



Global Cheetah Ex situ Planning: Linking Managed Populations Working Group

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Participants

Karen Bauman, Evan Blumer, Adrienne Crosier, Jackie Fallon, Greg Geise, Jack Grisham, Jamie Ivy, Sarah Long, Allison Rogers, Karin Schwartz, Kelley Snodgrass, Ed Spevak

Background Information

The concept of a global management program for cheetahs was first discussed in 2001 and 2002 at the Global cheetah Forum in Africa. Global management of this species would be greatly enhanced by regional programs networking together to improve the management the ex situ populations. In 2003 a meeting was held at Fossil Rim Wildlife Center, Glen Rose, Texas, to discuss the development of this program. Participants from Southern Africa, Europe and the United States discussed how to make this move forward. In 2008 Jacques Kaandorp, EEP cheetah coordinator and Laurie Marker, Cheetah Conservation Fund Namibia and Jack Grisham, North American Cheetah SSP met in Saint Louis and discussed moving forward with such a program. The basis of that meeting was the impedance of this workshop at CBSG – how do we work together for the long-termed management of cheetah in an intensively managed program (ex situ) globally.


Goal: Development of a Global ex situ management plan for cheetahs

The focus of this working group is to outline strategies of how the North American cheetah SSP program can facilitate and begin networking internationally towards global cheetah population management. Neither the European (EEP) nor the North American (SSP) cheetah populations are self-sustainable and rely on imports from Africa to bolster demographic needs. The current status of each the SSP and EEP populations necessitates that new animals be brought in for population management to maintain demographics and fulfill facility requests. The largest free-ranging population of cheetahs is in Namibia (~3,000 individuals). This country also maintains many captive non-releasable individuals potentially available to contribute to the global ex situ population. Recent attempts to transfer animals from the Namibian captive population have failed for the North American population; therefore, the largest and most easily-available sources of cheetahs are breeding institutions in South Africa. Regionally managed captive populations worldwide are keen to begin transfer individual cheetahs among various institutions. Towards this end, recent discussions have focused on global meta-population strategies for cheetah management to reach the goal of establishing self-sustaining ex situ populations.

Cheetah Reproductive Management

Cheetah females demonstrate a very short window of time in which to establish successful first pregnancy; approximately 82% of female cheetahs give birth for the first time by 6 years of age. Implementation of breeding centers (five recognized within the SSP including White Oak Conservation Center, Fossil Rim Wildlife Center, San Diego's Wild Animal Park, the Conservation & Research Center of the National Zoo and the Ohio Consortium consisting of the Wilds, Toledo, Columbus, Cincinnati and Cleveland) have been important for increasing reproductive success in the SSP. Cheetah breeding centers are defined as institutions with large land-holdings that provide more options for mate choice, having a larger availability of experienced individuals (to match with inexperienced animals), ability to hold multiple animals of prime breeding age, large and diverse enclosures to provide quiet, off-exhibit housing and greater options to move animals within the facility. In addition, these centers:

1. are more likely to focus on cheetahs with less stress provided by other carnivores,
2. have greater resource commitment to cheetah conservation,
3. are able to reduce the stress of public exhibits and
4. encourage support of hypothesis-driven research. Definition and establishment of breeding centers has occurred. As part of improved cheetah management ex situ, there is also a need to more clearly define and implement exhibit-only institutions.



Recently, we have begun discussions concerning genetic management of the SSP animals to include recommending breeding between genetically non-matched pairs. For example, an over-represented experienced male can be matched with an inexperienced, valuable female to give this female with breeding and cub-raising experience. When these pairings result in production of cubs with lower genetic value, these animals will provide a resource to fulfill exhibit needs and/or to be exported internationally for meta-population management. Additionally, the management of full-sibs from a single litter could be such that only one or two individuals from that litter would receive breeding recommendations while the remaining individuals would fulfill exhibit and/or international transfer agreements.

Assisted Reproductive Technologies (ARTs) are designed to augment natural breeding strategies for specific situations such as behaviorally incompatible but genetically recommended pairings; aged individuals that have not previously reproduced; collection and storage of genetics for future breeding strategies; to reduce the stress and costs of transfer of living animals. Artificial insemination (AI) is the most commonly utilized ART for cheetah reproduction; however, this technology is often implemented too late (post 6-year of female age) to result in successful pregnancy establishment. Currently, pregnancy establishment occurs in only ~30% of the females stimulated with exogenous gonadotropins for AI. Further, AI does produce mostly singleton litters; however, this is not simply a product of the technique but also of the age of the females being inseminated. Additional research is necessary to improve success of AI as well as increase the size of litters produced. Importantly, younger females with relatively low genetic value need to be made available to improve ARTs overall, and AI in particular. Better education of zoo directors and managers on statistics associated with cheetah reproductive success and ARTs is also needed. Finally, prioritization of sperm collection for cryopreservation should be implemented immediately. In the near future, bringing in new genetics in the form of sperm will likely to be easier to implement internationally compared with bringing in live animals.

Meta-population Cheetah Management

To maintain a target number of animals (300 spaces for cheetahs) in the North American population within outlined genetic and demographic parameters, strict breeding recommendations are made based on individual mean kinship values. Some facilities in the SSP have exhibit spaces and are in need of animals; however, there are not enough cheetahs in the population to fulfill exhibit and/or breeding facility spaces. Further, by staying within breeding recommendations for genetic management, animals to fulfill these SSP needs, as well to consider individuals for exchange with international partners, will not be generated. Therefore, to generate this need of animals for SSP exhibit and international exchange among collaborative international organizations, generation of animals with low (as defined by current SSP mean kinship listing) genetic value would provide individuals to meet these immediate goals (e.g.: continued (over) reproduction of proven females that are genetically invaluable in the SSP). Before any of these strategies can be implemented, having up-to-date regional studbooks are necessary.

The EEP is the most accessible population to the SSP and would be the easiest starting point for international transfer and collaboration. Implementation of these actions requires active and constant updating of regional population genetics, and heightened communication between these two regions. Gathering of population metrics has proven difficult in the past. A significant challenge within AZA institutions is compliance with transfer and breeding recommendations after the comment period. Institutions decide based on a variety of issues (animal health, breeding, ownership, staff departures, etc) that they will not or cannot or do not (for sometimes unknown reasons) follow SSP recommendations. Currently, compliance is estimated to be 40% in the cheetah SSP. However, encouragingly, if updated and accurate genetic information is provided, breeding recommendations based on mean kinship values and genetics are readily available. Importantly, only ~5% of the international studbook is currently considered 'unknown'. Sharing of the most up-to-date regional studbooks between the EEP and SSP has just occurred. The overall goal of this working group is to outline strategies to move towards global meta-population management of the captive cheetah population. Continued transfer of animals between international populations is ultimate, the long-term goal. A highly obtainable and less intensive 'starting-off point' will be implemented first which includes the sharing of information, working on collaborative research, and outlining global strategies.



Goals and Central Themes

What are the most important goals for creating a self-sustaining global *ex situ* [intensely managed] cheetah population?

Goal: *Establish and implement cheetah meta-population/global management program.*

Action Steps

1. Contact other regional leaders and suggest a possible date and venue for a meeting
 - a. To be done by Jack Grisham by February 2010
2. Collection of information needed for petition (studbook information, in situ support, etc.) submission by regional coordinators To be done by Jack Grisham
3. Conduct a meeting of the international leaders by July 1, 2010; location to be determined To be coordinated by Jack Grisham
4. Petition Committee for Population Management of WAZA for global species management plan (GSPM; Jack Grisham to contact Dave Morgan for application)
 - a. Petitioner TBD at the workshop/meeting of global managers to be submitted by August 1, 2010

Goal: *Update studbooks and management plans for each region*

Action Steps

1. It will be the responsibility of regional coordinators to ensure studbooks are updated so most current, up-to-date information is available for the meeting. Ideally have the information forward ahead of time so it may be analyzed prior to meeting
 - a. Jack Grisham will contact regional coordinators prior to proposed meeting
2. International studbook keeper should be apprised of regional updates and given copies of the updated regional studbooks
 - a. To be coordinated by regional directors

Increasing breeding success to make global populations self-sustainable

Goal: *Identify factors influencing breeding success*

Action Steps

1. Reduce and/or explain compliance and/or non-compliance (to be coordinated by regional directors)
 - a. Establish timeline for follow-up of breeding and transfer recommendations
 - i. To track if animal recommendations have taken place and if not why; and, to facilitate resolution on non-compliance
 - ii. Look at movement of animals between regions to assist in managed programs with increase in genetic diversity within each individual region. (An animal may be over-represented in one region while under-represented in another. Sharing the managed program animals between regions)
 - b. PMC monitoring tool – recommendation outcomes monitoring
 - i. Timeline: software is now being developed and should be available for use on cheetahs by next planning session. This would track recommendations, if animal was moved, when animal was moved, if animal reproduced, etc.
2. Better utilization of breeding centers (to be coordinated by regional directors)
 - a. Already identified in NA; need to identify similar systems in other regions
 - b. Provide contact information for each breeding center and improve information sharing
 - c. Require that breeding centers meet management flexibility standards
 - i. Regional coordinators must establish for each institution
3. Improve success of Assisted Reproductive Techniques (ARTs; coordinated by Adrienne Crosier with other regional coordinators)
 - a. Collect and cryopreserve sperm from as many males as possible for genetic management and research
 - b. Make young, non-genetically valuable females available for artificial insemination and embryo transfer research
 - c. Females that have not reproduced by 6 years of age will be recommended for assisted reproduction
 - d. Increase transfer of genetics internationally via cryopreserved sperm and/or embryos
 - e. Increase research associated with management-based infertility including: mate choice, cyclicity, female age and housing/management



Goal: *Generate international husbandry manual (to be coordinated by regional directors)*

Action Steps

1. Adapt (possibly) from the recently updated North American cheetah SSP regional husbandry manual
2. Create database of successful breeding protocols
3. Develop/implement international keeper/curator training for cheetah breeding management to ensure the long-term survival of the species in managed programs

Goal: *Update disease management workshop (to be coordinated by regional vets by 2011)*

Action Steps

1. Outline global veterinary standards and update programs identified in 2005 workshop
2. Improve ability to transfer individuals between regions and within regions