409 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
418 F	281	55	F = 0.0000	mk = 0.0414	kv = 0.0446	1.0000
419 M	308	317	F = 0.0000	mk = 0.0455	kv = 0.0485	1.0000
426 F	74	213	F = 0.0000	mk = 0.0393	kv = 0.0450	1.0000
427 M	292	239	F = 0.0000	mk = 0.0246	kv = 0.0252	1.0000
432 M	161	163	F = 0.0000	mk = 0.0393	kv = 0.0382	1.0000
435 M	292	233	F = 0.0000	mk = 0.0211	kv = 0.0222	1.0000
443 M	74	213	F = 0.0000	mk = 0.0393	kv = 0.0440	1.0000
457 M	247	225	F = 0.0000	mk = 0.0246	kv = 0.0267	1.0000
458 M	332	328	F = 0.0000	mk = 0.0475	kv = 0.0479	1.0000
459 M	251	212	F = 0.0000	mk = 0.0164	kv = 0.0151	1.0000
472 M	259	202	F = 0.0000	mk = 0.0317	kv = 0.0312	1.0000
473 M	110	192	F = 0.0000	mk = 0.0278	kv = 0.0253	0.7500
2090 M	259	202	F = 0.0000	mk = 0.0317	kv = 0.0305	1.0000
2092 F	362	359	F = 0.0000	mk = 0.0370	kv = 0.0362	1.0000
2095 M	301	53	F = 0.0000	mk = 0.0305	kv = 0.0280	1.0000
2098 M	271	235	F = 0.0000	mk = 0.0235	kv = 0.0246	1.0000
2099 M	305	331	F = 0.0000	mk = 0.0335	kv = 0.0289	1.0000

ORDERED LISTS OF MEAN KINSHIP BY SEX:

Rank	MALES	MK	Age	Known	FEMALES	MK	Age	Known
1	68	0.0000	40	1.000	255	0.0000	24	1.000
2	409	0.0000	40	1.000	311	0.0000	19	1.000
3	251	0.0047	18	1.000	76	0.0047	28	1.000
4	356	0.0117	8	1.000	225	0.0094	24	1.000
5	459	0.0164	2	1.000	233	0.0094	20	1.000
6	381	0.0173	8	1.000	330	0.0094	12	1.000
7	169	0.0188	23	1.000	53	0.0117	29	1.000
8	110	0.0188	27	1.000	235	0.0188	20	1.000
9	285	0.0205	15	1.000	212	0.0188	19	1.000
10	395	0.0211	6	1.000	202	0.0211	21	1.000
11	389	0.0211	6	1.000	365	0.0235	9	1.000
12	435	0.0211	3	1.000	396	0.0235	5	1.000
13	292	0.0235	14	1.000	190	0.0282	24	1.000
14	372	0.0235	7	1.000	213	0.0282	23	1.000
15	2098	0.0235	0	1.000	294	0.0282	13	1.000
16	457	0.0246	2	1.000	163	0.0293	23	1.000
17	427	0.0246	4	1.000	331	0.0305	11	1.000
18	388	0.0267	8	1.000	359	0.0305	8	1.000
19	305	0.0270	13	1.000	192	0.0364	22	0.500
20	473	0.0278	1	0.750	2092	0.0370	1	1.000
21	247	0.0305	24	1.000	267	0.0376	18	1.000
22	2095	0.0305	1	1.000	364	0.0376	8	1.000
23	472	0.0317	3	1.000	351	0.0393	9	1.000
24	2090	0.0317	1	1.000	383	0.0393	6	1.000
25	259	0.0329	17	1.000	426	0.0393	4	1.000
26	2099	0.0335	0	1.000	317	0.0399	11	1.000
27	362	0.0340	8	1.000	418	0.0414	5	1.000
28	377	0.0349	7	1.000	397	0.0417	5	1.000
29	376	0.0393	7	1.000	328	0.0417	11	1.000
30	432	0.0393	4	1.000				
31	443	0.0393	3	1.000				
32	301	0.0399	14	1.000				
33	161	0.0399	22	1.000				
34	363	0.0417	8	1.000				
35	308	0.0417	12	1.000				
36	302	0.0440	14	1.000				
37	332	0.0440	11	1.000				
38	419	0.0455	5	1.000				
39	458	0.0475	2	1.000				

GENETIC SUMMARY OF POPULATION

Descendant population Mean Kinship:	0.0313
Gene Diversity:	0.9687
Founder Genome Equivalents:	15.9581
Desc. population mean Kinship Value:	0.0327
Gene Value:	0.9673

GENE DROP ANALYSIS FOR EASTERN BLACK RHINO SSP

Fri Mar 25 18:43:38 1994

Studbook		Sire	Dam	Status	Prop. genome unique among living desc.	all living
53	F	WILD	WILD	F		0.2540
68	M	WILD	WILD	F		1.0000
76	F	WILD	WILD	F		0.5000
110	M	46	47	A	0.3035	0.3035
161	M	74	75	A	0.0610	0.0610
163	F	124	125	A	0.0945	0.0945
169	M	WILD	WILD	F		0.1275
190	F	16	17	A	0.1275	0.1275
192	F	54	55	A	0.2870	0.2870
202	F	WILD	WILD	F		0.0525
212	F	52	53	A	0.2480	0.1255
213	F	WILD	WILD	F		0.0250
225	F	WILD	WILD	F		0.2450
233	F	WILD	WILD	F		0.2555
235	F	WILD	WILD	F		0.0685
247	M	WILD	WILD	F		0.0270
251	M	WILD	WILD	F		0.5000
255	F	WILD	WILD	F		1.0000
259	M	182	181	A	0.0580	0.0580
267	F	56	207	A	0.0850	0.0850
285	M	199	126	A	0.3750	0.3750
292	M	79	293	A	0.1215	0.1215
294	F	169	190	A	0.1160	0.0000
301	M	56	207	A	0.0410	0.0410
302	M	247	180	A	0.0125	0.0050
305	M	182	181	A	0.2540	0.2540
308	M	74	213	A	0.0145	0.0060
311	F	WILD	WILD	F		1.0000
317	F	56	207	A	0.0370	0.0370
328	F	161	163	A	0.0000	0.0000
330	F	261	262	A	1.0000	1.0000
331	F	169	190	A	0.0675	0.0000
332	M	247	180	A	0.0160	0.0055
351	F	74	213	A	0.0345	0.0110
356	M	155	225	A	0.7550	0.5000
359	F	169	190	A	0.0630	0.0000
362	M	259	202	A	0.0250	0.0000
363	M	247	180	A	0.0405	0.0210
364	F	56	207	A	0.0885	0.0885
365	F	271	235	A	0.1280	0.0630
372	M	271	235	A	0.1305	0.0595
376	M	161	163	A	0.0000	0.0000
377	M	302	239	A	0.1270	0.1270
381	M	285	76	A	0.5000	0.0000
383	F	74	213	A	0.0345	0.0130
388	M	268	282	A	0.5135	0.5035
389	M	292	233	A	0.2445	0.0000
395	M	52	202	A	0.3095	0.2505
396	F	271	235	A	0.1295	0.0730
397	F	247	180	A	0.0395	0.0190
409	M	WILD	WILD	F		1.0000

418	F	281	55	A	0.0785	0.0705
419	M	308	317	A	0.0000	0.0000
426	F	74	213	A	0.0355	0.0125
427	M	292	239	A	0.1270	0.1270
432	M	161	163	A	0.0000	0.0000
435	M	292	233	A	0.2445	0.0000
443	M	74	213	A	0.0315	0.0125
457	M	247	225	A	0.2760	0.0000
458	M	332	328	A	0.0000	0.0000
459	M	251	212	A	0.5000	0.0000
472	M	259	202	A	0.0635	0.0000
473	M	110	192	A	0.0000	0.0000
2090	M	259	202	A	0.0585	0.0000
2092	F	362	359	A	0.0000	0.0000
2095	M	301	53	A	0.2460	0.0000
2098	M	271	235	A	0.1220	0.0635
2099	M	305	331	A	0.0000	0.0000

41 Founders 54 Living descendants 104 In analysis

FOUNDER ALLELE REPRESENTATION

Founder	Retention	%Representation with unk	%Representation w/o	Target with unk	Target w/o	Difference with unk	Difference w/o
16 M	0.500	2.746	2.785	1.732	1.763	-1.014	-1.022
17 F	0.500	2.817	2.856	1.732	1.763	-1.084	-1.094
31 M	0.235	0.926	0.939	0.812	0.827	-0.113	-0.112
32 F	0.235	0.930	0.943	0.812	0.827	-0.117	-0.116
46 M	0.500	1.831	1.856	1.732	1.763	-0.098	-0.094
47 F	0.500	1.882	1.909	1.732	1.763	-0.150	-0.146
52 M	0.751	2.315	2.348	2.600	2.646	0.285	0.298
53 FL	0.746	2.315	2.348	3.465	3.526	1.150	1.178
54 M U	0.500	1.394	0.000	1.732	0.000	0.339	0.000
56 M	0.978	8.226	8.342	3.387	3.446	-4.839	-4.896
57 F	0.676	3.723	3.776	2.344	2.385	-1.379	-1.391
68 ML	0.000	0.000	0.000	3.465	3.526	3.465	3.526
74 M	0.991	8.110	8.225	3.433	3.494	-4.677	-4.731
75 F	0.500	2.531	2.566	1.732	1.763	-0.798	-0.803
76 FL	0.500	0.926	0.939	3.465	3.526	2.539	2.587
79 M	0.500	2.337	2.370	1.732	1.763	-0.605	-0.607
124 M	0.612	3.238	3.284	2.120	2.158	-1.118	-1.126
125 F	0.627	3.267	3.313	2.172	2.211	-1.094	-1.102
155 M	0.500	0.926	0.939	1.732	1.763	0.806	0.824
169 ML	0.873	3.696	3.749	3.465	3.526	-0.232	-0.223
170 M	0.240	0.445	0.452	0.833	0.848	0.388	0.396
181 F	0.750	3.959	4.015	2.598	2.644	-1.361	-1.371
182 M	0.744	3.910	3.965	2.578	2.623	-1.333	-1.342
188 F	0.374	0.917	0.930	1.297	1.320	0.381	0.391
199 M	0.500	1.381	1.400	1.732	1.763	0.352	0.363
202 FL	0.948	4.168	4.226	3.465	3.526	-0.703	-0.701
207 F	0.930	4.670	4.736	3.222	3.279	-1.448	-1.458
213 FL	0.975	5.548	5.627	3.465	3.526	-2.084	-2.101
217 F	0.260	0.481	0.487	0.899	0.915	0.419	0.428
225 FL	0.755	1.852	1.878	3.465	3.526	1.613	1.648
233 FL	0.745	1.852	1.878	3.465	3.526	1.613	1.648
235 FL	0.931	3.704	3.756	3.465	3.526	-0.239	-0.230
241 M	0.462	1.848	1.874	1.599	1.627	-0.249	-0.247
247 ML	0.973	6.061	6.147	3.465	3.526	-2.597	-2.621
251 ML	0.500	0.926	0.939	3.465	3.526	2.539	2.587
255 FL	0.000	0.000	0.000	3.465	3.526	3.465	3.526
261 M	0.500	0.926	0.939	1.732	1.763	0.806	0.824
262 F	0.500	0.926	0.939	1.732	1.763	0.806	0.824
293 F	0.500	2.293	2.325	1.732	1.763	-0.560	-0.562
311 FL	0.000	0.000	0.000	3.465	3.526	3.465	3.526
409 ML	0.000	0.000	0.000	3.465	3.526	3.465	3.526

GENETIC SUMMARY

LIVING DESCENDANT POPULATION POTENTIAL

	with unknowns	w/o	w/ unkn	w/o
Number of founders:	37	36	41	40
Mean retention:	0.616	0.620	0.704	0.709
Founder genomes surviving:	22.808	22.308	28.864	28.363
Founder Genome Equivalents:	16.249	15.911	28.864	28.363
Fraction of wild gene diversity retained:	0.969	0.969	0.983	0.982
Fraction of wild gene diversity lost:	0.031	0.031	0.017	0.018
Mean inbreeding coefficient:	0.000			

FOUNDER ANALYSIS FOR EASTERN BLACK RHINO SSP

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Founder studbook numbers in parentheses indicate UNKNOWNs.

Founders	16	17	31	32	46	47	52
Founders	53 (	54)	56	57	68	74	75
Founders	76	79	124	125	155	169	170
Founders	181	182	188	199	202	207	213
Founders	217	225	233	235	241	247	251
Founders	255	261	262	293	311	409	

Founder contributions

1.5000	1.5000	0.5000	0.5000	1.0000	1.0000	1.2500
1.2500	0.7500	4.5000	2.0000	0.0000	4.3750	1.3750
0.5000	1.2500	1.7500	1.7500	0.5000	2.0000	0.2500
2.1250	2.1250	0.5000	0.7500	2.2500	2.5000	3.0000
0.2500	1.0000	1.0000	2.0000	1.0000	3.2500	0.5000
0.0000	0.5000	0.5000	1.2500	0.0000	0.0000	

Fractional contributions

0.0278	0.0278	0.0093	0.0093	0.0185	0.0185	0.0231
0.0231	0.0139	0.0833	0.0370	0.0000	0.0810	0.0255
0.0093	0.0231	0.0324	0.0324	0.0093	0.0370	0.0046
0.0394	0.0394	0.0093	0.0139	0.0417	0.0463	0.0556
0.0046	0.0185	0.0185	0.0370	0.0185	0.0602	0.0093
0.0000	0.0093	0.0093	0.0231	0.0000	0.0000	

Number of living descendants

5	6	4	4	4	4	3
3	2	16	10	0	12	5
1	4	7	7	1	5	1
7	7	2	2	5	6	7
1	2	2	4	4	8	1
0	1	1	4	0	0	

FOUNDER ANALYSIS FOR EASTERN BLACK RHINO SSP

Fri Mar 25 18:43:38 1994

Founder calculations omit UNKNOWNs.

Founders	16	17	31	32	46	47	52
Founders	53	56	57	68	74	75	76
Founders	79	124	125	155	169	170	181
Founders	182	188	199	202	207	213	217
Founders	225	233	235	241	247	251	255
Founders	261	262	293	311	409		

Founder contributions

1.5000	1.5000	0.5000	0.5000	1.0000	1.0000	1.2500
1.2500	4.5000	2.0000	0.0000	4.3750	1.3750	0.5000
1.2500	1.7500	1.7500	0.5000	2.0000	0.2500	2.1250
2.1250	0.5000	0.7500	2.2500	2.5000	3.0000	0.2500
1.0000	1.0000	2.0000	1.0000	3.2500	0.5000	0.0000
0.5000	0.5000	1.2500	0.0000	0.0000		

Fractional contributions

0.0282	0.0282	0.0094	0.0094	0.0188	0.0188	0.0235
0.0235	0.0845	0.0376	0.0000	0.0822	0.0258	0.0094
0.0235	0.0329	0.0329	0.0094	0.0376	0.0047	0.0399
0.0399	0.0094	0.0141	0.0423	0.0469	0.0563	0.0047
0.0188	0.0188	0.0376	0.0188	0.0610	0.0094	0.0000
0.0094	0.0094	0.0235	0.0000	0.0000		

Number of living descendants

6	6	4	4	4	4	3
3	16	10	0	12	5	1
4	7	7	1	5	1	7
7	2	2	5	6	7	1
2	2	4	4	8	1	0
1	1	4	0	0		

EASTERN BLACK RHINO Studbook

(Diceros bicornis michaeli)

Restricted to:
Locations: N.AMERICA/
Dates: During 24/03/1994 <= date
Status: Living during 24 Mar 1994 -> 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
53	F	5 Sep 1965	WILD	WILD	UNKNOWN	5 Sep 1965	UNK	Wild Born			BIBI
					FERNDALE	5 Sep 1965	UNK		U.S.A.		
					DETROIT	30 Sep 1965	UNK		U.S.A.		
					OKLAHOMA	5 Jun 1985	UNK		U.S.A.		
					WICHITA	2 Aug 1988	UNK		U.S.A.		
68	M	1 Jan 1954	WILD	WILD	AFRICAN	1 Jan 1954	UNK	Wild Born	AFRICAN		CLYDE
					COLUMBUS	1 Jan 1954	UNK		U.S.A.		
76	F	1 Jan 1966	WILD	WILD	UNKNOWN	1 Jan 1966	UNK	Wild Born			TWINKLE TO
					FERNDALE	1 Jan 1966	UNK		U.S.A.		
					LOSANGELE	3 Oct 1966	UNK		U.S.A.		
110	M	31 Aug 1967	46	47	WASHINGTO	31 Aug 1967	UNK	Captive Born	U.S.A.		DILLON
					SD-WAP	18 Apr 1970	UNK		U.S.A.		
					SANDIEGOZ	11 Jan 1983	UNK		U.S.A.		
161	M	1 Jan 1972	74	75	SAN FRAN	1 Jan 1972	UNK	Captive Born	U.S.A.		RHINESTONE
					DENVER	4 Sep 1973	UNK		U.S.A.		
163	F	6 Jan 1971	124	125	DENVER	6 Jan 1971	UNK	Captive Born	U.S.A.		LIJ
169	M	22 Aug 1971	WILD	WILD	UNKNOWN	22 Aug 1971	UNK	Wild Born			LORD
					DVURKRALV	22 Aug 1971	UNK		CZECHOSLO		
					JACKSONVL	22 Jun 1972	UNK		U.S.A.		
					SAN ANTON	22 Apr 1978	UNK		U.S.A.		
190	F	26 Nov 1969	16	17	LONDON	26 Nov 1969	UNK	Captive Born	ENGLAND		LUANA/LISA
					DUBLIN	19 Apr 1972	UNK		IRELAND		
					ONTARIO	7 Jun 1974	UNK		CANADA		
					SAN ANTON	28 Dec 1976	UNK		U.S.A.		
192	F	2 May 1972	54	55	OKLAHOMA	2 May 1972	UNK	Captive Born	U.S.A.		EDITH ANN
					SEDGWICK	5 Nov 1973	UNK		U.S.A.		
					SANDIEGOZ	6 Oct 1988	UNK		U.S.A.		
202	F	13 Jun 1973	WILD	WILD	UNKNOWN	13 Jun 1973	UNK	Wild Born			CORA
					METROZOO	13 Jun 1973	UNK		U.S.A.		
212	F	9 Sep 1975	52	53	DETROIT	9 Sep 1975	UNK	Captive Born	U.S.A.		BETSY
					ST LOUIS	30 Oct 1984	UNK		U.S.A.		
213	F	1 Jan 1971	WILD	WILD	KENYA	1 Jan 1971	UNK	Wild Born	KENYA		ELLY
					FERNDALE	10 Apr 1974	UNK		U.S.A.		
					SAN FRAN	16 Apr 1974	UNK		U.S.A.		
225	F	1 Jan 1970	WILD	WILD	UNKNOWN	1 Jan 1970	UNK	Wild Born			JULIE
					OKLAHOMA	1 Jan 1970	UNK		U.S.A.		
					BUSCH TAM	24 Jul 1971	UNK		U.S.A.		
					CINCINNAT	16 Aug 1990	UNK		U.S.A.		

EASTERN BLACK RHINO Studbook

(Diceros bicornis michaeli)

Restricted to:
Locations: N.AMERICA/
Dates: During 24/03/1994 <= date
Status: Living during 24 Mar 1994 -> 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
233	F	23 Nov 1973	WILD	WILD	UNKNOWN	23 Nov 1973	UNK	Wild Born			JUDY
					CHICAGOBR	23 Nov 1973	UNK		U.S.A.		
					SD-WAP	10 Nov 1986	UNK		U.S.A.		
235	F	11 Dec 1973	WILD	WILD	UNKNOWN	11 Dec 1973	UNK	Wild Born			BROOKE
					CHICAGOBR	11 Dec 1973	UNK		U.S.A.		
247	M	1 Jul 1970	WILD	WILD	UNKNOWN	1 Jul 1970	UNK	Wild Born			RALPH
					ZEEHANDLR	1 Jul 1970	UNK		U.S.A.		
					DEMMER	1 Jan 1971	UNK		AUSTRIA		
					CINCINNAT	19 Jul 1972	UNK		U.S.A.		
251	M	22 May 1976	WILD	WILD	UNKNOWN	22 May 1976	UNK	Wild Born			TOTO
					FERNDALE	22 May 1976	UNK		U.S.A.		
					ST LOUIS	12 Sep 1976	UNK		U.S.A.		
255	F	1 Jan 1970	WILD	WILD	UNKNOWN	1 Jan 1970	UNK	Wild Born			LULU/BABY
					OKAHANDJA	1 Jan 1970	UNK		NAMIBIA		
					FRANKLINP	9 Jul 1973	UNK		U.S.A.		
					BUFFALO	9 Nov 1976	UNK		U.S.A.		
					METROZOO	21 Jan 1983	UNK		U.S.A.		
259	M	10 Apr 1977	182	181	HIROSHIMA	10 Apr 1977	UNK	Captive Born	JAPAN		TOSHI
					METROZOO	10 Nov 1983	UNK		U.S.A.		
267	F	16 Sep 1975	56	207	CINCINNAT	16 Sep 1976	UNK	Captive Born	U.S.A.		SWEET PEA
					FERNDALE	18 Dec 1978	UNK		U.S.A.		
					COLUMBUS	20 Dec 1978	UNK		U.S.A.		
					FERNDALE	1 May 1979	UNK		U.S.A.		
					LOSANGELE	27 Oct 1979	UNK		U.S.A.		
						15 Jun 1981	UNK				
285	M	7 Nov 1978	199	126	MEMPHIS	7 Nov 1978	UNK	Captive Born	U.S.A.		BUSTER/BUD
					FERNDALE	26 Aug 1979	UNK		U.S.A.		
					LOSANGELE	27 Aug 1979	UNK		U.S.A.		
						15 Jun 1981	UNK				
292	M	11 Dec 1979	79	293	GRANBY	11 Dec 1979	UNK	Captive Born	CANADA		CORNELIUS
					SANDIEGOZ	11 Mar 1981	UNK		U.S.A.		
					SD-WAP	25 May 1983	UNK		U.S.A.		
					SANDIEGOZ	11 Apr 1985	UNK		U.S.A.		
					SD-WAP	22 Oct 1986	UNK		U.S.A.		
294	F	21 May 1981	169	190	SAN ANTON	21 May 1981	UNK	Captive Born	U.S.A.		MARSHA
					LINCOLN C	21 Jul 1982	UNK		U.S.A.		
301	M	25 Feb 1980	56	207	CINCINNAT	25 Feb 1980	UNK	Captive Born	U.S.A.		EUGENE
					SEDGWICK	23 Jun 1981	UNK		U.S.A.		
302	M	7 Aug 1980	247	180	CINCINNAT	7 Aug 1980	UNK	Captive Born	U.S.A.		MWANIKI
					SD-WAP	28 Sep 1981	UNK		U.S.A.		

EASTERN BLACK RHINO Studbook

(Diceros bicornis michaeli)

Restricted to:
Locations: N.AMERICA/
Dates: During 24/03/1994 <= date
Status: Living during 24 Mar 1994 -> 25 Mar 1994

Isd #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
305	M	31 Mar 1981	182	181	HIROSHIMA	31 Mar 1981	UNK	Captive Born	JAPAN		AKI
					COLO SPRG	10 Nov 1983	UNK		U.S.A.		
308	M	18 Oct 1981	74	213	SAN FRAN	18 Oct 1981	UNK	Captive Born	U.S.A.		MARSHALL
					LINCOLN C	17 Jun 1982	UNK		U.S.A.		
311	F	22 Oct 1974	WILD	WILD	UNKNOWN	22 Oct 1974	UNK	Wild Born			KENYA
					FERNDALE	22 Oct 1974	UNK		U.S.A.		
					HAINESCIT	24 Oct 1974	UNK		U.S.A.		
					COLUMBUS	6 Oct 1984	UNK		U.S.A.		
					HAINESCIT	24 Oct 1986	UNK		U.S.A.		
					DALLAS	13 Dec 1986	UNK		U.S.A.		
317	F	29 Sep 1982	56	207	CINCINNAT	29 Sep 1982	UNK	Captive Born	U.S.A.		NAIVASHA
					LINCOLN C	12 Jun 1984	UNK		U.S.A.		
328	F	15 Nov 1982	161	163	DENVER	15 Nov 1982	UNK	Captive Born	U.S.A.		ONYX
330	F	28 Dec 1981	261	262	DELHI	28 Dec 1981	UNK	Captive Born	INDIA		JERI
					OKLAHOMA	2 Feb 1989	UNK		U.S.A.		
					ST LOUIS	28 Jun 1991	UNK		U.S.A.		
331	F	11 Dec 1982	169	190	SAN ANTON	11 Dec 1982	UNK	Captive Born	U.S.A.		SHY-ANNE/H
					SAN FRAN	1 Jan 1983	UNK		U.S.A.		
					KANSASCTY	15 Jul 1984	UNK		U.S.A.		
					JACKSONVL	31 Dec 1985	UNK		U.S.A.		
					COLO SPRG	14 Jan 1987	UNK		U.S.A.		
332	M	11 Jan 1983	247	180	CINCINNAT	11 Jan 1983	UNK	Captive Born	U.S.A.		AKEEM
					DENVER	13 Jul 1984	UNK		U.S.A.		
353	F	24 Jun 1985	74	213	SAN FRAN	24 Jun 1985	UNK	Captive Born	U.S.A.		MOONSTONE
					KANSASCTY	1 Jan 1986	UNK		U.S.A.		
					LOSANGELE	13 Jan 1987	UNK		U.S.A.		
					METROZOO	15 Mar 1987	UNK		U.S.A.		
356	M	9 Feb 1986	155	225	BUSCH TAM	9 Feb 1986	UNK	Captive Born	U.S.A.		LITTLE JOE
359	F	1 Feb 1986	169	190	SAN ANTON	1 Feb 1986	UNK	Captive Born	U.S.A.		CRISTA
					CALDWELL	19 Jul 1987	UNK		U.S.A.		
362	M	11 Mar 1986	259	202	METROZOO	11 Mar 1986	UNK	Captive Born	U.S.A.		MAKURU
					CALDWELL	15 Sep 1988	UNK		U.S.A.		
363	M	14 Dec 1985	247	180	CINCINNAT	14 Dec 1985	UNK	Captive Born	U.S.A.		KABISA
					CHICAGOBR	23 Mar 1987	UNK		U.S.A.		
364	F	27 Dec 1985	56	207	CINCINNAT	27 Dec 1985	UNK	Captive Born	U.S.A.		SABABU
					SAN ANTON	17 Jul 1987	UNK		U.S.A.		
365	F	18 Jan 1985	271	235	CHICAGOBR	18 Jan 1985	UNK	Captive Born	U.S.A.		SHIMA

EASTERN BLACK RHINO Studbook

(Diceros bicornis michaeli)

Restricted to:
Locations: N.AMERICA/
Dates: During 24/03/1994 <= date
Status: Living during 24 Mar 1994 -> 25 Mar 1994

Id #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
372	M	11 Dec 1986	271	235	CHICAGOBR	11 Dec 1986	UNK	Captive Born	U.S.A.		CORKY
					CALDWELL	23 Oct 1988	UNK		U.S.A.		
376	M	7 May 1987	161	163	DENVER	7 May 1987	UNK	Captive Born	U.S.A.		PETE
					WASHINGTO	25 Jun 1988	UNK		U.S.A.		
377	M	12 Jul 1987	302	239	SD-WAP	12 Jul 1987	UNK	Unk Birth Type	U.S.A.		WASHAKI
						12 Jul 1987	UNK				
					SANDIEGOZ	5 Jan 1990	UNK		U.S.A.		
					LANSING	30 Jun 1990	UNK		U.S.A.		
381	M	10 Jun 1986	285	76	LOSANGELE	10 Jun 1986	UNK	Captive Born	U.S.A.		
					OKLAHOMA	9 Jun 1988	UNK		U.S.A.		
					MILWAUKEE	27 Jun 1989	UNK		U.S.A.		
					COLUMBIA	23 May 1991	UNK		U.S.A.		
383	F	2 Jul 1988	74	213	SAN FRAN	2 Jul 1988	UNK	Captive Born	U.S.A.		GEMSTONE/P
					MILWAUKEE	19 Dec 1989	UNK		U.S.A.		
					COLUMBIA	6 Jun 1991	UNK		U.S.A.		
388	M	26 Aug 1986	268	282	DVURKRALV	26 Aug 1986	UNK	Captive Born	CZECHOSLO		BOMA/SADO
					ATLANTA	18 Oct 1989	UNK		U.S.A.		
389	M	12 Sep 1988	292	233	SD-WAP	12 Sep 1988	UNK	Captive Born	U.S.A.		JIONI
					COLUMBUS	9 Oct 1989	UNK		U.S.A.		
395	M	18 Mar 1988	52	202	METROZOO	18 Mar 1988	UNK	Captive Born	U.S.A.		TATOO
396	F	4 Nov 1988	271	235	CHICAGOBR	4 Nov 1988	UNK	Captive Born	U.S.A.		MIADI
						4 Nov 1988	UNK				
					WASHINGTO	15 Mar 1990	UNK		U.S.A.		
397	F	19 Oct 1988	247	180	CINCINNAT	19 Oct 1988	UNK	Captive Born	U.S.A.		KULINDA KI
					COLUMBUS	10 Apr 1989	UNK		U.S.A.		
409	M	12 Jul 1954	WILD	WILD	UNKNOWN	12 Jul 1954	UNK	Wild Born			RLOY
					BROOKLYN	12 Jul 1954	UNK		U.S.A.		
					DETROIT	1 Aug 1988	UNK		U.S.A.		
418	F	23 Mar 1989	281	55	DETROIT	23 Mar 1989	UNK	Captive Born	U.S.A.		
						23 Mar 1989	UNK				
					BUSCH TAM	10 Aug 1990	UNK		U.S.A.		
419	M	21 May 1989	308	317	CHICAGOLP	21 May 1989	UNK	Captive Born	U.S.A.		AHADI/BARL
					GARDENCTY	31 Jul 1990	UNK		U.S.A.		
426	F	6 Jan 1990	74	215	SAN FRAN	6 Jan 1990	UNK	Captive Born	U.S.A.		ROSETTA ST
					ATLANTA	23 Nov 1990	UNK		U.S.A.		
427	M	25 Feb 1990	292	239	SD-WAP	25 Feb 1990	UNK	Unk Birth Type	U.S.A.		MAKILI
432	M	30 Oct 1989	161	163	DENVER	30 Oct 1989	UNK	Captive Born	U.S.A.		JASPER

EASTERN BLACK RHINO Studbook

(Diceros bicornis michaeli)

Restricted to:
Locations: N.AMERICA/
Dates: During 24/03/1994 <= date
Status: Living during 24 Mar 1994 -> 25 Mar 1994

Bud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
					BUSCH TAM	21 Aug 1991	UNK		U.S.A.		
435	M	29 Nov 1990	292	233	SD-WAP	29 Nov 1990	UNK	Unk Birth Type	U.S.A.		JIMMA
443	M	30 Jul 1991	74	213	SAN FRAN	30 Jul 1991	UNK	Captive Born	U.S.A.		HAILSTONE
457	M	5 Aug 1992	247	225	CINCINNAT	5 Aug 1992	UNK	Captive Born	U.S.A.		
458	M	26 Mar 1992	332	328	DENVER	26 Mar 1992	UNK	Captive Born	U.S.A.		
459	M	21 Oct 1991	251	212	ST LOUIS	21 Oct 1991	UNK	Captive Born	U.S.A.		WERIKHE
472	M	10 Nov 1990	259	202	DENVER	10 Nov 1990	UNK	Captive Born	U.S.A.		TONKA
473	M	15 Nov 1992	110	192	SANDIEGOZ	15 Nov 1992	UNK	Captive Born	U.S.A.		WERIKHE
2090	M	11 Feb 1993	259	202	METROZOO	11 Feb 1993	UNK	Captive Born	U.S.A.		
2092	F	30 May 1993	362	359	CALDWELL	30 May 1993	UNK	Captive Born	U.S.A.		
2095	M	11 Feb 1993	301	53	SEDGWICK	11 Feb 1993	UNK	Captive Born	U.S.A.		
2098	M	6 Oct 1993	271	235	CHICAGOBR	6 Oct 1993	UNK	Captive Born	U.S.A.		
2099	M	20 Oct 1993	305	331	COLO SPRG	20 Oct 1993	UNK	Captive Born	U.S.A.		

TOTALS: 39.29.0 (68)

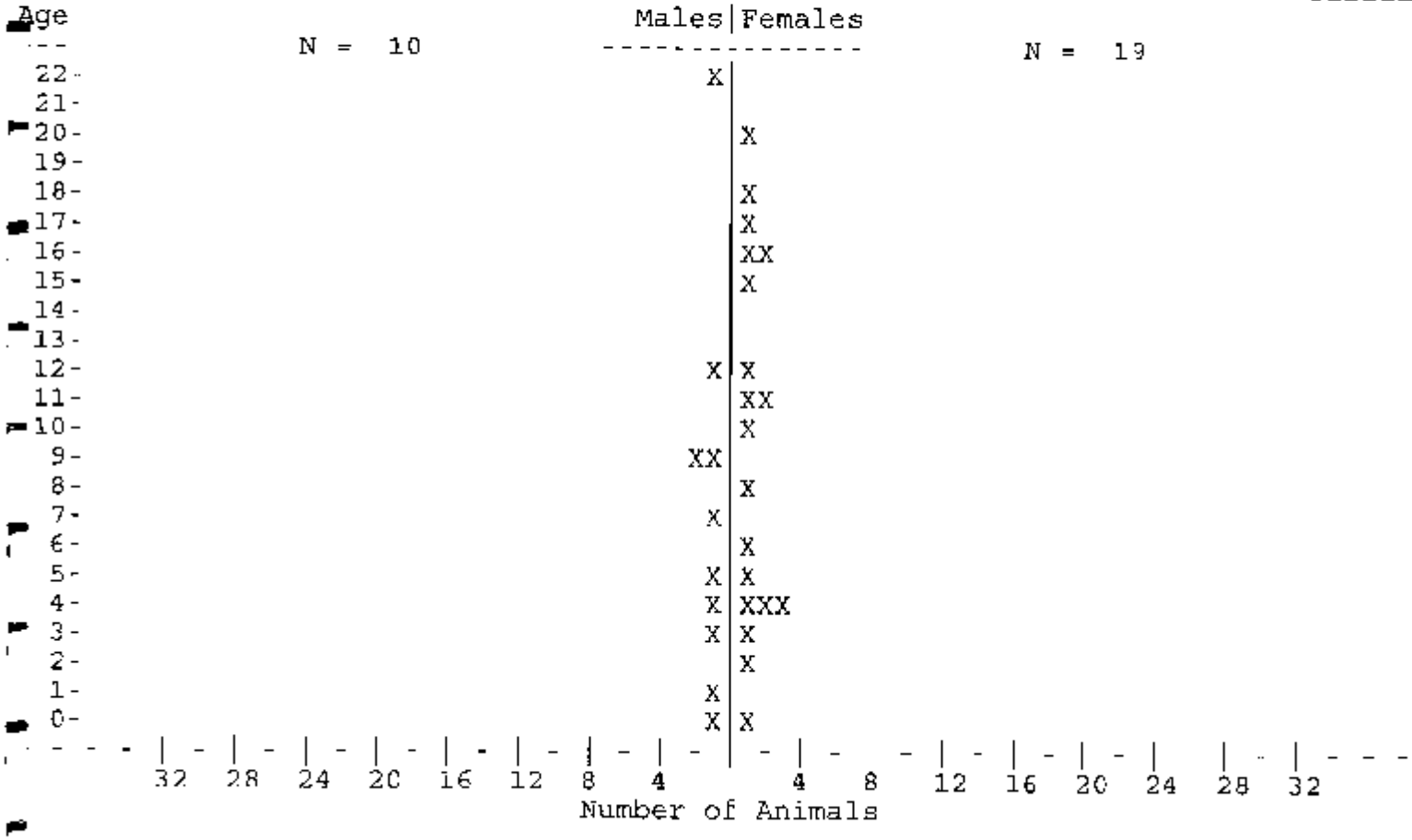
APPENDIX IV

POPULATION ANALYSES FOR SOUTHERN BLACK RHINO SSP POPULATION

Age Pyramid Report

Restricted to: SOUTHERN BLACK RHINO Studbook
Locations: N.AMERICA/
Dates: As of End of 28/02/1994 <= date
Status: Living by

Taxon Name: **DICEROS BICORNIS MINOR**



X >>> Specimens of known sex...
? >>> Specimens of unknown sex...

Age Pyramid Report
SOUTHERN BLACK RHINO Studbook

Report Date:
1 Mar 1994

Taxon Name: **DICEROS BICORNIS MINOR**

Age	Studbook Numbers >>> **Male**	
22	378	
21		
20		
19		
18		
17		
16		
15		
14		
13		
12	399	
11		
10		
9	401	404
8		
7	390	
6		
5	467	
4	403	
3	465	
2		
1	463	
0	2094	

Total= 10

Age Pyramid Report
SOUTHERN BLACK RHINO Studbook

Report Date:
1 Mar 1994

Taxon Name: **DICEROS BICORNIS MINOR**

Age	Studbook Numbers >>> **Female**		
22			
21			
20	400		
19			
18	379		
17	334		
16	461	466	
15	402		
14			
13			
12	405		
11	410	468	
10	336		
9			
8	392		
7			
6	414		
5	411		
4	424	433	464
3	462		
2	447		
1			
0	2097		

Total= 19

Fecundity & Mortality Report

Restricted to: SOUTHERN BLACK RHINO Studbook
Locations: N.AMERICA/
Dates: During 01/01/1984 <= date

Taxon Name: **DICEROS BICORNIS MINOR**

Age Class	Fecundity [Mx]... Male	N	Female	N	Mortality [Qx]... Male	N	Female	N
0- 1	0.00	2.8	0.00	4.8	0.54	5.6	0.17	5.8
1- 2	0.00	1.9	0.00	6.1	0.00	1.9	0.00	6.1
2- 3	0.00	3.0	0.00	7.0	0.00	3.0	0.00	7.0
3- 4	0.00	3.3	0.00	6.9	0.00	3.3	0.00	6.9
4- 5	0.00	3.6	0.00	5.6	0.29	3.5	0.16	6.3
5- 6	0.00	3.9	0.00	3.0	0.00	3.9	0.33	3.0
6- 7	0.00	3.0	0.00	2.8	0.00	3.0	0.00	2.8
7- 8	0.30	3.3	0.11	4.5	0.00	3.3	0.00	4.5
8- 9	0.00	3.0	0.10	4.8	0.00	3.0	0.00	4.8
9-10	0.00	1.3	0.10	5.0	0.00	1.3	0.00	5.0
10-11	0.00	2.5	0.15	6.5	1.00	2.0	0.16	6.3
11-12	0.00	2.0	0.10	5.0	0.00	2.0	0.00	5.0
12-13	0.00	1.9	0.00	3.2	0.00	1.9	0.00	3.2
13-14	0.00	2.0	0.17	3.0	0.00	2.0	0.00	3.0
14-15	0.00	2.0	0.17	3.0	0.00	2.0	0.00	3.0
15-16	0.25	2.0	0.10	4.8	0.00	2.0	0.18	5.6
16-17	0.00	2.0	0.11	4.7	0.00	2.0	0.00	4.7
17-18	0.25	2.0	0.00	2.2	0.00	2.0	0.00	2.2
18-19	0.00	2.0	0.00	1.2	0.00	2.0	0.00	1.2
19-20	0.50	2.0	0.00	1.0	0.00	2.0	0.00	1.0
20-21	0.47	1.1	0.00	0.2	1.00	1.0	0.00	0.2
21-22	0.50	1.0	0.00	0.0	0.00	1.0	0.00	0.0
22-23	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0
23-24	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
24-25	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 7.000	T = 9.976	30 day mortality: 27%
Ro = 0.098	Ro = 0.510	(3 out of 11)
lambda=0.72	lambda=0.93	
r = -0.332	r = -0.067	

9 birth events to known age parents tabulated for Mx...

12 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

(s0p10.0Ch12.0v0s0b3T **Fecundity & Mortality Report**
Restricted to: SOUTHERN BLACK RHINO Studbook
Locations: N.AMERICA/
Dates: During 01/01/1985 <= date

Taxon Name: **DICEROS BICORNIS MINOR**

	Fecundity [Mx]...				Mortality [Qx]...			
Age Class	Male	N	Female	N	Male	N	Female	N
0- 1	0.00	2.8	0.00	4.5	0.54	5.6	0.18	5.5
1- 2	0.00	1.9	0.09	5.4	0.00	1.9	0.00	5.4
2- 3	0.00	3.0	0.00	7.0	0.00	3.0	0.00	7.0
3- 4	0.00	2.5	0.00	6.9	0.00	2.5	0.00	6.9
4- 5	0.00	3.6	0.00	4.8	0.22	4.5	0.18	5.6
5- 6	0.00	3.9	0.00	3.0	0.00	3.9	0.25	4.0
6- 7	0.00	3.0	0.00	2.8	0.00	3.0	0.00	2.8
7- 8	0.30	3.3	0.14	3.5	0.00	3.3	0.00	3.5
8- 9	0.00	3.0	0.13	4.0	0.00	3.0	0.00	4.0
9-10	0.00	1.3	0.10	5.0	0.00	1.3	0.00	5.0
10-11	0.00	1.5	0.15	6.5	1.00	1.0	0.16	6.3
11-12	0.00	2.0	0.10	5.0	0.00	2.0	0.00	5.0
12-13	0.00	1.2	0.00	3.2	0.00	1.2	0.00	3.2
13-14	0.00	2.0	0.17	3.0	0.00	2.0	0.00	3.0
14-15	0.00	2.0	0.17	3.0	0.00	2.0	0.00	3.0
15-16	0.25	2.0	0.11	4.6	0.00	2.0	0.00	4.6
16-17	0.00	2.0	0.11	4.7	0.00	2.0	0.00	4.7
17-18	0.25	2.0	0.00	2.2	0.00	2.0	0.00	2.2
18-19	0.00	2.0	0.00	1.2	0.00	2.0	0.00	1.2
19-20	0.50	2.0	0.00	1.0	0.00	2.0	0.00	1.0
20-21	0.47	1.1	0.00	0.2	1.00	1.0	0.00	0.2
21-22	0.50	1.0	0.00	0.0	0.00	1.0	0.00	0.0
22-23	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0
23-24	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
24-25	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 7.000	T = 10.003	30 day mortality: 27%
Ro = 0.108	Ro = 0.604	(3 out of 11)
lambda=0.73	lambda=0.95	
r = -0.318	r = -0.050	

9 birth events to known age parents tabulated for Mx...

11 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

INBREEDING COEFFICIENTS AND MEAN KINSHIPS FOR SOUTHERN BLACK RHINO SSP

Thu Feb 24 10:54:07 1994

MEAN KINSHIP OF LIVING ANIMALS TO LIVING NON-FOUNDERS

STUDBOOK	SIRE	DAM	INBREEDING	MEAN KINSHIP
334 F	WILD	WILD	F = 0.0000	mk = 0.0208
336 F	P334	334	F = 0.0000	mk = 0.0417
378 M	WILD	WILD	F = 0.0000	mk = 0.0625
379 F	WILD	WILD	F = 0.0000	mk = 0.0417
390 M	WILD	WILD	F = 0.0000	mk = 0.0208
392 F	WILD	WILD	F = 0.0000	mk = 0.0208
399 M	WILD	WILD	F = 0.0000	mk = 0.0000
400 F	WILD	WILD	F = 0.0000	mk = 0.0208
401 M	WILD	WILD	F = 0.0000	mk = 0.0000
402 F	WILD	WILD	F = 0.0000	mk = 0.0417
403 M	P402	402	F = 0.0000	mk = 0.0521
404 M	WILD	WILD	F = 0.0000	mk = 0.0208
405 F	WILD	WILD	F = 0.0000	mk = 0.0208
410 F	WILD	WILD	F = 0.0000	mk = 0.0000
411 F	378	379	F = 0.0000	mk = 0.0729
414 F	WILD	WILD	F = 0.0000	mk = 0.0208
424 F	P414	414	F = 0.0000	mk = 0.0417
433 F	P400	400	F = 0.0000	mk = 0.0417
447 F	378	379	F = 0.0000	mk = 0.0729
461 F	WILD	WILD	F = 0.0000	mk = 0.0208
462 F	P461	461	F = 0.0000	mk = 0.0417
463 M	404	405	F = 0.0000	mk = 0.0417
464 F	P466	466	F = 0.0000	mk = 0.0417
465 M	P468	468	F = 0.0000	mk = 0.0417
466 F	WILD	WILD	F = 0.0000	mk = 0.0208
467 M	WILD	WILD	F = 0.0000	mk = 0.0000
468 F	WILD	WILD	F = 0.0000	mk = 0.0208
2094 M	390	392	F = 0.0000	mk = 0.0417
2097 F	378	402	F = 0.0000	mk = 0.0729

ORDERED LISTS OF MEAN KINSHIP BY SEX:

Rank	MALES	MK	Age	FEMALES	MK	Age
1	399	0.0000	12	410	0.0000	11
2	401	0.0000	9	400	0.0208	20
3	467	0.0000	6	334	0.0208	17
4	404	0.0208	9	461	0.0208	17
5	390	0.0208	8	466	0.0208	17
6	465	0.0417	3	405	0.0208	12
7	462	0.0417	1	468	0.0208	12
8	2094	0.0417	1	392	0.0208	8
9	403	0.0521	5	414	0.0208	6
10	378	0.0625	22	379	0.0417	18
11				402	0.0417	15
12				336	0.0417	11
13				424	0.0417	4
14				464	0.0417	4
15				433	0.0417	4
16				462	0.0417	3
17				411	0.0729	5
18				447	0.0729	2
19				2097	0.0729	0

GENETIC SUMMARY OF POPULATION

Descendant population Mean Kinship:	0.0503
Gene Diversity:	0.9497
Founder Genome Equivalents:	9.9310

GENE DROP ANALYSIS FOR SOUTHERN BLACK RHINO SSP

Thu Feb 24 10:54:07 1994

Studbook		Sire	Dam	Status	Prop. genome unique among living desc.	all living
334	F	WILD	WILD	F		0.5000
336	F	P334	334	A	1.0000	0.5000
378	M	WILD	WILD	F		0.1280
379	F	WILD	WILD	F		0.2425
390	M	WILD	WILD	F		0.5000
392	F	WILD	WILD	F		0.5000
399	M	WILD	WILD	F		1.0000
400	F	WILD	WILD	F		0.5000
401	M	WILD	WILD	F		1.0000
402	F	WILD	WILD	F		0.2575
403	M	P402	402	A	0.7425	0.5000
404	M	WILD	WILD	F		0.5000
405	F	WILD	WILD	F		0.5000
410	F	WILD	WILD	F		1.0000
411	F	378	379	A	0.3760	0.0000
414	F	WILD	WILD	F		0.5000
424	F	P414	414	A	1.0000	0.5000
433	F	P400	400	A	1.0000	0.5000
447	F	378	379	A	0.3775	0.0000
461	F	WILD	WILD	F		0.5000
462	F	P461	461	A	1.0000	0.5000
463	M	404	405	A	1.0000	0.0000
464	F	P466	466	A	1.0000	0.5000
465	M	P468	468	A	1.0000	0.5000
466	F	WILD	WILD	F		0.5000
467	M	WILD	WILD	F		1.0000
468	F	WILD	WILD	F		0.5000
2094	M	390	392	A	1.0000	0.0000
2097	F	378	402	A	0.3760	0.0000

24 Founders 12 Living descendants 36 In analysis

FOUNDER ALLELE REPRESENTATION

Founder	Retention	%Representation	Target	Difference
334 FL	0.500	4.167	4.878	0.711
378 ML	0.872	12.500	4.878	-7.622
379 FL	0.757	8.333	4.878	-3.455
390 ML	0.500	4.167	4.878	0.711
392 FL	0.500	4.167	4.878	0.711
399 ML	0.000	0.000	4.878	4.878
400 FL	0.500	4.167	4.878	0.711
401 ML	0.000	0.000	4.878	4.878
402 FL	0.743	8.333	4.878	-3.455
404 ML	0.500	4.167	4.878	0.711
405 FL	0.500	4.167	4.878	0.711
410 FL	0.000	0.000	4.878	4.878
414 FL	0.500	4.167	4.878	0.711
461 FL	0.500	4.167	4.878	0.711
466 FL	0.500	4.167	4.878	0.711
467 ML	0.000	0.000	4.878	4.878
468 FL	0.500	4.167	4.878	0.711
P334 M	0.500	4.167	2.439	-1.728
P400 M	0.500	4.167	2.439	-1.728
P402 M	0.500	4.167	2.439	-1.728
P414 M	0.500	4.167	2.439	-1.728
P461 M	0.500	4.167	2.439	-1.728
P466 M	0.500	4.167	2.439	-1.728
P468 M	0.500	4.167	2.439	-1.728

GENETIC SUMMARY

	LIVING DESCENDANT POPULATION	POTENTIAL
Number of founders:	20	24
Mean retention:	0.544	0.854
Founder genomes surviving:	10.872	20.500
Founder Genome Equivalents:	9.923	20.500
Fraction of wild gene diversity retained:	0.950	0.976
Fraction of wild gene diversity lost:	0.050	0.024
Mean inbreeding coefficient:	0.000	

FOUNDER ANALYSIS FOR SOUTHERN BLACK RHINO SSP

Thu Feb 24 10:54:07 1994

Studbook numbers beginning with P indicate wild or unknown founders that mated with studbook # without the P to produce CB offspring.

Founders	334	378	379	390	392	399	400
Founders	401	402	404	405	410	414	461
Founders	466	467	468	P334	P400	P402	P414
Founders	P461	P466	P468				
Founder contributions							
	0.5000	1.5000	1.0000	0.5000	0.5000	0.0000	0.5000
	0.0000	1.0000	0.5000	0.5000	0.0000	0.5000	0.5000
	0.5000	0.0000	0.5000	0.5000	0.5000	0.5000	0.5000
	0.5000	0.5000	0.5000				
Fractional contributions							
	0.0417	0.1250	0.0833	0.0417	0.0417	0.0000	0.0417
	0.0000	0.0833	0.0417	0.0417	0.0000	0.0417	0.0417
	0.0417	0.0000	0.0417	0.0417	0.0417	0.0417	0.0417
	0.0417	0.0417	0.0417				
Number of living descendants							
	1	3	2	1	1	0	1
	0	2	1	1	0	1	1
	1	0	1	1	1	1	1
	1	1	1				

SOUTHERN BLACK RHINO Studbook

(Diceros bicornis minor)

Restricted to:
Locations: N.AMERICA/
Dates: During 24/03/1994 <= date
Status: Living during 24 Mar 1994 -> 25 Mar 1994

stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
334	F	- 1977	WILD	WILD	ZIMBABWE	- 1977	UNK	Wild Born	ZIMBABWE		MABEL
					LOSANGELE	4 Dec 1982	001079		U.S.A.		
					WATERFALL	1 Dec 1993	UNK		U.S.A.		
336	F	21 Apr 1983	WILD	334	LOSANGELE	21 Apr 1983	001135	Captive Born	U.S.A.		ICE
378	M	- 1972	WILD	WILD	S.AFRICAR	- 1984	UNK	Wild Born	S.AFRICAR		NACHO
					LA COMA	24 Mar 1984	UNK		U.S.A.		
379	F	- 1976	WILD	WILD	S.AFRICAR	- 1984	UNK	Wild Born	S.AFRICAR		CHULA
					LA COMA	24 Mar 1984	UNK		U.S.A.		
390	M	- May 1986	WILD	WILD	S.AFRICAR	- 1986	UNK	Wild Born	S.AFRICAR		GUNDWANE
					SANDIEGOZ	15 Dec 1987	587408		U.S.A.		
392	F	- Mar 1986	WILD	WILD	ZIMBABWE	- Apr 1989	UNK	Wild Born	ZIMBABWE		CHIRUNDU
					SANDIEGOZ	18 Jul 1989	589278		U.S.A.		
399	M	- 1982	WILD	WILD	ZIMBABWE	- Apr 1989	UNK	Wild Born	ZIMBABWE		NYAKASIKAN
					DALLAS	16 Jul 1989	896576		U.S.A.		
400	F	- 1974	WILD	WILD	ZIMBABWE	- Apr 1989	UNK	Wild Born	ZIMBABWE		MABANZU
					DALLAS	16 Jul 1989	896577		U.S.A.		
401	M	- 1985	WILD	WILD	ZIMBABWE	- Apr 1989	UNK	Wild Born	ZIMBABWE		GOTA GOTA
					FORTWORTH	16 Jul 1989	714		U.S.A.		
					EL COYOTE	27 Jul 1991	UNK		U.S.A.		
402	F	- 1979	WILD	WILD	ZIMBABWE	- Apr 1989	UNK	Wild Born	ZIMBABWE		NOWETE
					FORTWORTH	16 Jul 1989	715		U.S.A.		
					LA COMA	6 Jan 1992	UNK		U.S.A.		
403	M	18 Aug 1989	WILD	402	FORTWORTH	18 Aug 1989	716	Captive Born	U.S.A.		HARRY
404	M	- 1985	WILD	WILD	ZIMBABWE	- Apr 1989	UNK	Wild Born	ZIMBABWE		BREWSTER/M
					MILWAUKEE	18 Jul 1989	3371		U.S.A.		
405	F	- 1982	WILD	WILD	ZIMBABWE	- Apr 1989	UNK	Wild Born	ZIMBABWE		BARLEY/RUT
					MILWAUKEE	18 Jul 1989	3372		U.S.A.		
410	F	- 1983	WILD	WILD	S.AFRICAR	- 1989	UNK	Wild Born	S.AFRICAR		THOMBI
					LA COMA	17 May 1989	UNK		U.S.A.		
411	F	28 Feb 1989	378	379	LA COMA	28 Feb 1989	UNK	Captive Born	U.S.A.		MTOTO
					FORTWORTH	19 Dec 1991	UNK		U.S.A.		
414	F	1 Jan 1988	WILD	WILD	ZIMBABWE	- Apr 1989	UNK	Wild Born	ZIMBABWE		CHINYUKU
					EL COYOTE	16 Jul 1989	UNK		U.S.A.		
424	F	11 Sep 1989	WILD	414	EL COYOTE	11 Sep 1989	UNK	Captive Born	U.S.A.		MARGARITA

SOUTHERN BLACK RHINO Studbook

(Diceros bicornis minor)

Restricted to:
Locations: N.AMERICA/
Dates: During 24/03/1994 <= date
Status: Living during 24 Mar 1994 -> 25 Mar 1994

Loc #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
433	F	28 Feb 1990	WILD	400	DALLAS	28 Feb 1990	906719	Captive Born	U.S.A.		ZAMBEZI
447	F	3 Dec 1991	378	379	LA COMA	3 Dec 1991	UNK	Captive Born	U.S.A.		GLORIA
461	F	- 1977	WILD	WILD	ZIMBABWE	23 Jun 1991	9112	Wild Born	ZIMBABWE		JOTA
					EL COYOTE	22 Apr 1992	UNK		U.S.A.		
462	F	1 Dec 1990	WILD	461	ZIMBABWE	23 Jun 1991	9113	Wild Born	ZIMBABWE		CHARERE
					EL COYOTE	22 Apr 1992	UNK		U.S.A.		
463	M	29 Dec 1992	404	405	MILWAUKEE	29 Dec 1992	UNK	Captive Born	U.S.A.		KWAHZAA
464	F	- 1990	WILD	466	ZIMBABWE	27 Jun 1991	9105	Wild Born	ZIMBABWE		KASIKIRI
					SANTLLANA	22 Apr 1992	UNK		U.S.A.		
465	M	- 1990	WILD	468	ZIMBABWE	27 Jun 1991	9116	Wild Born	ZIMBABWE		DINGA
					SANTLLANA	22 Apr 1992	UNK		U.S.A.		
466	F	- 1977	WILD	WILD	ZIMBABWE	20 Jun 1991	9104	Wild Born	ZIMBABWE		SINAMPANDE
					WATERFALL	22 Apr 1992	UNK		U.S.A.		
467	M	- 1988	WILD	WILD	ZIMBABWE	18 Jun 1991	9101	Wild Born	ZIMBABWE		SIABUWA
					WATERFALL	22 Apr 1992	UNK		U.S.A.		
468	F	- 1982	WILD	WILD	ZIMBABWE	27 Jun 1991	9115	Wild Born	ZIMBABWE		NWENDA
					YULEE	22 Apr 1992	UNK		U.S.A.		
2094	M	12 Aug 1993	390	392	SANDIEGOZ	12 Aug 1993	UNK	Captive Born	U.S.A.		IBALA
2097	F	29 Aug 1993	378	402	LA COMA	29 Aug 1993	UNK	Captive Born	U.S.A.		KIT

TOTALS: 10.19.0 (29)

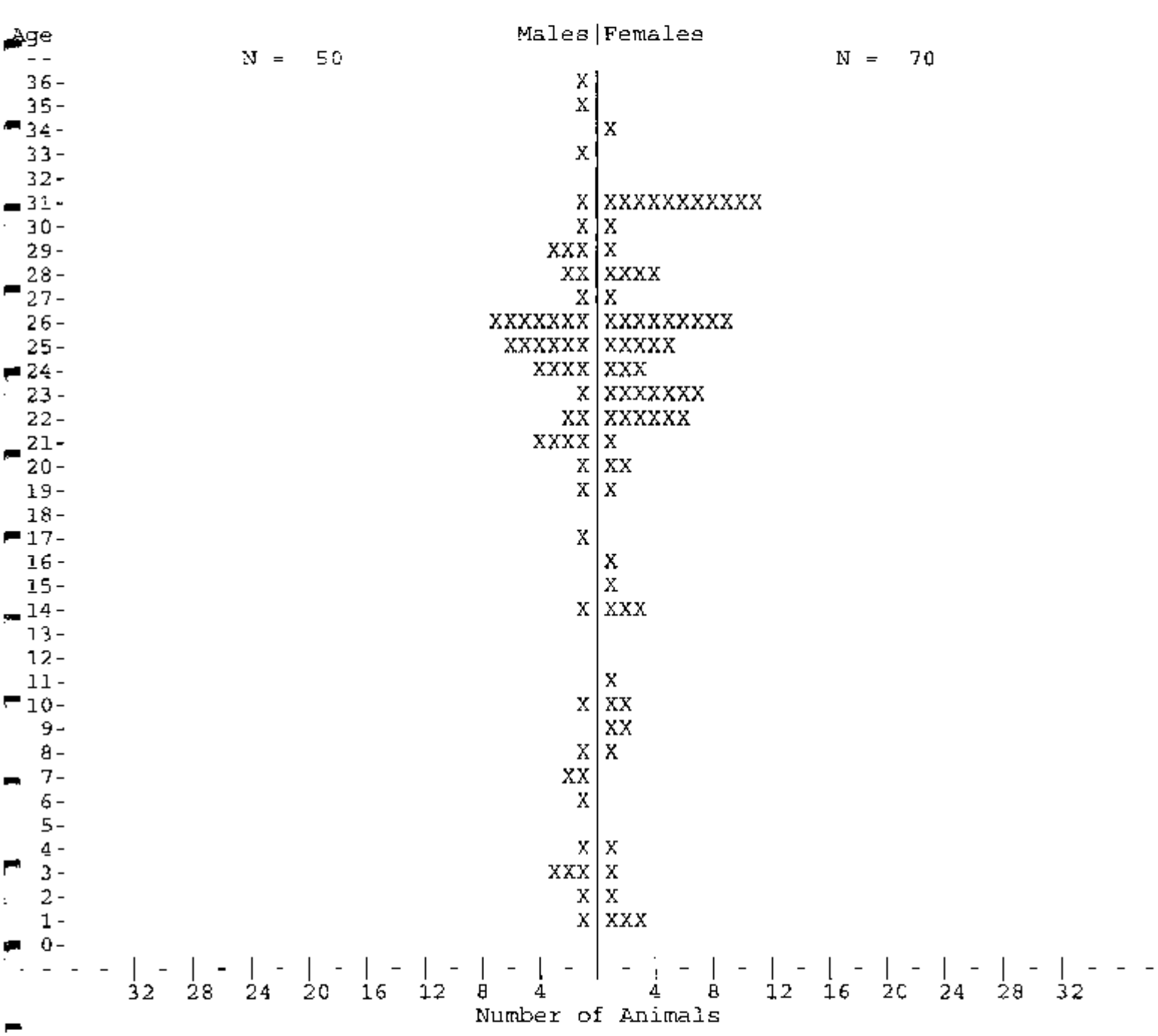
APPENDIX V

POPULATION ANALYSES FOR SOUTHERN WHITE RHINO SSP POPULATION

Age Pyramid Report

Restricted to: SOUTHERN WHITE RHINOCEROS Studbook Page 1
Cooperative Management: In SSP and managed

Taxon Name: **CERATOTHERIUM SIMUM SIMUM**



X >>> Specimens of known sex...
? >>> Specimens of unknown sex...

Age Pyramid Report

Restricted to: SOUTHERN WHITE RHINOCEROS Studbook Page 2
Cooperative Management: In SSP and managed

Taxon Name: **CERATOTHERIUM SIMUM SIMUM**

Age	Studbook Numbers >>> **Male**						
36	31						
35	29						
34							
33	34						
32							
31	143						
30	80						
29	50	180	359				
28	336	618					
27	82						
26	146	177	187	189	191	379	697
25	363	364	390	473	753	754	
24	386	413	463	573			
23	469						
22	465	687					
21	202	203	213	707			
20	220						
19	280						
18							
17	335						
16							
15							
14	755						
13							
12							
11							
10	790						
9							
8	841						
7	861	876					
6	898						
5							
4	950						
3	T005	T006	T009				
2	T010						
1	T015						
0							

Total= 50

Age Pyramid Report

Restricted to: SOUTHERN WHITE RHINOCEROS Studbook Page 3
Cooperative Management: In SSP and managed

Taxon Name: **CERATOTHERIUM SIMUM SIMUM**

Age	Studbook Numbers >>> Female									
36										
35										
34	30									
33										
32										
31	39	47	51	147	150	153	154	156	157	159
	277									
30	81									
29	181									
28	337	358	619	620						
27	83									
26	148	188	190	380	381	452	453	565	696	
25	182	365	366	475	750					
24	464	574	587							
23	192	318	416	417	418	470	471			
22	387	392	397	466	467	686				
21	218									
20	219	238								
19	391									
18										
17										
16	575									
15	533									
14	542	582	612							
13										
12										
11	772									
10	788	791								
9	819	822								
8	842									
7										
6										
5										
4	T002									
3	T004									
2	T008									
1	T013	T016	T020							
0										

Total= 70

Fecundity and Mortality Report

Restricted to: SOUTHERN WHITE RHINOCEROS Studbook
Dates: During 01/01/1980 <- date
Cooperative Management: In SSP

Taxon Name: **CERATOTHERIUM SIMUM SIMUM**

Age Class	Fecundity [Mx]... Male	N	Female	N	Mortality [Qx]... Male	N	Female	N
0- 1	0.00	27.1	0.00	23.0	0.13	31.1	0.15	27.0
1- 2	0.00	23.5	0.00	21.3	0.04	24.4	0.04	24.7
2- 3	0.00	21.8	0.00	18.5	0.00	21.8	0.05	18.8
3- 4	0.00	18.5	0.00	17.4	0.00	18.5	0.11	18.2
4- 5	0.00	14.2	0.00	15.8	0.00	14.2	0.00	15.8
5 6	0.00	13.7	0.00	16.0	0.00	13.7	0.00	16.0
6- 7	0.00	12.0	0.03	15.2	0.00	12.0	0.00	15.2
7- 8	0.00	8.8	0.00	15.8	0.00	8.8	0.00	15.8
8- 9	0.00	8.2	0.00	17.1	0.00	8.2	0.00	17.1
9-10	0.00	9.8	0.03	16.7	0.00	9.8	0.00	16.7
10-11	0.00	12.2	0.00	19.7	0.00	12.2	0.00	19.7
11-12	0.00	12.3	0.00	26.6	0.00	12.3	0.00	26.6
12-13	0.00	17.0	0.03	29.7	0.00	17.0	0.03	30.0
13-14	0.00	23.0	0.01	34.4	0.00	23.0	0.00	34.4
14-15	0.00	29.5	0.00	41.1	0.03	29.8	0.00	41.1
15-16	0.00	29.2	0.00	39.1	0.00	29.2	0.00	39.1
16 17	0.02	32.0	0.02	43.6	0.00	32.0	0.00	44.1
17-18	0.00	34.6	0.00	43.8	0.00	34.6	0.02	44.0
18-19	0.00	35.0	0.00	44.5	0.00	35.0	0.02	45.0
19-20	0.00	39.5	0.00	57.0	0.03	39.8	0.00	57.0
20-21	0.01	37.3	0.00	57.4	0.00	37.3	0.02	57.9
21-22	0.00	35.5	0.03	54.3	0.00	35.5	0.02	55.1
22-23	0.05	35.5	0.00	50.2	0.00	35.5	0.02	51.6
23-24	0.03	35.2	0.00	42.7	0.00	36.4	0.02	43.1
24-25	0.08	32.0	0.04	40.7	0.06	32.9	0.00	40.7
25 26	0.00	24.7	0.00	35.0	0.00	24.7	0.06	36.1
26-27	0.00	17.1	0.00	25.9	0.06	17.6	0.04	28.1
27-28	0.08	13.3	0.00	21.0	0.07	14.2	0.09	22.2
28-29	0.05	11.5	0.00	16.9	0.00	11.5	0.00	16.9
29-30	0.00	8.7	0.10	15.2	0.00	8.7	0.00	15.2
30-31	0.00	6.8	0.00	13.5	0.00	6.8	0.00	13.5
31-32	0.00	4.7	0.00	4.5	0.19	5.2	0.00	4.5
32-33	0.00	4.0	0.00	1.9	0.00	4.0	0.50	2.0
33 34	0.00	2.5	0.00	1.0	0.00	2.5	0.00	1.0
34 35	0.00	2.0	0.00	0.2	0.00	2.0	0.00	0.2
35-36	0.00	1.2	0.00	0.0	0.00	1.2	0.00	0.0
36-37	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0
37-38	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
38-39	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 24.091 T = 18.685 30 day mortality: 50%
Ro = 0.230 Ro = 0.172 (8 out of 16)
lambda=0.94 lambda=0.91

Compiled by: Randall W. Rockwell thru The Wilds
Data current thru: 1 Feb 1993 White Rhino Species Survival Plan

SPARKS v1.3
25 Mar 1994

Fecundity and Mortality Report

Restricted to: SOUTHERN WHITE RHINOCEROS Studbook Page 2
Dates: During 01/01/1980 <= date
Cooperative Management: In SSP

Taxon Name: CERATOTHERIUM SIMUM SIMUM

r = -0.061 r = -0.094

15 birth events to known age parents tabulated for Mx...plus...
1 births to UNK or MULT sires...

33 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

Smoothing pass 1

Age Class	Fecundity [Mx]... Male	N	Female	N	Mortality [Qx]... Male	N	Female	N
0- 1	0.00	27.1	0.00	23.0	0.13	31.1	0.15	27.0
1- 2	0.00	23.5	0.00	21.3	0.02	24.4	0.05	24.7
2- 3	0.00	21.8	0.00	18.5	0.01	21.8	0.07	18.8
3- 4	0.00	18.5	0.00	17.4	0.00	18.5	0.05	18.2
4- 5	0.00	14.2	0.00	15.8	0.00	14.2	0.04	15.8
5- 6	0.00	13.7	0.01	16.0	0.00	13.7	0.00	16.0
6- 7	0.00	12.0	0.01	15.2	0.00	12.0	0.00	15.2
7- 8	0.00	8.8	0.01	15.8	0.00	8.8	0.00	15.8
8- 9	0.00	8.2	0.01	17.1	0.00	8.2	0.00	17.1
9-10	0.00	9.8	0.01	16.7	0.00	9.8	0.00	16.7
10-11	0.00	12.2	0.01	19.7	0.00	12.2	0.00	19.7
11-12	0.00	12.3	0.01	26.6	0.00	12.3	0.01	26.6
12-13	0.00	17.0	0.01	29.7	0.00	17.0	0.01	30.0
13-14	0.00	23.0	0.01	34.4	0.01	23.0	0.01	34.4
14-15	0.00	29.5	0.00	41.1	0.01	29.8	0.00	41.1
15-16	0.01	29.2	0.01	39.1	0.01	29.2	0.00	39.1
16-17	0.01	32.0	0.01	43.6	0.00	32.0	0.01	44.1
17-18	0.01	34.6	0.01	43.8	0.00	34.6	0.01	44.0
18-19	0.00	35.0	0.00	44.5	0.01	35.0	0.01	45.0
19-20	0.00	39.5	0.00	57.0	0.01	39.8	0.01	57.0
20-21	0.00	37.3	0.01	57.4	0.01	37.3	0.01	57.9
21-22	0.02	35.5	0.01	54.3	0.00	35.5	0.02	55.1
22-23	0.03	35.5	0.01	50.2	0.00	35.5	0.02	51.6
23-24	0.05	35.2	0.01	42.7	0.02	36.4	0.01	43.1
24-25	0.04	32.0	0.01	40.7	0.02	32.9	0.03	40.7
25-26	0.03	24.7	0.01	35.0	0.04	24.7	0.03	36.1
26-27	0.03	17.1	0.00	25.9	0.04	17.6	0.06	28.1
27-28	0.04	13.3	0.00	21.0	0.04	14.2	0.04	22.2
28-29	0.04	11.5	0.03	16.9	0.02	11.5	0.03	16.9
29-30	0.02	8.7	0.03	15.2	0.00	8.7	0.00	15.2
30-31	0.00	6.8	0.03	13.5	0.06	6.8	0.00	13.5
31-32	0.00	4.7	0.00	4.5	0.06	5.2	0.17	4.5
32-33	0.00	4.0	0.00	1.9	0.06	4.0	0.17	2.0
33-34	0.00	2.5	0.00	1.0	0.00	2.5	0.17	1.0
34-35	0.00	2.0	0.00	0.2	0.00	2.0	0.00	0.2
35-36	0.00	1.2	0.00	0.0	0.00	1.2	0.00	0.0
36-37	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0
37-38	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
38-39	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
39-40	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 24.092	T = 18.638	30 day mortality: 50%
Ro = 0.235	Ro = 0.172	(8 out of 16)
lambda=0.94	lambda=0.91	
r = -0.060	r = -0.095	

15 birth events to known age parents tabulated for Mx...plus...
1 births to UNK or MULT sires...

33 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

Fecundity and Mortality Report

Restricted to: SOUTHERN WHITE RHINOCEROS Studbook
Locations: N.AMERICA/
Dates: During 01/01/1980 <= date

Taxon Name: **CERATOTHERIUM SIMUM SIMUM**

Age Class	Fecundity [Mx]... Male	N	Female	N	Mortality [Qx]... Male	N	Female	N
0- 1	0.00	45.1	0.00	46.3	0.22	57.8	0.14	53.2
1- 2	0.00	34.4	0.00	32.5	0.03	35.3	0.08	36.1
2- 3	0.00	26.2	0.00	23.6	0.11	28.0	0.08	24.6
3- 4	0.00	17.3	0.00	22.0	0.00	17.3	0.09	22.8
4- 5	0.00	14.1	0.00	19.5	0.00	14.1	0.05	19.5
5- 6	0.00	13.4	0.00	18.8	0.00	13.4	0.00	18.8
6- 7	0.00	13.6	0.03	20.5	0.07	15.2	0.00	20.5
7- 8	0.00	15.6	0.08	20.8	0.00	15.6	0.04	22.5
8- 9	0.00	17.6	0.00	27.4	0.00	17.6	0.00	27.4
9-10	0.00	16.2	0.10	32.8	0.00	16.2	0.00	32.8
10-11	0.05	24.7	0.01	35.5	0.04	27.0	0.00	35.5
11-12	0.00	29.3	0.02	45.7	0.00	29.3	0.02	46.1
12-13	0.04	41.0	0.07	58.9	0.00	42.0	0.03	59.5
13-14	0.04	41.5	0.07	54.8	0.00	41.5	0.00	54.8
14-15	0.11	41.9	0.05	55.9	0.07	42.8	0.04	56.3
15-16	0.05	41.1	0.05	52.0	0.05	42.0	0.00	52.0
16-17	0.05	42.0	0.08	52.0	0.00	42.0	0.02	52.7
17-18	0.04	45.6	0.03	62.8	0.00	45.6	0.02	63.0
18-19	0.16	44.2	0.09	61.8	0.00	44.2	0.02	62.3
19-20	0.05	46.0	0.05	62.9	0.06	46.8	0.00	62.9
20-21	0.18	46.3	0.04	63.4	0.00	46.3	0.02	63.9
21-22	0.10	43.5	0.05	59.3	0.00	43.5	0.02	60.1
22-23	0.13	41.5	0.04	57.2	0.00	41.5	0.02	57.6
23-24	0.08	39.6	0.09	49.1	0.00	39.8	0.02	49.5
24-25	0.15	33.5	0.06	42.1	0.06	34.4	0.00	42.1
25-26	0.04	25.7	0.10	36.0	0.00	25.7	0.05	37.1
26-27	0.09	18.1	0.00	26.9	0.05	18.6	0.03	29.1
27-28	0.08	14.3	0.02	22.0	0.07	15.2	0.09	23.2
28-29	0.09	12.5	0.06	17.9	0.00	12.5	0.00	17.9
29-30	0.06	9.7	0.10	16.2	0.00	9.7	0.00	16.2
30-31	0.00	7.5	0.00	14.5	0.00	7.5	0.00	14.5
31-32	0.00	5.7	0.00	4.8	0.16	6.2	0.18	5.5
32-33	0.00	5.0	0.00	1.9	0.00	5.0	0.50	2.0
33-34	0.00	2.7	0.00	1.0	0.00	2.7	0.00	1.0
34-35	0.00	2.0	0.00	0.2	0.00	2.0	0.00	0.2

Compiled by: Randall W. Rockwell thru The Wilds
Data current thru: 1 Feb 1993 White Rhino Species Survival Plan

SPARKS v1.3
25 Mar 1994

Fecundity and Mortality Report

Locations: N.AMERICA/
Dates: During 01/01/1980 <= date

Taxon Name: **CERATOTHERIUM SIMUM SIMUM**

35-36	0.00	1.2	0.00	0.0	0.00	1.2	0.00	0.0
36-37	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0
37-38	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
38-39	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 20.180 T = 17.265 30 day mortality: 16%
Ro = 0.793 Ro = 0.667 (17 out of 109)
lambda=0.99 lambda=0.98
r = -0.011 r = -0.023

105 birth events to known age parents tabulated for Mx...plus...
6 births to UNK or MULT dams...
12 births to UNK or MULT sires...

67 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

Smoothing pass 1

Age Class	Fecundity [Mx]... Male	N	Female	N	Mortality [Qx]... Male	N	Female	N
0- 1	0.00	45.1	0.00	46.3	0.22	57.8	0.14	53.2
1- 2	0.00	34.4	0.00	32.5	0.07	35.3	0.08	36.1
2- 3	0.00	26.2	0.00	23.6	0.05	28.0	0.08	24.6
3- 4	0.00	17.3	0.00	22.0	0.04	17.3	0.07	22.8
4 5	0.00	14.1	0.00	19.5	0.00	14.1	0.05	19.5
5- 6	0.00	13.4	0.01	18.8	0.02	13.4	0.02	18.8
6- 7	0.00	13.6	0.04	20.5	0.02	15.2	0.01	20.5
7- 8	0.00	15.6	0.04	20.8	0.02	15.6	0.01	22.5
8- 9	0.00	17.6	0.06	27.4	0.00	17.6	0.01	27.4
9-10	0.02	16.2	0.04	32.8	0.01	16.2	0.00	32.8
10-11	0.02	24.7	0.04	35.5	0.01	27.0	0.01	35.5
11-12	0.03	29.3	0.03	45.7	0.01	29.3	0.02	46.1
12 13	0.03	41.0	0.05	58.9	0.00	42.0	0.02	59.5
13-14	0.06	41.5	0.06	54.8	0.02	41.5	0.02	54.8
14-15	0.07	41.9	0.06	55.9	0.04	42.8	0.01	56.3
15 16	0.07	41.1	0.06	52.0	0.04	42.0	0.02	52.0
16-17	0.05	42.0	0.05	52.0	0.02	42.0	0.01	52.7
17-18	0.08	45.6	0.07	62.8	0.00	45.6	0.02	63.0
18-19	0.08	44.2	0.06	61.8	0.02	44.2	0.01	62.3
19-20	0.13	46.0	0.06	62.9	0.02	46.8	0.01	62.9
20-21	0.11	46.3	0.05	63.4	0.02	46.3	0.01	63.9
21-22	0.14	43.5	0.04	59.3	0.00	43.5	0.02	60.1
22-23	0.10	41.5	0.06	57.2	0.00	41.5	0.02	57.6
23 24	0.12	39.6	0.06	49.1	0.02	39.8	0.01	49.5
24 25	0.09	33.5	0.08	42.1	0.02	34.4	0.02	42.1
25-26	0.09	25.7	0.05	36.0	0.04	25.7	0.03	37.1
26-27	0.07	16.1	0.04	26.9	0.04	18.6	0.06	29.1
27-28	0.09	14.3	0.03	22.0	0.04	15.2	0.04	23.2
28-29	0.08	12.5	0.06	17.9	0.02	12.5	0.03	17.9
29-30	0.05	9.7	0.05	16.2	0.00	9.7	0.00	16.2
30-31	0.02	7.5	0.03	14.5	0.05	7.5	0.06	14.5
31-32	0.00	5.7	0.00	4.8	0.05	6.2	0.23	5.5
32-33	0.00	5.0	0.00	1.9	0.05	5.0	0.23	2.0
33-34	0.00	2.7	0.00	1.0	0.00	2.7	0.17	1.0
34-35	0.00	2.0	0.00	0.2	0.00	2.0	0.00	0.2
35-36	0.00	1.2	0.00	0.0	0.00	1.2	0.00	0.0
36-37	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0
37-38	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
38-39	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
39-40	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 20.170 T = 17.237 30 day mortality: 16%
Ro = 0.791 Ro = 0.669 (17 out of 109)
lambda=0.99 lambda=0.98
r = -0.012 r = -0.023

105 birth events to known age parents tabulated for Mx...plus...
6 births to UNK or MULT dams...
12 births to UNK or MULT sires...

67 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

Fecundity and Mortality Report

Restricted to: SOUTHERN WHITE RHINOCEROS Studbook Page 1
Dates: During 01/01/1980 <= date

Taxon Name: **CERATOTHERIUM SIMUM SIMUM**

Age Class	Fecundity [Mx]... Male	N	Female	N	Mortality [Qx]... Male	N	Female	N
0- 1	0.00	50.5	0.00	51.5	0.21	64.2	0.13	58.4
1- 2	0.00	43.0	0.00	41.3	0.04	44.6	0.09	46.2
2- 3	0.00	35.8	0.00	32.2	0.08	37.7	0.06	33.2
3- 4	0.00	27.5	0.00	30.0	0.00	27.5	0.06	30.8
4- 5	0.00	23.7	0.00	28.0	0.00	23.7	0.04	28.0
5 6	0.00	22.4	0.00	27.2	0.00	22.4	0.00	27.2
6- 7	0.00	20.8	0.02	27.7	0.04	22.5	0.00	27.7
7- 8	0.00	20.8	0.06	27.8	0.00	20.8	0.03	29.5
8- 9	0.00	22.6	0.00	33.4	0.00	22.6	0.00	33.4
9-10	0.00	20.5	0.08	39.7	0.00	20.5	0.00	42.3
10-11	0.04	28.7	0.04	41.5	0.03	31.0	0.00	41.5
11-12	0.00	33.8	0.02	51.7	0.03	34.3	0.02	52.1
12-13	0.04	45.9	0.07	64.9	0.02	47.4	0.03	65.5
13-14	0.06	45.0	0.06	60.1	0.00	45.0	0.00	60.1
14-15	0.11	44.8	0.04	60.1	0.07	45.7	0.03	60.4
15-16	0.05	43.1	0.06	55.0	0.05	44.0	0.00	55.0
16 17	0.05	44.0	0.08	54.4	0.00	44.0	0.04	55.7
17-18	0.04	47.5	0.03	64.8	0.00	47.5	0.03	65.0
18-19	0.16	45.2	0.09	62.8	0.00	45.2	0.02	63.3
19-20	0.05	47.0	0.05	63.9	0.06	47.8	0.00	63.9
20-21	0.18	47.3	0.04	64.4	0.00	47.3	0.02	64.9
21-22	0.10	44.5	0.05	60.3	0.00	44.5	0.02	61.1
22-23	0.13	42.5	0.04	58.2	0.00	42.5	0.02	58.6
23-24	0.09	39.9	0.09	49.3	0.00	40.0	0.02	49.7
24-25	0.15	33.5	0.06	42.1	0.06	34.4	0.00	42.1
25 26	0.04	25.7	0.11	36.0	0.00	25.7	0.05	37.1
26 27	0.09	18.1	0.00	26.9	0.05	18.6	0.03	29.1
27-28	0.08	14.3	0.02	22.0	0.07	15.2	0.09	23.2
28-29	0.09	12.5	0.06	17.9	0.00	12.5	0.00	17.9
29-30	0.06	9.7	0.10	16.2	0.00	9.7	0.00	16.2
30-31	0.00	7.5	0.00	14.5	0.00	7.5	0.00	14.5
31-32	0.00	5.7	0.00	4.8	0.16	6.2	0.18	5.5
32-33	0.00	5.0	0.00	1.9	0.00	5.0	0.50	2.0
33-34	0.00	2.7	0.00	1.0	0.00	2.7	0.00	1.0
34-35	0.00	2.0	0.00	0.2	0.00	2.0	0.00	0.2
35-36	0.00	1.2	0.00	0.0	0.00	1.2	0.00	0.0
36-37	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0

Compiled by: Randall W. Rockwell thru The Wilds
Data current thru: 1 Feb 1993 White Rhino Species Survival Plan

SPARKS v1.3
25 Mar 1994

Fecundity and Mortality Report

Dates: During 01/01/1980 <= date

Taxon Name: **CERATOTHERIUM SIMUM SIMUM**

37-38	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
38-39	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 20.150 T = 17.558 30 day mortality: 15%
Ro = 0.828 Ro = 0.697 (17 out of 115)
lambda=0.99 lambda=0.96
r = -0.009 r = -0.021

108 birth events to known age parents tabulated for Mx...plus...
9 births to UNK or MULT dams...
15 births to UNK or MULT sires...

74 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

Smoothing pass 1

Age Class	Fecundity [Mx]... Male	N	Female	N	Mortality [Qx]... Male	N	Female	N
0- 1	0.00	50.5	0.00	51.5	0.21	64.2	0.13	58.4
1- 2	0.00	43.0	0.00	41.3	0.06	44.6	0.08	46.2
2- 3	0.00	36.8	0.00	32.2	0.04	37.7	0.07	33.2
3- 4	0.00	27.5	0.00	30.0	0.03	27.5	0.05	30.8
4- 5	0.00	23.7	0.00	28.0	0.00	23.7	0.03	28.0
5- 6	0.00	22.4	0.01	27.2	0.01	22.4	0.01	27.2
6- 7	0.00	20.8	0.03	27.7	0.01	22.5	0.01	27.7
7- 8	0.00	20.8	0.03	27.8	0.01	20.8	0.01	29.5
8- 9	0.00	22.6	0.05	33.4	0.00	22.6	0.01	33.4
9-10	0.01	20.5	0.04	39.7	0.01	20.5	0.00	42.3
10-11	0.01	28.7	0.05	41.5	0.02	31.0	0.01	41.5
11-12	0.03	33.8	0.04	51.7	0.03	34.3	0.02	52.1
12-13	0.03	45.9	0.05	64.9	0.02	47.4	0.02	65.5
13-14	0.07	45.0	0.06	60.1	0.03	45.0	0.02	60.1
14-15	0.07	44.8	0.05	60.1	0.04	45.7	0.01	60.4
15-16	0.07	43.1	0.06	55.0	0.04	44.0	0.02	55.0
16-17	0.05	44.0	0.06	54.4	0.02	44.0	0.02	55.7
17-18	0.08	47.5	0.07	54.8	0.00	47.5	0.03	65.0
18-19	0.08	45.2	0.06	52.8	0.02	45.2	0.02	63.3
19-20	0.13	47.0	0.06	53.9	0.02	47.8	0.01	63.9
20-21	0.11	47.3	0.05	54.4	0.02	47.3	0.01	64.9
21 22	0.14	44.5	0.04	60.3	0.00	44.5	0.02	61.1
22 23	0.11	42.5	0.06	58.2	0.00	42.5	0.02	58.6
23-24	0.12	39.9	0.06	49.3	0.02	40.0	0.01	49.7
24-25	0.09	33.5	0.09	42.1	0.02	34.4	0.02	42.1
25-26	0.09	25.7	0.06	36.0	0.04	25.7	0.03	37.1
26-27	0.07	18.1	0.04	26.9	0.04	18.6	0.06	29.1
27 28	0.09	14.3	0.03	22.0	0.04	15.2	0.04	23.2
28-29	0.08	12.5	0.06	17.9	0.02	12.5	0.03	17.9
29-30	0.05	9.7	0.05	16.2	0.00	9.7	0.00	16.2
30-31	0.02	7.5	0.03	14.5	0.05	7.5	0.06	14.5
31-32	0.00	5.7	0.00	4.8	0.05	6.2	0.23	5.5
32-33	0.00	5.0	0.00	1.9	0.05	5.0	0.23	2.0
33-34	0.00	2.7	0.00	1.0	0.00	2.7	0.17	1.0
34-35	0.00	2.0	0.00	0.2	0.00	2.0	0.00	0.2
35-36	0.00	1.2	0.00	0.0	0.00	1.2	0.00	0.0
36-37	0.00	0.2	0.00	0.0	0.00	0.2	0.00	0.0
37-38	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
38-39	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
39-40	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 20.158 T = 17.523
Ro = 0.825 Ro = 0.704
lambda=0.99 lambda=0.98
r = -0.010 r = -0.020

30 day mortality: 15%
(17 out of 115)

108 birth events to known age parents tabulated for Mx...plus...
9 births to UNK or MULT dams...
15 births to UNK or MULT sires...

74 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

INBREEDING COEFFICIENTS AND MEAN KINSHIPS FOR SOUTHERN WHITE RHINO SSP

Fri Mar 25 20:16:59 1994

Inbreeding and kinship calculations assume UNKNOWNs are founders.

MEAN KINSHIP OF LIVING ANIMALS TO LIVING NON-FOUNDERS

STUDBOOK	SIRE	DAM	INBREEDING	MEAN KINSHIP	KINSHIP VALUE	GENOME KNOWN
29 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
30 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
31 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
34 M	WILD	WILD	F = 0.0000	mk = 0.0066	kv = 0.0086	1.0000
39 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
47 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
50 M	WILD	WILD	F = 0.0000	mk = 0.0132	kv = 0.0157	1.0000
51 F	WILD	WILD	F = 0.0000	mk = 0.0132	kv = 0.0157	1.0000
80 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
81 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
82 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
83 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
143 M	WILD	WILD	F = 0.0000	mk = 0.0066	kv = 0.0089	1.0000
146 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
147 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
148 F	WILD	WILD	F = 0.0000	mk = 0.0066	kv = 0.0055	1.0000
150 F	WILD	WILD	F = 0.0000	mk = 0.0132	kv = 0.0092	1.0000
153 F	WILD	WILD	F = 0.0000	mk = 0.0132	kv = 0.0113	1.0000
154 F	WILD	WILD	F = 0.0000	mk = 0.0132	kv = 0.0114	1.0000
156 F	WILD	WILD	F = 0.0000	mk = 0.0099	kv = 0.0114	1.0000
157 F	WILD	WILD	F = 0.0000	mk = 0.0329	kv = 0.0298	1.0000
159 F	WILD	WILD	F = 0.0000	mk = 0.0066	kv = 0.0087	1.0000
177 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
180 M	WILD	WILD	F = 0.0000	mk = 0.0132	kv = 0.0112	1.0000
181 F	WILD	WILD	F = 0.0000	mk = 0.0066	kv = 0.0041	1.0000
182 F	WILD	WILD	F = 0.0000	mk = 0.0066	kv = 0.0072	1.0000
187 M	WILD	WILD	F = 0.0000	mk = 0.0197	kv = 0.0247	1.0000
188 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
189 M	WILD	WILD	F = 0.0000	mk = 0.0066	kv = 0.0089	1.0000
190 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
191 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
192 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
202 M	180	181	F = 0.0000	mk = 0.0164	kv = 0.0117	1.0000
203 M	52	151	F = 0.0000	mk = 0.0543	kv = 0.0423	1.0000
213 M	52	152	F = 0.0000	mk = 0.0543	kv = 0.0423	1.0000
218 F	52	157	F = 0.0000	mk = 0.0740	kv = 0.0598	1.0000
219 F	52	153	F = 0.0000	mk = 0.0576	kv = 0.0435	1.0000
220 M	52	154	F = 0.0000	mk = 0.0576	kv = 0.0456	1.0000
238 F	52	150	F = 0.0000	mk = 0.0576	kv = 0.0425	1.0000
277 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
280 M	52	148	F = 0.0000	mk = 0.0543	kv = 0.0434	1.0000
318 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
335 M	52	154	F = 0.0000	mk = 0.0576	kv = 0.0473	1.0000
336 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
337 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
358 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
359 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000

363	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
364	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
365	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
366	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
379	M	WILD	WILD	F = 0.0000	mk = 0.0066	kv = 0.0080	1.0000
380	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
381	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
386	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
387	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
390	M	WILD	WILD	F = 0.0000	mk = 0.0164	kv = 0.0177	1.0000
391	F	WILD	WILD	F = 0.0000	mk = 0.0164	kv = 0.0177	1.0000
392	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
397	F	WILD	WILD	F = 0.0000	mk = 0.0132	kv = 0.0157	1.0000
413	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
416	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
417	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
418	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
452	F	WILD	WILD	F = 0.0000	mk = 0.0132	kv = 0.0163	1.0000
453	F	WILD	WILD	F = 0.0000	mk = 0.0132	kv = 0.0145	1.0000
463	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
464	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
465	M	WILD	WILD	F = 0.0000	mk = 0.0132	kv = 0.0162	1.0000
466	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
467	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
469	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
470	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
471	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
473	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
475	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
533	F	390	391	F = 0.0000	mk = 0.0263	kv = 0.0265	1.0000
542	F	52	157	F = 0.0000	mk = 0.0674	kv = 0.0548	1.0000
565	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
573	M	WILD	WILD	F = 0.0000	mk = 0.0066	kv = 0.0041	1.0000
574	F	WILD	WILD	F = 0.0000	mk = 0.0066	kv = 0.0041	1.0000
575	F	573	574	F = 0.0000	mk = 0.0132	kv = 0.0081	1.0000
582	F	P218	218	F = 0.0000	mk = 0.0469	kv = 0.0376	0.5000
587	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
612	F	562	566	F = 0.0000	mk = 0.0132	kv = 0.0096	1.0000
618	M	WILD	WILD	F = 0.0000	mk = 0.0197	kv = 0.0211	1.0000
619	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
620	F	WILD	WILD	F = 0.0000	mk = 0.0132	kv = 0.0154	1.0000
686	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
687	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
696	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
697	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
707	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
750	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
753	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
754	M	WILD	WILD	F = 0.0000	mk = 0.0066	kv = 0.0074	1.0000
755	M	754	752	F = 0.0000	mk = 0.0132	kv = 0.0148	1.0000
772	F	618	453	F = 0.0000	mk = 0.0230	kv = 0.0240	1.0000
788	F	52	157	F = 0.0000	mk = 0.0674	kv = 0.0565	1.0000
790	M	618	452	F = 0.0000	mk = 0.0230	kv = 0.0270	1.0000
791	F	618	620	F = 0.0000	mk = 0.0230	kv = 0.0248	1.0000
819	F	52	155	F = 0.0000	mk = 0.0576	kv = 0.0491	1.0000
822	F	52	150	F = 0.0000	mk = 0.0576	kv = 0.0462	1.0000
841	M	420	599	F = 0.0000	mk = 0.0395	kv = 0.0394	1.0000
842	F	40	397	F = 0.0000	mk = 0.0197	kv = 0.0225	1.0000
861	M	420	155	F = 0.0000	mk = 0.0197	kv = 0.0245	1.0000

876	M	50	51	F = 0.0000	mk = 0.0197	kv = 0.0243	1.0000
898	M	34	153	F = 0.0000	mk = 0.0164	kv = 0.0185	1.0000
950	M	143	218	F = 0.0000	mk = 0.0469	kv = 0.0432	1.0000
T002	F	465	453	F = 0.0000	mk = 0.0197	kv = 0.0235	1.0000
T004	F	465	452	F = 0.0000	mk = 0.0197	kv = 0.0242	1.0000
T005	M	390	391	F = 0.0000	mk = 0.0230	kv = 0.0266	1.0000
T006	M	40	397	F = 0.0000	mk = 0.0197	kv = 0.0247	1.0000
T008	F	379	533	F = 0.0000	mk = 0.0230	kv = 0.0252	1.0000
T009	M	189	620	F = 0.0000	mk = 0.0164	kv = 0.0211	1.0000
T010	M	187	159	F = 0.0000	mk = 0.0197	kv = 0.0254	1.0000
T013	F	50	51	F = 0.0000	mk = 0.0197	kv = 0.0229	1.0000
T015	M	187	157	F = 0.0000	mk = 0.0329	kv = 0.0360	1.0000
T016	F	187	156	F = 0.0000	mk = 0.0214	kv = 0.0252	1.0000
T020	F	180	182	F = 0.0000	mk = 0.0164	kv = 0.0164	1.0000

ORDERED LISTS OF MEAN KINSHIP BY SEX:

Rank	MALES	MK	Age	Known	FEMALES	MK	Age	Known
1	31	0.0000	36	1.000	30	0.0000	34	1.000
2	29	0.0000	35	1.000	39	0.0000	31	1.000
3	80	0.0000	30	1.000	47	0.0000	31	1.000
4	359	0.0000	29	1.000	147	0.0000	31	1.000
5	336	0.0000	28	1.000	277	0.0000	31	1.000
6	82	0.0000	27	1.000	81	0.0000	30	1.000
7	146	0.0000	26	1.000	337	0.0000	28	1.000
8	177	0.0000	26	1.000	358	0.0000	28	1.000
9	191	0.0000	26	1.000	619	0.0000	28	1.000
10	697	0.0000	26	1.000	83	0.0000	27	1.000
11	363	0.0000	25	1.000	188	0.0000	26	1.000
12	364	0.0000	25	1.000	190	0.0000	26	1.000
13	473	0.0000	25	1.000	380	0.0000	26	1.000
14	753	0.0000	25	1.000	381	0.0000	26	1.000
15	386	0.0000	24	1.000	565	0.0000	26	1.000
16	413	0.0000	24	1.000	696	0.0000	26	1.000
17	463	0.0000	24	1.000	365	0.0000	25	1.000
18	469	0.0000	23	1.000	366	0.0000	25	1.000
19	687	0.0000	22	1.000	475	0.0000	25	1.000
20	707	0.0000	21	1.000	750	0.0000	25	1.000
21	34	0.0066	33	1.000	464	0.0000	24	1.000
22	143	0.0066	31	1.000	587	0.0000	24	1.000
23	189	0.0066	26	1.000	192	0.0000	24	1.000
24	379	0.0066	26	1.000	318	0.0000	23	1.000
25	754	0.0066	25	1.000	416	0.0000	23	1.000
26	573	0.0066	24	1.000	417	0.0000	23	1.000
27	50	0.0132	29	1.000	418	0.0000	23	1.000
28	180	0.0132	29	1.000	470	0.0000	23	1.000
29	465	0.0132	22	1.000	471	0.0000	23	1.000
30	755	0.0132	15	1.000	392	0.0000	22	1.000
31	390	0.0164	25	1.000	387	0.0000	22	1.000
32	202	0.0164	22	1.000	466	0.0000	22	1.000
33	B98	0.0164	7	1.000	467	0.0000	22	1.000
34	T009	0.0164	3	1.000	686	0.0000	22	1.000
35	618	0.0197	28	1.000	159	0.0066	31	1.000
36	187	0.0197	26	1.000	181	0.0066	29	1.000
37	B61	0.0197	8	1.000	148	0.0066	26	1.000
38	B76	0.0197	7	1.000	182	0.0066	25	1.000
39	T006	0.0197	3	1.000	574	0.0066	24	1.000
40	T010	0.0197	2	1.000	156	0.0099	31	1.000
41	790	0.0230	10	1.000	51	0.0132	31	1.000
42	T005	0.0230	3	1.000	150	0.0132	31	1.000
43	T015	0.0329	2	1.000	153	0.0132	31	1.000
44	841	0.0395	9	1.000	154	0.0132	31	1.000
45	950	0.0469	4	1.000	620	0.0132	28	1.000
46	203	0.0543	21	1.000	452	0.0132	26	1.000
47	213	0.0543	21	1.000	453	0.0132	26	1.000
48	280	0.0543	20	1.000	397	0.0132	22	1.000
49	220	0.0576	21	1.000	575	0.0132	17	1.000
50	335	0.0576	18	1.000	612	0.0132	15	1.000
51					391	0.0164	20	1.000
52					T020	0.0164	1	1.000
53					942	0.0197	9	1.000

54	T002	0.0197	4	1.000
55	T004	0.0197	3	1.000
56	T013	0.0197	1	1.000
57	T016	0.0214	1	1.000
58	772	0.0230	12	1.000
59	791	0.0230	10	1.000
60	T008	0.0230	3	1.000
61	533	0.0263	15	1.000
62	157	0.0329	31	1.000
63	582	0.0469	14	0.500
64	238	0.0576	21	1.000
65	219	0.0576	21	1.000
66	819	0.0576	10	1.000
67	822	0.0576	10	1.000
68	542	0.0674	15	1.000
69	788	0.0674	10	1.000
70	218	0.0740	21	1.000

GENETIC SUMMARY OF POPULATION

Descendant population Mean Kinship:	0.0345
Gene Diversity:	0.9655
Founder Genome Equivalents:	14.5126
Desc. population mean Kinship Value:	0.0304
Gene Value:	0.9696

INBREEDING COEFFICIENTS AND MEAN KINSHIPS FOR SOUTHERN WHITE RHINO SSP

Fri Mar 25 20:16:59 1994

Inbreeding and kinship calculations omit genes from UNKNOWN ancestors.

MEAN KINSHIP OF LIVING ANIMALS TO LIVING NON-FOUNDERS

STUDBOOK	SIRE	DAM	INBREEDING	MEAN KINSHIP	KINSHIP VALUE	GENOME KNOWN
29 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
30 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
31 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
34 M	WILD	WILD	F = 0.0000	mk = 0.0067	kv = 0.0087	1.0000
39 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
47 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
50 M	WILD	WILD	F = 0.0000	mk = 0.0133	kv = 0.0159	1.0000
51 F	WILD	WILD	F = 0.0000	mk = 0.0133	kv = 0.0159	1.0000
80 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
81 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
82 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
83 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
143 M	WILD	WILD	F = 0.0000	mk = 0.0067	kv = 0.0090	1.0000
146 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
147 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
148 F	WILD	WILD	F = 0.0000	mk = 0.0067	kv = 0.0056	1.0000
150 F	WILD	WILD	F = 0.0000	mk = 0.0133	kv = 0.0093	1.0000
153 F	WILD	WILD	F = 0.0000	mk = 0.0133	kv = 0.0114	1.0000
154 F	WILD	WILD	F = 0.0000	mk = 0.0133	kv = 0.0115	1.0000
156 F	WILD	WILD	F = 0.0000	mk = 0.0100	kv = 0.0115	1.0000
157 F	WILD	WILD	F = 0.0000	mk = 0.0333	kv = 0.0301	1.0000
159 F	WILD	WILD	F = 0.0000	mk = 0.0067	kv = 0.0088	1.0000
177 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
180 M	WILD	WILD	F = 0.0000	mk = 0.0133	kv = 0.0114	1.0000
181 F	WILD	WILD	F = 0.0000	mk = 0.0067	kv = 0.0041	1.0000
182 F	WILD	WILD	F = 0.0000	mk = 0.0067	kv = 0.0072	1.0000
187 M	WILD	WILD	F = 0.0000	mk = 0.0200	kv = 0.0249	1.0000
188 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
189 M	WILD	WILD	F = 0.0000	mk = 0.0067	kv = 0.0090	1.0000
190 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
191 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
192 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
202 M	180	181	F = 0.0000	mk = 0.0167	kv = 0.0118	1.0000
203 M	52	151	F = 0.0000	mk = 0.0550	kv = 0.0427	1.0000
213 M	52	152	F = 0.0000	mk = 0.0550	kv = 0.0427	1.0000
218 F	52	157	F = 0.0000	mk = 0.0750	kv = 0.0604	1.0000
219 F	52	153	F = 0.0000	mk = 0.0583	kv = 0.0439	1.0000
220 M	52	154	F = 0.0000	mk = 0.0583	kv = 0.0461	1.0000
238 F	52	150	F = 0.0000	mk = 0.0583	kv = 0.0429	1.0000
277 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
280 M	52	148	F = 0.0000	mk = 0.0550	kv = 0.0439	1.0000
318 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
335 M	52	154	F = 0.0000	mk = 0.0583	kv = 0.0478	1.0000
336 M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
337 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
358 F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000

359	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
363	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
364	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
365	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
366	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
379	M	WILD	WILD	F = 0.0000	mk = 0.0067	kv = 0.0080	1.0000
380	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
381	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
386	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
387	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
390	M	WILD	WILD	F = 0.0000	mk = 0.0167	kv = 0.0179	1.0000
391	F	WILD	WILD	F = 0.0000	mk = 0.0167	kv = 0.0179	1.0000
392	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
397	F	WILD	WILD	F = 0.0000	mk = 0.0133	kv = 0.0159	1.0000
413	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
416	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
417	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
418	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
452	F	WILD	WILD	F = 0.0000	mk = 0.0133	kv = 0.0164	1.0000
453	F	WILD	WILD	F = 0.0000	mk = 0.0133	kv = 0.0146	1.0000
463	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
464	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
465	M	WILD	WILD	F = 0.0000	mk = 0.0133	kv = 0.0163	1.0000
466	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
467	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
469	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
470	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
471	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
473	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
475	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
533	F	390	391	F = 0.0000	mk = 0.0267	kv = 0.0268	1.0000
542	F	52	157	F = 0.0000	mk = 0.0583	kv = 0.0554	1.0000
565	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
573	M	WILD	WILD	F = 0.0000	mk = 0.0067	kv = 0.0041	1.0000
574	F	WILD	WILD	F = 0.0000	mk = 0.0067	kv = 0.0041	1.0000
575	F	573	574	F = 0.0000	mk = 0.0133	kv = 0.0082	1.0000
582	F	P218	218	F = 0.0000	mk = 0.0750	kv = 0.0604	0.5000
587	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
612	F	562	566	F = 0.0000	mk = 0.0133	kv = 0.0097	1.0000
618	M	WILD	WILD	F = 0.0000	mk = 0.0200	kv = 0.0213	1.0000
619	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
620	F	WILD	WILD	F = 0.0000	mk = 0.0133	kv = 0.0156	1.0000
686	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
687	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
696	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
697	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
707	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
750	F	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
753	M	WILD	WILD	F = 0.0000	mk = 0.0000	kv = 0.0000	1.0000
754	M	WILD	WILD	F = 0.0000	mk = 0.0067	kv = 0.0075	1.0000
755	M	754	752	F = 0.0000	mk = 0.0133	kv = 0.0150	1.0000
772	F	618	453	F = 0.0000	mk = 0.0233	kv = 0.0243	1.0000
788	F	52	157	F = 0.0000	mk = 0.0683	kv = 0.0571	1.0000
790	M	618	452	F = 0.0000	mk = 0.0233	kv = 0.0273	1.0000
791	F	618	620	F = 0.0000	mk = 0.0233	kv = 0.0250	1.0000
819	F	52	155	F = 0.0000	mk = 0.0583	kv = 0.0496	1.0000
822	F	52	150	F = 0.0000	mk = 0.0583	kv = 0.0467	1.0000
841	M	420	599	F = 0.0000	mk = 0.0400	kv = 0.0398	1.0000
842	F	40	397	F = 0.0000	mk = 0.0200	kv = 0.0228	1.0000

861	M	420	155	F = 0.0000	mk = 0.0200	kv = 0.0247	1.0000
876	M	50	51	F = 0.0000	mk = 0.0200	kv = 0.0245	1.0000
898	M	34	153	F = 0.0000	mk = 0.0167	kv = 0.0187	1.0000
950	M	143	218	F = 0.0000	mk = 0.0475	kv = 0.0436	1.0000
T002	F	465	453	F = 0.0000	mk = 0.0200	kv = 0.0238	1.0000
T004	F	465	452	F = 0.0000	mk = 0.0200	kv = 0.0244	1.0000
T005	M	390	391	F = 0.0000	mk = 0.0233	kv = 0.0269	1.0000
T006	M	40	397	F = 0.0000	mk = 0.0200	kv = 0.0249	1.0000
T008	F	379	533	F = 0.0000	mk = 0.0233	kv = 0.0254	1.0000
T009	M	189	620	F = 0.0000	mk = 0.0167	kv = 0.0213	1.0000
T010	M	187	159	F = 0.0000	mk = 0.0200	kv = 0.0257	1.0000
T013	F	50	51	F = 0.0000	mk = 0.0200	kv = 0.0231	1.0000
T015	M	187	157	F = 0.0000	mk = 0.0333	kv = 0.0363	1.0000
T016	F	187	156	F = 0.0000	mk = 0.0217	kv = 0.0255	1.0000
T020	F	180	182	F = 0.0000	mk = 0.0167	kv = 0.0165	1.0000

ORDERED LISTS OF MEAN KINSHIP BY SEX:

Rank	MALES	MK	Age	Known	FEMALES	MK	Age	Known
1	31	0.0000	36	1.000	30	0.0000	34	1.000
2	29	0.0000	35	1.000	39	0.0000	31	1.000
3	80	0.0000	30	1.000	47	0.0000	31	1.000
4	359	0.0000	29	1.000	147	0.0000	31	1.000
5	336	0.0000	28	1.000	277	0.0000	31	1.000
6	82	0.0000	27	1.000	81	0.0000	30	1.000
7	146	0.0000	26	1.000	337	0.0000	28	1.000
8	177	0.0000	26	1.000	358	0.0000	28	1.000
9	191	0.0000	26	1.000	619	0.0000	28	1.000
10	697	0.0000	26	1.000	83	0.0000	27	1.000
11	363	0.0000	25	1.000	188	0.0000	26	1.000
12	364	0.0000	25	1.000	190	0.0000	26	1.000
13	473	0.0000	25	1.000	380	0.0000	26	1.000
14	753	0.0000	25	1.000	381	0.0000	26	1.000
15	386	0.0000	24	1.000	565	0.0000	26	1.000
16	413	0.0000	24	1.000	696	0.0000	26	1.000
17	463	0.0000	24	1.000	365	0.0000	25	1.000
18	469	0.0000	23	1.000	366	0.0000	25	1.000
19	687	0.0000	22	1.000	475	0.0000	25	1.000
20	707	0.0000	21	1.000	750	0.0000	25	1.000
21	34	0.0067	33	1.000	464	0.0000	24	1.000
22	143	0.0067	31	1.000	587	0.0000	24	1.000
23	189	0.0067	26	1.000	192	0.0000	24	1.000
24	379	0.0067	26	1.000	318	0.0000	23	1.000
25	754	0.0067	25	1.000	416	0.0000	23	1.000
26	573	0.0067	24	1.000	417	0.0000	23	1.000
27	50	0.0133	29	1.000	418	0.0000	23	1.000
28	180	0.0133	29	1.000	470	0.0000	23	1.000
29	465	0.0133	22	1.000	471	0.0000	23	1.000
30	755	0.0133	15	1.000	392	0.0000	22	1.000
31	390	0.0167	25	1.000	387	0.0000	22	1.000
32	202	0.0167	22	1.000	466	0.0000	22	1.000
33	898	0.0167	7	1.000	467	0.0000	22	1.000
34	T009	0.0167	3	1.000	686	0.0000	22	1.000
35	618	0.0200	28	1.000	159	0.0067	31	1.000
36	187	0.0200	26	1.000	181	0.0067	29	1.000
37	861	0.0200	8	1.000	148	0.0067	26	1.000
38	876	0.0200	7	1.000	182	0.0067	25	1.000
39	T006	0.0200	3	1.000	574	0.0067	24	1.000
40	T010	0.0200	2	1.000	156	0.0100	31	1.000
41	790	0.0233	10	1.000	51	0.0133	31	1.000
42	T005	0.0233	3	1.000	150	0.0133	31	1.000
43	T015	0.0333	2	1.000	153	0.0133	31	1.000
44	841	0.0400	9	1.000	154	0.0133	31	1.000
45	950	0.0475	4	1.000	620	0.0133	28	1.000
46	203	0.0550	21	1.000	452	0.0133	26	1.000
47	213	0.0550	21	1.000	453	0.0133	26	1.000
48	280	0.0550	20	1.000	397	0.0133	22	1.000
49	220	0.0583	21	1.000	575	0.0133	17	1.000
50	335	0.0583	18	1.000	612	0.0133	15	1.000
51					391	0.0167	20	1.000
52					T020	0.0167	1	1.000
53					842	0.0200	9	1.000

54	T002	0.0200	4	1.000
55	T004	0.0200	3	1.000
56	T013	0.0200	1	1.000
57	T016	0.0217	1	1.000
58	772	0.0233	11	1.000
59	791	0.0233	10	1.000
60	T008	0.0233	3	1.000
61	533	0.0267	15	1.000
62	157	0.0333	31	1.000
63	238	0.0583	21	1.000
64	219	0.0583	21	1.000
65	819	0.0583	10	1.000
66	822	0.0583	10	1.000
67	542	0.0683	15	1.000
68	788	0.0683	10	1.000
69	218	0.0750	21	1.000
70	582	0.0750	14	0.500

GENETIC SUMMARY OF POPULATION

Descendant population Mean Kinship:	0.0351
Gene Diversity:	0.9649
Founder Genome Equivalents:	14.2405
Desc. population mean Kinship Value:	0.0316
Gene Value:	0.9684

GENE DROP ANALYSIS FOR SOUTHERN WHITE RHINO SSP

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Studbook		Sire	Dam	Status	Prop. genome unique among living desc.	all living
29	M	WILD	WILD	F		1.0000
30	F	WILD	WILD	F		1.0000
31	M	WILD	WILD	F		1.0000
34	M	WILD	WILD	F		0.5000
39	F	WILD	WILD	F		1.0000
47	F	WILD	WILD	F		1.0000
50	M	WILD	WILD	F		0.2695
51	F	WILD	WILD	F		0.2525
80	M	WILD	WILD	F		1.0000
81	F	WILD	WILD	F		1.0000
82	M	WILD	WILD	F		1.0000
83	F	WILD	WILD	F		1.0000
143	M	WILD	WILD	F		0.5000
146	M	WILD	WILD	F		1.0000
147	F	WILD	WILD	F		1.0000
148	F	WILD	WILD	F		0.5000
150	F	WILD	WILD	F		0.2545
153	F	WILD	WILD	F		0.2535
154	F	WILD	WILD	F		0.2530
156	F	WILD	WILD	F		0.3730
157	F	WILD	WILD	F		0.0665
159	F	WILD	WILD	F		0.5000
177	M	WILD	WILD	F		1.0000
180	M	WILD	WILD	F		0.2430
181	F	WILD	WILD	F		0.5000
182	F	WILD	WILD	F		0.5000
187	M	WILD	WILD	F		0.1260
188	F	WILD	WILD	F		1.0000
189	M	WILD	WILD	F		0.5000
190	F	WILD	WILD	F		1.0000
191	M	WILD	WILD	F		1.0000
192	F	WILD	WILD	F		1.0000
202	M	180	181	A	0.7570	0.0000
203	M	52	151	A	0.5000	0.5000
213	M	52	152	A	0.5000	0.5000
218	F	52	157	A	0.0195	0.0000
219	F	52	153	A	0.2465	0.0000
220	M	52	154	A	0.2475	0.0005
238	F	52	150	A	0.2460	0.0005
277	F	WILD	WILD	F		1.0000
280	M	52	148	A	0.5000	0.0000
318	F	WILD	WILD	F		1.0000
335	M	52	154	A	0.2470	0.0000
336	M	WILD	WILD	F		1.0000
337	F	WILD	WILD	F		1.0000
358	F	WILD	WILD	F		1.0000
359	M	WILD	WILD	F		1.0000
363	M	WILD	WILD	F		1.0000
364	M	WILD	WILD	F		1.0000
365	F	WILD	WILD	F		1.0000
366	F	WILD	WILD	F		1.0000

379	M	WILD	WILD	F		0.5000
380	F	WILD	WILD	F		1.0000
381	F	WILD	WILD	F		1.0000
386	M	WILD	WILD	F		1.0000
387	F	WILD	WILD	F		1.0000
390	M	WILD	WILD	F		0.2580
391	F	WILD	WILD	F		0.2455
392	F	WILD	WILD	F		1.0000
397	F	WILD	WILD	F		0.2575
413	M	WILD	WILD	F		1.0000
416	F	WILD	WILD	F		1.0000
417	F	WILD	WILD	F		1.0000
418	F	WILD	WILD	F		1.0000
452	F	WILD	WILD	F		0.2420
453	F	WILD	WILD	F		0.2585
463	M	WILD	WILD	F		1.0000
464	F	WILD	WILD	F		1.0000
465	M	WILD	WILD	F		0.2500
466	F	WILD	WILD	F		1.0000
467	F	WILD	WILD	F		1.0000
469	M	WILD	WILD	F		1.0000
470	F	WILD	WILD	F		1.0000
471	F	WILD	WILD	F		1.0000
473	M	WILD	WILD	F		1.0000
475	F	WILD	WILD	F		1.0000
533	F	390	391	A	0.2575	0.0000
542	F	52	157	A	0.0610	0.0000
565	F	WILD	WILD	F		1.0000
573	M	WILD	WILD	F		0.5000
574	F	WILD	WILD	F		0.5000
575	F	573	574	A	1.0000	0.0000
582	F	P218	218	A	0.5000	0.5000
587	F	WILD	WILD	F		1.0000
612	F	562	566	A	1.0000	1.0000
618	M	WILD	WILD	F		0.1315
619	F	WILD	WILD	F		1.0000
620	F	WILD	WILD	F		0.2500
686	F	WILD	WILD	F		1.0000
687	M	WILD	WILD	F		1.0000
696	F	WILD	WILD	F		1.0000
697	M	WILD	WILD	F		1.0000
707	M	WILD	WILD	F		1.0000
750	F	WILD	WILD	F		1.0000
753	M	WILD	WILD	F		1.0000
754	M	WILD	WILD	F		0.5000
755	M	754	752	A	1.0000	0.5000
772	F	618	453	A	0.3655	0.0000
788	F	52	157	A	0.0585	0.0005
790	M	618	452	A	0.3855	0.0000
791	F	618	620	A	0.3670	0.0000
819	F	52	155	A	0.2555	0.2555
822	F	52	150	A	0.2155	0.0000
841	M	420	599	A	0.3790	0.2520
842	F	40	397	A	0.4970	0.2545
861	M	420	155	A	0.5075	0.5075
876	M	50	51	A	0.4780	0.0000
898	M	34	153	A	0.7465	0.0000
950	M	143	218	A	0.5000	0.0000
T002	F	465	453	A	0.4915	0.0000

T004	F	465	452	A	0.5080	0.0000
T005	M	390	391	A	0.4965	0.0000
T006	M	40	397	A	0.4970	0.2545
T008	F	379	533	A	0.5000	0.0000
T009	M	189	620	A	0.7500	0.0000
T010	M	187	159	A	0.6250	0.0000
T013	F	50	51	A	0.4780	0.0000
T015	M	187	157	A	0.3830	0.0000
T016	F	187	156	A	0.5005	0.0000
T020	F	180	182	A	0.7570	0.0000

92 Founders 38 Living descendants 131 In analysis

FOUNDER ALLELE REPRESENTATION

Founder		Retention	%Representation with unk	%Representation w/o	Target with unk	Target w/o	Difference with unk	Difference w/o
29	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
30	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
31	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
34	ML	0.500	1.316	1.333	1.133	1.139	-0.183	-0.194
39	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
40	M	0.755	2.632	2.667	0.855	0.860	-1.777	-1.807
47	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
50	ML	0.731	2.632	2.667	1.133	1.139	-1.499	-1.527
51	FL	0.748	2.632	2.667	1.133	1.139	-1.499	-1.527
52	M	1.000	17.743	17.980	1.132	1.139	-16.611	-16.841
80	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
81	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
82	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
83	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
143	ML	0.500	1.316	1.333	1.133	1.139	-0.183	-0.194
146	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
147	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
148	FL	0.500	1.316	1.333	1.133	1.139	-0.183	-0.194
150	FL	0.746	2.632	2.667	1.133	1.139	-1.499	-1.527
151	F	0.500	1.316	1.333	0.566	0.570	-0.749	-0.764
152	F	0.500	1.316	1.333	0.566	0.570	-0.749	-0.764
153	FL	0.747	2.632	2.667	1.133	1.139	-1.499	-1.527
154	FL	0.747	2.632	2.667	1.133	1.139	-1.499	-1.527
155	F	0.756	2.632	2.667	0.856	0.861	-1.776	-1.806
156	FL	0.627	1.976	2.003	1.133	1.139	0.843	-0.863
157	FL	0.933	6.596	6.684	1.133	1.139	-5.463	-5.545
159	FL	0.500	1.316	1.333	1.133	1.139	-0.183	-0.194
177	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
180	ML	0.757	2.632	2.667	1.133	1.139	-1.499	-1.527
181	FL	0.500	1.316	1.333	1.133	1.139	-0.183	-0.194
182	FL	0.500	1.316	1.333	1.133	1.139	-0.183	-0.194
187	ML	0.874	3.947	4.000	1.133	1.139	-2.814	-2.861
188	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
189	ML	0.500	1.316	1.333	1.133	1.139	-0.183	-0.194
190	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
191	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
192	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
277	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
318	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
336	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
337	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
358	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
359	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
363	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
364	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
365	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
366	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
379	ML	0.500	1.316	1.333	1.133	1.139	-0.183	-0.194
380	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
381	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
386	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
387	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
390	ML	0.742	3.303	3.347	1.133	1.139	-2.170	-2.207

391	FL	0.755	3.276	3.320	1.133	1.139	-2.143	-2.181
392	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
397	FL	0.743	2.632	2.667	1.133	1.139	-1.499	-1.527
413	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
416	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
417	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
418	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
420	M	0.752	2.632	2.667	0.852	0.857	-1.780	-1.810
452	FL	0.758	2.632	2.667	1.133	1.139	-1.499	-1.527
453	FL	0.742	2.632	2.667	1.133	1.139	-1.499	-1.527
463	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
464	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
465	ML	0.750	2.632	2.667	1.133	1.139	-1.499	-1.527
466	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
467	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
469	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
470	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
471	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
473	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
475	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
562	M	0.500	1.316	1.333	0.566	0.570	-0.749	-0.764
565	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
566	F	0.500	1.316	1.333	0.566	0.570	-0.749	-0.764
573	ML	0.500	1.316	1.333	1.133	1.139	-0.183	-0.194
574	FL	0.500	1.316	1.333	1.133	1.139	-0.183	-0.194
587	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
618	ML	0.869	3.947	4.000	1.133	1.139	-2.814	-2.861
619	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
620	FL	0.750	2.632	2.667	1.133	1.139	-1.499	-1.527
686	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
687	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
696	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
697	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
707	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
750	FL	0.000	0.000	0.000	1.133	1.139	1.133	1.139
752	F	0.500	1.316	1.333	0.566	0.570	-0.749	-0.764
753	ML	0.000	0.000	0.000	1.133	1.139	1.133	1.139
754	ML	0.500	1.316	1.333	1.133	1.139	-0.183	-0.194
P218	M U	0.500	1.316	0.000	0.566	0.000	-0.749	0.000

GENETIC SUMMARY

LIVING DESCENDANT POPULATION POTENTIAL

	with unknowns	w/o	w/ unkn	w/o
Number of founders:	38	37	92	91
Mean retention:	0.652	0.656	0.959	0.964
Founder genomes surviving:	24.777	24.277	88.262	87.762
Founder Genome Equivalents:	14.481	14.173	88.262	87.762
Fraction of wild gene diversity retained:	0.965	0.965	0.994	0.994
Fraction of wild gene diversity lost:	0.035	0.035	0.006	0.006
Mean inbreeding coefficient:	0.000			

FOUNDER ANALYSIS FOR SOUTHERN WHITE RHINO SSP

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Founder studbook numbers in parentheses indicate UNKNOWNs.
Studbook numbers beginning with P indicate wild or unknown founders that mated with studbook # without the P to produce CB offspring.

Founders	29	30	31	34	39	40	47
Founders	50	51	52	80	81	92	83
Founders	143	146	147	148	150	151	152
Founders	153	154	155	156	157	159	177
Founders	180	181	182	187	188	189	190
Founders	191	192	277	318	336	337	358
Founders	359	363	364	365	366	379	380
Founders	381	386	387	390	391	392	397
Founders	413	416	417	418	420	452	453
Founders	463	464	465	466	467	469	470
Founders	471	473	475	562	565	566	573
Founders	574	587	618	659	620	686	687
Founders	696	697	707	750	752	753	754
Founders(	P218)						

Founder contributions

0.0000	0.0000	0.0000	0.5000	0.0000	1.0000	0.0000
1.0000	1.0000	6.7500	0.0000	0.0000	0.0000	0.0000
0.5000	0.0000	0.0000	0.5000	1.0000	0.5000	0.5000
1.0000	1.0000	1.0000	0.7500	2.5000	0.5000	0.0000
1.0000	0.5000	0.5000	1.5000	0.0000	0.5000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000
0.0000	0.0000	0.0000	1.2500	1.2500	0.0000	1.0000
0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000
0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.5000	0.0000	0.5000	0.5000
0.5000	0.0000	1.5000	0.0000	1.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.5000
0.5000						

Fractional contributions

0.0000	0.0000	0.0000	0.0132	0.0000	0.0263	0.0000
0.0263	0.0263	0.1776	0.0000	0.0000	0.0000	0.0000
0.0132	0.0000	0.0000	0.0132	0.0263	0.0132	0.0132
0.0263	0.0263	0.0263	0.0197	0.0658	0.0132	0.0000
0.0263	0.0132	0.0132	0.0395	0.0000	0.0132	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0132	0.0000
0.0000	0.0000	0.0000	0.0329	0.0329	0.0000	0.0263
0.0000	0.0000	0.0000	0.0000	0.0263	0.0263	0.0263
0.0000	0.0000	0.0263	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0132	0.0000	0.0132	0.0132
0.0132	0.0000	0.0395	0.0000	0.0263	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0132	0.0000	0.0132
0.0132						

Number of living descendants

0	0	0	1	0	2	0
2	2	15	0	0	0	0
1	0	0	1	2	1	1
2	2	2	2	6	1	0
2	1	1	3	0	1	0
0	0	0	0	0	0	0
0	0	0	0	0	1	0
0	0	0	3	3	0	2
0	0	0	0	2	2	2
0	0	2	0	0	0	0
0	0	0	1	0	1	1
1	0	3	0	2	0	0
0	0	0	0	1	0	1
1						

FOUNDER ANALYSIS FOR SOUTHERN WHITE RHINO SSP

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Founder calculations omit UNKNOWNs.

Founders	29	30	31	34	39	40	47
Founders	50	51	52	80	81	82	83
Founders	143	146	147	148	150	151	152
Founders	153	154	155	156	157	159	177
Founders	180	181	182	187	188	189	190
Founders	191	192	277	318	336	337	358
Founders	359	363	364	365	366	379	380
Founders	381	386	387	390	391	392	397
Founders	413	416	417	418	420	452	453
Founders	463	464	465	466	467	469	470
Founders	471	473	475	562	565	566	573
Founders	574	587	618	619	620	686	687
Founders	696	697	707	750	752	753	754

Founder contributions

0.0000	0.0000	0.0000	0.5000	0.0000	1.0000	0.0000
1.0000	1.0000	6.7500	0.0000	0.0000	0.0000	0.0000
0.5000	0.0000	0.0000	0.5000	1.0000	0.5000	0.5000
1.0000	1.0000	1.0000	0.7500	2.5000	0.5000	0.0000
1.0000	0.5000	0.5000	1.5000	0.0000	0.5000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000
0.0000	0.0000	0.0000	1.2500	1.2500	0.0000	1.0000
0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000
0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.5000	0.0000	0.5000	0.5000
0.5000	0.0000	1.5000	0.0000	1.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.5000

Fractional contributions

0.0000	0.0000	0.0000	0.0133	0.0000	0.0267	0.0000
0.0267	0.0267	0.1800	0.0000	0.0000	0.0000	0.0000
0.0133	0.0000	0.0000	0.0133	0.0267	0.0133	0.0133
0.0267	0.0267	0.0267	0.0200	0.0667	0.0133	0.0000
0.0267	0.0133	0.0133	0.0400	0.0000	0.0133	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0133	0.0000
0.0000	0.0000	0.0000	0.0333	0.0333	0.0000	0.0267
0.0000	0.0000	0.0000	0.0000	0.0267	0.0267	0.0267
0.0000	0.0000	0.0267	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0133	0.0000	0.0133	0.0133
0.0133	0.0000	0.0400	0.0000	0.0267	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0133	0.0000	0.0133

Number of living descendants

0	0	0	1	0	2	0
2	2	15	0	0	0	0
1	0	0	1	2	1	1
2	2	2	2	6	1	0
2	1	1	3	0	1	0
0	0	0	0	0	0	0
0	0	0	0	0	1	0
0	0	0	3	3	0	2
0	0	0	0	2	2	2
0	0	2	0	0	0	0
0	0	0	1	0	1	1
1	0	3	0	2	0	0
0	0	0	0	1	0	1

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP and managed
Status: Living by 25 Mar 1994

Sub #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
29	M	~ 1959	WILD	WILD	NATAL SA	~ 1962	UNK		S.AFRICAR		MASHUARA
					CHICAGOBR	1 Sep 1962	UNK		U.S.A.		
					(WINSTON)	14 Jun 1988	350002		U.S.A.		
30	F	~ 1960	WILD	WILD	NATAL SA	~ 1962	UNK		S.AFRICAR		NEVA
					CHICAGOBR	1 Sep 1962	UNK		U.S.A.		
					(WINSTON)	14 Jun 1988	350003		U.S.A.		
31	M	~ 1958	WILD	WILD	NATAL SA	~ 1962	UNK		S.AFRICAR		MTONDO
					MILWAUKEE	30 Aug 1962	204		U.S.A.		
					(FOSSIL RM)	15 Dec 1988	12031		U.S.A.		
34	M	~ 1961	WILD	WILD	NATAL SA	~ 1963	UNK		S.AFRICAR		KEMTLA
					PHOENIX	28 Jul 1963	137		U.S.A.		
39	F	~ 1963	WILD	WILD	NATAL SA	~ 1966	UNK		S.AFRICAR		HENRIETTA
					OMAHA	14 Nov 1966	315		U.S.A.		
47	F	~ 1963	WILD	WILD	NATAL SA	~ 1966	UNK		S.AFRICAR		JANET
					CALGARY	14 May 1966	100546		CANADA		
50	M	~ 1965	WILD	WILD	NATAL SA	~ 1965	UNK	Wild Born	S.AFRICAR		MAC
					LOSANGELE	17 Aug 1965	UNK		U.S.A.		
					(LLANO)	4 Jun 1983	UNK		U.S.A.		
					(FOSSIL RM)	9 Nov 1989	12050		U.S.A.		
51	F	~ 1963	WILD	WILD	NATAL SA	~ 1965	UNK		S.AFRICAR		TOSHA
					LOSANGELE	17 Aug 1965	UNK		U.S.A.		
					(SANDSTONE)	4 Jun 1983	UNK		U.S.A.		
					(FOSSIL RM)	9 Nov 1989	12051		U.S.A.		
80	M	~ 1964	WILD	WILD	NATAL SA	~ 1969	UNK		S.AFRICAR		LEROY
					LOUISVILL	6 Dec 1969	100131		U.S.A.		
					(KINGS ISL)	11 Feb 1985	821		U.S.A.		
					(BALTIMORE)	7 May 1992	92-038		U.S.A.		
81	F	~ 1964	WILD	WILD	NATAL SA	~ 1967	UNK		S.AFRICAR		PACKY
					LOUISVILL	15 Nov 1967	100130		U.S.A.		
					(KINGS ISL)	11 Feb 1985	822		U.S.A.		
					(COLUMBUS)	15 Jul 1988	882093		U.S.A.		
					WILDS	12 Nov 1993	UNK		U.S.A.		
82	M	~ 1967	WILD	WILD	NATAL SA	~ 1968	UNK		S.AFRICAR		DUDLEY
					FORTWORTH	23 May 1968	122		U.S.A.		
					(FOSSIL RM)	20 Jan 1989	1282		U.S.A.		
83	F	~ 1967	WILD	WILD	NATAL SA	~ 1968	UNK		S.AFRICAR		POKEY
					FORTWORTH	23 May 1968	123		U.S.A.		
					(FOSSIL RM)	20 Jan 1989	1283		U.S.A.		
143	M	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		BULL
					SD-WAP	17 Feb 1971	UNK		U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP and managed
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death Date	Name
					TORONTO	8 Aug 1974	4314		CANADA		
146	M	~ 1968	WILD	WILD	NATAL SA	- 1970	UNK		S.AFRICAR		PENDLLLAH
					SD-WAP	17 Feb 1971	100253		U.S.A.		
					COLUMBUS	21 Jun 1975	752006		U.S.A.		
					MEMPHIS	12 Nov 1993	UNK		U.S.A.		
147	F	~ 1963	WILD	WILD	NATAL SA	- 1970	UNK		S.AFRICAR		NACITE
					SD-WAP	17 Feb 1971	100255		U.S.A.		
					(FOSSIL RM)	14 Dec 1989	12147		U.S.A.		
148	F	~ 1968	WILD	WILD	NATAL SA	- 1970	UNK		S.AFRICAR		DELILAH/MA
					SD-WAP	17 Feb 1971	100256		U.S.A.		
					COLUMBUS	21 Jun 1975	752007		U.S.A.		
					WILDS	12 Nov 1993	UNK		U.S.A.		
150	F	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		SINAMRA
					SD-WAP	17 Feb 1971	100258		U.S.A.		
153	F	~ 1963	WILD	WILD	NATAL SA	- 1970	UNK		S.AFRICAR		TAMBILE
					SD-WAP	17 Feb 1971	100261		U.S.A.		
					PHOENIX	1 May 1975	1672		U.S.A.		
154	F	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		MJUBA
					SD-WAP	17 Feb 1971	100262		U.S.A.		
156	F	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		NAVULA
					SD-WAP	17 Feb 1971	100264		U.S.A.		
157	F	~ 1965	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		KOMAAS
					SD WAP	17 Feb 1971	100265		U.S.A.		
159	F	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		UMFOLOZI
					SD WAP	17 Feb 1971	100267		U.S.A.		
177	M	~ 1968	WILD	WILD	NATAL SA	- 1970	UNK		S.AFRICAR		PHIL
					TOLEDO	22 Sep 1970	UNK		U.S.A.		
					(YULEE	) 21 Jun 1984	8451		U.S.A.		
180	M	~ 1965	WILD	WILD	NATAL SA	- 1970	UNK		S.AFRICAR		FRED
					SAN ANTON	5 Oct 1970	701002		U.S.A.		
181	F	~ 1965	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		GERTRUDE
					SAN ANTON	5 Oct 1970	701003		U.S.A.		
182	F	~ 1969	WILD	WILD	NATAL SA	~ 1969	UNK	Wild Born	S.AFRICAR		PHOEBE
					SAN ANTON	13 Feb 1971	710202		U.S.A.		
187	M	~ 1968	WILD	WILD	NATAL SA	~ 1971	UNK		S.AFRICAR		FODDER
					FRESNO	19 Sep 1971	1156		U.S.A.		
					(SD-WAP	) 30 May 1990	690329		U.S.A.		
188	F	~ 1968	WILD	WILD	NATAL SA	- 1971	UNK		S.AFRICAR		MUDDER

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP and managed
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
					FRESNO	19 Sep 1971	1157		U.S.A.		
189	M	- 1968	WILD	WILD	NATAL SA	- 1970	UNK		S.AFRICAR		M'KABI
					BROWNSVIL	11 Sep 1970	261		U.S.A.		
190	F	- 1968	WILD	WILD	NATAL SA	- 1970	UNK		S.AFRICAR		NOBELA
					BROWNSVIL	11 Sep 1970	262		U.S.A.		
191	M	- 1968	WILD	WILD	NATAL SA	- 1970	UNK		S.AFRICAR		
					ZEEHANDLR	- 1970	UNK		U.S.A.		
					HOUSTON	8 Jul 1970	441		U.S.A.		
192	F	- 1970	WILD	WILD	NATAL SA	- 1970	UNK		S.AFRICAR		
					ZEEHANDLR	- 1970	UNK		U.S.A.		
					HOUSTON	8 Jul 1970	440		U.S.A.		
202	M	28 Aug 1972	180	161	SAN ANTON	28 Aug 1972	721816	Captive Born	U.S.A.		SHAKA
					(BROWNSVIL)	8 Jan 1987	3120		U.S.A.		
203	M	11 Oct 1972	52	151	SD-WAP	11 Oct 1972	100270	Captive Born	U.S.A.		ZIBULO
					(TUCSON)	8 Jun 1976	678		U.S.A.		
						7 Oct 1985	678				
213	M	19 Dec 1972	52	152	SANDIEGOZ	19 Dec 1972	UNK	Captive Born	U.S.A.		BENDER
					TORONTO	8 Aug 1974	4313		CANADA		
					CALGARY	19 Sep 1988	102965		CANADA		
218	F	3 Feb 1973	52	157	SD-WAP	3 Feb 1973	UNK	Captive Born	U.S.A.		PISTOL
					TORONTO	8 Aug 1974	4316		CANADA		
219	F	8 May 1973	52	153	SD-WAP	8 May 1973	UNK	Captive Born	U.S.A.		HENRIETTA
					PHILADELP	4 May 1974	100251		U.S.A.		
					FOSSIL RM	28 Nov 1988	1219		U.S.A.		
220	M	28 Jun 1973	52	154	SD-WAP	28 Jun 1973	UNK	Captive Born	U.S.A.		SAM
					PHILADELP	4 May 1974	100250		U.S.A.		
					TOLEDO	15 Nov 1998	880033		U.S.A.		
238	F	15 Apr 1973	52	150	SD-WAP	15 Apr 1973	100275	Captive Born	U.S.A.		YEBONGA
					(TUCSON)	8 Jun 1976	679		U.S.A.		
						7 Jan 1985	679				
277	F	- 1963	WILD	WILD	NATAL SA	- 1971	UNK		S.AFRICAR		NTHOMBI
					SANDIEGOZ	18 Sep 1971	UNK		U.S.A.		
					SD-WAP	1 Nov 1972	100271		U.S.A.		
280	M	29 May 1974	52	148	SD-WAP	29 May 1974	UNK	Captive Born	U.S.A.		JACK
					WINSTON	26 Jun 1975	106751		U.S.A.		
318	F	- 1971	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		ANNE
					KANSASCTY	23 Jun 1972	629		U.S.A.		
					(JACKSONVL)	5 Jan 1983	1943		U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP and managed
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Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
335	M	24 Aug '976	52	154	SD-WAP	24 Aug 1976	UNK	Captive Born	U.S.A.		SHIMBAYA
					HOGLE	18 May 1977	00927		U.S.A.		
336	M	- '966	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		POP
					REDWOOD	1 May '972	1022		U.S.A.		
337	F	- 1966	WILD	WILD	NATAL SA	- '972	UNK		S.AFRICAR		MOM
					REDWOOD	1 May '972	1023		U.S.A.		
358	F	- 1966	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		DINKA
					RIO GRAND	27 Nov '973	10312		U.S.A.		
359	M	- 1963	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		CHUKURU
					RIO GRAND	27 Nov 1973	10311		U.S.A.		
363	M	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		LUCIFER
					ROCKTON	3 May 1973	100210		CANADA		
364	M	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		ABNER
					ROCKTON	3 May 1973	100211		CANADA		
365	F	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		KATIE
					ROCKTON	3 May 1973	100212		CANADA		
					(TORONTO)	25 Jul 1989	24732		CANADA		
					ROCKTON	5 Nov 1992	920008		CANADA		
366	F	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		MAY
					ROCKTON	3 May 1973	100213		CANADA		
379	M	- 1968	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		SAMSON
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					COLUMBIA	18 Apr 1974	SJ0152		U.S.A.		
					YULEE	15 Apr 1989	89507		U.S.A.		
380	F	- 1968	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		DAISEY MAE
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					COLUMBIA	18 Apr 1974	SJ0153		U.S.A.		
					KINGS ISL	23 Nov 1988	1043		U.S.A.		
					BALTIMORE	7 May 1992	92-039		U.S.A.		
381	F	- 1968	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		LULU
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					COLUMBIA	18 Apr 1974	SJ0154		U.S.A.		
					TOLEDO	11 Nov 1988	880031		U.S.A.		
386	M	- 1970	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		
					MONROE	24 Apr 1972	141173		L.S.A.		
387	F	- 1972	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		
					MONROE	24 Apr 1972	142174		U.S.A.		
390	M	- 1969	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		ARCHIE
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook (Ceratotherium simum simum)

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Cooperative Management: In SSP and managed
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Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
					JACKSONVL	18 Dec 1975	350		U.S.A.		
391	F	~ 1974	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		EDITH
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					JACKSONVL	18 Dec 1975	348		U.S.A.		
					(YULEE)	3 Dec 1992	920441		U.S.A.		
392	F	~ 1971	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		WRINKLES
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					JACKSONVL	18 Dec 1975	349		U.S.A.		
					WACO	7 Jun 1993	UNK		U.S.A.		
397	F	~ 1972	WILD	WILD	NATAL SA	~ 1973	UNK		S.AFRICAR		TOMBI
					BOSWELL	2 Oct 1973	UNK		U.S.A.		
					MEMPHIS	16 Apr 1976	C271		U.S.A.		
413	M	~ 1970	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		DARYLL
					KINGS ISL	25 Jan 1974	104		U.S.A.		
					HUDSON	21 May 1980	UNK		U.S.A.		
					ASHEBORO	21 Nov 1987	941		U.S.A.		
416	F	~ 1971	WILD	WILD	NATAL SA	1974	UNK		S.AFRICAR		CHARLIE
					KINGS ISL	25 Apr 1974	107		U.S.A.		
417	F	~ 1971	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		PRETTY GIR
					KINGS ISL	25 Apr 1974	108		U.S.A.		
418	F	~ 1971	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		PETITE/LON
					KINGS ISL	25 Apr 1974	109		U.S.A.		
452	F	~ 1968	WILD	WILD	NATAL SA	~ 1971	UNK		S.AFRICAR		POLLY
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					(KNOXVILLE)	2 Nov 1976	142		U.S.A.		
453	F	~ 1968	WILD	WILD	NATAL SA	~ 1971	UNK		S.AFRICAR		DOLLY
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					(KNOXVILLE)	2 Nov 1976	141		U.S.A.		
463	M	~ 1970	WILD	WILD	NATAL SA	~ 1972	UNK		S.AFRICAR		
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					LITTLEROC	12 Jun 1975	181		U.S.A.		
					(FORTWORTH)	15 Dec 1990	747		U.S.A.		
464	F	~ 1970	WILD	WILD	NATAL SA	~ 1972	UNK		S.AFRICAR		SUE
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					LITTLEROC	12 Jun 1975	182		U.S.A.		
					(FORTWORTH)	18 Oct 1991	792		U.S.A.		
465	M	~ 1972	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		MONDO
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BATONROUG	26 Oct 1974	124		U.S.A.		
					(KNOXVILLE)	17 May 1988	1237		U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook

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Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
466	F	~ 1972	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		HATARI
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BATONROUG	26 Oct 1974	129		U.S.A.		
467	F	~ 1972	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		WAGASA
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BATONROUG	26 Oct 1974	130		U.S.A.		
					KNOXVILLE	17 Jan 1991	1416		U.S.A.		
469	M	~ 1971	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		RONNIE
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BIRMINGHM	24 Feb 1976	315		U.S.A.		
470	F	~ 1971	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		GERTRUDE
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BIRMINGHM	24 Feb 1976	316		U.S.A.		
471	F	~ 1971	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		HORTENSE
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BIRMINGHM	24 Feb 1976	317		U.S.A.		
473	M	~ 1969	WILD	WILD	NATAL SA	~ 1972	UNK		S.AFRICAR		CHUCK
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					JACKSON	2 Sep 1974	000219		U.S.A.		
					KNOXVILLE	30 Aug 1988	1249		U.S.A.		
475	F	~ 1969	WILD	WILD	NATAL SA	~ 1972	UNK		S.AFRICAR		LONGHORN
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					JACKSON	2 Sep 1974	000220		U.S.A.		
533	F	5 Mar 1979	390	391	JACKSONVL	5 Mar 1979	1298	Captive Born	U.S.A.		GLORIA
					YULEE	12 Apr 1989	B95C6		U.S.A.		
542	F	14 Jun 1979	52	157	SD-WAP	14 Jun 1979	UNK	Captive Born	U.S.A.		PRINCESS
					HOGLE	15 Dec 1980	D2794		U.S.A.		
565	F	~ 1968	WILD	WILD	NATAL SA	~ 1972	UNK		S.AFRICAR		
					W PALM BC	1 Jan 1972	UNK		U.S.A.		
					HUDSON	13 Jul 1981	UNK		U.S.A.		
					ASHEBORO	21 Nov 1987	942		U.S.A.		
573	M	~ 1970	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		TED
					ST LOUIS	12 Aug 1974	UNK		U.S.A.		
					ASHEBORO	30 Sep 1976	59		U.S.A.		
574	F	~ 1970	WILD	WILD	NATAL SA	~ 1974	UNK		S.AFRICAR		ALICE
					ST LOUIS	12 Aug 1974	UNK		U.S.A.		
					ASHEBORO	30 Sep 1976	60		U.S.A.		
575	F	19 Aug 1977	573	574	ASHEBORO	19 Aug 1977	61	Captive Born	U.S.A.		CAROLINE
					(KNOXVILLE)	9 Nov 1988	1259		U.S.A.		
582	F	13 Oct 1979	UNK	218	TORONTO	13 Oct 1979	12159	Captive Born	CANADA		SHABOOLA

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
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Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
					(ROCKTON)	25 Aug 1989	UNK		CANADA		
					TORONTO	9 Jan 1992	12159		CANADA		
587	F	- 1970	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		AMY
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					PHILADELP	22 Oct 1976	100486		U.S.A.		
					KNOXVILLE	25 Nov 1988	1261		U.S.A.		
					BATONROUG	18 Jan 1991	UNK		U.S.A.		
612	F	6 May 1979	562	566	W PALM BE	6 May 1979	UNK	Captive Born	U.S.A.		M'BILLI
					HOUSTON	21 Nov 1989	11944		U.S.A.		
618	M	- 1966	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		MARVIN
					KNOXVILLE	15 Aug 1974	143		U.S.A.		
					BATONROUG	16 May 1988	UNK		U.S.A.		
619	F	- 1966	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		MILLEY
					KNOXVILLE	15 Aug 1974	144		U.S.A.		
620	F	- 1966	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		TILLEY
					KNOXVILLE	15 Aug 1974	145		U.S.A.		
					BROWNSVIL	18 May 1988	3621		U.S.A.		
686	F	- 1972	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		JESSE
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					NORFOLK	1 Jun 1974	172002		U.S.A.		
687	M	- 1972	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		RUFUS
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					NORFOLK	1 Jun 1974	172000		U.S.A.		
696	F	- 1968	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		NADIA
					FERNDALE	22 Jul 1975	UNK		U.S.A.		
					MADISON	6 Jul 1976	643		U.S.A.		
697	M	- 1969	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		SHAKA
					FERNDALE	22 Jul 1975	UNK		U.S.A.		
					MADISON	6 Jul 1976	642		U.S.A.		
707	M	- 1973	WILD	WILD	NATAL SA	- 1975	UNK		S.AFRICAR		FRANKLIN
					DARBY DAN	- 1976	UNK		U.S.A.		
					JACKSON	20 Dec 1980	000876		U.S.A.		
750	F	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		LUCY
					DOSWELL	3 Oct 1973	026		U.S.A.		
753	M	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		ALFRED
					DOSWELL	3 Oct 1973	021		U.S.A.		
754	M	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		RUFUS
					DOSWELL	3 Oct 1973	022		U.S.A.		
755	M	10 Jun 1979	754	752	DOSWELL	10 Jun 1979	750	Captive Born	U.S.A.		MILTON

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP and managed
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
772	F	3 Mar 1983	618	453	KNOXVILLE	3 Mar 1983	760	Captive Born	U.S.A.		LULU
					(LOUISVILL)	23 May 1985	100906		U.S.A.		
788	F	22 Dec 1983	52	157	SD-WAP	22 Dec 1983	012004	Captive Born	U.S.A.		KARIBU
790	M	3 Jan 1984	618	452	KNOXVILLE	3 Jan 1984	843	Captive Born	U.S.A.		KYLE
					(CLEVELAND)	23 May 1985	850505		U.S.A.		
791	F	11 Jan 1984	618	620	KNOXVILLE	11 Jan 1984	844	Captive Born	U.S.A.		SINDI
					(LOUISVILL)	23 May 1985	100905		U.S.A.		
819	F	24 Jun 1984	52	155	SD-WAP	24 Jun 1984	026210	Captive Born	U.S.A.		DLMISHA
822	F	28 Aug 1984	52	150	SD-WAP	28 Aug 1984	026342	Captive Born	U.S.A.		SINYAA
841	M	27 Jul 1985	420	599	SD WAP	27 Jul 1985	UNK	Captive Born	U.S.A.		SITINI
					HONOLULU	29 Oct 1986	860275		U.S.A.		
842	F	19 Aug 1985	40	397	MEMPHIS	19 Aug 1985	7593	Captive Born	U.S.A.		KARLA
					(CLEVELAND)	6 Jun 1986	860603		U.S.A.		
861	M	11 May 1986	420	155	SD-WAP	11 May 1986	100548	Captive Born	U.S.A.		DUMA
					OMAHA	18 Dec 1989	5585		U.S.A.		
876	M	25 Nov 1986	50	51	(SANDSTONE)	25 Nov '986	UNK	Unk Birth Type	U.S.A.		BUBBA
					LOSANGELE	25 Nov '986	UNK		U.S.A.		
					(LOUISVILL)	2 Dec 1988	101130		U.S.A.		
898	M	14 Jul 1987	34	153	PHOENIX	14 Jul 1987	5077	Captive Born	U.S.A.		OLLIE
					(FOSSIL RM)	30 Mar 1989	12898		U.S.A.		
					WACO	22 Jun 1993	UNK		U.S.A.		
950	M	13 Jan 1990	143	218	TORONTO	13 Jan 1990	25243	Captive Born	CANADA		ATU
T002	F	2 Feb 1990	465	453	KNOXVILLE	2 Feb 1990	1347	Captive Born	U.S.A.		YVONNE
					(AUDUBON)	4 Feb 1993	1509		U.S.A.		
T004	F	8 Jan 1991	465	452	KNOXVILLE	8 Jan 1991	1413	Captive Born	U.S.A.		TARYN
T005	M	26 Jan 1991	390	391	JACKSONVL	26 Jan 1991	UNK	Captive Born	U.S.A.		SABA
					(AUDUBON)	13 Apr 1993	1542		U.S.A.		
T006	M	9 Mar 1991	40	397	MEMPHIS	9 Mar 1991	11835	Captive Born	U.S.A.		STORMIN NO
T008	F	3 Sep 1991	379	533	YULEE	3 Sep 1991	9147	Captive Born	U.S.A.		NINA
T009	M	14 Dec 1990	189	620	(BROWNSVIL)	14 Dec 1990	4648	Unk Birth Type	U.S.A.		STORMY
					KNOXVILLE	14 Dec 1990	UNK		U.S.A.		
T010	M	20 Nov 1991	187	159	SD-WAP	20 Nov 1991	691716	Captive Born	U.S.A.		UZAZI
T013	F	5 Dec 1992	50	51	FOSSIL RM	6 Dec 1992	12052	Captive Born	U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook Page 9

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP and managed
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
TD15	M	15 May 1992	187	157	SD-WAP	15 May 1992	692265	Captive Born	U.S.A.		KUSINI
TD16	F	3 Oct 1992	187	156	SD-WAP	3 Oct 1992	692553	Captive Born	U.S.A.		MZIGO
TD20	F	18 Feb 1993	180	182	SAN ANTON	18 Feb 1993	930215	Captive Born	U.S.A.		SAFARI

TOTALS: 50.70.0 (120)

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death Date	Name
29	M	~ 1959	WILD	WILD	NATAL SA	~ 1962	UNK		S.AFRICAR		NASNUARA
					CHICAGOBR	1 Sep 1962	UNK		U.S.A.		
					(WINSTON)	14 Jun 1988	350002		U.S.A.		
30	F	~ 1960	WILD	WILD	NATAL SA	~ 1962	UNK		S.AFRICAR		NEVA
					CHICAGOBR	1 Sep 1962	UNK		U.S.A.		
					(WINSTON)	14 Jun 1988	350003		U.S.A.		
31	M	~ 1958	WILD	WILD	NATAL SA	~ 1962	UNK		S.AFRICAR		MTONDO
					MILWAUKEE	30 Aug 1962	204		U.S.A.		
					(FOSSIL RM)	15 Dec 1988	12031		U.S.A.		
34	M	~ 1961	WILD	WILD	NATAL SA	~ 1963	UNK		S.AFRICAR		KEHTLA
					PHOENIX	28 Jul 1963	137		U.S.A.		
39	F	~ 1963	WILD	WILD	NATAL SA	~ 1966	UNK		S.AFRICAR		HENRIETTA
					OMAHA	14 Nov 1966	315		U.S.A.		
47	F	~ 1963	WILD	WILD	NATAL SA	~ 1966	UNK		S.AFRICAR		JANET
					CALGARY	14 May 1966	100546		CANADA		
50	M	~ 1965	WILD	WILD	NATAL SA	~ 1965	UNK	Wild Born	S.AFRICAR		MAC
					LOSANGELE	17 Aug 1965	UNK		U.S.A.		
					(LLANO)	4 Jun 1983	UNK		U.S.A.		
					(FOSSIL RM)	9 Nov 1989	12050		U.S.A.		
51	F	~ 1963	WILD	WILD	NATAL SA	~ 1965	UNK		S.AFRICAR		TOSHA
					LOSANGELE	17 Aug 1965	UNK		U.S.A.		
					(SANDSTONE)	4 Jun 1983	UNK		U.S.A.		
					(FOSSIL RM)	9 Nov 1989	12051		U.S.A.		
80	M	~ 1964	WILD	WILD	NATAL SA	~ 1969	UNK		S.AFRICAR		LEROY
					LOUISVILL	6 Dec 1969	100131		U.S.A.		
					(KINGS ISL)	11 Feb 1985	821		U.S.A.		
					(BALTIMORE)	7 May 1992	92-038		U.S.A.		
81	F	~ 1964	WILD	WILD	NATAL SA	~ 1967	UNK		S.AFRICAR		PACHY
					LOUISVILL	15 Nov 1967	100130		U.S.A.		
					(KINGS ISL)	11 Feb 1985	822		U.S.A.		
					(COLUMBUS)	15 Jul 1989	882093		U.S.A.		
					WILDS	12 Nov 1993	UNK		U.S.A.		
82	M	~ 1967	WILD	WILD	NATAL SA	~ 1968	UNK		S.AFRICAR		DUDLEY
					FORTWORTH	23 May 1968	122		U.S.A.		
					(FOSSIL RM)	20 Jan 1989	1282		U.S.A.		
83	F	~ 1967	WILD	WILD	NATAL SA	~ 1968	UNK		S.AFRICAR		POKEY
					FORTWORTH	23 May 1968	123		U.S.A.		
					(FOSSIL RM)	20 Jan 1989	1283		U.S.A.		
143	M	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		BULL
					SD-WAP	17 Feb 1971	UNK		U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
					TORONTO	8 Aug 1974	4314		CANADA		
146	M	~ 1968	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		PENDULLAH
					SD-WAP	17 Feb 1971	100253		U.S.A.		
					COLUMBUS	21 Jun 1975	752006		U.S.A.		
					MEMPHIS	12 Nov 1993	UNK		U.S.A.		
147	F	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		MACETE
					SD-WAP	17 Feb 1971	100255		U.S.A.		
					(FOSSIL RM)	14 Dec 1989	12147		U.S.A.		
148	F	~ 1968	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		DELILAH/MA
					SD-WAP	17 Feb 1971	100256		U.S.A.		
					COLUMBUS	21 Jun 1975	752007		U.S.A.		
					WILDS	12 Nov 1993	UNK		U.S.A.		
150	F	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		SINANRA
					SD-WAP	17 Feb 1971	100258		U.S.A.		
153	F	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		TAMBILE
					SD-WAP	17 Feb 1971	100261		U.S.A.		
					PHOENIX	1 May 1975	1672		U.S.A.		
154	F	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		NJUBA
					SD-WAP	17 Feb 1971	100262		U.S.A.		
156	F	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		MAVULA
					SD-WAP	17 Feb 1971	100264		U.S.A.		
157	F	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		KOMAAS
					SD-WAP	17 Feb 1971	100265		U.S.A.		
159	F	~ 1963	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		UMFOLOZI
					SD-WAP	17 Feb 1971	100267		U.S.A.		
177	M	~ 1968	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		PHIL
					TOLEDO	22 Sep 1970	UNK		U.S.A.		
					(YULEE	) 21 Jun 1984	8451		U.S.A.		
180	M	~ 1965	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		FRED
					SAN ANTON	5 Oct 1970	701002		U.S.A.		
181	F	~ 1965	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		GERTRUDE
					SAN ANTON	5 Oct 1970	701003		U.S.A.		
182	F	~ 1969	WILD	WILD	NATAL SA	~ 1969	UNK	Wild Born	S.AFRICAR		PHOEBE
					SAN ANTON	13 Feb 1971	710202		U.S.A.		
187	M	~ 1968	WILD	WILD	NATAL SA	~ 1971	UNK		S.AFRICAR		FODDER
					FRESNO	19 Sep 1971	1156		U.S.A.		
					(SD-WAP	) 30 May 1990	690329		U.S.A.		
188	F	~ 1968	WILD	WILD	NATAL SA	~ 1971	UNK		S.AFRICAR		MUDDER

SOUTHERN WHITE RHINOCEROS Studbook (Ceratotherium simum simum)

Restricted to:
Cooperative Management: In SSP
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
					FRESNO	19 Sep 1971	1157		U.S.A.		
189	M	~ 1968	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		M'KABI
					BROWNSVIL	11 Sep 1970	261		U.S.A.		
190	F	~ 1968	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		NOBELA
					BROWNSVIL	11 Sep 1970	262		U.S.A.		
191	M	~ 1968	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		
					ZEEHANDLR	~ 1970	UNK		U.S.A.		
					HOUSTON	8 Jul 1970	441		U.S.A.		
192	F	~ 1970	WILD	WILD	NATAL SA	~ 1970	UNK		S.AFRICAR		
					ZEEHANDLR	~ 1970	UNK		U.S.A.		
					HOUSTON	8 Jul 1970	440		U.S.A.		
202	M	28 Aug 1972	180	181	SAN ANTON	28 Aug 1972	721816	Captive Born	U.S.A.		SHAKA
					(BROWNSVIL)	8 Jan 1987	3120		U.S.A.		
203	M	11 Oct 1972	52	151	SD-WAP	11 Oct 1972	100270	Captive Born	U.S.A.		ZIBULO
					(TUCSON)	8 Jun 1976	678		U.S.A.		
						7 Oct 1985	678				
213	M	19 Dec 1972	52	152	SANDIEGOZ	19 Dec 1972	UNK	Captive Born	U.S.A.		BENDER
					TORONTO	8 Aug 1974	4313		CANADA		
					CALGARY	19 Sep 1988	102965		CANADA		
218	F	3 Feb 1973	52	157	SD-WAP	3 Feb 1973	UNK	Captive Born	U.S.A.		PISTOL
					TORONTO	8 Aug 1974	4316		CANADA		
219	F	8 May 1973	52	153	SD-WAP	8 May 1973	UNK	Captive Born	U.S.A.		HENRIETTA
					PHILADELP	4 May 1974	100251		U.S.A.		
					FOSSIL RM	28 Nov 1988	1219		U.S.A.		
220	M	28 Jun 1973	52	154	SD-WAP	28 Jun 1973	UNK	Captive Born	U.S.A.		SAM
					PHILADELP	4 May 1974	100250		U.S.A.		
					TOLEDO	15 Nov 1988	880033		U.S.A.		
238	F	15 Apr 1973	52	150	SD-WAP	15 Apr 1973	100275	Captive Born	U.S.A.		YEBONGA
					(TUCSON)	8 Jun 1976	679		U.S.A.		
						7 Jan 1985	679				
277	F	~ 1963	WILD	WILD	NATAL SA	~ 1971	UNK		S.AFRICAR		NTHOMBI
					SANDIEGOZ	18 Sep 1971	UNK		U.S.A.		
					SD-WAP	1 Nov 1972	100271		U.S.A.		
280	M	29 May 1974	52	148	SD-WAP	29 May 1974	UNK	Captive Born	U.S.A.		JACK
					WINSTON	26 Jun 1975	106751		U.S.A.		
318	F	~ 1971	WILD	WILD	NATAL SA	~ 1972	UNK		S.AFRICAR		ANNE
					KANSASCTY	23 Jun 1972	629		U.S.A.		
					(JACKSONVL)	5 Jan 1983	1943		U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
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Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
335	M	24 Aug 1976	52	154	SD-WAP	24 Aug 1976	UNK	Captive Born	U.S.A.		SHIMBAYA
					HOGLE	18 May 1977	00927		U.S.A.		
336	M	- 1966	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		POP
					REDWOOD	1 May 1972	1022		U.S.A.		
337	F	- 1966	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		MOM
					REDWOOD	1 May 1972	1023		U.S.A.		
358	F	- 1966	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		DINKA
					RIO GRAND	27 Nov 1973	10312		U.S.A.		
359	M	- 1965	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		CHUKURU
					RIO GRAND	27 Nov 1973	10311		U.S.A.		
363	M	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		LUCIFER
					ROCKTON	3 May 1973	100210		CANADA		
364	M	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		ABNER
					ROCKTON	3 May 1973	100211		CANADA		
365	F	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		KATIE
					ROCKTON	3 May 1973	100212		CANADA		
					(TORONTO)	25 Jul 1989	24732		CANADA		
					ROCKTON	5 Nov 1992	920008		CANADA		
366	F	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		MAY
					ROCKTON	3 May 1973	100213		CANADA		
379	M	- 1968	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		SAMSON
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					COLUMBIA	18 Apr 1974	SJ0152		U.S.A.		
					YULEE	15 Apr 1989	89507		U.S.A.		
380	F	- 1968	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		DAISEY MAE
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					COLUMBIA	18 Apr 1974	SJ0153		U.S.A.		
					KINGS ISL	23 Nov 1988	1043		U.S.A.		
					BALTIMORE	7 May 1992	92-039		U.S.A.		
381	F	- 1968	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		LULU
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					COLUMBIA	18 Apr 1974	SJ0154		U.S.A.		
					TOLEDO	11 Nov 1988	880031		U.S.A.		
386	M	- 1970	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		
					MONROE	24 Apr 1972	141173		U.S.A.		
387	F	- 1972	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		
					MONROE	24 Apr 1972	142174		U.S.A.		
390	M	- 1969	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		ARCHIE
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth Origin	Country	Death Date	Name
					JACKSONVL	18 Dec 1975	350		U.S.A.		
391	F	~ 1974	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		EDITH
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					JACKSONVL	18 Dec 1975	348		U.S.A.		
					(YULEE)	3 Dec 1992	920441		U.S.A.		
392	F	~ 1971	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		WRINKLES
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					JACKSONVL	18 Dec 1975	349		U.S.A.		
					WACO	7 Jun 1993	UNK		U.S.A.		
397	F	~ 1972	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		TOMBI
					DOSWELL	2 Oct 1973	UNK		U.S.A.		
					MEMPHIS	16 Apr 1976	0271		U.S.A.		
413	M	~ 1970	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		DARYLL
					KINGS ISL	25 Jan 1974	104		U.S.A.		
					HUDSON	21 May 1980	UNK		U.S.A.		
					ASHEBORO	21 Nov 1987	941		U.S.A.		
416	F	~ 1971	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		CHARLIE
					KINGS ISL	25 Apr 1974	107		U.S.A.		
417	F	~ 1971	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		PRETTY GIR
					KINGS ISL	25 Apr 1974	108		U.S.A.		
418	F	~ 1971	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		PETITE/LON
					KINGS ISL	25 Apr 1974	109		U.S.A.		
452	F	~ 1968	WILD	WILD	NATAL SA	~ 1971	UNK		S.AFRICAR		POLLY
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					(KNOXVILLE)	2 Nov 1975	142		U.S.A.		
453	F	~ 1968	WILD	WILD	NATAL SA	- 1971	UNK		S.AFRICAR		DOLLY
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					(KNOXVILLE)	2 Nov 1976	141		U.S.A.		
463	M	~ 1970	WILD	WILD	NATAL SA	~ 1972	UNK		S.AFRICAR		
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					LITTLEROC	12 Jun 1975	181		U.S.A.		
					(FORTWORTH)	15 Dec 1990	747		U.S.A.		
464	F	~ 1970	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		SUE
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					LITTLEROC	12 Jun 1975	182		U.S.A.		
					(FORTWORTH)	18 Oct 1991	792		U.S.A.		
465	M	~ 1972	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		MONDO
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BATONROUG	26 Oct 1974	124		U.S.A.		
					(KNOXVILLE)	17 May 1988	1237		U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
466	F	- 1972	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		NATAR1
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BATONROUG	26 Oct 1974	129		U.S.A.		
467	F	- 1972	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		WAGASA
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BATONROUG	26 Oct 1974	130		U.S.A.		
					KNOXVILLE	17 Jan 1991	1416		U.S.A.		
469	M	- 1971	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		RONNIE
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BIRMINGHM	24 Feb 1976	315		U.S.A.		
470	F	- 1971	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		GERTRUDE
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BIRMINGHM	24 Feb 1976	316		U.S.A.		
471	F	- 1971	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		HORTENSE
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					BIRMINGHM	24 Feb 1976	317		U.S.A.		
473	M	- 1969	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		CHUCK
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					JACKSON	2 Sep 1974	000219		U.S.A.		
					KNOXVILLE	30 Aug 1988	1249		U.S.A.		
475	F	- 1969	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		LONGHORN
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					JACKSON	2 Sep 1974	000220		U.S.A.		
481	M	30 Dec 1975	UNK	UNK	GRT ADVEN	30 Dec 1975	UNK	Captive Born	U.S.A.		DEAND
					PITTSBURG	11 Jul 1977	201		U.S.A.		
482	F	25 Nov 1975	UNK	UNK	GRT ADVEN	25 Nov 1975	UNK	Captive Born	U.S.A.		KIDAGO
					PITTSBURG	11 Jul 1977	202		U.S.A.		
533	F	5 Mar 1979	390	391	JACKSONVL	5 Mar 1979	1298	Captive Born	U.S.A.		GLORIA
					YLLEE	12 Apr 1989	B9506		U.S.A.		
542	F	14 Jun 1979	52	157	SD WAP	14 Jun 1979	UNK	Captive Born	U.S.A.		PRINCESS
					BOGLE	15 Dec 1980	02794		U.S.A.		
565	F	- 1968	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		
					W PALM BE	1 Jan 1972	UNK		U.S.A.		
					HUDSON	13 Jul 1981	UNK		U.S.A.		
					ASHEBORO	21 Nov 1987	942		U.S.A.		
573	M	- 1970	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		TED
					ST LOUIS	12 Aug 1974	UNK		U.S.A.		
					ASHEBORO	30 Sep 1976	59		U.S.A.		
574	F	- 1970	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		ALICE
					ST LOUIS	12 Aug 1974	UNK		U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook Page 7
Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
					ASHEBORO	30 Sep 1976	60		U.S.A.		
575	F	19 Aug '977	573	574	ASHEBORO	19 Aug 1977	61	Captive Born	U.S.A.		CAROLINE
					(KNOXVILLE)	9 Nov 1988	1259		U.S.A.		
582	F	13 Oct '979	UNK	218	TORONTO	13 Oct 1979	12159	Captive Born	CANADA		SHABOOLA
					(ROCKTON)	25 Aug 1989	UNK		CANADA		
					TORONTO	9 Jan 1992	12159		CANADA		
587	F	- 1970	WILD	WILD	NATAL SA	- 1972	UNK		S.AFRICAR		AMY
					STOCKBRID	15 Apr 1972	UNK		U.S.A.		
					PHILADELP	22 Oct 1976	100486		U.S.A.		
					KNOXVILLE	25 Nov 1988	1261		U.S.A.		
					BATONROUG	18 Jan '991	UNK		U.S.A.		
612	F	6 May 1979	562	566	W PALM BE	6 May 1979	UNK	Captive Born	U.S.A.		M'BILLI
					HOUSTON	21 Nov 1989	11944		U.S.A.		
618	M	- 1965	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		MARVIN
					KNOXVILLE	15 Aug 1974	143		U.S.A.		
					BATONROUG	16 May 1988	UNK		U.S.A.		
619	F	- 1966	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		MILLEY
					KNOXVILLE	15 Aug 1974	144		U.S.A.		
620	F	- 1966	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		TILLEY
					KNOXVILLE	15 Aug 1974	145		U.S.A.		
					BROWNSVIL	18 May 1988	3621		U.S.A.		
686	F	- 1972	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		JESSE
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					NORFOLK	1 Jun 1974	172002		U.S.A.		
687	M	- 1972	WILD	WILD	NATAL SA	- 1974	UNK		S.AFRICAR		RUFUS
					KINGS ISL	25 Apr 1974	UNK		U.S.A.		
					NORFOLK	1 Jun 1974	172000		U.S.A.		
691	F	1 Nov 1980	420	429	GRAND PRA	1 Nov 1980	UNK	Captive Born	U.S.A.		BONNIE
					TULSA	3 Nov 1982	5592		U.S.A.		
693	F	17 Mar 1980	UNK	UNK	JACKSN NJ	17 Mar 1980	UNK	Captive Born			JEANNIE
					TULSA	3 Nov 1982	5591		U.S.A.		
696	F	~ 1968	WILD	WILD	NATAL SA	~ 1972	UNK		S.AFRICAR		NADIA
					FERNDALE	22 Jul 1975	UNK		U.S.A.		
					MADISON	6 Jul 1976	643		U.S.A.		
697	M	~ 1968	WILD	WILD	NATAL SA	~ 1972	UNK		S.AFRICAR		SHAKA
					FERNDALE	22 Jul 1975	UNK		U.S.A.		
					MADISON	6 Jul 1976	642		U.S.A.		
707	M	~ 1973	WILD	WILD	NATAL SA	~ 1975	UNK		S.AFRICAR		FRANKLIN
					DARBY DAN	- 1976	UNK		U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death-Date	Name
					JACKSON	20 Dec 1980	000876		U.S.A.		
718	M	13 Apr 1981	UNK	UNK	JACKSN MJ	13 Apr 1981	UNK	Captive Born			BUZBIE
					TULSA	3 Nov 1982	5590		U.S.A.		
750	F	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		LUCY
					DOSWELL	3 Oct 1973	026		U.S.A.		
753	M	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		ALFRED
					DOSWELL	3 Oct 1973	021		U.S.A.		
754	M	- 1969	WILD	WILD	NATAL SA	- 1973	UNK		S.AFRICAR		RUFUS
					DOSWELL	3 Oct 1973	022		U.S.A.		
755	M	10 Jun 1979	754	752	DOSWELL	10 Jun 1979	750	Captive Born	U.S.A.		MILTON
772	F	3 Mar 1983	618	453	KNOXVILLE	3 Mar 1983	760	Captive Born	U.S.A.		LULU
					(LOUISVILL)	23 May 1985	100906		U.S.A.		
788	F	22 Dec 1983	52	157	SD-WAP	22 Dec 1983	0'2004	Captive Born	U.S.A.		KARIBU
790	M	3 Jan 1984	618	452	KNOXVILLE	3 Jan 1984	843	Captive Born	U.S.A.		KYLE
					(CLEVELAND)	23 May 1985	850505		U.S.A.		
791	F	11 Jan 1984	618	620	KNOXVILLE	11 Jan 1984	844	Captive Born	U.S.A.		SINDI
					(LOUISVILL)	23 May 1985	100905		U.S.A.		
819	F	24 Jun 1984	52	155	SD-WAP	24 Jun 1984	026210	Captive Born	U.S.A.		DUMISHA
822	F	28 Aug 1984	52	150	SD WAP	28 Aug 1984	026342	Captive Born	U.S.A.		SINYAA
841	M	27 Jul 1985	420	599	SD-WAP	27 Jul 1985	UNK	Captive Born	U.S.A.		SITIKI
					HONOLULU	29 Oct 1986	860275		U.S.A.		
842	F	19 Aug 1985	40	397	MEMPHIS	19 Aug 1985	7593	Captive Born	U.S.A.		KARLA
					(CLEVELAND)	6 Jun 1986	860603		U.S.A.		
861	M	11 May 1986	420	155	SD-WAP	11 May 1986	100548	Captive Born	U.S.A.		DUMA
					OMAHA	18 Dec 1989	5585		U.S.A.		
876	M	25 Nov 1986	50	51	(SANDSTONE)	25 Nov 1986	UNK	Unk Birth Type	U.S.A.		BUBBA
					LOSANGELE	25 Nov 1986	UNK		U.S.A.		
					(LOUISVILL)	2 Dec 1988	101130		U.S.A.		
898	M	14 Jul 1987	34	153	PHOENIX	14 Jul 1987	5077	Captive Born	U.S.A.		OLLIE
					(FOSSIL RM)	30 Mar '989	12898		U.S.A.		
					WACO	22 Jun '993	UNK		U.S.A.		
950	M	13 Jan 1990	143	218	TORONTO	13 Jan '990	25243	Captive Born	CANADA		ATU
T002	F	2 Feb 1990	465	453	KNOXVILLE	2 Feb 1990	1347	Captive Born	U.S.A.		YVONNE
					(AUDUBON)	4 Feb 1993	1509		U.S.A.		

SOUTHERN WHITE RHINOCEROS Studbook

Restricted to: (Ceratotherium simum simum)
Cooperative Management: In SSP
Status: Living by 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth Origin	Country	Death Date	Name
T004	F	8 Jan 1991	465	452	KNOXVILLE	8 Jan 1991	1413	Captive Born	U.S.A.		TARYN
T005	M	26 Jan 1991	390	391	JACKSONVL	26 Jan 1991	UNK	Captive Born	U.S.A.		SABA
					(AUDUBON)	13 Apr 1993	1542		U.S.A.		
T006	M	9 Mar 1991	40	397	MEMPHIS	9 Mar 1991	11835	Captive Born	U.S.A.		STORMIN NO
T008	F	3 Sep 1991	379	533	YULEE	3 Sep 1991	9147	Captive Born	U.S.A.		NINA
T009	M	14 Dec 1990	189	620	(BROWNSVIL)	14 Dec 1990	4648	Unk Birth Type	U.S.A.		STORMY
					KNOXVILLE	14 Dec 1990	UNK		U.S.A.		
T010	M	20 Nov 1991	187	159	SD-WAP	20 Nov 1991	691716	Captive Born	U.S.A.		UZAZI
T013	F	6 Dec 1992	50	51	FOSSIL RM	6 Dec 1992	12052	Captive Born	U.S.A.		
T015	M	15 May 1992	187	157	SD-WAP	15 May 1992	692265	Captive Born	U.S.A.		KUSINI
T016	F	3 Oct 1992	187	156	SD-WAP	3 Oct 1992	692553	Captive Born	U.S.A.		MIZIGO
T020	F	18 Feb 1993	190	182	SAN ANTON	18 Feb 1993	930215	Captive Born	U.S.A.		SAFARI

TOTALS: 52.73.0 (125)

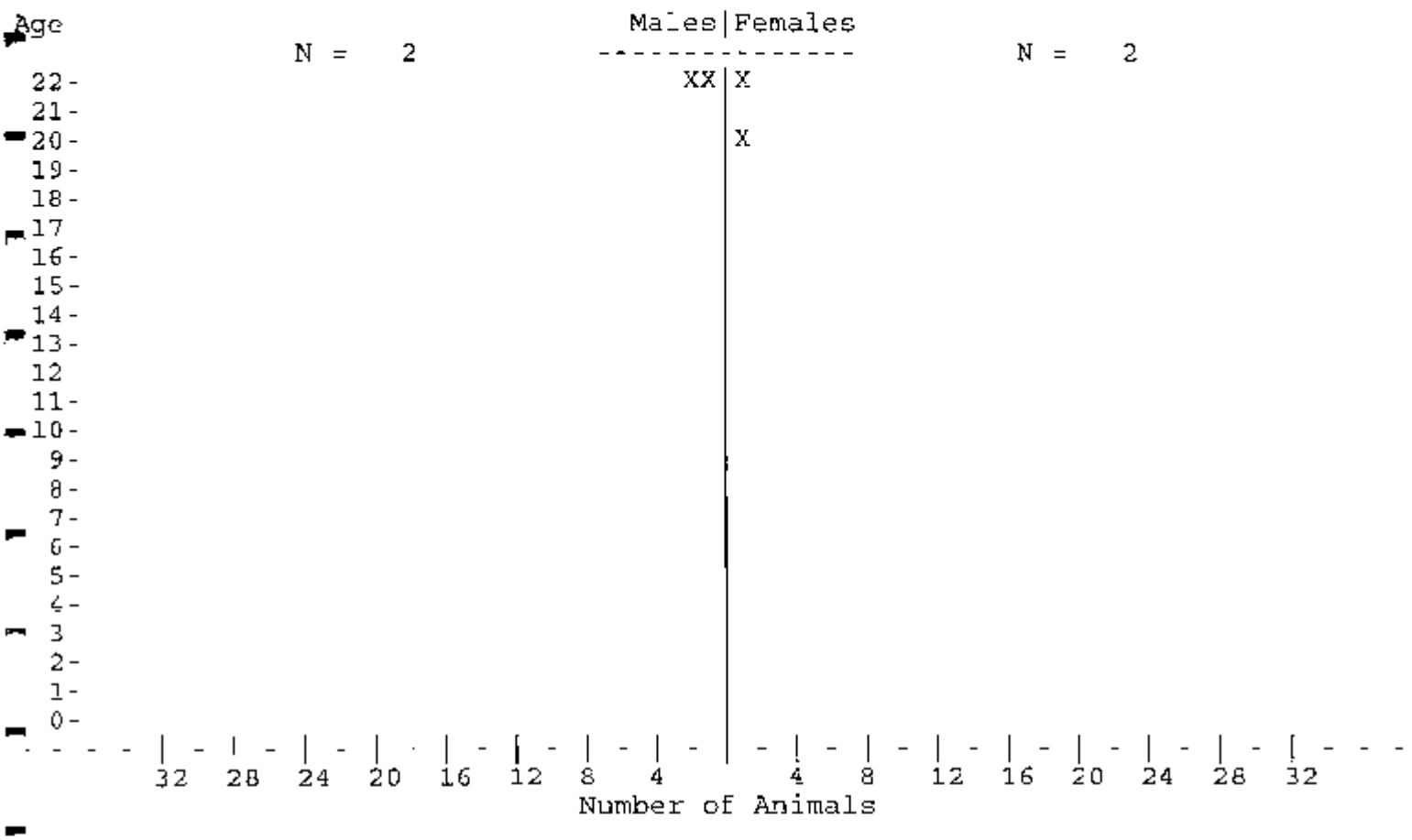
APPENDIX VI

POPULATION ANALYSES FOR NORTHERN WHITE RHINO SSP POPULATION

Age Pyramid Report

Restricted to: NORTHERN WHITE RHINO Studbook Page 1
Locations: N.AMERICA/

Taxon Name: **CERATOTHERIUM SIMUM COTTONI**



X >>> Specimens of known sex...
? >>> Specimens of unknown sex...

Age Pyramid Report

Restricted to: NORTHERN WHITE RHINO Studbook

Locations: N.AMERICA/

Taxon Name: **CERATOTHERIUM SIMUM COTTONI**

Age	Studbook Numbers >>>	Male
22	348	373
21		
20		
19		
18		
17		
16		
15		
14		
13		
12		
11		
10		
9		
8		
7		
6		
5		
4		
3		
2		
1		
0		

Total= 2

Age Pyramid Report

Restricted to: NORTHERN WHITE RHINO Studbook
Locations: N.AMERICA/

Taxon Name: **CERATOTHERIUM SIMUM COTTONI**

Age	Studbook Numbers >>> Female
22	376
21	
20	374
19	
18	
17	
16	
15	
14	
13	
12	
11	
10	
9	
8	
7	
6	
5	
4	
3	
2	
1	
0	

Total- 2

NORTHERN WHITE RHINO Studbook

(Ceratotherium simum cottoni)

Restricted to:
Locations: N.AMERICA/
Dates: During 24/03/1994 <= date
Status: Living during 24 Mar 1994 -> 25 Mar 1994

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Birth-Origin	Country	Death Date	Name
348	M	~ 1972	WILD	WILD	SUDAN	- 1973	UNK	Wild Born	SUDAN		ANGALIFU
					KHARTOUM	1 Apr 1973	UNK		SUDAN		
					SD-WAP	12 Aug 1990	UNK		U.S.A.		
373	M	~ 1972	WILD	WILD	SUDAN	- 1975	UNK	Wild Born	SUDAN		SAUT
					DVURKRALV	19 Sep 1975	UNK		CZECHOS_O		
					SD-WAP	14 Oct 1989	UNK		U.S_A.		
374	F	~ 1974	WILD	WILD	SUDAN	- 1975	UNK	Wild Born	SUDAN		NOLA
					DVURKRALV	19 Sep 1975	UNK		CZECHOSLO		
					SD-WAP	14 Oct 1989	UNK		U.S.A.		
376	F	~ 1972	WILD	WILD	SUDAN	- 1975	UNK	Wild Born	SUDAN		NADI
					DVURKRALV	19 Sep 1975	UNK		CZECHOSLO		
					SD-WAP	14 Oct 1989	UNK		U.S.A.		

TOTALS: 2.2.0 (4)

APPENDIX VII

SUMMARY OF RHINO GLOBAL CAPTIVE ACTION PLAN (GCAP) GLOBAL ANIMAL SURVIVAL PLAN (GASP)

TABLE 1
RHINOCEROS POPULATIONS IN THE WILD AND IN CAPTIVITY (CPTV) ON BOTH GLOBAL AND REGIONAL BASIS AT CURRENT AND TARGET LEVELS (TRGT)

	WORLD			AFRICA		ASIA		AUSTRALASIA		EUROPE		N. AMERICA		C.& S. AMERICA	
RHINO TAXON	WILD POP	CPTV POP	CPTV TRGT	CPTV POP	TRGT POP	CPTV POP	TRGT POP	CPTV POP	TRGT POP	CPTV POP	TRGT POP	CPTV POP	TRGT POP	CPTV POP	TRGT POP
Eastern Black	600	165	240	5	10 ?	35	40	2	0	55	100	67	90	6	?
Southern Black	1,200	45	210	4	50	2?	0	6	80	2	0	30	80	0	?
Southwestern Black	400	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North & West Black	<100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern White	31	9	?	0	?	0	0	0	0	6	?	4	?	0	0
Southern White	5,600	630+	380 +20 Rsrch	24	0	150	100	14	60	210	120	132	100 +20 Rsrch	40	?
Indian/Nepalese	2,000	123	250	0	0	50	80	0	0	32	80	42	90	1	?
Javan (Java)	< 75	0	?	0	0	0	?	0	0	0	0	0	0	0	?
Javan (Vietnam)	< 25	0	?	0	0	0	?	0	0	0	0	0	0	0	?
Mainland Sumatran	110	8	100*	0	0	8	50	0	0	0	(50)*	0	0	0	?
Sumatran Sumatran	250	11	100*	0	0	4	50	0	0	2	0	5	(50)*	0	0
Borneo Sumatran	90	4	100*	0	0	4	50	0	(50)*	0	0	0	0	0	0
African Rhino	**7,900**	**850**	**850**	**33**	**60**	**187**	**140**	**16**	**140**	**266**	**220**	**233**	**290**	**46**	**?**
Asian Rhino	**2,600**	**146**	**550**	**0**	**0**	**66**	**230**	**0**	**100**	**34**	**130**	**47**	**140**	**1**	**?**
All Rhino Taxa	**10,500**	**1,000**	**1,400**	**33**	**60**	**253**	**370**	**16**	**240**	**300**	**350**	**280**	**430**	**47**	**?**

* A desirable target if and when husbandry of this species can be mastered and sufficient founders for *ex situ* populations can be produced by captive propagation programs within the range states.

T.J. Foose
1 December 1993