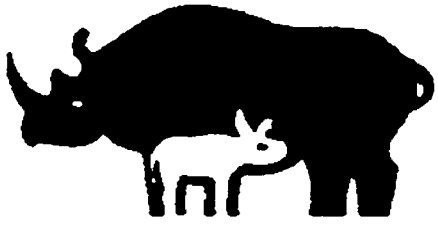

AZA RHINO PROGRAMS

1995

AZA RHINOCEROS ADVISORY GROUP 1995

Chair: Robert W. Reece, The Wilds
Program Assistant: Thomas J. Foose

Primary Goals:

The crisis for rhinoceros is as acute as ever. In Asia, the latest figures on Sumatran rhino indicate that number are under 500, only half of the previous estimate. Pressure on the Indian/Nepalese rhino intensifies and the species may be on the brink of a major decline. The Javan rhino remain very small and vulnerable although efforts led by the Minnesota Zoo Adopt-A-Park program and now the AZK's Bowling for Rhinos are helping significantly. In Africa, black rhino numbers appear have been precariously stable over the last year. Southern white rhino has increased. However, 85 % of southern white rhino and 40% of black rhino are in South Africa which is in early days of new nationhood. The northern white rhino numbers are also small and precarious although again, the captive conservation community including many AZA institutions, led by Columbus Zoo, are assisting significantly through a project facilitated by the International Rhino Foundation.

In response to this crisis, attempts to develop viable *ex situ* populations remains a primary goal of AZA rhino conservation programs. Toward this end, another primary goal is to improve captive husbandry and management through research in health, nutrition, behavior and reproduction. A third major goal is to assist with selected *in situ* efforts for rhino with emphasis on those projects that are significant, feasible, and provide appropriate opportunities for application of the particular expertise that the captive conservation community can provide in terms of intensive management technology. All of the above goals will require development of additional financial resources.

Data Table: (current through 1 July 1995)

	Two years ago	One year ago	Current year
# of meetings	2	4	1
# of studbooks under umbrella	4	4	4
# of SSPs under umbrella	4	4	4
# of new studbook petitions submitted	0	0	4
# of new studbooks approved	0	0	4
# of new SSP petitions submitted	0	0	0
# of new SSPs approved	0	0	0

Special Concerns:

The AZA Rhinoceros Advisory Group remains particularly concerned with the successful implementation and management of sustainable *ex situ* populations, especially considering the critical state of wild populations. All of the rhino SSP programs have deficiencies which are receiving attention. Major problems relate to husbandry, health, and reproduction of the animals as well as financial and physical resources. The captive populations must attain stability and sustainability. Additionally, there is need to develop the methodology and programs to use captive populations for reestablishment and reinforcement of wild populations.

There is continuing need to identify feasible and significant ways in which AZA institutions can assist with selected *in situ* programs for rhino conservation both financially and technically. More attention to rhinos by the AZA Executive Office and Conservation Center would also be highly desirable and most appropriate considering the almost incomparable plight of the rhino family.

Progress Toward Goals:

(1) Formal masterplans have been published (in mid-1994) for the African Rhino (Black and White) SSP Programs and for the Indian/Nepalese SSP Program. These plans are based on more rigorous assessment of the status and problems of the captive propagation programs has been conducted. A masterplan update session conducted primarily by the Rhino Advisory Group will be conducted in late 1995.

(2) A new Species Coordinator has been appointed for White Rhino.

(3) The Rhino Advisory Group has intensified its activities
- A meeting of core members was conducted in January 1994 to formulate an action plan.
- An informal action plan was circulated in March 1994.
- An important part of the masterplan was a first-cut at an AZA Regional Collection Plan for rhino. Over the last year, there has been gradual progress toward implementation as several new institutions have added rhinos and others have converted species.
- Another part of the Plan is for the RAG to provide more assistance to Species Coordinators in formulation of Rhino SSP Masterplans which will continue and expand with this years's masterplan update session.
- An informal program office has been established at the Chairman's institution (the Wilds).
    - Program officer support is being provided by the International Rhino Foundation (IRF).
    - This program officer has been approved as the official North American regional studbook keeper for all rhinos, consolidating compilation of these databases as recommend in the action plan. Good cooperation has been established with the International Studbooks for African and Indian Rhinos and with other Regional Breeding Programs. Other data bases in addition to the studbooks are being developed to facilitate implementation of rhino programs.

(4) A 5-year plan has been formulated emphasizing: *in situ* programs for Sumatran, northern white and black rhinos; health and husbandry research on black and Sumatran rhinos; reproductive research on all rhinos.

(5) Many of the RAG Research Council's objectives and activities were translated into the Request for Applications (RFA) for the Research Program being sponsored by the IRF.

(6) Further work on the husbandry manual has occurred. The RAG and IRF co-sponsored a workshop at White Oak Conservation Center in February 1994 to finalize compilation of the data for this manual. The manual will be published by September 1995.

(7) Close cooperation between the RAG and the IRF continues, especially in the areas of *in situ* conservation and research programs.

(8) *Around the Horn, The Rhino Conservation Newsletter* was reactivated as the joint newsletter of the AZA Rhino Advisory Group, the IRF, and the Rhino Global Action Plan (GCAP) and Global Animal Survival Plans (GASPs)

Short-term Goals for Upcoming Year:

(1) Continue with implementation of the AZA SSP Masterplans for rhino.
(2) Continue with development of an AZA Regional Collection Plan for rhino.
(3) Continue prioritization of research projects for financial support and initiate implementation of a number of them especially in conjunction with the IRF Research Program. Continue efforts to better coordinate and catalyze research on rhino reproduction;
(4) Participate in a meeting to consider rhino subspecies issues
(5) Proceed with development of the improved AZA rhino program data bases.
(6) Form technical support teams for management/manipulation of rhino.
(7) Initiate a more active program for support of *in situ* projects.
(8) Contribute to improvement of the SSP Program for Sumatran Rhino.

AZA RHINOCEROS ADVISORY GROUP

OUTLINE OF PROPOSED 5-YEAR PLAN

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1. **Sanctuary Program for Sumatran and Javan Rhino in Indonesia:**

   a. **Sumatran Rhino in Way Kambas**

   b. **Javan Rhino in Ujung Kulon**

   c. **Groundwork for Possible Second Sanctuary for Javan Rhino**

2. **Sanctuary Program for Northern White Rhino:**

   a. **Support for existing sanctuary in Garamba National Park**

   b. **Establishment of a second sanctuary using a few rhino translocated from Garamba and perhaps some of the captive rhino.**

3. **Health and Husbandry Research on Black and Sumatran Rhino:**

   - **Proposals in part to be prepared in accordance with Masterplan from Black Rhino Disease Workshop. Major areas of investigation will include: nutrition; stress; comparative cell metabolism; and specific studies on mucocutaneous ulcerative disease, cholestatic hepatopathy, encephalomalacia, basic immunological function, and epidemiology. Also included will be improved systems for sample and data acquisition and storage.**

4. **Reproductive Research on all Rhino Species:**

   a. **Completely characterize reproductive cycles in all 4 species in captivity and develop reliable feces/urine/saliva tests for estrus and pregnancy.**

   b. **Develop a more concerted and coordinated effort toward development of methodologies, instrumentation, etc. for assisted reproduction (AI and ET) and gene banking.**

5. **Support of IPZs for Black Rhino:**

   - **Actual sites to be determined by reconnaissance in late 1994 or early 1995.**

6. **Development of a Sanctuary(ies) for Indian/Nepalese Rhino.**

BLACK RHINOCEROS (*Diceros bicornis michaeli*)
(*Diceros bicornis minor*)
(July 1994 thru July 1995)

Species Coordinator: **Dr. Edward J. Maruska, Director**
Cincinnati Zoo and Botanical Garden

Subspecies Coordinator: **Dr. Don Farst, Director**
Gladys Porter Zoo

North American
Studbook Keeper: **Thomas J. Foose, Ph.D.**
International Rhino Foundation & The Wilds

Introduction

Initial analyses within the SSP had shown that the minimum population size (MVP) for black rhinos in North America to maintain 90% of original genetic diversity for 200 years was 150 individuals evenly divided into 75 *michaeli* and 75 minor. At the 1993 workshop at London Zoo to organize the Global Captive Action Plan (GCAP) for rhino and the Global Animal Survival Plan (GASP) for black rhino, new target population objectives for black rhino in the AZA SSP were proposed: 90 *michaeli* and 80 *minor*. The goal is to preserve 90% of the gene diversity in the population for 110 to 150 years (i.e. 8-10 rhino generations). In 1994 based upon feedback from the regional programs to the GCAP/GASP, these population targets were further refined to reflect a time frame for achievement. This change recognizes the need for more performance measurement and attainable objectives in captive breeding programs for rhino. The 7 year/50 year/ and 100 year target population objectives are: *michaeli* 90/90/90 and *minor* 50/80/80.

DATA TABLE (Current through 15 July 1995)

D. b. michaeli	2 years ago (end 1993)	1 year ago (end July 1994)	Current Year (July 1995)
Total # SSP Institutions with MOP's	24	26	27
Total Captive Population	36.34	40.29	37.28
#SSP animals (non-surplus)	70	69	66
#SSP animals (surplus)	0	0	0
#animals not in SSP but desirable	2	2	2
Total births in SSP program	4	4	4
#surviving to 1 year	4	4	3
#desired births	4	4	4
#undesired births	0	0	0
Total deaths of SSP animals	3	3	6
Total imports	0	0	0
Total exports	0	0	1
Total founders w/represented descendents	?	?	37

DATA TABLE (Current through 15 July 1995)

D. b. minor	2 years ago (July 1993)	1 year ago (July 1994)	Current Year (July 1995)
Total # SSP Institutions with MOP's	10	10	10
Total Captive Population	10.18	14.18	11.17
#SSP animals (non-surplus)	28	32	28
#SSP animals (surplus)	0	0	0
#animals not in SSP but desirable	0	0	0
Total births in SSP program	2	4	0
#surviving to 1 year	1	4	0
#desired births	2	4	0
#undesired births	0	0	0
Total deaths of SSP animals	2	2	1
Total imports	0	2	0
Total exports	0	0	3
Total founders w/represented descendents	15	19	18

Current Population Status

During the last year, there have been some encouraging developments with the wild populations of black rhino. For the species, population numbers have stabilized and in fact have increased slightly to about 2400 rhinos. The wild population of *michaeli* has definitely increased due primarily to the continued success of the sanctuary program in Kenya. Numbers of *minor* have also increased with apparent stabilization in Zimbabwe and rather healthy expansion in South Africa. The population of bicornis (misnomer) has remained stable or increased slightly. Only the very small population of longipes in Cameroon has declined and this geographic variety is on the brink of extinction although there are valiant efforts supported by the Global Environment Facility and French Government.

At the present time, there are 65 *michaeli* in 27 institutions and 28 *minor* in 10 institutions for a total of 93 animals in 36 institutions in North America. These numbers actually represent a decline in numbers from 1994 when 69 *michaeli* and 32 *minor* were reported. Some, but not all of the decline was due to transfer of 3 *minor* and 1 *michaeli* males to Western Plains Zoo in Australia for the ASMP program. However, there were more deaths than births in both the *michaeli* (4 births; 6 deaths) and *minor* (0 births; 1 deaths). Nevertheless, it is believed that the demographic parameters governing these populations will still permit growth from present numbers to target objectives.

As mentioned there were translocations of 4 rhino (3 male *minor* and 1 male *michaeli*) to the ASMP program to redress a demographic imbalance there. Two adult male *minor* were translocated from a semi-captive facility in Zimbabwe to the SSP. These rhino were replacements for rhino that had died of toxic stress associated with their translocation in 1992. The two adult males will attempt to redress demographic imbalance (insufficient number of adult males). Additionally, 6 transfers of *minor* and 9 transfers of *michaeli* occurred within the SSP to enhance propagation and management.

The SSP program for *michaeli* is in the mature stage; for *minor* in an earlier stage.

Two *michaeli* in Mexico City have not been included in the North American population because officials there have not signed the Memorandum of Participation so the rhinos are not managed as part of the SSP. As is evident, the MVP for *minor* needs to be increased.

Demographic Trends

The Black Rhino SSP is attempting to manage two of the four potential evolutionarily significant units (e.s.u.'s) for black rhino: *michaeli* and *minor*. Reproduction is occurring as explained above, but at a slower rate than is desirable. An African Rhino SSP Masterplan provided recommendations in August 1, 1994 to enhance reproduction in black rhino. Objectives for reproduction in the Masterplan are more specific and ambitious than in previous Black Rhino Masterplans: *michaeli* 7 births per year for next 5 years, with a total of 29 recommended breedings, and recruitment of 8 more of the breeding-age non-breeder males and 11 more of the breeding-age non-breeder females to reproduction so there will be 20.17 breeders instead of the current 12.16; *minor* 4-5 calves per year for next 5 years, with a total of 14 recommended breedings, and recruitment of 3 more breeding-age non-breeder males and especially 6 more of the breeding-age non-breeder females to reproduction so there would be 7.13 breeders instead of the current 4.7. The acquisition of 2 adult males from Zimbabwe and the relocations of adults within the SSP are intended to enhance reproduction in the *minor* population. The Masterplan will be reviewed and updated in November of 1995.

The greatest demographic problem continues to be the unsatisfactory survival of black rhino under intensive management due to a complex of heath problems (including hemolytic anemia, liver toxicities, encephalomalacia, various infectious disease, etc.).

The second greatest demographic problem for *michaeli* has been the skew in sex ratio of recent births. Of the 18 surviving births since 1 January 1990, 15 are males and only 3 are females. This skew in sex ration will probably destabilize the population demographically. The future of the population may be in jeopardy. Consequently, there is an need to acquire some additional female to redress an imbalance in sex ratio of rhino in younger ages classes in the North American population.

Population Genetics

The genetic foundation of the *michaeli* population seems adequate at this time. The addition of new founders line with animals imported for demographic reasons will further secure this situation. There are only 18 founders with represented descendents of *minor* in the N.A. population. There continues to be an ongoing effort to increase founder representation through recruitment of reproduction from non-breeder founders already in the population.

Special Concerns

Health and husbandry need to be improved to increase survival and reproduction in this species. Additional space for both subspecies needs to be increased and coordinated with each other and with the 2 other major rhino taxa in SSP programs, i.e. the white and Indian rhino. The Black Rhino SSP has been working in particular with the White Rhino SSP in hopes of moving white rhino from selected institutions to open up more space for black rhino. Better coordination is the reason for combining the black and white rhino in the African Rhino SSP Masterplan. The question of whether or not to keep *michaeli* and *minor* as two subspecies is still pending and a workshop to reconsider the issue is planned for 1996.

Research

Current research involves reproduction studies; nutritional studies; disease studies. Basic husbandry and health problems continue to be of the highest priority for this species. Major analyses of records ("back-casting") have been in progress to elucidate husbandry, health and reproduction patterns, problems and possible solutions. Much input was provided by the SSP for the AZA Rhino Husbandry manual especially at the workshop for this purpose at White Oak Conservation Center. The AZA Rhino Research Committee of the AZA Rhinoceros Advisory Group has continued development of its Masterplan for further research has been developed. In particular, the Work initiated at the Workshop on Diseases of Black Rhino in 1992 is continuing. The International Rhino Foundation (IRF) has initiated a major program of support for research. A Request for Applications (RFA) was circulated in early 1994 and 36 proposals are being evaluated with announcement of grants expected by October 1995. The IRF program is largely predicated on groundwork by the AZA Rhino TAG and SSP programs.

Field Conservation

The International Rhino Foundation will be working to develop in situ projects throughout Africa. Through the IRF, significant support for conservation of *minor* continues in Zimbabwe. Moreover, a cooperative agreement has been concluded with National Parks Board in South Africa to provide appreciable support for rhino conservation there.

Progress Toward Goals

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

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

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

Short-term Goals for Upcoming Year

1. Progress on the black rhino program, will be evaluated and adaptive adjustments formulated as part of the SSP African Rhino Masterplan update.
2. Attempts will be made to reproduce all breeding age females.
3. Compliance with guidelines in the AZA Rhino Husbandry Manual will be encouraged.
4. Recommendations will continue to wean calves as soon as possible to be able to expose post-lactational cows to bulls.
5. The SSP will continue to interact with other regional ex situ breeding programs as well as in situ protection and management efforts.
6. Additional female *michaeli* will be imported from Japan and South Africa to redress the current imbalance in sex ration in this SSP population.
7. More space will be sought for both *michaeli* and *minor* in order to achieve the carrying capacity of 170 animals.

Five Year Goal

Resolve the major husbandry and health problems of this species to enable the population to achieve its target objectives in terms of numbers.

WHITE RHINOCEROS (*Ceratotherium simum*)

Species Coordinator: Michael Fouraker, Fort Worth Zoological Park
Regional Studbook Keeper: Tom Foose, Ph.D., The Wilds

Introduction

The White rhino SSP is still re-developing and undergoing many changes. In keeping with the AZA's reorganization of the SSP Propagation Group, new Memorandums of Participation were distributed and a new Management Group was elected this past year. Additionally, all SSP representatives were surveyed to determine institutional compliance with the recent Master Plan recommendations, as well as general institutional direction with white rhinos. Generally, institutions are in agreement with all recommendations, though the need for animals far exceeds the number of individuals currently available.

Immediate concerns for the SSP continue to be the demographic status of the population, the need for additional founders and the need for adequate captive space and herd management.

Data Table (current through 6 June 1995)

	Two years ago	One year ago	Current year
Participating Institutions	40	39	42
Captive Population	54.74	52.72	53.71
# SSP animals managed	114	119	124
# SSP animals not required to meet goals	11	15	11
# animals in nonparticipant collections but desirable to the SSP	0	0	0
Total # of births in SSP program	4	1	1.2
# of SSP recommended breedings (female)	4	25	24
# of deaths of SSP animals	2	0	0.3
# of transfers recommended	-	34	34
# of transfers completed	-	-	14
# of imports	0	0	0
# of exports	0	0	4
# of founders w/ represented descendants	44	38	38

Current Population Status

The Data Table reports the latest information from the unpublished studbook data (T. Foose, in prep.). To achieve the genetic objectives outlined by the Master Plan (90 percent of genetic diversity for 110-150 years), a substantial number of recommended breedings and transfers will be required in the immediate future.

Demographic Trends

The southern white rhino SSP population is not self-sustaining and is in a demographic crisis. As indicated last year, only three percent of the population is captive born and bred, numerous genetically valuable individuals have not reproduced, and the age structure is senescing. As noted in the Data Table, the growth rate for the current year is zero. It should also be noted that while there were three births in the population this year, all were to proven breeders. A particular concern of the SSP is the recruitment of unproven individuals into the breeding population.

As reported last year, the northern white rhino population consists of only four (2.2) animals, none of which have reproduced. Furthermore, all are more than 20 years of age and thus appear to be post-reproductive.

Population Genetics

An N_e of 50 and N_e/N ratio of .50 are necessary to achieve the genetic goals that have been outlined for the population. These goals may be achievable if the attempts at improved reproduction succeed.

The situation for the northern white rhino continues to look bleak. Without reproduction and with such a low number of founders, this population is not likely to be genetically viable without the global management of both captive and remnant wild animals.

Special Concerns

(1) Demographic crisis: The major problem facing the White rhino SSP that requires immediate attention is the demographic status of the population. Reproduction to date has been sporadic across institutions, and few have produced calves consistently . As noted previously, unproven breeders must be recruited into the breeding population in order to meet the population's genetic goals. The number of requests made to the SSP for animals exceeds the number of individuals available.

(2) Continued need for large enclosures and social groups: Large captive spaces must be identified that can hold white rhinos in herd situations to induce reproduction. There are a total of 86 adult spaces and 35 calf spaces in 13 facilities (current and proposed). If transfer recommendations are completed and institutions are successful in managing the additional animals, these numbers would bring the target breeding population closer.

Research

Numerous funding proposals concerning white rhinos have been submitted to the International Rhino Foundation. These projects address nutrition, behavior and reproductive concerns. Other ongoing research projects specific to white rhinos include:

(1) Quantitative husbandry analyses (M. Fouraker and T. Wagener): Analyses of reproductive success as a function of management, captive design, social grouping and individual behavior in white rhinos. Results are anticipated in early 1996.

(2) Historical studbook analyses (D. Lindburg, B. Reed, T. Wagener): Review of historical data in the white rhino studbook to determine potential factors affecting reproductive trends across and within institutions. Data collection is complete and analyses are underway.

(3) Research population: Twenty southern white rhinos, including 12 females, have been designated for research programs at both the Wilds and White Oak Conservation Center. Research priorities are being evaluated.

Progress Toward Goals

(1) A survey was completed by all SSP institutions to determine agreement with Master Plan recommendations. Despite a few exceptions, compliance is high; however, institutional desire for animals far exceeds the number of individuals available.
(2) The AZA Rhino Husbandry Resource Manual will be published in September 1995. This manual will address white, black and greater-one horned rhinos and is funded by a grant from both the AZA Rhino TAG and the International Rhino Foundation.
(3) Several projects related to white rhino nutrition, behavior and reproduction have been identified and are pending, depending on the availability of grant funds.

Short-term Goals for Upcoming Year

(1) Continue to facilitate and encourage the compliance with all Master Plan recommendations.
(2) Distribute the AZA Rhino Husbandry Resource manual worldwide.
(3) Update the Master Plan in the upcoming year.
(4) Identify new founder stock for the population and seek institutions willing to import founders.
(5) Continue to support and conduct research leading to increasing the population growth rate and recruiting additional founders.

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

Species Coordinator: **Michael Dee, Los Angeles Zoo**

International Studbook Keeper: **Dr. Peter Studer, Basel Zoo, Switzerland**

Introduction

There are currently 15 institutions participating in the Greater One-horned Asian Rhinoceros SSP. Some of the desired transfers have taken place as recommended in the 1994 Masterplan, and one more institution will come on line in late summer or early fall. However, we still have only eight institutions that have bred this species. Four institutions have single males and three have animals that are or are reaching sexual maturity, but have no produced offspring yet.

Ideally, at least 90 animals should be maintained by the SSP (acquired through births and importations) in order to preserve 90% of the gene diversity of the wild population for 100 years.

At the Master Plan meeting in 1994, two females were recommended for export, studbook #182 was transferred from the San Diego Wild Animal Park to Germany. It will be to the species advantage to import 2 unrelated males born in captivity in India. The SSP is currently negotiating the first of these transfers from India. We are in the process of identifying captive bred males that will contribute positively to the program.

DATA TABLE (current through 1 July 1995)

Rhinoceros unicornis	2 years ago	1 year ago	Current Year
Participating Institutions	13	15	15
Captive Population	120	123	128
#SSP animals managed	39	42	45
#SSP animals not required to meet goals	7	7	6
Total births in SSP program	27	31	36
Births surviving to one year	18	21	25
# of SSP recommended births	5	5	12
# of non recommended births	0	0	0
Total imports	0	0	0
Total exports	0	0	1
Total founders w/represented decendents	14	14	14

Current Population Status

Poaching continues to be a problem in both range states, but does not appear to be any more significant than in past years. The wild population seems to be holding at just under 2,000 animals. At the IUCN Asian Rhino Specialists Group meeting that will be held in Sabah later this year, further population figures should be available.

There are no non-SSP animals in North America, however, three animals (2.1) have been designated as over represented to the current SSP population. These three currently reside at the San Diego Wild Animal Park and Rolling Hills Ranch (a new participant) in Kansas.

Demographic Trends

Life history table analysis of the North American population indicates a growth rate (r) of 1.043, a generation time (T) of 17.5 and a life expectancy at birth of twenty years. This SSP species has grown at an annual rate of 1.3 animals per year since 1982. The Toronto Zoo produced their second calf from an underrepresented pair. One of the National Zoo's females was transferred to the Philadelphia Zoo for breeding with the wild caught male whose known age is approaching 40 years. This female did not get pregnant during her stay and in fact appeared to stop cycling. The Philadelphia male is probably at the end of his breeding career, however, he has contributed to the SSP population by siring four calves, 2.1 that are still living.

Population Genetics

Inbreeding coefficients (f) have been calculated for each living animal. There are several animals with f=0.25. If the founder population is going to effectively meet the SSP's goals, we still need to obtain six to eight new founders for the North American population. The acquisition of any animals from India will put the SSP closer to its goals.

Research

Research continues to play an important role in the SSP. The Metro Toronto Zoo will be collecting urine from all SSP institutions that currently maintain females for oestrus determination. The Lowry Park Zoo is currently working on a behavior project with their male.

Dr. Don Melnick has requested their samples with follicles for a major DNA study that is currently underway at Columbia University.

Short-term Goals for Upcoming Year

1. Pair single animals where possible.
2. Locate new founders for the SSP.
3. Encourage more institutions to become participants in the SSP.