

## GREATER ONE-HORNED RHINOCEROS (*Rhinoceros unicornis*)

Species Coordinator: Michael Dee, Los Angeles Zoo  
International Studbook Keeper: Kathleen Tobler, Basel Zoo, Switzerland

### Introduction

There are currently 13 institutions participating in the Greater One-horned Asian SSP. However, only eight institutions are breeding this species due to the fact that three have single animals, and two have animals that have not yet reached sexual maturity.

Population genetic analysis has shown that the minimum viable population size (MVP) in order to maintain 90% of original genetic diversity for 200 years is approximately 294 animals, about eight times the current population size in North America. Under these conditions, each participating institution would need to allocate space for 24 animals. Even if the current number of participating institutions was doubled, 12 animals would have to be maintained at each in order to meet the SSP's goals.

At the 1989 Master Plan session, a more realistic approach of maintaining 50 animals was discussed. Ideally, at least 84 animals will need to be maintained through births and importations to meet the minimum objectives of the SSP.

Data Table (current through 1 July, 1992)

	Two Years ago	One Year ago	Current year
Participating Institutions	12	12	13
Captive Population	150	155	120
# SSP animals managed	34	36	41
# SSP animals not required to meet goals	1	0	3
Total # of births in SSP program	22	27	27
# surviving to one year	13	13	18
# of SSP recommended births	3	1	5
# of non recommended births	0	0	0
# of imports	2	0	0
# of exports	1	0	0
# of founders w/ represented descendants	14	14	14

### Current Population Status

At present, the SSP population appears to be somewhat secure. Competition with other rhino species has occurred, but does not appear to be serious at this time. At the 1989 Master Plan session, future breeding, surplus and management priorities were discussed. A Master Plan meeting scheduled for 1992 has been rescheduled for 1994.

There are no non-SSP animals in North America. The wild population appears to be somewhat stable, although poaching has occurred in India (present population about 1500) and the Nepal population in Chitwan National Park is expanding by about 10% per year. Forty-three animals have been translocated from Chitwan to the Royal Bardia National Park in the past three years. The species coordinator continues to work with the Nepalese and Indian government to obtain at least six more founder animals for the SSP. The 1990 and 1991 captive population was an estimate as a number of institutions had not reported to the studbook keeper. The 1992 population is an actual count as of 1 July 1992.

### Demographic Trends

Life history table analysis of the North American studbook population indicates a growth rate ( $r$ ) of 1.043, a generation time ( $T$ ) of 17.5 years, a rate of population increase per generation ( $R_0$ ) of 2.122, and a life expectancy at birth of twenty years. The Greater One-horned Asian Rhino SSP population has grown at the annual rate of 1.3 animals per year since 1982. All recruitment has been through births and two importations (1987 and 1991). A male born in Washington (the only living descendant of a founder pair) in 1974 sired his first offspring on Christmas Day 1991.

### **Population Genetics**

Inbreeding coefficients ( $f$ ) for each living animal have been calculated. There are several animals with  $f=0.25$ . If the founder population is to effectively meet the SSP's goals, then six to eight new founders need to be brought into the SSP.

### **Research**

Research into rhino reproduction is ongoing at a number of facilities, notably the Cincinnati Zoo, San Diego Zoo and National Zoological Park. Nutritional research is also a priority, particularly as it relates to Vitamin E levels in captive animals. The Metro Toronto Zoo is currently collecting and analyzing urine samples from three institutions.

### **Short-term Goals for Upcoming Year**

- (1) Update the Master Plan.
- (2) Pair single animals where possible.
- (3) Encourage research on rhino nutrition, especially as it related to vitamin E.
- (4) Encourage more institutions to become participants in the SSP. At present, four institutions have expressed interest in joining if animals become available.