AZA Antelope and Giraffe TAG Regional Collection Plan

Sixth Edition

FINAL 1 November 2014

Compiled by
AZA Antelope and Giraffe Taxon Advisory Group
Steering Committee, Advisors and Program Leaders

ASSOCIATION OF ZOOS & AQUARIUMS

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Acknowledgments

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Photo courtesy of Robin Winkelmann, Saint Louis Zoo

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Introduction

This document represents the Sixth Edition of the Regional Collection Plan (RCP) for the Association of Zoos and Aquariums (AZA) Antelope and Giraffe Taxon Advisory Group (TAG). The intent of this work is to serve as a guide and a tool for AZA institutions and animal managers concerned with antelope, pronghorn, giraffe and okapi conservation.

According to the IUCN SSC Antelope Specialist Group, an alarming 62% of the world's 91 antelope species are experiencing decreasing population trends. Giraffe and okapi populations are also facing serious declines. AZA zoos have an obligation as stewards of a part of the world's natural heritage to ensure the survival of these species for future generations by providing both *ex situ* and *in situ* conservation support. By providing safety net assurance populations and *in situ* conservation support zoos can do their part to make sure these unique and beautiful species do not vanish from our zoos and from our planet.

Of the species managed under the AZA Antelope and Giraffe TAG's umbrella, only one AZA population can be sustained long-term according to AZA's current guidelines – the Reticulated/Rothschild's giraffe. Sustainability of ungulate populations in AZA is of real concern. If current trends continue, AZA institutions will have significantly fewer ungulate species to fill their habitats in the future. According to the RCPs of the six AZA Ungulate TAGs, 68% of the ungulate species currently managed in AZA are either recommended to be phased out of collections or are not eligible for formal management at this time. Even if all of today's ungulate SSP® and Studbook programs are successfully maintained, the number of ungulate species in our collections in the future is destined to be cut nearly in half.

The AZA Ungulate TAGs are collaborating on many fronts to conserve ungulates for the long-term and they need your help.

- Marketing and awareness campaigns to promote ungulates have always been a priority for the Ungulate TAGs. Zoo professionals can be of assistance in marketing ungulates by serving as passionate, vocal advocates for ungulates with visitors and colleagues.
- Zoo leaders are encouraged to increase exhibit and behind-the-scenes space for ungulates. Managers and keepers are encouraged to seek creative solutions to space issues they face.
- Alternative and flexible population management strategies need to be explored.
- As appropriate, in accordance with AZA's non-member participation guidelines, program leaders and institutional representatives are encouraged to collaborate with Sustainability Partners and other conservation organizations committed to the conservation of ungulates in a combined effort to build and maintain sustainable populations in North America and conserve these species in the wild.
- TAG leaders are actively working with USDA to address the challenges of ruminant animal and semen importation.
- As an additional hedge against extinction, zoos are urged to increase support for *in situ* conservation and habitat restoration initiatives that benefit ungulates.
- And finally, collection managers are encouraged to select species according to conservation need and as prioritized by the TAGs, not solely on how appealing they may be or how easy they are to manage. Institutions are strongly encouraged to commit to TAG-recommended programs, stick with them long-term and follow the breeding and transfer recommendations provided by program leaders.

Included in this edition of the RCP are recommendations regarding the antelope, pronghorn, giraffe and okapi programs currently managed in AZA, including conservation, education, research, veterinary/health and marketing priorities. These recommendations are based on a series of evaluations, space surveys, current population genetic and demographic analyses, studbook and/or ZIMS data, and information provided by the IUCN SSC Specialist Groups regarding wild antelope, pronghorn, giraffe and okapi population trends. In some cases, threatened species not currently found in AZA collections were also included as priorities for conservation actions.

This version of the RCP is intended to serve as a conduit linking AZA programs with efforts to conserve wild antelope, pronghorn, giraffe and okapi populations. The goal of managing our populations in AZA - to ensure sustainable programs for zoo animals which will contribute strongly to the conservation and awareness efforts for their wild counterparts - is of the highest priority.

Thank you for all you do for antelope, pronghorn, giraffe and okapi in human care and in the wild. The Steering Committee and Program Leaders look forward to partnering with all of you and your institutions to achieve the goals of this RCP.

Photo courtesy of Robin Winkelmann, Saint Louis Zoo

AZA Antelope and Giraffe Taxon Advisory Group
Mission Statement

To provide leadership and guidance to AZA institutions regarding the management and care of antelope, pronghorn, giraffe and okapi and to facilitate activities and programs that support their conservation in the wild

Goals of the AZA Antelope and Giraffe TAG

The following goals are priorities for the AZA Antelope and Giraffe TAG:

- To continue to support AZA antelope, pronghorn, giraffe and okapi populations in cooperation with our partners nationally and internationally in the effort to develop and/or maintain sustainable *ex situ* populations.
- To continue to develop and expand education programs which promote *in situ* and *ex situ* antelope, pronghorn, giraffe and okapi awareness and conservation.
- To continue to support *in situ* research and conservation efforts that enhance and protect wild antelope, pronghorn, giraffe and okapi populations and their habitats, and to link these efforts to our *ex situ* programs as possible.
- To continue to advance the management and husbandry of AZA antelope, pronghorn, giraffe and okapi populations through scientific investigation.
- To provide support and, when needed, animals for global reintroduction efforts.

AZA Antelope and Giraffe TAG Structure

The AZA Antelope and Giraffe TAG was initiated in 1992. This TAG serves as an advisory group to AZA facilities on matters related to zoo and field conservation of antelope, pronghorn, giraffe and okapi.

Officers
The 15-member Antelope and Giraffe TAG leadership group consists of a Chair (selected by AZA Wildlife Conservation and Management Committee), five Vice-Chair Subgroup Coordinators (invited by the Chair and Vice-Chairs) and nine Steering Committee members (elected by Institutional Representatives (IR)). One of the elected SC members also serves as Secretary. A Treasurer is appointed by the Steering Committee and is not required to be a member of the Steering Committee.

The Antelope and Giraffe TAG Chair's primary responsibility is to lead the TAG as it coordinates, facilitates and progresses toward the goals of its cooperative management and conservation programs.

The Vice-Chair Subgroup Coordinators are invited by the Chair and Vice-Chairs. A Vice-Chair's primary responsibilities include coordination of the activities of his/her subgroup and

serving as an advisor, a mentor and a TAG liaison for the program leaders within his/her subgroup.

The Antelope and Giraffe TAG Secretary is primarily responsible for conducting all TAG elections and communicating election results to the Steering Committee, to the IRs, and to AZA. The TAG Treasurer is primarily responsible for organizing the TAG's financial matters.

Additional responsibilities of the TAG Officers can be found in the AZA Taxon Advisory Group Handbook.

Steering Committee

The Antelope and Giraffe TAG Steering Committee is made up of nine individuals that are elected by the IRs based on their ungulate management expertise, the historical commitment of their facilities toward ungulate management and conservation and/or their demonstrated leadership abilities. The Steering Committee members are elected to three-year terms, with terms staggered.

The Antelope and Giraffe TAG conducts an annual Call for Interest to advertise and encourage Steering Committee participation. During the Call for Interest period, every AZA institution has an opportunity to identify an IR for the Antelope and Giraffe TAG if they have not previously done so. At the same time every AZA institution has an opportunity to add its IR to the ballot to be considered during the Steering Committee election.

The TAG's annual Calls for Interest are distributed to all AZA Accredited Institutional Members and Certified Related Facilities, including those facilities which are not yet involved in the Antelope and Giraffe TAG, in order to raise awareness of and to encourage participation in Antelope and Giraffe TAG programs, partnerships and activities.

All Steering Committee members are expected to participate in the activities of the Antelope and Giraffe TAG. Steering Committee members must have the professional commitment and the institutional support to fulfill the following responsibilities:

- Dedicate sufficient time to carry out Antelope and Giraffe TAG duties and participate in TAG discussions and decisions
- Attend at least one Antelope and Giraffe TAG meeting per year
- Have access to email

Advisors

To most effectively pursue the TAG's goals, the Steering Committee of the Antelope and Giraffe TAG partners with a team of Advisors who assist with the management, research and conservation efforts of the TAG. Eight advisors currently work with the Antelope and Giraffe TAG to counsel TAG participants and Program Leaders on matters related to their fields of expertise as they relate to antelope, pronghorn, giraffe and okapi: Education, Marketing, Nutrition, Reproduction, Research and Veterinary Medicine.

The Antelope and Giraffe TAG Officers, Steering Committee, Advisors and Program Leaders are listed in Appendix 1.

Institutional Representatives

According to the AZA guidelines for TAGs, each participating facility may designate an IR to the TAG if it so chooses. The IR is the primary point of contact with the TAG, will receive all

TAG communications and is responsible for disseminating TAG information within his/her facility. IRs are responsible for voting to elect Steering Committee Members.

Listservs
The Steering Committee, Advisors and IRs for the TAG communicate primarily via email. There are two listservs available for various communications about TAG business and/or animal management.

antelopeirs@lists.aza.org is a closed listserv that includes the TAG Chair, Vice-Chairs, Steering Committee and IRs. This listserv is used to provide a confidential method of communicating among the Steering Committee and IRs and for conducting TAG business (discussions, voting, etc.)

antelope@lists.aza.org is an open listserv that includes the members of the above list as well as many individuals from AZA institutions who are interested in antelope, pronghorn, giraffe and okapi. This listserv is used for more general communications with the TAG and AZA members who are interested in antelope, pronghorn, giraffe and okapi.

Website
The AZA Ungulate TAGs (Antelope and Giraffe TAG, Bison, Buffalo and Cattle TAG, Caprinae TAG, Cervid TAG, Equid TAG, and Wild Pig, Peccary and Hippo TAG) have found synergy in informally working together to address shared needs, interests and challenges. The resulting macro-herd partnership pools limited resources, generates interest and idea-sharing across TAG boundaries, maximizes productivity with the limited corps of available AZA volunteers and ensures that there is no duplication of effort. Great outcomes have resulted from this informal collaborative approach, including the development of a joint website (www.AZAUngulates.org). This website serves as a base for the individual and cooperative efforts of these six TAGs.

AZA Antelope and Giraffe TAG Definition

This TAG's purview covers all 91 of the world's antelope species as well as other similar species with similar management and conservation needs, such as pronghorn, giraffe, okapi and Tibetan antelope. The species under the umbrella of this TAG occur in Africa, Europe, the Middle East, Asia and North America. The TAG's purview covers the following 37 genera:

Table 1. Genera Under Purview of AZA Antelope and Giraffe TAG.

Addax	*Cephalophus*	*Kobus*	*Pantholops*
Aepyceros	*Connochaetes*	*Litocranius*	*Pelea*
Alcelaphus	*Damaliscus*	*Madoqua*	*Philantomba*
Ammodorcas	*Dorcatragus*	*Nanger*	*Procapra*
Antidorcas	*Eudorcas*	*Neotragus*	*Raphicerus*
Antilocapra	*Gazella*	*Okapia*	*Redunca*
Antilope	*Giraffa*	*Oreotragus*	*Saiga*
Beatragus	*Hippotragus*	*Oryx*	*Sylvicapra*
Boselaphus	*Hyemoschus*	*Ourebia*	*Tetracerus*
			Tragelaphus

In addition to the species which are managed within AZA institutions, the TAG also focuses some of its conservation efforts on a limited number of *in situ* conservation programs for severely threatened populations as prioritized by the IUCN SSC Specialist Groups. The TAG's *in situ* Focus (ISF) programs are recommended to generate awareness, participation, and conservation support for certain species. An *ex situ* component is not a requisite for such a program, but may be considered if warranted and recommended within conservation action plans for said species.

AZA Antelope and Giraffe TAG Conservation Status

According to the IUCN SSC Antelope Specialist Group, of the world's 91 antelope species, only one species (springbok) has increased in number in the wild in recent years. An alarming 62% of antelope species are experiencing decreasing population trends. One species – scimitar horned oryx – is already extinct in the wild. Five species – addax, hirola, Ader's duiker, dama gazelle and saiga – are considered to be critically endangered. Twenty-five species are threatened with extinction. The global situation is worse when considering the 49 sub-species of antelopes which have been assessed. Within species of antelopes not threatened with extinction (Near threatened or Least Concern), 20 subspecies are listed as Vulnerable, Endangered or Critically Endangered.

The non-antelope species covered by this TAG are also at risk. In 1999, it was estimated that there were 140,000 giraffes in Africa. More recent preliminary estimates put the total population at less than 80,000 animals, a 40% decline in just 15 years. Okapi have been undergoing a 50% decline since at least 1995 and that trend is projected to continue. Tibetan antelope (chiru) have long been hunted for their underfur which is woven into a fine fabric that is used to make shawls. Hunting escalated to a commercial scale in the late 1980s and 1990s, becoming the major threat to chiru and leading to a severe decline in numbers.

The rate of decline of the world's ungulates is of great concern. AZA zoos have an obligation as stewards of a part of the world's natural heritage to ensure the survival of these species for future generations by providing both *ex situ* and *in situ* conservation support. By providing safety net assurance populations and *in situ* conservation support zoos can do their part to make sure these species do not vanish from our zoos and from our planet.

Two species managed by this TAG changed IUCN Red List Status since the RCP was last published in 2009. As a result of increasing population numbers, the Arabian oryx was changed from Endangered to Vulnerable in 2011. The okapi was changed from Near Threatened to Endangered in 2013 due to the continued expansion of human settlements, deforestation and forest degradation which have eliminated important portions of okapi range.

For a full listing of the current conservation status of the species under the AZA Antelope and Giraffe TAG's purview, see Appendix 2. A full taxonomic listing of the 91 antelope species and six non-antelope species covered by the IUCN SSC Antelope Specialist Group and conservation status details can be found on the IUCN SSC Antelope Specialist Group's website.

AZA Antelope and Giraffe TAG Species Selection

The antelope, pronghorn, giraffe and okapi species in AZA Accredited Institutions and Certified Related Facilities were ranked according to their potential ability to contribute to the

conservation of their wild counterparts. The species ranking system used in previous editions of this TAG's RCP was used. This numerical ranking system includes criteria (Appendix 3) which consider several factors about each species including: abundance in AZA and other regions; current and potential genetic and demographic stability; potential conservation role; and institutional and public appeal.

The members of the Steering Committee processed each species through the ranking system by selecting a number value for each criterion which were then added together to arrive at a total, or a ranking, between 0 and 22 for each species, with 0 representing a species of low priority and 22 representing a species of high priority. The rankings produced by the Steering Committee members were then averaged resulting in a mean "team ranking" for each species. The tabulated results of the Steering Committee members' rankings can be found in Appendix 4.

This species ranking process is a means for comparing current and emerging TAG programs. The ranking generally, but not always, corresponds to the program recommendation as presented in Table 2. The program rankings and the program recommendations can be found on the Individual Species Sheets.

Table 2. General Guidelines for Assigning Program Management Level Using Ranking

Mean Ranking	General Guidelines for Assigning Program Management Level
0-7	Phase Out (P/O)
8-13	Red Program or Species Survival Plan®
14-22	Species Survival Plan®

Seven of the 59 species/subspecies held in AZA institutions fall outside of these general guidelines for program recommendations. Exceptions to these general guidelines are listed in Table 3 along with the justifications for these exceptions.

Table 3. Exceptions to General Program Management Level Guidelines

Program	Score	Program Management Level According Table 2	Actual Program Recommendation	Justification for Exception
Eastern Giant Eland	11	Red Program or SSP®	Unmanaged Program	Ownership issues and monetary commitment to be involved limit institutional participation
Blackbuck	11	Red Program or SSP®	Unmanaged Program	Numerous in private collections; Need for a managed population in AZA is of minimal value
Nilgai	9	Red Program or SSP®	Unmanaged Program	Numerous in private collections; Need for a managed population in AZA is of minimal value
Royal antelope	7	P/O	Red Program	Emerging program; Unique species; Not managed in other regions
Jackson's Hartebeest	7	P/O	Red Program	Unique species; Not managed in other regions
Uganda Kob	6	P/O	Red Program	Unique species; Institutional interest; Not managed in other regions
Mhorr gazelle	11	Red Program or SSP®	P/O	Strong EEP program; Small unviable population in AZA; Space needed for Addra Gazelle SSP®

AZA Animal Program Management

In 2010, the administrative structure of AZA's population management programs was modified to remove impediments to reaching sustainability, increase program flexibility and simplify program administration. The Animal Management Program Structure is as follows:

- Collection Sustainability and Conservation Action are assessed separately
- Programs earn their levels of population sustainability and/or conservation action, and levels can change depending upon the population's performance.
- Collection sustainability of each managed population will be assessed and the population placed in one of three levels: Green, Yellow, Red (most current designations for all programs can be found on the AZA website).
- Assessments will be performed with modeling programs such as ZooRisk, Vortex, or others to be developed
- The general criteria for long-term sustainability will be how long a population is projected to remain demographically viable with gene diversity above 90%. Some taxa/populations will need to consider and monitor other criteria as well.
- The level of each individual program will change in accordance with the population becoming more or less sustainable.
- All AZA institutions participating in Animal Management Programs will continue to be subject to the AZA Policy on Responsible Population Management: Acquisitions, Transfers and Transitions by Zoos and Aquariums and the AZA Code of Professional Ethics, as required by AZA accreditation standards.
- Institutional accountability regarding active participation and willingness to provide timely and accurate information is imperative to achieving collection sustainability.

Table 4. AZA Animal Management Program Categories, 2014

Green	Yellow	Red
Green SSP® Programs are Currently Sustainable for the long-term. • The population is presently sustainable demographically for 100+ years or 10+ generations. • The population is able to retain a high amount of gene diversity (>90% GD) over this time. • The Program is subject to SSP® Full Participation and the non-AZA member application processes. These programs are called Species Survival Plans®	Yellow SSP® Programs are Potentially Sustainable for the long-term. • The population currently cannot retain 90% gene diversity for 100 years or 10 generations. • The population requires additional attention and effort to make it more sustainable. • Factors affecting sustainability that need to be addressed may include: o Lack of husbandry and breeding expertise/predictability; o Too few individuals; o Too little space; o Low gene diversity; and o Poor demographics • The Program's adherence to SSP® Full Participation is voluntary, and Programs can partner with non-AZA members without going through the AZA non-member application process. These programs are called Species Survival	Red Programs are Currently Not Sustainable for the long-term and the populations are deemed critical. • The population has fewer than 50 individuals and is not designated as an SSP® Program based on collection sustainability criteria. • The Program should be managed as an official AZA Studbook if the TAG recommends these species in the RCP, but will not require formal planning on a regularly scheduled basis. • Red designation may serve as a strong call to action. • The Program's adherence to SSP® Full Participation is voluntary, and Programs can partner with non-AZA members without going through the AZA non-member application process.

Green	Yellow	Red
	Plans®	These programs are called Studbooks or Red Programs

The Program Management Level for each Antelope and Giraffe TAG program has been determined by analyzing the most recent masterplan for each species and can be found within the 2014 Program Summary Table (Table 8) and on the Individual Species Pages.

AZA Antelope and Giraffe TAG RCP Development

ZIMS and Studbook Data

All managed AZA antelope, pronghorn, giraffe and okapi programs have now been assigned program leaders (studbook keepers and population managers). As vacancies occur, replacement program leaders will be sought.

The most current published studbook data and/or population analyses were utilized in the RCP review and this information has been included on the Individual Species Sheets. Recent ZIMS data was utilized for species programs for which studbooks are not yet complete or for which studbook data are outdated.

Space Analysis

All holders of antelope, pronghorn, giraffe and okapi in AZA were polled in November 2013 concerning their current and estimated future available space for these species. The 2013 Space Survey results are included in Appendix 5. This survey was utilized for development of this RCP and was compared to surveys from previous editions of the Antelope and Giraffe TAG RCP.[1,2,3]

A subset of AZA Accredited Institutional Members and Certified Related Facilities were asked to respond to a Space Survey conducted in November 2013 using Survey Monkey. Requests for information were sent out three times in order to achieve the desired response rate. Ample time was given to respond to the survey so after three requests, it was assumed that non-response to the survey by an institution indicated its lack of interest in participating in the AZA Antelope and Giraffe TAG now or in the next 3-5 years.

The survey was sent to 130 facilities that have identified IRs to serve on the TAG. Forty-three facilities that might be eligible for having antelope, pronghorn, giraffe or okapi at their facility but have not chosen to identify IRs to serve on the TAG were also surveyed. AZA facilities (aquariums, butterfly houses, etc) that were deemed not relevant to this taxonomic group were excluded given that they are unlikely to hold antelope, pronghorn, giraffe or okapi now or in the next 3-5 years.

Overall, 90 of 173 facilities responded to the Space Survey (52% response rate). Eighty of 130 facilities with IRs responded (62% response rate) and ten of 43 facilities without IRs responded (23% response rate). Though the response rate from institutions with IRs falls short of the optimal 80% response rate, it is felt that a reasonable effort was made by the TAG to encourage

[1] Carter, S. and S. Shurter, editors, 1999. AZA Antelope and Giraffe Regional Collection Plan, Third Edition, 1999.
[2] Fischer, M. and S. Shurter, editors, 2005. AZA Antelope and Giraffe Regional Collection Plan, Fourth Edition, 2005.
[3] Fischer, M., editor, 2008. AZA Antelope and Giraffe Regional Collection Plan, Fifth Edition, 2008.

responses from institutions and ample time was given to respond to the survey. Those facilities with IRs that did not respond to the survey requests are listed in Appendix 6.

Results of the 2013 Space Survey indicate that currently there are 4,439 spaces occupied by antelope and pronghorn and 794 spaces occupied by giraffe and okapi in AZA accredited institutions and certified related facilities, for a total of 5,233 spaces currently occupied by antelope, pronghorn, giraffe and okapi. Currently, the maximum number of spaces available for antelope, pronghorn, giraffe and okapi is 6,814 (antelope/pronghorn – 5,859 and giraffe/okapi – 956).

When considering the maximum number of spaces available and institutions' desires to acquire/deacquire species or increase/decrease herd sizes 3-5 years in the future, the 2013 Space Analysis results indicate that the maximum capacity within TAG participating facilities in 3-5 years is projected to be 6,435 spaces for antelope and pronghorn and 1039 spaces for giraffe and okapi (Total maximum spaces in future – 7,474).

Table 5. Comparison of Projected Maximum Space Available From All Editions of RCP.

Maximum Space Available in 3-5 years	**1999**	**2005**	**2008**	**2013**
Antelope/Pronghorn Spaces	5,481	4,812	4,554	6,435
Giraffes/Okapi Spaces	430	603	772	1,039
Total Maximum Space Available in 3-5	**5,911**	**5,425**	**5,326**	**7,474**

When compared to Space Survey results compiled in the previous three editions of the Antelope and Giraffe TAG RCP in Table 3, this edition of the RCP is projecting an encouraging increase in future available space for antelope and a continuing and significant increase in future available space for giraffes and okapi in AZA facilities 3-5 years in the future. This projected increase in space for antelope, pronghorn, giraffes and okapi is positive and a welcome reversal after the previous surveys projected a decrease in space for antelope of nearly 1,000 spaces between 1999 and 2008.

Marketing and awareness campaigns to promote AZA participation in antelope, pronghorn, giraffe and okapi programs have always been a high priority for the TAG, and in the last five years additional efforts to promote the TAG's important conservation programs were implemented to bolster interest in and commitment to antelope, pronghorn, giraffe and okapi. The projected numbers indicate that these efforts have paid off. It will be important to continue to promote antelope, pronghorn, giraffe and okapi during the life of this RCP to sustain interest and enthusiasm for these and other ungulates.

Additional space for management and conservation of antelope, pronghorn, giraffe and okapi is potentially available at privately-owned, non-AZA Sustainability Partner facilities, but that space was not surveyed. As appropriate, in accordance with AZA's non-member participation guidelines, the Antelope and Giraffe TAG hopes to continue to collaborate with Sustainability Partners and other conservation organizations committed to the conservation of ungulates in a combined effort to build and maintain sustainable populations in NA and conserve these species in the wild.

The results of the sustainability analyses of AZA's breeding programs point to the need for a more global approach to collection planning as a means to ensure that we can maintain our populations long-term. If the importation hurdles can be resolved, sustainable populations may

be possible for some species by collaborating with other regional zoo programs to manage populations globally. During the 2014 Joint TAG Chairs meeting, partnerships will be strengthened with other regional TAG Chairs and global population management will be discussed. Additional information on this topic will be available after the Joint TAG Chairs meeting and will be added to the final draft of this document.

Population Analyses
When possible, the most recent population analyses completed by the program leaders and small population management advisors were used as references when developing the recommendations within this RCP and this information is included on the Individual Species Sheets.

Target Population Size
Several factors were considered prior to setting a Target Population Size (TPS) for each species, including space survey results, population status in North America, available population viability information provided by the program leader and his/her population management advisor, as well as species management expertise and knowledge.

All of the TAG's 26 programs currently recommended for SSP® management have been analyzed within the last three years in partnership with a PMC or PMC Adjunct population management advisor. Although not required, nine of the TAG's 19 Red Programs have also been analyzed within the last three years in partnership with a PMC or PMC Adjunct population management advisor.

There are currently seven additional programs under development (Impala, Royal Antelope, Uganda Kob, Red Lechwe, Red-fronted Gazelle, Pronghorn, Peninsular Pronghorn). Studbook keepers have been identified for these seven programs. Once the studbooks are published and more information is known about those populations, program designations will be determined and Target Population Sizes will be set.

Based on the space survey results, adequate space is available within AZA Accredited Institutions and Certified Related Facilities for the current program TPS recommendations represented in this RCP. In order for each of the TAG's recommended programs to achieve its current TPS, at least 6,402 spaces (antelope = 5,652; giraffe/okapi = 750) will be needed. The total TPS for all recommended species is well within the current maximum number of spaces (antelope = 5,859; giraffe/okapi = 956) and the future maximum number of spaces (antelope = 6,435; giraffe/okapi = 1,039) available in AZA Institutions and Certified Related Facilities.

The Target Population Size for each species can be found within the Program Recommendations Summary (Table 8) and on the Individual Species Sheets.

AZA Antelope and Giraffe TAG Program Goals and Objectives

All species for which programs are recommended in this RCP contribute to the conservation and/or awareness of antelope and giraffes and their native habitats or to research intended to improve management or aid conservation. The goals and objectives for each species are included within the Program Recommendations Summary (Table 8), on the Individual Species Sheets, and are described below.

Conservation Action
The species is under immediate threat and action or reintroduction is underway

Assurance Population
The species is threatened or declining in some fashion and the managed population is serving as a genetic and demographic reservoir for the future, if required.

Education/Exhibit Needs
The species is used for educational purposes and inspires guests to care for wildlife.

Research
The species is in need of greater understanding and the managed population serves as a research population or a population that is just being founded within Zoos.

***in situ* Focus**
A species or subspecies focus program recommended to generate awareness, participation, and conservation support (technical, financial, educational materials, etc.) for severely threatened populations and/or habitats as prioritized by the IUCN SSC Specialist Groups. An *ex situ* component is not a requisite for such a program, but may be considered if warranted under conservation action plans for said species.

AZA Antelope and Giraffe TAG Action Plan 2014-2019

The Action Plan for the Antelope and Giraffe TAG includes the prioritization of animal management, health, education, conservation, and research efforts. These action areas are intended to focus institutional efforts and support in linking *ex situ* and *in situ* antelope, pronghorn, giraffe, and okapi conservation and management programs.

The goals of the Action Plan include:

- Development of antelope, pronghorn, giraffe and okapi *ex situ* conservation programs.
- Development of new and refinement of existing management strategies to support antelope, pronghorn, giraffe and okapi programs, such as bachelor herd and multi-species management, assisted reproduction, reversible contraception, and management euthanasia.
- Support of strategies to promote global antelope, pronghorn, giraffe and okapi conservation and species diversity.
- Strengthening of education programs that create awareness, understanding, and appreciation of antelope, pronghorn, giraffe and okapi.
- Support of multi-disciplinary research designed to improve the health, welfare, and management, of managed and free living antelope, pronghorn, giraffe and okapi populations.
- Investigation of bovidae health and veterinary issues that impact conservation programs or wild populations.
- Development of collaborative partnerships to achieve mutual and bio-diverse conservation goals.

Summary of Priorities for 2014-19

- Promote conservation program development and assist program leaders as possible to achieve TAG and antelope, pronghorn, giraffe and okapi conservation program goals. (Program Management)

- If the importation hurdles can be resolved, investigate the possibility of global population management of certain species in collaboration with other regional programs. (Program Management)
- Promote and support *in situ* conservation initiatives for antelope, pronghorn, giraffe and okapi and habitats related to priority AZA programs. (Conservation)
- Complete an updated version of the ungulate multi-species manual (Animal Management)
- Maintain Ungulate TAG website (www.AZAUngulates.org) and materials and update as needed (Education)
- Develop importation protocols and methods to import frozen gametes of non-domestic ruminants. (Research-Assisted Reproduction)
- Ongoing infectious disease monitoring and vigilance for bovid diseases in AZA institutions, which may seriously impact conservation program health and management. (Animal Health)

The full version of the AZA Antelope and Giraffe TAG Action Plan is provided in Appendix 7.

AZA Antelope and Giraffe TAG Program Resources

AZA Wildlife Contraception Center

Many antelope, pronghorn, giraffes and okapi cared for in AZA-accredited institutions breed very successfully and contraception is one tool to use to ensure that the TAG populations remain at a healthy size. Reversible contraception allows natural social herds to be maintained while managing the genetic health of the population. Recommended methods of contraception for ungulates can be obtained from the AZA Wildlife Contraceptive Center. Zoos are encouraged to contact the program leader before contracepting or permanently sterilizing an SSP or Red Program animal. More information can be found in Appendix 8, at www.stlzoo.org/contraception, by emailing contraception@stlzoo.org or calling (314) 646-4595.

Sustainability Partners

Many AZA antelope, pronghorn, giraffe and okapi programs work closely with non-AZA institutions and individuals as Sustainability Partners to accomplish the goals of their conservation programs. These are often mutually beneficial relationships and may be integral to the success of some programs. Sustainability Partners often can provide resources unavailable in zoo environments due to the lack of spatial, exhibit and marketing constraints. The Antelope and Giraffe TAG encourages these partnerships within our programs and to our institutions and population leaders, to address program capacity, sustainability, resources and conservation goals and priorities. Zoos are encouraged to contact the program leader before sending an SSP animal to a Sustainability Partner. Please see AZA's Sustainability Partner Policy for more details.

Animal Disposition

The ethical disposition of antelope, pronghorn, giraffe and okapi from our facilities is of paramount concern for managers. While the Antelope and Giraffe TAG recognizes the regional and institutional differences among antelope, pronghorn, giraffe and okapi institutions and the subsequent range of institutional policies, it is important that there are consistent, responsible methods of handling the transfer of animals, especially when moving animals out of the AZA population.

The Antelope and Giraffe TAG recommends that each participating institution adopt the standards set for animal acquisition, transfer and transition as outlined in the AZA Policy on Responsible Population Management: Acquisitions, Transfers and Transitions by Zoos and Aquariums. The policy outlines the elements which the Antelope and Giraffe TAG feels are applicable to antelope, pronghorn, giraffe and okapi institutions and are recommended for consideration and inclusion in all TAG participating institutions' animal acquisition, transfer and transition policies.

Responsible Population Management: Humane Euthanasia
The Antelope and Giraffe TAG recognizes that humane euthanasia is a management tool that may be practiced to ensure that the population remains genetically and demographically healthy for the long-term. Zoos are encouraged to contact the Program Leader before euthanizing an SSP Program animal for management purposes, in order to optimize animal welfare. The decision to utilize humane euthanasia as a management tool is at the discretion of the individual institution, and should follow the institution's acquisition, transfer and transition policy as outlined in the AZA Policy on Responsible Population Management: Acquisitions, Transfers and Transitions by Zoos and Aquariums.

Collection Planning Resources for Institutions

This RCP is intended to serve as a conduit linking AZA programs with efforts to conserve wild antelope, pronghorn, giraffe and okapi populations. Managing our populations in AZA to ensure sustainable zoo populations which will contribute strongly to the conservation and awareness efforts for their wild counterparts is of the highest priority.

The TAG strongly suggests that institutions abide by the program recommendations presented in this RCP when developing institutional collection plans. Included in this edition of the RCP are recommendations regarding the antelope, pronghorn, giraffe and okapi programs currently managed in AZA, including conservation, education, research, veterinary/health and development priorities. These recommendations are based on a series of evaluations, space surveys, current population genetic and demographic analyses, studbook and/or ZIMS data, and information provided by the IUCN SSC Specialist Groups regarding wild antelope, pronghorn, giraffe and okapi population trends. In some cases, threatened species not currently found in AZA collections were also included as priorities for conservation actions.

Additional resources that institutions can utilize when planning their ungulate collections and conservation activities include:

- **Antelope and Giraffe TAG Species Suggestions Table:** A Species Suggestions Table (Table 6) is provided to serve as an additional resource to animal managers when they are developing their collection plans. It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. Species are divided according to geographic origination and relative body size to aid in decision making related to exhibit size and theme.
- **Species Profiles:** Species profiles that have been created for animal managers to use in collection planning are available on the Ungulate TAG website and through links on the Individual Species Pages. These useful profiles identify key species within the Antelope and Giraffe TAG that are in need of additional space and participating institutions and

they include information about species size, temperament, care, handling and conservation.

- **Ultimate Ungulate Website:** This website (www.ultimateungulate.com) includes an interactive phylogeny (based on recent genetic findings) beginning at the root of the mammalian family tree and expanding to illustrate the relationships between every ungulate species. To date, the life histories of over 150 species have been compiled into individual accounts that are both understandable to the general public and useful for scientific research. Curators and keepers will find great value in this website whether looking for an overview, seeking specific facts, or stunning ungulate images. This website, managed by Brent Huffman, a zoologist and zookeeper at the Toronto Zoo, is invaluable to ungulate managers and enthusiasts around the world.
- **IUCN SSC Specialist Group Websites:**
    - The Antelope Specialist Group is the world's leading body of scientific and practical expertise on the status and conservation of all antelope species. It is a global network of 64 specialists representing 28 countries concerned with the conservation, monitoring, management, and study of antelopes. The overall aim of ASG is to promote the long-term conservation of antelopes and their habitats worldwide, and the recovery or restoration of antelope species, populations and communities where feasible. The Antelope Specialist Group's website and biannual periodical, *Gnusletter*, are two great resources for global antelope conservation information.
        - A regional structure for ASG is being developed, based broadly on the regions used for the Antelope Survey and Action Plan. The Northeast Africa regional subgroup covering Djibouti, Eritrea, Ethiopia, Somalia, and Sudan is now well established. Similar groups are planned for the other regions.
    - The Giraffe and Okapi Specialist Group is made up of experts from around the world who lead efforts to study giraffe, okapi and the threats they face, as well as support conservation actions designed to ensure the survival of the two species into the future. The Giraffe and Okapi Specialist Group website provides news and information about giraffe and okapi, current and future conservation and research projects, activities of this specialist group, as well as a library of resources including relevant scientific literature.
- **Multi-species Exhibit Database:** Many species under the purview of the Antelope and Giraffe TAG can be managed in multi-species exhibits. By managing our ungulates in shared spaces, we can maximize the use of our limited zoo space and create more dynamic exhibits for our visitors. In 1998, the Antelope and Giraffe TAG collected information regarding various management techniques and presented it in a format that could serve as a resource for managers interested in future antelope mixed species exhibit management. This data is broken down by antelope subgroups and by institution, and includes bachelor herd data as well as known interspecies hybrids. The 1998 database can be found at http://antelopetag.com/mixed_species_survey.htm. Multi-species habitat management has evolved over the last 16 years and this database is currently being updated.

Table 6. Antelope and Giraffe TAG Species Suggestions

	Africa			Asia/Middle East			North America		
	Recommended for Phase Out	**Population Currently At or Over TPS**	**Suggested Species in Need of Additional Space**	**Recommended for Phase Out**	**Population Currently At or Over TPS**	**Suggested Species in Need of Additional Space**	**Recommended for Phase Out**	**Population Currently At or Over TPS**	**Suggested Species in Need of Additional Space**
Small Species	**Springbok *spp*** **Bay Duiker** **Maxwell's Duiker** **Suni** **Saudi Goitered Gazelle** **Persian Gazelle**	**Thomson's Gazelle**	**South African Springbok** **Blue Duiker** **Black Duiker** **Red-flanked Duiker** **Yellow-backed Duiker** **Günther's Dik-dik** **Kirk's Dik-dik** **Royal Antelope** **Steenbok** **Klipspringer** **Cuvier's Gazelle** **Grant's Gazelle** **Slender-horned Gazelle** **Speke's Gazelle**	None	**Blackbuck (unmanaged population)**	None	None	None	None
Medium Species	**Harnessed bushbuck** **Blesbok** **Topi** **Mhorr Gazelle** **Beisa Oryx**	**Gemsbok**	**Lowland Nyala** **Southern Lesser Kudu** **Sitatunga** **Impala** **Southern Gerenuk** **Bontebok** **Uganda Kob** **Red Lechwe** **Nile Lechwe** **Addax** **Scimitar-horned Oryx** **Fringe-eared Oryx** **Addra Gazelle** **Red-fronted Gazelle** **Soemmerring's Gazelle**	None	None	**Arabian Oryx**	None	None	**Pronghorn** **Peninsular Pronghorn**
Large Species	None	**Common Eland** **Greater Kudu** **Wildebeest** **Common Waterbuck**	**Giant Eland (unmanaged population)** **Eastern Bongo** **Roan Antelope** **Sable Antelope** **Jackson's Hartebeest** **Okapi**	None	None	**Nilgai (unmanaged population)**	None	None	None
Giraffes	None	**Reticulated Giraffe** **Rothschild's Giraffe** **Hybrid Giraffe**	**Masai Giraffe**	n/a	n/a	n/a	n/a	n/a	n/a

Photo Courtesy of Nina Fischer

AZA Antelope and Giraffe Advisory Group

2014 Program Recommendations Summary for Antelope, Pronghorn, Giraffe and Okapi

2014 AZA Antelope and Giraffe TAG Program Recommendations

The 6th edition of the AZA Antelope and Giraffe TAG RCP reviewed 79 species/subspecies and is recommending 1 Green SSP®, 25 Yellow SSPs®, 19 Red Programs, 3 Unmanaged Populations, 0 Phase Ins, 11 Phase Outs and 20 ISFs.

- No species have been phased into AZA institutions since the last RCP.
- Six species/subspecies have been phased out of AZA institutions since the last RCP – Zambian sable antelope, crowned duiker, cape hartebeest, rhebok, Defassa waterbuck and dorcas gazelle.
- One ISF species – saola – is now under the purview of the AZA Buffalo, Bison and Cattle TAG.
- Two ISF subspecies – West African (Nigerien) giraffe and Rothschild's giraffe – have been added as ISFs due to their endangered status.

A summary of the program recommendations of all six editions of the Antelope and Giraffe TAG RCP is found below in Table 7.

A summary table with the program recommendation and Program Leader changes that have occurred between the 5th and 6th editions of the RCP can be found in Appendix 9.

The AZA Antelope and Giraffe TAG Program Status Table listing the date each program was initiated, the current Program Leader for each program and the date he/she assumed leadership and the date of the last publication of each studbook or SSP® is provided for your information in Appendix 10.

Table 7. Program Recommendations Summary of All Six Editions of the RCP.

Programs	1995	1997	1999	2005	2009	2014
SSP® – Species Survival Plan	3	6	10	8	8	
SSP® – Green Program						1
SSP® – Yellow Program						25
PMP – Population Management Program	42	42	36	33	31	
Red Program						19
DERP – Display/Education/Research		11	2	8	11	
Unmanaged Population						3
Phase In			0	0	0	0
Phase Out			36	18	15	11
MFR - Manage for Replacement	13	11				
Pending more information	2	6	1	0	0	0
***in situ* Focus**				20	19	20
Total Programs Reviewed	**112**	**95**	**85**	**87**	**84**	**79**

Table 8. AZA Antelope and Giraffe TAG Program Recommendations, 2014

Species	Program	Primary Program Goal	Target Population	Program Leader
Forest/Woodland Antelope Subgroup				
Eastern giant eland *Tragelaphus derbianus gigas*	Unmanaged Population	Education/Exhibit Needs	75	n/a
Western giant eland *Tragelaphus derbianus derbianus*	ISF	*in situ* Focus	0	Steve Shurter White Oak Cons. Center
Common and Cape eland *Tragelaphus oryx spp.*	Yellow SSP®	Education and Display	250	Hollie Colahan Denver Zoo
Lowland nyala *Tragelaphus angasii*	Yellow SSP®	Education/Exhibit Needs	200	Steve Metzler Disney's Animal Kingdom
Mountain nyala *Tragelaphus buxtoni*	ISF	*in situ* Focus	0	Martha Fischer Saint Louis Zoo
Eastern bongo *Tragelaphus eurycerus isaaci*	Yellow SSP®	Conservation Action	250	Ron Surratt Forth Worth Zoo
Southern lesser kudu *Tragelaphus imberbis*	Yellow SSP®	Assurance Population	150	Lily Civili Saint Louis Zoo
Harnessed bushbuck *Tragelaphus scriptus scriptus*	Phase Out	n/a	0	n/a
Greater kudu *Tragelaphus strepsiceros*	Yellow SSP®	Education/Exhibit Needs	250	Dennis Charlton Smithsonian's National Zoo
Sitatunga *Tragelaphus spekii*	Red Program	Education/Exhibit Needs	75	Gil Myers Smithsonian's National Zoo
Roan antelope *Hippotragus equinus*	Yellow SSP®	Education/Exhibit Needs	125	Andi Kornak Cleveland Metroparks Zoo
Sable antelope *Hippotragus niger*	Yellow SSP®	Education/Exhibit Needs	175	Jill Piltz Disney's Animal Kingdom
Giant sable antelope *Hippotragus niger variani*	ISF	*in situ* Focus	0	Sharon Joseph Houston Zoo
Impala *Aepyceros melampus*	Red Program	Education/Exhibit Needs	150	Jennifer MacNaughton Busch Gardens - Tampa
Black-faced impala *Aepyceros melampus petersi*	ISF	*in situ* Focus	0	Sharon Joseph Houston Zoo

Species	Program	Primary Program Goal	Target Population	Program Leader
Springbok *Antidorcas marsupialis spp.*	Phase Out	n/a	0	n/a
South African springbok *Antidorcas m. marsupialis*	Yellow SSP®	Education/Exhibit Needs	100	Jessica Scallan Tulsa Zoo
Blackbuck *Antilope cervicapra*	Unmanaged Population	Education/Exhibit Needs	150	n/a
Southern gerenuk *Litocranius walleri walleri*	Yellow SSP®	Assurance Population	150	Christina Seely Denver Zoo
Dibatag *Ammodorcas clarkei*	ISF	*in situ* Focus	0	Martha Fischer Saint Louis Zoo
Nilgai *Boselaphus tragocamelus*	Unmanaged Population	Education/Exhibit Needs	100	n/a
Small Antelope Subgroup				
Bay duiker *Cephalophus dorsalis*	Phase Out	n/a	0	n/a
Jentink's duiker *Cephalophus jentinki*	ISF	*in situ* Focus	0	Jeff Holland Los Angeles Zoo
Maxwell's duiker *Philantomba maxwellii*	Phase Out	n/a	0	n/a
Blue duiker *Philantomba monticola*	Red Program	Assurance Population	75	Sarah Ksiazek Dallas Zoo
Ader's duiker *Cephalophus adersi*	ISF	*in situ* Focus	0	Jeff Holland Los Angeles Zoo
Black duiker *Cephalophus niger*	Red Program	Education/Exhibit Needs	25	Jeff Holland Los Angeles Zoo
Red-flanked duiker *Cephalophus rufilatus*	Red Program	Education/Exhibit Needs	75	Nate Oliveira Saint Louis Zoo
Yellow-backed duiker *Cephalophus silvicultor*	Yellow SSP®	Assurance Population	125	Linda Rohr Bachers Milwaukee Zoo
Abbott's duiker *Cephalophus spadix*	ISF	*in situ* Focus	0	Jeff Holland Los Angeles Zoo
Zebra duiker *Cephalophus zebra*	ISF	*in situ* Focus	0	Jeff Holland Los Angeles Zoo

Species	Program	Primary Program Goal	Target Population	Program Leader
Kenyan Günther's dik dik *Madoqua guentheri smithi*	Red Program	Education/Exhibit Needs	25	Paige McNickle Phoenix Zoo
Kirk's dik dik *Madoqua kirkii*	Red Program	Education/Exhibit Needs	75	Paige McNickle Phoenix Zoo
Suni *Neotragus moschatus*	Phase Out	n/a	0	n/a
Silver dik dik *Madoqua piacentinii*	ISF	*in situ* Focus	0	Jeff Holland Los Angeles Zoo
Royal antelope *Neotragus pygmaeus*	Red Program	Education/Exhibit Needs	25	Amy Roberts Brookfield Zoo
Beira *Dorcatragus megalotis*	ISF	*in situ* Focus	0	Martha Fischer Saint Louis Zoo
Steenbok *Raphicerus campestris*	Red Program	Education/Exhibit Needs	50	Steve Metzler Disney's Animal Kingdom
Klipspringer *Oreotragus Oreotragus*	Red Program	Education/Exhibit Needs	100	Michael Lebanik Disney's Animal Kingdom
Hartebeest Subgroup				
Jackson's hartebeest *Alcelaphus buselaphus jacksoni*	Red Program	Education/Exhibit Needs	50	Mollye Nardi Zoo Atlanta
Swayne's hartebeest *Alcelaphus buselaphus swaynei*	ISF	*in situ* Focus	0	Martha Fischer Saint Louis Zoo
White-bearded wildebeest *Connochaetes taurinus spp.*	Yellow SSP®	Education/Exhibit Needs	200	Kristen Wolfe Disney's Animal Kingdom
Bontebok *Damaliscus pygargus dorcas*	Yellow SSP®	Assurance Population	152	Lissa McCaffree San Diego Zoo's Safari Park
Blesbok *Damaliscus pygargus phillipsi*	Phase Out	n/a	0	n/a
Hunter's hartebeest, Hirola *Beatragus hunteri*	ISF	*in situ* Focus	0	Martha Fischer Saint Louis Zoo
Topi *Damaliscus lunatus jimela*	Phase Out	n/a	0	n/a

Species	Program	Primary Program Goal	Target Population	Program Leader
Waterbuck Subgroup				
Common waterbuck *Kobus e. ellipsiprymnus*	Yellow SSP®	Education/Exhibit Needs	200	Jonnie Capiro San Diego Zoo's Safari Park
Uganda kob *Kobus kob thomasi*	Red Program	Education/Exhibit Needs	75	Danny Lepping Rolling Hills Zoo
Red lechwe *Kobus leche*	Red Program	Education/Exhibit Needs	75	Melissa Covey Disney's Animal Kingdom
Nile lechwe *Kobus megaceros*	Yellow SSP®	Assurance Population	200	Matt Hohne Disney's Animal Kingdom
Western mountain reedbuck *Redunca fulvorufula adamauae*	ISF	*in situ* Focus	0	Randy Rieches San Diego Zoo's Safari Park
Aridland Antelope, Gazelles and Pronghorn Subgroup				
Addax *Addax nasomaculatus*	Yellow SSP®	Conservation Action	250	Bill Houston Saint Louis Zoo
Scimitar-horned oryx *Oryx dammah*	Yellow SSP®	Conservation Action	250	Sheri Horiszny Santa Barbara Zoo
Gemsbok *Oryx gazella gazella*	Yellow SSP®	Education/Exhibit Needs	75	Melissa McCartney Sacramento Zoo
Beisa oryx *Oryx beisa beisa*	Phase Out	n/a	0	n/a
Fringe-eared oryx *Oryx beisa callotis*	Red Program	Assurance Population	75	Melissa McCartney Sacramento Zoo
Arabian oryx *Oryx leucoryx*	Yellow SSP®	Conservation Action	200	Michelle Hatwood Phoenix Zoo
Cuvier's gazelle *Gazella cuvieri*	Red Program	Assurance Population	75	Wendy Enright The Living Desert
Addra gazelle *Nanger dama ruficollis*	Yellow SSP®	Conservation Action	200	Ann Petric With support from Saint Louis Zoo
Mhorr gazelle *Nanger dama mhorr*	Phase Out	n/a	0	n/a
Grant's gazelle *Nanger granti*	Yellow SSP®	Education/Exhibit Needs	100	Vacant

Species	Program	Primary Program Goal	Target Population	Program Leader
Thomson's gazelle *Eudorcas thomsonii spp.*	Yellow SSP®	Education/Exhibit Needs	175	Lanny Brown Nashville Zoo
Slender-horned gazelle *Gazella leptoceros*	Yellow SSP®	Conservation Action	100	Patricia Cassady San Diego Zoo's Safari Park
Nubian red-fronted gazelle *Eudorcas rufifrons laevipes*	Red Program	Conservation Action	50	Lanny Brown Nashville Zoo
Nubian Soemmerring's gazelle *Nanger soemmerringii*	Red Program	Assurance Population	75	Stacey Konwiser Palm Beach Zoo
Speke's gazelle *Gazella spekei*	Yellow SSP®	Assurance Population	100	Christy Poelker Saint Louis Zoo
Saudi goitered gazelle *Gazella subgutturosa marica*	Phase Out	n/a	0	n/a
Persian gazelle *Gazella subgutturosa*	Phase Out	n/a	0	n/a
Pronghorn *Antilocapra americana*	Red Program	Education/Exhibit Needs	150	Melodi Tayles San Diego Zoo's Safari Park
Peninsular pronghorn *Antilocapra a. peninsularis*	Red Program	Conservation Action	50	Melodi Tayles San Diego Zoo's Safari Park
Sonoran pronghorn *Antilocapra a. sonoriensis*	ISF	*in situ* Focus	0	Jeff Holland Los Angeles Zoo
Saiga, Russian and Mongolian *Saiga tatarica spp.*	ISF	*in situ* Focus	0	C2S2 Dan Beetem
Tibetan antelope *Pantholops hodgsonii*	ISF	*in situ* Focus	0	Vacant
Przewalski's gazelle *Procapra przewalskii*	ISF	*in situ* Focus	0	Steve Shurter White Oak Cons. Center
Giraffe/Okapi Subgroup				
Masai giraffe *Giraffa c. tippelskirchii*	Yellow SSP®	Education/Exhibit Needs	150	Laurie Bingaman Lackey With support from Disney's Animal Kingdom
Giraffe, retic/roth complex *Giraffa camelopardalis spp*	Green SSP®	Education/Exhibit Needs	400	Laurie Bingaman Lackey With support from Disney's Animal Kingdom

Species	Program	Primary Program Goal	Target Population	Program Leader
West African giraffe *Giraffa camelopardalis peralta*	ISF	*in situ* Focus	0	Amy Roberts amy.roberts@czs.org
Rothschild's giraffe *Giraffa camelopardalis rothschildi*	ISF	*in situ* Focus	0	Amy Roberts amy.roberts@czs.org
Okapi *Okapia johnstoni*	Yellow SSP®	Conservation Action	200	Ann Petric With support from Saint Louis Zoo

Forest Woodland Subgroup
Vice Chair, Sharon Joseph sjoseph@houstonzoo.org

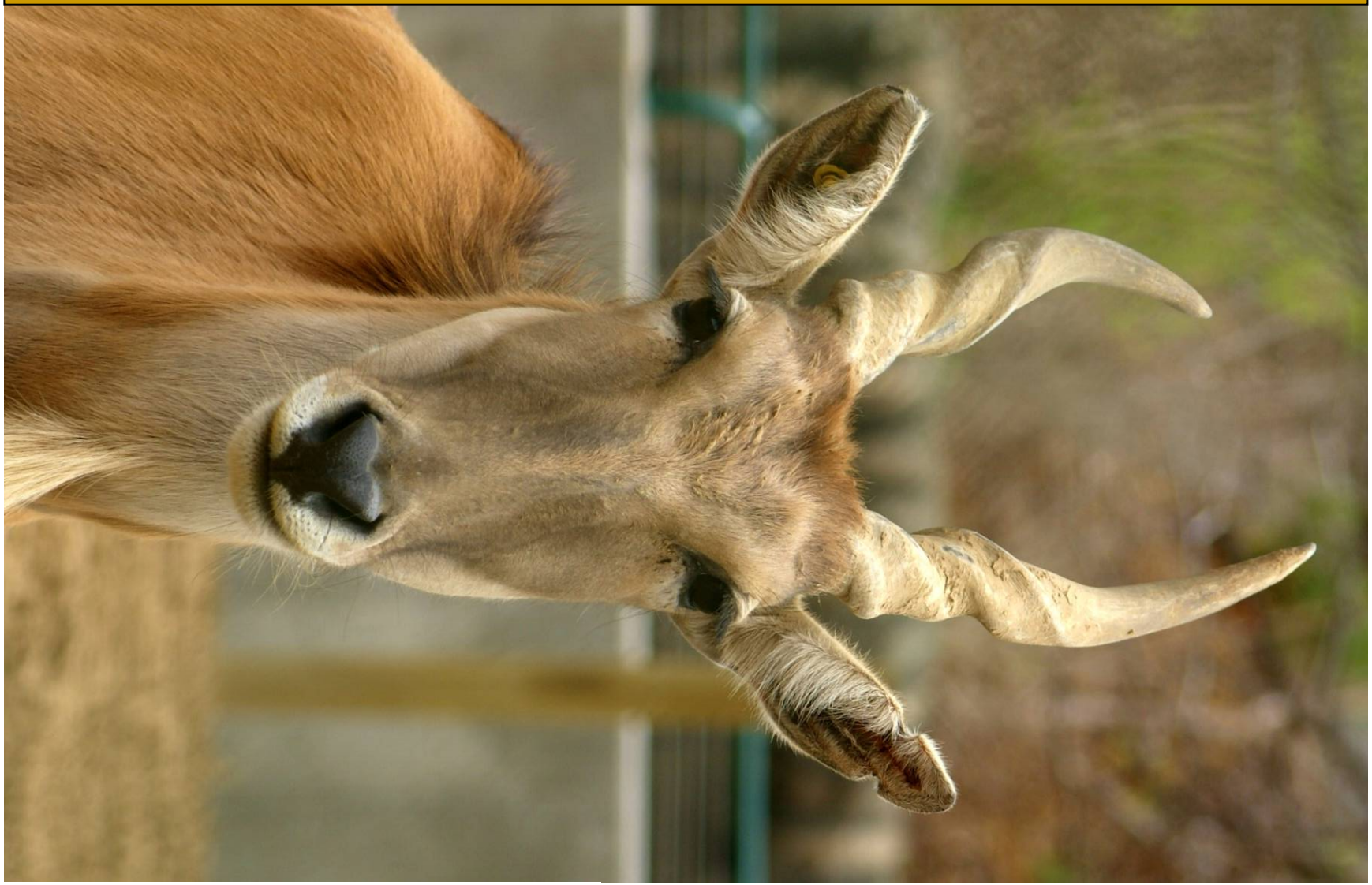

Photo courtesy of Hollie Colahan, Denver Zoo

SPECIES:	Eastern giant eland *Tragelaphus derbianus gigas* (Gray, 1847)
PROGRAM:	Unmanaged Population
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 22.26 (48) in 9 institutions[4]

AZA PROGRAM STATUS:

INTERNATIONAL STUDBOOK KEEPER: Lissa McCaffree, San Diego Zoo's Safari Park
lmccaffree@sandiegozoo.org

PROGRAM LEADER: n/a

MANAGEMENT PLAN: n/a

ADVISOR(S): n/a

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM 2013 INTERNATIONAL STUDBOOK AND ZIMS 2014:

AFRICA: 0.2 (2) in 1 institution

ASIA/MIDDLE EAST: 3.4 (7) in 1 institution

SOUTH AMERICA: 0.3 (3) in 1 institution

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Giant Eland Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **11**

AZA PROGRAM SUMMARY

Sustainability Score: n/a

Target Population Size: 75 (This Target Population Size is an estimate based on Steering Committee's knowledge of this and similar species and on the space survey responses indicating institutional interest/space available.)

Comments: Recruitment of additional institutions is critical to the long-term management of this species in North America, but ownership issues and monetary commitment to become involved are limiting institutional participation. Until those constraints are removed, this population will continue to be threatened with unsustainability due to lack of institutional participation, lack of space and lack of formal population management. Husbandry research is needed for this species, particularly with regards to nutrition.

ZIMS and the IUCN SSC Antelope Specialist Group use different taxonomic names for several antelope species, including the Eastern giant eland: ZIMS - *Taurotragus derbianus gigas;* IUCN - *Tragelaphus derbianus gigas*

Program Goals and Objectives

1. Education/Exhibit Needs
2. Maintain International Studbook
3. Broker relationships between institutions
4. Encourage research that will address nutritional and veterinary challenges

[4] McCaffree, L., 2011. International Studbook for the Eastern Giant Eland *Taurotragus derbianus gigas*, 2011. www.aza.org.

SPECIES:	Common eland *Tragelaphus oryx spp* (Pallas, 1766)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION STATUS:	81.147.7 (235)[5] in 25 institutions
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Hollie Colahan hcolahan@denverzoo.org
SSP® VICE-COORDINATOR:	Vacant
MANAGEMENT PLAN:	2014
ADVISOR(S):	Sara Sullivan, AZA Population Management Center ssullivan@lpzoo.org
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
AFRICA:	11.18.22 (31) in 5 institutions *(T. oryx and T. o. oryx)*
ASIA/MIDDLE EAST:	43.65.12 (120) in 9 institutions *(T. oryx and T. o. oryx)*
AUSTRALIA:	30.51.3 (84) in 4 institutions *(T. oryx)*
EUROPE:	143.329.27 (499) in 72 institutions *(T. oryx and T. o. oryx)*
NORTH AMERICA (NON-AZA):	~88 in 11 institutions[6] *(T. oryx spp)*
SOUTH AMERICA:	3.3 (6) in 2 institutions *(T. oryx)*
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Common Eland Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**10**

AZA PROGRAM SUMMARY

Sustainability Score: Genetic analysis not possible due to high level of unknown pedigree data.

Target Population Size: 250

Common Eland SSP® Demography Summary Table

Current size of population (N)	81.147.7 (235)
Number of individuals excluded from the potentially breeding population	28.10 (38)
Population size following exclusions	53.137.7 (197)
Target population size (Kt)	200
Mean generation time (T; years)	5.5
Historical population growth rate/Potential population growth rate (λ; lambda)	1.17/1.00

[5] Colahan, H. and S. Sullivan, 2014. AZA Draft Population Analysis & Breeding and Transfer Plan for Common Eland *(Taurotragus oryx spp.)* SSP® Yellow Program, 2014. www.aza.org.

[6] Colahan, H., 2013. AZA North American Regional Studbook for Common Eland, *Taurotragus oryx spp*., 2013. www.aza.org.

SPECIES:	Common eland *Tragelaphus oryx spp* (Pallas, 1766)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Common Eland SSP® Genetic Summary Table

	Current	Potential
Founders	-----	-----
Founder genome equivalents (FGE)	-----	-----
Gene diversity (GD%)	-----	-----
Population mean kinship (MK)	-----	-----
Mean inbreeding (F)	-----	-----
Effective population size/census size ratio (Ne/N)	-----	-----
% pedigree known before assumptions and exclusions	-----	-----
% pedigree known after assumptions and exclusions	-----	-----
Years to 90% GD	-----	-----
Year to 10% loss of GD	-----	-----
Gene Diversity at 100 Years (%)	-----	-----
Gene Diversity in 10 Generations (%)	-----	-----

Comments: This population is over its Target Population Size. Institutions are strongly recommended to comply with SSP® recommendations to decrease this population to its optimal size.

The common eland continues to be popular in AZA and the 2013 space survey indicates that this trend is likely to continue. Based on this, the target population size has been increased to 250 animals in this edition of the RCP which is in line with information provided for the space survey.

Within this living population, there are two subspecies, "East" (*T. o. pattersonianus*) and "Cape" (*T. o. oryx*), and many hybrids. After careful analysis, the TAG recommended that this species be managed as a single common "generic" population and as one SSP®. Subspecies data will be overlooked as animals of known subspecies comprise small, demographically unsustainable sub-populations and the majority of animals have a high level of unknownness in pedigree and origin.

Due to the extensive lack of pedigree information available for this population, genetic management by the conventional method of using mean kinship to equalize the representation of various founder lineages cannot be undertaken at this time. Accurate historical and current data are required even for the most basic genetic management, such as avoidance of inbreeding. Without pedigree data, the genetic diversity of the population cannot be measured, the relative genetic value of different individuals is unknown and the relatedness among animals cannot be determined.

ZIMS and the IUCN SSC Antelope Specialist Group use different taxonomic names for several antelope species, including common eland and Cape eland: ZIMS Common eland - *Taurotragus oryx;* IUCN: Common eland - *Tragelaphus oryx*

Program Goals and Objectives

1. Education/Exhibit Needs
2. Attempt to further resolve unknown pedigrees or use alternative genetic management strategies
3. Update Population Analysis & Breeding and Transfer Plan
4. Make recommendations to reduce population to Target Population Size
5. Recruit SSP® Vice-Coordinator

SPECIES:	Lowland nyala *Tragelaphus angasii* (Gray, 1849)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 60.84 (144) in 14 institutions[7]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR: Steve Metzler, Disney's Animal Kingdom
steve.F.Metzler@disney.com

SSP® VICE-COORDINATOR: Jason Green, Busch Gardens-Tampa
jason.green@buschgardens.com

MANAGEMENT PLAN: 2013

ADVISOR(S): Gina M. Ferrie, Disney's Animal Kingdom
Gina.M.Ferrie@disney.com

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA:	15.23.121 (159) in 4 institutions
ASIA/MIDDLE EAST:	32.60.13 (105) in 12 institutions
AUSTRALIA:	1.4 (5) in 1 institutions
EUROPE:	51.119 (170) in 25 institutions
NORTH AMERICA (NON-SSP®):	1.1 (2) in 1 institution
SOUTH AMERICA:	0.2 (2) in 1 institution

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Lowland Nyala Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **11**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 60.3% genetic diversity for 100 years

Target Population Size: 200

Lowland Nyala SSP® Demography Summary Table

Current size of population (N)	60.84 (144)
Number of individuals excluded from the potentially breeding population	13 (5.8)
Population size following exclusions	55.76 (131)
Target population size (Kt)	175
Mean generation time (T; years)	4.7
Historical population growth rate/Potential population growth rate needed to grow population to target size in the next 4 years (λ; lambda)	1.054

[7] Metzler, S. and G. Ferrie, 2013. AZA Population Analysis & Breeding and Transfer Plan for Lowland Nyala *(Tragelaphus angasii)* SSP® Yellow Program, 2013. www.aza.org.

SPECIES:	Lowland nyala *Tragelaphus angasii* (Gray, 1849)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Lowland Nyala SSP® Genetic Summary Table

	Current	Potential
Founders	11	0
Founder genome equivalents (FGE)	2.48	4.08
Gene diversity (GD%)	79.86	87.75
Population mean kinship (MK)	0.2014	-----
Mean inbreeding (F)	0.1879	-----
Effective population size/census size ratio (Ne/N)	0.2203	-----
% pedigree known before assumptions and exclusions	2%	-----
% pedigree known after assumptions and exclusions	80%	-----
Years to 90% GD	Already <90%	-----
Year to 10% loss of GD	37	-----
Gene Diversity at 100 Years (%) Assuming $\lambda = 1.055$, TPS = 175	60.3%	-----
Gene Diversity in 10 Generations (%) T=4.7 x 10 = 47	69.9%	-----

Comments: Additional institutions are needed for this growing population. Developing models and guidelines for the management of bachelor herds is a priority. In order to retain 90% genetic diversity for 47 years, one new founder will need to be incorporated every two years.

Given the increased interest in this species and the current growth rate, the target population size has been adusted to 200 in this edition of the RCP.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Make recommendations to grow population to Target Population Size
3. Develop bachelor herds
4. Import new founders
    a. Explore partnerships with EAZA as there is a significant population of lowland nyala in European zoos.

SPECIES:	Eastern mountain bongo *Tragelaphus eurycerus isaaci* (Ogilby, 1837)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action

AZA POPULATION STATUS: 46.82 (128) in 38 institutions[8]

AZA PROGRAM STATUS:

INTERNATIONAL STUDBOOK KEEPER: Lydia Frasier-Bosley, supported by Oregon Zoo
lfbosley@q.com

SSP® COORDINATOR: Ron Surratt, Fort Worth Zoo
rsurratt@fortworthzoo.org

SSP® VICE-COORDINATOR: John Ward, Fort Worth Zoo
jward@fortworthzoo.org

MANAGEMENT PLAN: 2013 SSP®

ADVISOR(S): Katelyn Marti, PMC
kmarti@lpzoo.org

WILD POPULATION STATUS:

IUCN: Critically Endangered C2a(i)

OTHER REGIONAL PROGRAM STATUS, FROM 2014 INTERNATIONAL STUDBOOK[9]:

AFRICA: 72 in 3 institutions
ASIA/MIDDLE EAST: 44 in 7 institutions
AUSTRALIA: 10 in 4 institutions
EUROPE: 181 in 47 institutions
NORTH AMERICA (NON-SSP®) ~273 in 20 institutions
SOUTH AMERICA: 18 in 3 institutions

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Bongo Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **19**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 83% gene diversity for 100 years

Target Population Size: 250

Bongo SSP® Demography Summary Table

Current size of population (N)	48.84 (132)
Number of individuals excluded from management	18
Population size following exclusions	40.74 (114)
Target population size (Kt)	250
Mean generation time (years)	6.2
Historical/Potential population growth rate (λ, lambda)	1.10/1.04

[8] Surratt, R. and K. Marti, 2013. AZA Population Analysis & Breeding and Transfer Plan for Eastern (Mountain) Bongo (*Tragelaphus eurycerus isaaci)* SSP® Yellow Program, 2013. www.aza.org.
[9] Bosley, L., 2014. International Studbook for Bongo *Tragelaphus eurycerus isaaci*, 2013. www.aza.org.

SPECIES:	Eastern mountain bongo *Tragelaphus eurycerus isaaci* (Ogilby, 1837)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action

Bongo SSP® Genetic Summary Table

	Current	Potential
Founders	29	0
Founder genome equivalents (FGE)	7.70	13.01
Gene Diversity (GD %)	93.51	96.16
Population Mean Kinship (MK)	0.0649	-----
Mean Inbreeding (F)	0.0457	-----
Effective population size (Ne/N)	0.2924	-----
Percentage of pedigree known before assumptions & exclusions	90.9	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	27	-----
Years to 10% Loss of Gene Diversity	99	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.04$, Target size = 250	82.96	-----

Comments: All bongo in North America are of known origin and should be reported to ZIMS as Eastern bongo by institutions. This program was upgraded to SSP® status in the 3rd edition of the RCP, based on the conservation status of the species, in order to optimize long-term management of the *ex situ* population and to establish links with *in situ* programs.

A repatriation project for bongo in the Mt. Kenya area was completed in 2004 and 4.16 animals from the SSP® population were reintroduced. The Mt. Kenya Bongo Project continues with plans for additional transfers of bongo breeding stock and continued technical and logistical support to ultimately return bongo to the forests of Mt. Kenya. For more information on this project, please contact Ron Surratt, rsurratt@fortworthzoo.org.

Program Goals and Objectives

1. Conservation Action
2. Maintain International Studbook
3. Make recommendations to grow population to Target Population Size
4. Recruit additional institutions
5. Investigate recruitment of specimens from the private sector in cases where the pedigree is known.
6. Encourage institutions to support field conservation and repatriation efforts in Kenya

SPECIES:	Southern lesser kudu *Tragelaphus imberbis imberbis* (Blyth, 1869)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population
AZA POPULATION STATUS:	59.54 (113) in 19 institutions[10]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Lily Civili, Saint Louis Zoo civili@stlzoo.org
SSP® VICE-COORDINATOR:	Vacant
MANAGEMENT PLAN:	2014
ADVISOR(S):	Ed Spevak, Saint Louis Zoo spevak@stlzoo.org
WILD POPULATION STATUS:	
IUCN:	Near Threatened
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
EUROPE:	25.44 (69) in 13 institutions
ASIA/MIDDLE EAST:	6.14 (20) in 1 institution
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Lesser Kudu Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**12**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 62.81% gene diversity for 100 years

Target Population Size: 150

Southern Lesser Kudu SSP® Demography Summary Table

Current size of population (N)	59.54 (113)
Number of individuals excluded from the potentially breeding population	3
Population size following exclusions	110
Target population size (Kt)	150
Mean generation time (T; years)	6
Projected population growth rate (λ; lambda)	1.064

[10] Civili, L. and E. Spevak, 2014. AZA Population Analysis & Breeding and Transfer Plan for Southern Lesser Kudu (*Tragelaphus imberbis)* SSP® Yellow Program, 2013. www.aza.org.

SPECIES:	Southern lesser kudu *Tragelaphus imberbis imberbis* (Blyth, 1869)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population

Southern Lesser Kudu SSP® Genetic Summary Table

	Current	Potential
Founders	12	0
Founder genome equivalents (FGE)	2.56	4.29
Gene diversity (GD%)	80.51	88.33
Population mean kinship (MK)	0.1949	-----
Mean inbreeding (F)	0.1563	-----
Effective population size/census size ratio (Ne/N)	0.2323	-----
% pedigree known before assumptions and exclusions		-----
% pedigree known after assumptions and exclusions	100	-----
Years to 90% GD	Already <90%	-----
Gene Diversity at 100 Years (%) Assuming $\lambda = 1.055$, TPS = 175	62.81	-----

Comments: This population is very well managed and there is reason to believe that the gene diversity can be move closer to its current potential. The population is inbred but has grown rapidly over the last several years.

Lesser kudu are relatively easy to manage and mix extremely well with other species. Additional institutions are sought for the long-term management of this species. Recruitment of additional founders is encouraged.

Program Goals and Objectives

1. Assurance Population
2. Make recommendations to grow population to Target Population Size
3. Recruit additional institutions
4. Import new founders
    a. Explore partnerships with EAZA as there is a population of lesser kudu in European zoos and exchange might be possible.
5. Recruit SSP® Vice-Coordinator

SPECIES:	Harnessed bushbuck *Tragelaphus scriptus scriptus* (Pallas, 1766)
PROGRAM:	Phase Out
PRIMARY PROGRAM GOAL:	n/a

AZA POPULATION STATUS: 6.5 (11) in 1 institution[11]

AZA PROGRAM STATUS:

PROGRAM LEADER: n/a

MANAGEMENT PLAN: n/a

ADVISOR(S): n/a

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA: 8.11.26 (46) in 2 institutions *(T. scriptus)*

ASIA/MIDDLE EAST: 1.0 (1) in 1 institution *(T. scriptus)*

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Bushbuck Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **4**

AZA PROGRAM SUMMARY

Sustainability Score: Phase Out - It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. A Species Suggestions Table (Table 6) is provided.

Target Population Size: 0

Comments: Management of this species has long been problematic due to challenging behavior and husbandry issues. The remaining population is genetically and demographically compromised.

Program Goals and Objectives

1. Phase Out

[11] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Greater kudu *Tragelaphus strepsiceros spp* (Pallas, 1766)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION STATUS:	86.154.5 (245) in 37 institutions[12] *(T. strepsiceros spp)*
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Dennis Charlton, Smithsonian's National Zoo charltond@si.edu
SSP® VICE-COORDINATOR:	Scotty Stainback, Caldwell Zoo sstainback@caldwellzoo.org
MANAGEMENT PLAN:	2012
ADVISOR(S):	Sarah Long, AZA Population Management Center slong@lpzoo.org
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
AFRICA:	1.3.39 (43) in 3 institutions *(T. strepsiceros and T. s. strepsiceros)*
ASIA/MIDDLE EAST:	12.6.2 (20) in 6 institutions *(T. strepsiceros and T. s. strepsiceros)*
AUSTRALIA:	0.3 (3) in 1 institution
EUROPE:	59.107.1 (167) in 35 institutions *(T. strepsiceros and T. s. strepsiceros)*
NORTH AMERICA (NON-SSP®):	10.19.1 (30) in 2 institutions
SOUTH AMERICA:	5.8 (13) in 2 institutions
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Greater Kudu Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**12**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 77.47% gene diversity for 100 years

Target Population Size: 250

Greater Kudu SSP® Demography Summary Table

Current size of population (N)	86.154.5 (245)
# of individuals excluded from the potentially breeding population	16
Population size following exclusions	229
Target population size (Kt)	200
Mean generation time (T; years)	5.3
Historical population growth rate/Potential population growth rate (λ; lambda)	1.13/1.00

[12] Charlton, D. and S. Long, 2012. AZA Population Analysis & Breeding and Transfer Plan for Greater Kudu (*Tragelaphus strepsiceros)* SSP® Yellow Program, 2012. www.aza.org.

SPECIES:	Greater kudu *Tragelaphus strepsiceros spp* (Pallas, 1766)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Greater Kudu SSP® Genetic Summary Table

	Current	Potential
Founders	46	0 additional
Founder genome equivalents (FGE)	6.48	12.83
Gene diversity (GD%)	92.29	96.10
Population mean kinship (MK)	0.0771	-----
Mean inbreeding (F)	0.0562	-----
Effective population size/census size ratio (Ne/N)	0.2348	-----
% pedigree known before assumptions and exclusions	18.7	-----
% pedigree known after assumptions and exclusions	52.4	-----
Years to 90% GD	13	-----
Year to 10% loss of GD	60	-----
Gene Diversity at 100 Years (%)	77.47	-----
Variables (target size, growth rate) used for projections	200, λ=1.00	-----

Comments: This population is current at its Target Population Size. Institutions are strongly recommended to comply with SSP® recommendations to maintain this population at its optimal size.

The greater kudu continues to be popular in AZA and the 2013 space survey indicates that this species will likely be maintained in current or slightly greater numbers. Based on this, the target population size has been increased to 250 animals in this edition of the RCP to reflect the institutional interest indicated in the space survey.

A combined studbook for both forms (*T. strepsiceros* and *T. s. strepsiceros*) is maintained with sub-specific designations for those specimens for which it is known.

The managed population continues to be challenged by unknown pedigrees. Further propagation of the unknown lineages will produce animals that may fill spaces and meet demographic needs but which cannot be managed genetically using traditional pedigree or mean kinship values. Known pedigree animals will be prioritized for breeding (and not interbred with unknown pedigree animals) to increase the known and genetically managed portion of the population. Animals with less than 50% known pedigree are better suited for exhibit only, non-breeding situations. The TAG encourages all institutions managing greater kudu to record parentage of offspring on a go-forward basis.

Program Goals and Objectives

- Education/Exhibit Needs
- Attempt to further resolve unknown pedigrees or use alternative genetic management strategies
- Encourage permanent identification of animals
- Manage the population to maintain the Target Population Size
- Encourage institutions to follow SSP® breeding and transfer recommendations

SPECIES:	Sitatunga *Tragelaphus spekii* (Sclater, 1863)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION STATUS:	18.34 (52) in 10 institutions[13]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER:	Gil Myers, Smithsonian's National Zoo myersg@si.edu
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
AFRICA:	4.7 (11) in 1 institution *(T. spekii)*
ASIA/MIDDLE EAST:	2.4 (6) in 2 institutions *(T. spekii and T. s. gratus)*
AUSTRALIA:	10.3 (3) in 2 institutions *(T. spekii)*
EUROPE:	119.353.23 in 54 institutions *(T. s. gratus)*
RESOURCES AVAILABLE:	
SPECIES PROFILE:	Sitatunga Species Profile
PHOTOS AND FACTS:	Sitatunga Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**10**

AZA PROGRAM SUMMARY

Sustainability Score: n/a

Target Population Size: 75

Comments: There are more sitatunga in the private sector than in the AZA population. Of special concern to the managed population is the high degree of unknownness in the pedigree - a result of both uncertainties deep in the historical pedigree and current offspring born to unidentified parents. Pedigree assumptions have been incorporated into an analytical studbook to estimate the amount of gene diversity in the population and to help avoid inbreeding. With the population size now slightly greater than 50, the program qualifies for assistance from the PMC in producing a formal Population Analysis and Breeding and Transfer Plan. The 2013 space survey indicates a maximum capacity for this species in five years of 101 animals but the target population has been set at 75 as that is a more realistic growth rate.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Complete a formal Population Analysis & Breeding and Transfer Plan
    a. Alternative genetic management strategies may be needed due to the high degree of unknown pedigree in the population.
3. Recruit additional institutions
4. Import new founders

[13] Myers, G., 2014. AZA North American Regional Studbook for the Sitatunga *Tragelaphus spekii,* 2014. www.aza.org.

SPECIES:	Roan antelope *Hippotragus equinus* (Desmarest, 1804)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION STATUS:	41.56 (97) in 10 institutions[14]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Andi Kornak, Cleveland Metroparks Zoo amk@clevelandmetroparks.com
SSP® VICE-COORDINATOR:	Scotty Wade, White Oak Conservation Center scottyw@wogilman.com
MANAGEMENT PLAN:	2012
ADVISOR(S):	AZA Population Management Center slong@lpzoo.org
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
AFRICA:	29.20 (49) in 2 institutions
ASIA/MIDDLE EAST:	1.3 (4) in 2 institutions
EUROPE:	48.73 (121) in 18 institutions
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Roan Antelope Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**10**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 66.1% gene diversity for 100 years

Target Population Size: 125

Roan Antelope SSP® Demography Summary Table

Current size of population (N)	41.56 (97)
Number of individuals excluded from the potentially breeding population	10.3 (13)
Population size following exclusions	31.53 (84)
Target population size (Kt)	125
Mean generation time (T; years)	6.0
Historical population growth rate/Potential population growth rate needed to grow population to target size in the next 5 years (λ; lambda)	1.147/1.05

[14] Kornak, A. and K. Schad, 2012. AZA Population Analysis & Breeding and Transfer Plan for Roan Antelope (*Hippotragus equinus)* SSP® Yellow Program, 2012. www.aza.org.

SPECIES:	Roan antelope *Hippotragus equinus* (Desmarest, 1804)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Roan Antelope SSP® Genetic Summary Table

	Current	Potential
Founders	17	0
Founder genome equivalents (FGE)	3.6	6.29
Gene diversity (GD%)	86.09	92.05
Population mean kinship (MK)	0.1391	-----
Mean inbreeding (F)	0.1149	-----
Effective population size/census size ratio (Ne/N)	0.3582	-----
% pedigree known before assumptions and exclusions	7.8	-----
% pedigree known after assumptions and exclusions	91	-----
Years to 90% GD	Already <90%	Already <90%
Year to 10% loss of GD	47	46
Gene Diversity at 100 Years from Present (%); Target size = 125; Potential projects assuming λ=1.05	66.1	66
Gene Diversity in 10 Generations ((Tx10) = 60 years) from Present (%); Target size=125; Potential projections assuming λ=1.05	76	76

Comments: A program that replaces the generic roan antelope population with *H. e. cottoni* is preferable, but the poor outlook for the acquisition of additional founder animals may dictate the continued management of a generic population.

With continued careful management, there is some room to increase the genetic diversity of the current population closer to its potential of 92.05%. The trend towards larger, multi-species savannah exhibits is a potential obstacle to expanding the number of collections that include roan antelope. Therefore, greater institutional interest will need to be generated.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Make recommendations to grow population to Target Population Size
3. Recruit additional institutions
4. Import new founders

SPECIES:	Sable antelope *Hippotragus niger* (Harris, 1838)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 37.100.2 (139) in 16 institutions[15]

AZA PROGRAM STATUS:

NA STUDBOOK KEEPER & SSP® COORDINATOR: Jill Piltz, Disney's Animal Kingdom
jill.m.piltz@disney.com

SSP® VICE-COORDINATOR: Tracy Sorensen, Brevard Zoo
tsorensen@brevardzoo.org

MANAGEMENT PLAN: 2012

ADVISOR(S): Gina M. Ferrie, Disney's Animal Kingdom
Gina.M.Ferrie@disney.com

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA: 13.25.2 (40) in 2 institutions *(H. niger)*

ASIA/MIDDLE EAST: 3.7 (10) in 2 institutions *(H. niger and H. n. niger)*

AUSTRALIA: 0.3 (3) in 1 institution *(H. niger)*

EUROPE: 68.117.3 (188) in 26 institutions *(H. niger and H. n. niger)*

NORTH AMERICA (NON-SSP®): 17.20.2 (39) in 4 institutions *(H. niger)*

SOUTH AMERICA: 3.2 (5) in 1 institution *(H. niger)*

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Sable Antelope Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **11**

AZA PROGRAM SUMMARY

Sustainability Score: Genetic analysis not possible due to high level of unknown pedigree

Target Population Size: 175

Sable Antelope SSP® Demography Summary Table

Current size of population (N)	37.100.2 (139)
Number of individuals excluded from the potentially breeding population	10.12 (22)
Population size following exclusions	27.88.2 (117)
Target population size (Kt)	150
Mean generation time (T; years)	6.1
Historical population growth rate/Potential population growth rate needed to grow population to target size in the next 2 years (λ; lambda)	1.063/1.039

[15] Piltz, J. and G. Ferrie, 2012. AZA Population Analysis & Breeding and Transfer Plan for Sable Antelope (*Hippotragus niger)* SSP® Yellow Program, 2012. www.aza.org.

SPECIES:	Sable antelope *Hippotragus niger* (Harris, 1838)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Sable Antelope SSP® Genetic Summary Table

	Current	Potential
Founders	n/a	0
Founder genome equivalents (FGE)	n/a	n/a
Gene diversity (GD%)	n/a	n/a
Population mean kinship (MK)	n/a	-----
Mean inbreeding (F)	n/a	-----
Effective population size/census size ratio (Ne/N)	n/a	-----
% pedigree known before assumptions and exclusions	13.8	-----
% pedigree known after assumptions and exclusions	40.9	-----
Years to 90% GD	n/a	-----
Year to 10% loss of GD	n/a	-----
Gene Diversity at 100 Years (%)	n/a	-----
Gene Diversity in 10 Generations (%)	n/a	-----

Comments: It is thought that all the specimens in the North American population of sable antelope are of the South African variety. A large number of sable antelope being held in private hands are not included in the managed population numbers above.

There is still significant institutional interest in this species and the Target Population Size has been set at 175 based on current numbers and data about current and future space from the 2013 space survey.

Currently the biggest challenge facing the population is the high amount of unknown pedigree leading to the inability to provide genetic analyses for the entire population and no recommendations for some herds. There are very few reproductively proven and experienced breeding males in the AZA population leading to males being brought in from the private sector which perpetuates the unknown in this population. The TAG encourages all institutions managing sable antelope to record parentage of offspring and to keep males of known pedigree intact on a go-forward basis.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Attempt to further resolve unknown pedigrees or use alternative genetic management strategies
3. Make recommendations to grow population to Target Population Sizes
4. Recruit additional institutions, especially for bachelor herds
5. Import new founders

SPECIES:	Impala *Aepyceros melampus* (Lichtenstein, 1812)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION STATUS:	53.127.4 (184) in 14 institutions[16]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER:	Jennifer MacNaughton, Busch Gardens-Tampa Jennifer.MacNaughton@BuschGardens.com
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
AFRICA:	1.237 (238) in 4 institutions
ASIA/MIDDLE EAST:	31.56.33 (120) in 4 institutions
EUROPE:	91.201.9 (301) in 27 institutions
NORTH AMERICA (NON-AZA):	7.21 (28) in 2 institutions
SOUTH AMERICA:	1.0 (1) in 1 institution
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Impala Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**10**

AZA PROGRAM SUMMARY

Sustainability Score: TBD if program achieves Yellow Program status

Target Population Size: 150

Comments: Population analysis was attempted in January 2002. However, no masterplan was produced due to outstanding issues with characterizing the population. The current population size is over 50 so this program will qualify for assistance from the PMC once a studbook is produced. Producing a formal Population Analysis & Breeding and Transfer Plan will involve exploring the use of alternative genetic management strategies as traditional planning is not possible due to the high degree of unknown pedigree in this population.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Update and publish studbook. Attempt to resolve unknown pedigrees
3. Attempt to produce a Population Analysis & Breeding and Transfer Plan, using alternative genetic management strategies if necessary
4. Determine ideal Target Population Size
    a. Currently set at 150 based on reported AZA holdings and data from the 2013 space survey

[16] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Springbok *Antidorcas marsupialis* (Zimmerman, 1780)
PROGRAM:	Phase Out
PRIMARY PROGRAM GOAL:	n/a

AZA POPULATION STATUS: 33.28.2 (63) in 11 institutions[17]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER: Jessica Scallan, Tulsa Zoo and Living Museum
Jessica.scallan@sbcglobal.net

MANAGEMENT PLAN: n/a

ADVISOR(S): n/a

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA: 2.12.38 (52) in 3 institutions *(A. marsupialis)*

ASIA/MIDDLE EAST: 6.7.5 (18) in 2 institutions *(A. marsupialis)*

AUSTRALIA: 6.12 (18) in 2 institutions *(A. m. angolensis)*

EUROPE: 41.64.5 (110) in 15 institutions *(A. marsupialis)*

RESOURCES AVAILABLE:

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **6**

AZA PROGRAM SUMMARY

Sustainability Score: Phase Out - It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. A Species Suggestions Table (Table 6) is provided.

Target Population Size: 0

Comments: A combined studbook for all forms of springbok is recommended, maintaining subspecific designations for those specimens for which they are known. The SSP® will manage only the *A. m. marsupialis* subspecies. All other springbok in NA are of untraceable ancestry and the decision was made to discontinue management and to concentrate the program's efforts on the animals of known parentage.

Program Goals and Objectives

1. Phase Out

[17] Scallan, J. 2012. AZA North American Regional Studbook for Springbok *Antidorcas marsupialis*. www.aza.org.

SPECIES:	South African Springbok *Antidorcas marsupialis marsupialis* (Zimmerman, 1780)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION STATUS:	30.30 (60) in 14 institutions[18]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Jessica Scallan, Tulsa Zoo and Living Museum Jessica.scallan@sbcglobal.net
SSP® VICE-COORDINATOR:	Vacant
MANAGEMENT PLAN:	2013
ADVISOR(S):	Gina M. Ferrie, Disney's Animal Kingdom Gina.M.Ferrie@disney.com
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
AFRICA:	4.5.128 (137) in 2 institutions
ASIA/MIDDLE EAST:	4.7.1 (12) in 2 institutions
RESOURCES AVAILABLE:	
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**10**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 61.4% gene diversity for 100 years

Target Population Size: 100

South African Springbok SSP® Demography Summary Table

Current size of population (N)	30.30 (60)
Number of individuals excluded from the potentially breeding population	1.5 (6)
Population size following exclusions	29.25 (54)
Target population size (Kt)	100
Mean generation time (T; years)	4.7
Historical population growth rate/Potential population growth rate needed to grow population to target size in the next 9 years (λ; lambda)	1.038/1.038

[18] Scallan, J. and G. Ferrie, 2013. AZA Population Analysis & Breeding and Transfer Plan for South African Springbok *(Antidorcas marsupialis marsupialis)* SSP® Yellow Program, 2013. www.aza.org.

SPECIES:	South African Springbok *Antidorcas marsupialis marsupialis* (Zimmerman, 1780)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

South African Springbok SSP® Genetic Summary Table

	Current	Potential
Founders	11	0
Founder genome equivalents (FGE)	3.56	8.34
Gene diversity (GD%)	85.96	94.00
Population mean kinship (MK)	0.1404	-----
Mean inbreeding (F)	0.0733	-----
Effective population size/census size ratio (Ne/N)	0.3323	-----
% pedigree known before assumptions and exclusions	47	-----
% pedigree known after assumptions and exclusions	97	-----
Years to 90% GD	Already <90%	-----
Year to 10% loss of GD	28	-----
Gene Diversity at 100 Years (%) Assuming $\lambda = 1.055$, TPS = 175	61.4	-----
Gene Diversity in 10 Generations (%) T=4.7 x 10 = 47	72.8	-----

Comments: A combined studbook for all forms of springbok is recommended, maintaining subspecific designations for those specimens for which they are known. The SSP® will manage only the *A. m. marsupialis* subspecies. All other springbok in NA are of unknown and untraceable ancestry and the decision was made to discontinue management and to concentrate the program's efforts on the animals of known parentage.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Encourage current holders of generic springbok to phase those specimens out in favor of South African springbok.
3. Make recommendations to grow population to Target Population Size
4. Recruit additional institutions
5. Recruit SSP® Vice-Coordinator

SPECIES:	Blackbuck *Antilope cervicapra* (Linnaeus, 1758)
PROGRAM:	Unmanaged Population
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION STATUS:	84.181.5 (270) in 11 institutions[19]
AZA PROGRAM STATUS:	
PROGRAM LEADER:	n/a
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
IUCN:	Near Threatened
CITES:	Appendix III (Nepal)
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
AFRICA:	4.12.1 (17) in 3 institutions
ASIA/MIDDLE EAST:	101.199.520 (27) in 3 institutions
AUSTRALIA:	47.81.38 (166) in 5 institutions
EUROPE:	227.429.322 (978) in 2 institutions
NORTH AMERICA (NON-AZA)	44.69.123 (236) in 9 institutions
SOUTH AMERICA:	2.3 (5) in 1 institution
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Blackbuck Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**11**

AZA PROGRAM SUMMARY

Sustainability Score: Maintain as an unmanaged Education/Exhibit Needs population

Target Population Size: 150 (This Target Population Size is an estimate based on Steering Committee's knowledge of this species and the space survey responses indicating institutional interest and available space.)

Comments: It is estimated that there are more than 30,000 blackbuck in private hands and feral populations in the southwest United States. The future potential need for a managed population of blackbuck as a hedge against diminishing numbers in the wild is of minimal value. However, the species is an important antelope representative of Asia/Middle Eastn ecosystems and therefore has a strong educational component. The species is popular and easily managed in AZA institutions; however there are significant untraceable unknowns in the historic population database preventing detailed analysis and traditional management of the current population. Maintaining the blackbuck population in North American zoos warrants monitoring population trends but does not warrant a formal program. Recruitment of animals from outside the AZA population may be possible as the need is demonstrated.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Monitor population

[19] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Southern gerenuk *Litocranius walleri walleri* (Brooke, 1879)
PROGRAM:	Species Survival Plan® - Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population
AZA POPULATION STATUS:	24.48 (72) in 17 institutions[20]
AZA PROGRAM STATUS:	
NA STUDBOOK KEEPER & SSP® COORDINATOR:	Christina Seely, Denver Zoo cseely@denverzoo.org
SSP® VICE-COORDINATOR:	Manda Butler, Cameron Park Zoo MandaB@ci.waco.tx.us
MANAGEMENT PLAN:	2014[21]
ADVISOR(S):	Jessica Ray, AZA Population Management Center jray@lpzoo.org
WILD POPULATION STATUS:	
IUCN:	Near Threatened
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
ASIA/MIDDLE EAST:	10.18 in 3 institutions (*Litocranius walleri and L. w. walleri*) 12.20.2 in 1 institution (*L. w. sclateri*)
EUROPE:	2.2 in 1 institution (*L. w. walleri*)
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Gerenuk Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
AZA POPULATION VIABILITY ANALYSIS REPORT	Southern Gerenuk 2013 PVA
SPECIES SELECTION PROCESS SCORE:	**14**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 47% genetic diversity for 100 years

Target Population Size: 150

Southern Gerenuk SSP® Demography Summary Table

Current size of population (N)	24.48 (72)
Number of individuals excluded from management	2.3 (5)
Population size following exclusions	22.45 (67)
Target population size (Kt)	150
Mean generation time (years)	4.8
Historical/Potential Population growth rate (λ, lambda)	1.03/1.00

[20] Seely, C., Butler, M and J. Ray, 2014 . AZA Draft Population Analysis & Breeding and Transfer Plan for Southern Gerenuk *(Litocranius walleri)* SSP® Yellow Program, 2014. www.aza.org.

SPECIES:	Southern gerenuk *Litocranius walleri walleri* (Brooke, 1879)
PROGRAM:	Species Survival Plan® - Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population

Southern Gerenuk SSP® Genetic Summary Table

	Current	Potential
Founders	16	0
Founder genome equivalents (FGE)	3.34	5.45
Gene Diversity (GD %)	85.03	90.83
Population Mean Kinship (MK)	0.1497	-----
Mean Inbreeding (F)	0.1050	-----
Effective population size/census size ration (Ne/N)	0.2648	-----
Percentage of pedigree known before assumptions & exclusions	100	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	23	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.00$, Target size = 150	47	-----

Comments: All gerenuk in North America are of the Southern species (*Litocranius walleri walleri*) and should be reported to ZIMS as such.

According to the 2013 Southern Gerenuk AZA Population Viability Analysis Report, this population's status in AZA is critical in the future if no changes are made. This population is challenged by small population size, high death rates and decreasing gene diversity. With changes, the outlook for this population in AZA can be elevated to vulnerable. Essential actions listed for this population include increasing reproduction and decreasing mortality rates. Institutions are asked to work with the SSP® to import young unrelated individuals, to aggressively pursue breeding recommendations given to your institution and to discuss future institutional plans with the SSP® Coordinator to make sure gerenuk spaces are available.

Program Goals and Objectives

1. Assurance Population
2. Make recommendations to grow population to Target Population Size
3. Import new founders

SPECIES:	Nilgai *Boselaphus tragocamelus* (Pallas, 1766)
PROGRAM:	Unmanaged Population
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 17.41 (58) in 8 institutions[22]

AZA PROGRAM STATUS:

PROGRAM LEADER:	n/a
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a

WILD POPULATION STATUS:

IUCN:	Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA:	1.1 (2) in 1 institution
ASIA/MIDDLE EAST:	63.80.102 (245) in 21 institutions
EUROPE:	72.193.3 (268) in 47 institutions
NORTH AMERICA (NON-AZA)	19.39 (58) in 8 institutions

RESOURCES AVAILABLE:

PHOTOS AND FACTS:	Nilgai Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **9**

AZA PROGRAM SUMMARY

Sustainability Score: Maintain as an unmanaged Education/Exhibit Needs population.

Target Population Size: 100 (This Target Population Size is an estimate based on Steering Committee's knowledge of this species and the space survey responses indicating institutional interest and space available.)

Comments: It is estimated that there are tens of thousands of nilgai in private hands and feral populations in the southwest United States. The future potential need for a managed population of nilgai as a hedge against diminishing numbers in the wild is of minimal value. However, the species is an important antelope representative of Asian ecosystems and therefore has a strong educational component. The species is popular and easily managed in zoos; however there are significant untraceable unknowns in the historic population database preventing detailed analysis and traditional management of the current population. Maintaining the nilgai population in North American zoos warrants monitoring population trends but does not warrant a formal program. Recruitment of animals from outside the AZA population may be possible as the need is demonstrated.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Monitor population

[22] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

Forest/Woodland Antelope Subgroup
in situ Focus Species

Western Giant Eland ***Tragelaphus derbianus derbianus*** (Gray, 1847)
Range: Senegal, Mali, Guinea **Wild population estimate:** <200?
Photos and Facts: Giant Eland Ultimate Ungulate Fact Sheet

Lord Derby's eland has continued to decline in Senegal. This species still occurs in Mali and Guinea, but the wild population numbers remaining in these countries are unknown. Large seasonal home ranges place the giant eland in further jeopardy as they move out of protected areas such as Niokola Koba National Park. Hunting and habitat loss due to agriculture and herders contribute to the species' demise. Very little actual protection is afforded the species and numbers continue to decline. A managed program has been initiated in the Bandia Reserve in Senegal by concerned members of the private sector. A conservation action plan is needed to help conserve the remaining wild population. Technical and financial support is needed in these endeavors.
For information on how to become involved, contact Steve Shurter, steves@wogilman.com

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Mountain nyala ***Tragelaphus buxtoni*** (Lydekker, 1910)
Range: Ethiopia **Wild population estimate:** >2500
Photos and Facts: Mountain Nyala Ultimate Ungulate Fact Sheet

Bale Mountain National Park is a reserve representing a portion of the Afro-Alpine flora of the region. The mountain nyala is endemic to the area and a population survives inside the park, as well as in external areas. Little protection is afforded the species, despite the protected status. No management plan or conservation program has been developed for the mountain nyala and little is known of its natural history or biology, however hunting permits continue to be issued to take animals in Ethiopia. As an endemic monotypic species this is a critically important population which deserves conservation focus and support, and which requires further research to understand the ecology of the species.

The Saint Louis Zoo's WildCare Institute Center for Conservation in the Horn of Africa was established to provide *in situ* and *ex situ* conservation support for wildlife of the Horn of Africa, including mountain nyala. By supporting community-based coalitions and actively establishing a variety of conservation, research and education programs, this Center is striking a lasting balance between the needs of community members and the imperiled existence of several rare species. Emerging conservation research and education programs for the mountain nyala are being given important ground-floor support through emerging conservation organizations in Ethiopia. Additional partners are needed to support these ongoing programs that will lead to the development of a formal national conservation strategy for this endangered species.
For information on how to become involved, contact Martha Fischer, fischer@stlzoo.org

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Giant sable antelope ***Hippotragus niger variani*** (Harris, 1838)
Range: Angola **Wild population estimate:** >250

Disputes of the validity of this sub-species as compared with *H. n. niger* and *H. n. bakeri* continue. Historic hunting records indicate the species to have the largest horns of any sable, whether from environmental conditions or genetic variation. The giant sable lives in unique

woodland areas in Angola and the remaining population is not within designated protected areas. Years of civil war have prevented accurate surveys and the remaining giant sable are known to be low in number but without accurate information. No managed program for the sub-species is known to exist. A conservation program for the species may be developed by the government of Angola. This is a priority species of the Antelope Specialist Group and requires conservation measures to insure their survival.

For information on how to become involved, contact Sharon Joseph, sjoseph@houstonzoo.org

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Black-faced impala ***Aepyceros melampus petersi*** **(**Lichtenstein, 1812)
Range: Angola, Namibia **Wild population estimate:** >2200

This striking sub-species of impala is considered highly threatened though it is afforded protection and is managed in both the private and government lands in range states. An *ex situ* program was attempted in North America but was not successful. Conservation support and future *ex situ* programs may be warranted to assist the species.

For information on how to become involved, contact Sharon Joseph, sjoseph@houstonzoo.org

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Dibatag ***Ammodorcas clarkei*** (Thomas, 1891)
Range: Ethiopia, Djibouti **Wild population estimate:** unknown
Photos and Facts: Dibatag Ultimate Ungulate Fact Sheet

A unique antelope from the Horn of Africa, the dibatag lives in evergreen woodland regions under heavy pressure from domestic herders and from poaching. Surveys have been conducted in the Ogaden Region in Ethiopia, however civil unrest has made accurate assessment of the remaining population challenging. Little is known of the biology or natural history of this monotypic species or of the remaining wild population. No conservation management is in place in the range states and efforts should be invested towards increasing the base of knowledge for the species. Technical and financial support is warranted towards these conservation objectives. It is unknown whether this species is held in private herds however a managed program may be warranted to assist conservation goals.

For information on how to become involved, contact Martha Fischer, fischer@stlzoo.org

Small Antelope Subgroup
Vice Chair, Jeff Holland jeff.holland@lacity.org

SPECIES:	Bay duiker *Cephalophus dorsalis* (Gray, 1846)
PROGRAM:	Phase Out
PRIMARY PROGRAM GOAL:	n/a
AZA POPULATION STATUS:	5.7.1 (13) in 2 institutions[23]
AZA PROGRAM STATUS:	
PROGRAM LEADER:	n/a
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
IUCN:	Least Concern
CITES:	Appendix II
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
Not present in other regions	
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Bay Duiker Ultimate Ungulate Fact Sheet
HUSBANDRY MANUAL:	Husbandry Excerpt from 2002 Bay, Black and Red-flanked Duiker Studbook
HUSBANDRY MANUAL:	AZA Husbandry Manual for Duikers, 2000
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**6**

AZA PROGRAM SUMMARY

Sustainability Score: Phase Out - It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. A Species Suggestions Table (Table 6) is provided.

Target Population Size: 0

Comments: Importation of new founders for the long term management of the North American bay duiker population is not realistic at this time. Due to low institutional interest and low zoo numbers it is recommended to phase out this population to provide spaces for other duiker programs.

Program Goals and Objectives

1. Phase Out

[23] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Maxwell's duiker *Philantomba maxwellii* (H. Smith, 1827)
PROGRAM:	Phase Out
PRIMARY PROGRAM GOAL:	n/a

AZA POPULATION STATUS: 1.1 (2) in 1 institution[24]

AZA PROGRAM STATUS:

PROGRAM LEADER:	n/a
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA: 1.0 (1) in 1 institution

RESOURCES AVAILABLE:

PHOTOS AND FACTS:	Maxwell's Duiker Ultimate Ungulate Fact Sheet
HUSBANDRY MANUAL:	Husbandry Excerpt from 2002 Bay, Black and Red-flanked Duiker Studbook
HUSBANDRY MANUAL:	AZA Husbandry Manual for Duikers, 2000
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **5**

AZA PROGRAM SUMMARY

Sustainability Score: Phase Out - It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. A Species Suggestions Table (Table 6) is provided.

Target Population Size: 0

Comments: This duiker program has been historically maintained in low numbers by several institutions in North America. The TAG recognizes the contrasts represented by the duiker complex and the need for continued research on zoo management and husbandry issues, particularly in the field of nutrition. At one time it was thought that the Maxwell's duiker program might be valuable in contributing to these goals as a model for other duiker programs, however now the population is too small to be viable. AZA institutions with Maxwell's duiker are recommended to pursue programs with similar duiker species of greater conservation value.

ZIMS and the IUCN SSC Antelope Specialist Group use different taxonomic names for several antelope species, including the Maxwell's duiker: ZIMS – *Cephalophus maxwellii;* IUCN – *Philantomba maxwellii*

Program Goals and Objectives

1. Phase Out

[24] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Blue duiker *Philantomba monticola* (Thomas, 1789)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Assurance Population

AZA POPULATION STATUS: 22.28.1 (51) at 16 institutions[25]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER: Sarah Ksiazek, Dallas Zoo
Alphadawg7@gmail.com

MANAGEMENT PLAN: 2011[26]

ADVISOR(S): AZA Population Management Center
slong@lpzoo.org

WILD POPULATION STATUS:

IUCN: Least Concern

CITES: Appendix II

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

EUROPE: 2.3 (5) in 2 institutions (*C. monticola*)
0.2 (2) in 1 institutions (hybrids)
11.12 (23) in 3 institutions (*C. m. schultzei*)

OTHER: 7.12.1 (20) in 3 institutions (*C. monticola*)
23.25.2 (50) in 6 institutions (*C. m. bicolor*)

RESOURCES AVAILABLE:

SPECIES PROFILE: Blue Duiker Species Profile

PHOTOS AND FACTS: Blue Duiker Ultimate Ungulate Fact Sheet

HUSBANDRY MANUAL: Husbandry Excerpt from 2002 Bay, Black and Red-flanked Duiker Studbook

HUSBANDRY MANUAL: AZA Husbandry Manual for Duikers, 2000

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **9**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 58% gene diversity for 100 years

Target Population Size: 75

Blue Duiker Red Program Demography Summary Table

Current size of population (N)	18.27.1 (46)
Number of individuals excluded from management	5.1 (6)
Population size following exclusions	13.26.1 (40)
Target population size (Kt)	75
Mean generation time (years)	4.66
Historical/Potential population growth rate (λ, lambda)	1.045/1.03

[25] Ksiazek, S., 2013. AZA North American Regional Studbook for the Blue Duiker *Cephalophus monticola,* 2013. www.aza.org.

[26] Ksiazek, S. and C. Groome, 2011. Population Analysis & Breeding and Transfer Plan for the AZA Blue Duiker (*Cephalophus monticola)* Red Program, 2011. www.aza.org.

SPECIES:	Blue duiker *Philantomba monticola* (Thomas, 1789)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Assurance Population

Blue Duiker Red Program Genetic Summary Table

	Current	Potential
Founders	25	0
Founder genome equivalents (FGE)	4.58	7.56
Gene Diversity (GD %)	89.08	93.39
Population Mean Kinship (MK)	0.1092	-----
Mean Inbreeding (F)	0.0623	-----
Effective population size/census size ration (Ne/N)	0.3659	-----
Percentage of pedigree known before assumptions & exclusions	100	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	21	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.03$, Target size = 75	58	-----

Comments: Importation of new founders is important in support of the long term program.

ZIMS and the IUCN SSC Antelope Specialist Group use different taxonomic names for several antelope species, including the blue duiker: ZIMS – *Cephalophus monticola;* IUCN – *Philantomba monticola*

Program Goals and Objectives

1. Assurance Population
2. Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA Population Management Center
3. Recruit additional institutions
4. Import new founders

SPECIES:	Black duiker *Cephalophus niger* (Gray, 1846)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 9.8 (17) in 5 institutions[27]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER: Jeff Holland, Los Angeles Zoo
Jeff.holland@lacity.org

MANAGEMENT PLAN: 2014

ADVISOR(S): Andrea Putnam, San Diego Zoo Global
aputnam@sandiegozoo.org

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

NORTH AMERICA (NON-AZA): 1.2 (3) in 2 institutions

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Black Duiker Ultimate Ungulate Fact Sheet

HUSBANDRY MANUAL: Husbandry Excerpt from 2002 Bay, Black and Red-flanked Duiker Studbook

HUSBANDRY MANUAL: AZA Husbandry Manual for Duikers, 2000

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **8**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 33.1% gene diversity for 100 years.

Target Population Size: 25

Black Duiker Red Program Demography Summary Table

Current size of population (N)	9.8 (17)
Number of individuals excluded from management	0
Population size following exclusions	9.8 (17)
Target population size (Kt)	25
Mean generation time (years)	6.9
Historical/Projected population growth rate (λ, lambda)	0.988/1.002

[27] Holland, J. and A. Putnam, 2014. Population Analysis & Breeding and Transfer Plan for the Black Duiker *(Cephalophus niger)* Red Program, 2014. www.aza.org

SPECIES:	Black duiker *Cephalophus niger* (Gray, 1846)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Black Duiker Red Program Genetic Summary Table

	Current	Potential
Founders	3	0
Founder genome equivalents (FGE)	1.74	2.43
Gene Diversity (GD %)	71.31	79.40
Population Mean Kinship (MK)	0.2869	-----
Mean Inbreeding (F)	0.1719	-----
Effective population size/census size ration (Ne/N)	0.520	-----
Percentage of pedigree known before assumptions & exclusions	100	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	20	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.002$, Target size = 25	33.1	-----

Comments: New holders are encouraged to participate with this duiker program.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA Population Management Center
3. Recruit additional institutions
4. Import new founders

SPECIES:	Red-flanked duiker *Cephalophus rufilatus* (Gray, 1846)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 22.12 (34) in 14 institutions[28]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER: Nate Oliveira, Saint Louis Zoo
oliveira@stlzoo.org

MANAGEMENT PLAN: 2012[29]

ADVISOR(S): Ed Spevak, Saint Louis Zoo
spevak@stlzoo.org

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

EUROPE: 1.0 (1) in 1 institution

RESOURCES AVAILABLE:

SPECIES PROFILE: Red-flanked Duiker Species Profile

PHOTOS AND FACTS: Red-flanked Duiker Ultimate Ungulate Fact Sheet

HUSBANDRY MANUAL: Husbandry Excerpt from 2002 Bay, Black and Red-flanked Duiker Studbook

HUSBANDRY MANUAL: AZA Husbandry Manual for Duikers, 2000

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **9**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 48.68% gene diversity for 100 years

Target Population Size: 75

Red-flanked Duiker Red Program Demography Summary Table

Current size of population (N)	19.15 (34)
Number of individuals excluded from management	0
Population size following exclusions	19.15 (34)
Target population size (Kt)	75
Mean generation time (years)	5.5
Historic Population growth rate (λ, lambda)	1.01

[28] Oliveira, N., 2013. AZA North American Regional Studbook for the Red Flanked Duiker *Cephalophus rufilatus*, 2013. www.aza.org.

[29] Oliveira, N. and E. Spevak, 2012. Population Analysis & Breeding and Transfer Plan for the AZA Red-flanked Duiker (*Cephalophus rufilatus)* Red Program, 2012. www.aza.org.

SPECIES:	Red-flanked duiker *Cephalophus rufilatus* (Gray, 1846)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Red-flanked Duiker Red Program Genetic Summary Table

	Current	Potential
Founders	11	0
Founder genome equivalents (FGE)	5.93	8.14
Gene Diversity (GD %)	91.57	93.86
Population Mean Kinship (MK)	0.0843	-----
Mean Inbreeding (F)	0.0220	-----
Effective population size/census size ration (Ne/N)	0.2824	-----
Percentage of pedigree known before assumptions & exclusions	100	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	1	-----
Years to 10% Loss of Gene Diversity	-----	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.01$, Target size = 75	48.68	-----

Comments: Recent recruitment of founders has occurred and has been helpful to the long-term outlook for the North American red-flanked duiker population. New holders are encouraged to participate with this duiker program.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Make recommendations to grow population to 50 so it can become a Yellow Program.
3. Encourage institutions to follow recommendations even though this is a Red Program and participation is not mandatory
4. Recruit additional institutions
5. Import new founders

SPECIES:	Yellow-backed duiker *Cephalophus silvicultor* (Afzelius, 1815)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population

AZA POPULATION STATUS: 42.40.1 (83) in 28 institutions[30]

AZA PROGRAM STATUS:

INTERNATIONAL STUDBOOK KEEPER & SSP® COORDINATOR: Linda Bachers, Milwaukee County Zoo
Linda.bachers@milwcnty.com

SSP® VICE-COORDINATOR: Jeff Holland, Los Angeles Zoo
Jeff.holland@lacity.org

MANAGEMENT PLAN: 2012

ADVISOR(S): Andrea Putnam, San Diego Zoo Global
aputnam@sandiegozoo.org

WILD POPULATION STATUS:

IUCN: Least Concern

CITES: Appendix II

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

EUROPE: 4.2 (6) in 2 institutions

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Yellow-backed Duiker Ultimate Ungulate Fact Sheet

HUSBANDRY MANUAL: Husbandry Excerpt from 2002 Bay, Black and Red-flanked Duiker Studbook

HUSBANDRY MANUAL: AZA Husbandry Manual for Duikers, 2000

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **12**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 77.7% gene diversity for 100 years

Target Population Size: 125

Yellow-backed Duiker SSP® Demography Summary Table

Current size of population (N) - global	46.42.1 (89)
Number of individuals excluded from management	4
Population size following exclusions	44.41 (85)
Target population size (Kt)	100
Mean generation time (years)	1.0338
Historic Population growth rate (λ, lambda)	1.027

[30] Bachers, L., Holland J., and A. Putnam, 2012. Population Analysis & Breeding and Transfer Plan for the AZA Yellow-backed Duiker (*Cephalophus silvicultor)* SSP® Yellow Program, 2012. www.aza.org.

SPECIES:	Yellow-backed duiker *Cephalophus silvicultor* (Afzelius, 1815)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population

Yellow-backed Duiker SSP® Genetic Summary Table

	Current	Potential
Founders	14	0
Founder genome equivalents (FGE)	4.84	8.67
Gene Diversity (GD %)	89.67	94.23
Population Mean Kinship (MK)	0.1033	-----
Mean Inbreeding (F)	0.0677	-----
Effective population size/census size ration (Ne/N)	0.494	-----
Percentage of pedigree known before assumptions & exclusions	100	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	Already < 90%	-----
Years to 10% Loss of Gene Diversity	87	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.0338$, Target size = 100	77.7	-----

Comments: Recruitment of additional holding institutions and founders is encouraged. Continue to partner globally with institutions in other regions to conserve this species.

Program Goals and Objectives

1. Assurance Population
2. Continue to collaborate globally
3. Recruit additional institutions
4. Evaluate Target Population Size and consider increasing

SPECIES:	Kenyan Günther's dik dik *Madoqua guentheri smithi* (Thomas, 1894)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 9.4 (13) in 7 institutions[31]

AZA PROGRAM STATUS:

NA STUDBOOK KEEPER: Paige McNickle, Phoenix Zoo
PMcnickle@thephxzoo.com

MANAGEMENT PLAN: n/a

ADVISOR(S): n/a

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

Not present in other regions

RESOURCES AVAILABLE:

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **8**

AZA PROGRAM SUMMARY

Sustainability Score: TBD when program achieves Yellow Program status

Target Population Size: 25

Comments: Importation of new founders is important in support of the long term program. Additional participating institutions will be needed in the future.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA Population Management Center
3. Import new founders

[31] McNickle, P., 2012. AZA North American Regional Studbook for the Günther's Dik-Dik *Madoqua guentheri,* 2012. www.aza.org.

SPECIES:	Kirk's dik dik *Madoqua kirkii* (Guenther, 1880)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION STATUS:	23.26 (49) at 20 institutions[32]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Paige McNickle, Phoenix Zoo PMcnickle@thephxzoo.com
SSP® VICE-COORDINATOR:	Lisa Fitzgerald, Dallas Zoo Lisa.Fitzgerald@dallaszoo.com
MANAGEMENT PLAN:	2014
ADVISOR(S):	Jessica Ray, AZA Population Management Center jray@lpzoo.org
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
ASIA/MIDDLE EAST:	18.13.3 (34) in 5 institutions *(M. kirkii, M. k. thomasi and M. k. hindel)*
EUROPE:	45.62 (107) in 29 institutions *(M. kirkii and M. k. hindei)*
RESOURCES AVAILABLE:	
SPECIES PROFILE:	Kirk's Dik Dik Species Profile
PHOTOS AND FACTS:	Kirk's Dik Dik Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
AZA POPULATION VIABILITY ANALYSIS REPORT	Kirk's Dik Dik 2014 PVA
SPECIES SELECTION PROCESS SCORE:	**8**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 30.1% gene diversity for 100 years.

Target Population Size: 75

Kirk's Dik-dik SSP® Demography Summary Table

Current size of population (N)	23.26 (49)
Number of individuals excluded from management	2.4 (6)
Population size following exclusions	21.22 (43)
Long term/Short term Target population size (Kt)	75/60
Mean generation time (years)	4.4
Historical/5 year/Projected population growth rate (λ, lambda)	1.034/0.984/0.973

[32] McNickle, P. and J. Ray, 2014. Draft Population Analysis & Breeding and Transfer Plan for the AZA Kirk's Dik-Dik *(Madoqua kirkii)* Red Program, 2014. www.aza.org.

SPECIES:	Kirk's dik dik *Madoqua kirkii* (Guenther, 1880)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Kirk's Dik-dik SSP® Genetic Summary Table

	Current	Potential
Founders	17	0
Founder genome equivalents (FGE)	2.77	4.77
Gene Diversity (GD %)	81.94	89.51
Population Mean Kinship (MK)	0.1806	-----
Mean Inbreeding (F)	0.1847	-----
Effective population size/census size ration (Ne/N)	0.2030	-----
Percentage of pedigree known before assumptions & exclusions	80.5	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	12	10
Gene Diversity at 100 Years from Present (%) Assuming λ = 1.00/0.973, Target size = 60	30.1	0.6

Comments: According to the 2014 Kirk's Dik-dik AZA Population Viability Analysis Report, this population's status in AZA is endangered in the future. This population is challenged by small population size, high infant mortality rates and increasing inbreeding. Essential actions listed for this population include importation of unrelated individuals and continuation of the current breeding rates. Institutions are asked to work with the SSP® to import young unrelated individuals and to follow breeding and transfer recommendations.

An additional genetic issue in this population is the possible existence of different cytotypes. Studies have found that breeding individuals with different cytotypes (specifically, different chromosome numbers) could produce sterile offspring (Ryder *et al*, 1989). Assuming descendants of known cytotype animals have the same cytotype as their ancestors, most individuals in the living population would be Type A, having 46 chromosomes. However, some individuals in the living population are of unknown origin and therefore their cytotype remain unknown. Any unknown origin individuals imported into the population will also need their cytotype determined. Genetic testing is recommended for all unknown cytotype animals (listed in Appendix C as excluded due to unknown cytotype) in order to clarify the cytotype of these individuals and their descendants. Locations housing unknown cytotype specimens should contact the Studbook Keeper and Marlys Houck at the San Diego Zoo Institute for Conservation Research for the protocol for submission of blood and biopsy samples for testing. Until the cytotypes are determined, these animals and their offspring are not included in genetic analyses and are recommended not to breed.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA PMC
3. Import new founders
4. Determine cytotype for all individuals

SPECIES:	Suni
	Neotragus moschatus
PROGRAM:	Phase Out
PRIMARY PROGRAM GOAL:	Phase Out

AZA POPULATION STATUS: 0.1 (1) in 1 institution[33]

AZA PROGRAM STATUS:

PROGRAM LEADER: n/a

MANAGEMENT PLAN: n/a

ADVISOR(S): n/a

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA: 1.0 (1) in 1 institution

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Suni Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **6**

AZA PROGRAM SUMMARY

Sustainability Score: Phase Out - It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. A Species Suggestions Table (Table 6) is provided.

Target Population Size: 0

Comments: The continuing decline in this species program and low level of institutional interest regrettably has resulted in the decision to phase out this species. Some wild suni populations are in need of conservation support and if imports became available and institutional interest revived, the species program would be reconsidered.

ZIMS and the IUCN SSC Antelope Specialist Group are using different taxonomic names for several antelope species, including suni: ZIMS: *Neotragus moschatus*; IUCN: *Nesotragus moschatus.*

Program Goals and Objectives

1. Phase Out

[33] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Royal antelope *Neotragus pygmaeus*
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 2.10 (12) in 4 institutions[34]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER: Amy Roberts, Brookfield Zoo
Amy.roberts@czs.org

MANAGEMENT PLAN: n/a

ADVISOR(S): n/a

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

Not present in other regions.

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Royal Antelope Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **7**

AZA PROGRAM SUMMARY

Sustainability Score: TBD when program achieves Yellow Program status

Target Population Size: 25

Comments: This species is of low conservation concern. However, because of the institutional interest that exists, the TAG is recommending that this species be phased into collections. Because institutional interest existed and the population was growing, the TAG recommended this species for a more formal program in the last edition of the RCP.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Produce Studbook
3. Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA Population Management Center
4. Determine idea Target Population Size

[34] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Steenbok *Raphicerus campestris* (H. Smith, 1827)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 8.7 (15) in 7 institutions[35]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER: Steve Metzler, Disney's Animal Kingdom
Steve.F.Metzler@disney.com

MANAGEMENT PLAN: 2014

ADVISOR(S): Gina M. Ferrie, Disney's Animal Kingdom
Gina.M.Ferrie@disney.com

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA: 5.9 (14) in 5 institutions

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Steenbok Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **8**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 44.1% gene diversity for 100 years.

Target Population Size: 50

Steenbok Red Program Demography Summary Table

Current size of population (N)	8.7 (15)
Number of individuals excluded from the potentially breeding population	0
Population size following exclusions	8.7 (15)
Target population size (Kt)	75
Mean generation time (T; years)	4.0
Historical/Potential population growth rate needed to grow population to target size in the next 23 years (λ, lambda)	1.144/1.07

[35] Metzler, S. and G. Ferrie, 2014. Population Analysis & Mate Rx for the AZA Steenbok *(Raphicerus campestris)* Red Program, 2014. www.aza.org.

SPECIES:	Steenbok *Raphicerus campestris* (H. Smith, 1827)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Steenbok Red Program Genetic Summary Table

	Current	Potential
Founders	5	0
Founder genome equivalents (FGE)	2.46	3.40
Gene Diversity (GD %)	79.69	85.30
Population Mean Kinship (MK)	0.2031	-----
Mean Inbreeding (F)	0.1083	-----
Effective population size/census size ration (Ne/N)	0.3931	-----
Percentage of pedigree known before assumptions & exclusions	61	-----
Percentage of pedigree known after assumptions & exclusions	85	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	6	5
Gene Diversity at 100 Years from Present (%) Assuming Projected λ = 1.07, Target size = 75	47.7	44.1
Gene Diversity at 100 Years from Present (%) Assuming Projected λ = 1.07, Target size = 75	61.6	56.8

Comments: Steenbok represent a unique genus of antelope not previously successful in North America and a new program for the TAG. Recent importations have provided the potential for a conservation program based on the education and management values. The development of this new program for the TAG will be dependent upon the husbandry, management and growth of the population in the immediate term. As the program becomes successful, new holders will be needed and a source of additional founders is available. This is a unique antelope species; however the steenbok program will be managed in a way that does not compete for small antelope resources required for similar species of greater conservation concern.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Make recommendations to grow population to 50 so it can become a Yellow Program.
3. Recruit additional institutions
4. Import new founders

SPECIES:	Klipspringer *Oreotragus oreotragus spp* (Zimmerman, 1783)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 23.23.2 (48) in 19 institutions[36]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER: Michael Lebanik, Disney's Animal Kingdom
michael.g.lebanik.jr@disney.com

MANAGEMENT PLAN: 2012

ADVISOR(S): Gina M. Ferrie, Disney's Animal Kingdom
Gina.M.Ferrie@disney.com

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA: 0.0.9 (9) in 1 institution (*O. oreotragus*)

EUROPE: 2.1 (3) in 2 institutions (*O. o. saltatrixoides*)

RESOURCES AVAILABLE:

SPECIES PROFILE: Klipspringer Species Profile

PHOTOS AND FACTS: Klipspringer Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **10**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 67% gene diversity for 100 years

Target Population Size: 100

Klipspringer Red Program Demography Summary Table

Current size of population (N)	23.23.2 (48)
Number of individuals excluded from management	4.2 (6)
Population size following exclusions	29.21.2 (42)
Target population size (Kt)	100
Mean generation time (years)	7.4
Historical/Potential population growth rate (λ, lambda)	1.0335

[36] Lebanik, M. and G. Ferrie, 2012. Population Analysis & Mate Rx for the AZA Klipspringer *(Oreotragus oreotragus)* Red Program, 2012. www.aza.org.

SPECIES:	Klipspringer *Oreotragus oreotragus spp* (Zimmerman, 1783)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Klipspringer Red Program Genetic Summary Table

	Current	Potential
Founders	8	0
Founder genome equivalents (FGE)	2.35	3.89
Gene Diversity (GD %)	78.74	87.13
Population Mean Kinship (MK)	0.2126	-----
Mean Inbreeding (F)	0.1361	-----
Effective population size/census size ration (Ne/N)	0.3810	-----
Percentage of pedigree known before assumptions & exclusions	47	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	46	-----
Gene Diversity at 100 Years from Present (%) Assuming λ = 1.0335, Target size = 100	64.39	-----
Gene Diversity in 10 generations from Present (%)Assuming λ = 1.0335, Target size = 100	66.73	-----

Comments: It is extremely important both genetically and demographically that this population grow as quickly as possible to the target population size. The social behavior, specifically the pair bonding, of this species creates challenges in maintaining them in large numbers. Careful cooperation among a large number of institutions and/or a commitment of multiple spaces for breeding pairs will be required for this program to be successful. The program is in need of additional breeding and holding institutions as partners in this conservation program.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Make recommendations to grow population to 50 so it can become a Yellow Program.
3. Recruit additional institutions
4. Import new founders

Small Antelope Subgroup
in situ Focus Species

Silver Dik Dik ***Madoqua piacentinii*** (Drake-Brockman 1911)
Range: Somalia **Wild population estimate:** unknown

Inhabiting a unique coastal plain ecosystem, the silver dik dik lives under extreme pressure from human encroachment, poaching, herding and agriculture in Somalia. No protection is afforded the species and no surveys have been completed to assess the population, so little is known of its biology. Conservation management and surveys are desperately needed. No managed program is known to exist.
For information on how to become involved, contact Jeff Holland, jeff.holland@lacity.org

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Abbott's duiker ***Cephalophus spadix*** (True 1890)
Range: Tanzania **Wild population estimate:** unknown
Photos and Facts: Abbott's Duiker Ultimate Ungulate Fact Sheet

The remaining population of this large duiker lives on forested mountains in Tanzania. Protected areas include Mt. Kilimanjaro National Park, Udzwanga Mountains National Park, and Kilimobero Forest Reserve. Little is known of the biology of the species and much human pressure and logging of the forest occurs throughout its remaining range. No conservation management plans are in place for Abbott's duiker and no managed programs are in place outside Tanzania. Support for studies, surveys and conservation of Abbott's duiker are needed
For information on how to become involved, contact Jeff Holland, jeff.holland@lacity.org

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Jentink's duiker ***Cephalophus jentinki*** (Thomas 1892)
Range: West Africa **Wild population estimate:** unknown
Photos and Facts: Jentink's Duiker Ultimate Ungulate Fact Sheet

Inhabiting primary forested areas in Liberia, Sierra Leone and Ivory Coast, the Jentink's duiker habitat is under severe pressure from logging and from hunting. Conservation of the forest blocks will help insure the species' survival, as there are adequate protected areas established within the Jentink's duiker range in all range states (Sapo National Park in Liberia, and Tai National Park in Ivory Coast are critically important). No specific conservation management plans are in place for this duiker, and government protection efforts in the countries are minimal in part due to civil unrest. A managed program for the species in North America has not been successful.
For information on how to become involved, contact Jeff Holland, jeff.holland@lacity.org

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Zebra duiker ***Cephalophus zebra*** (Gray 1838)
Range: West Africa **Wild population estimate:** unknown
Photos and Facts: Zebra Duiker Ultimate Ungulate Fact Sheet

Inhabiting primary forested areas in Liberia, Sierra Leone, Guinea and Ivory Coast, the zebra duiker habitat is under pressure from logging and from hunting the species as bushmeat. Conservation of the forest blocks will help insure the species' survival as there are adequate protected areas established within the zebra duiker's range in all range states (Sapo National Park

in Liberia, and Tai National Park in Ivory Coast are critically important). No specific conservation management plans are in place for this duiker, and protection efforts in these countries continue to be hampered by civil unrest. A managed program for the species in North America was not successful.
For information on how to become involved, contact Jeff Holland, jeff.holland@lacity.org

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Ader's duiker ***Cephalophus adersi*** (Thomas 1918)
Range: Zanzibar **Wild population estimate:** 1400
Photos and Facts: Ader's Duiker Ultimate Ungulate Fact Sheet

Found in coastal thickets and brush in Kenya and Tanzania and on Zanzibar. Ader's duiker is still hunted for meat in all range states although populations do exist in protected areas in Kenya, Arabuko – Sokoke Forest Reserve, and Jozani Forest Reserve on Zanzibar. No managed programs have been initiated however a translocation to Chumbe Island off the coast of Zanzibar has taken place. This is a priority conservation species for the Small Antelope Subgroup of ASG. Conservation efforts and support are needed.
For information on how to become involved, contact Jeff Holland, jeff.holland@lacity.org

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Beira ***Dorcatragus megalotis*** (Menges 1894)
Range: Horn of Africa **Wild population estimate:** unknown
Photos and Facts: Beira Ultimate Ungulate Fact Sheet

This monotypic antelope species is found in sparsely wooded hilly areas within the region. Little is known of the ecology and biology of the species. Conservation and scientific endeavors for the species are encouraged. There is an *ex situ* group known at one facility in Qatar.
For information on how to become involved, contact Martha Fischer, fischer@stlzoo.org

Hartebeest Subgroup
Vice Chair, Dan Beetem, dbeetem@thewilds.org

Photo courtesy of Ken Bohn, San Diego Zoo Global

SPECIES:	Jackson's hartebeest *Alcelaphus buselaphus jacksoni* (Pallas, 1766)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION STATUS:	7.13 (20) in 5 institutions[37]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER:	Mollye Nardi, Zoo Atlanta mnardi@zooatlanta.org
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
Not present in other regions.	
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Jackson's Hartebeest Ultimate Ungulate Fact Sheet
HUSBANDRY MANUAL:	AZA Husbandry Manual for Alcelaphinae, 2001
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**7**

AZA PROGRAM SUMMARY

Sustainability Score: TBD when program achieves Yellow Program status

Target Population Size: 50

Comments: The North American zoo population of this species is small and is compromised genetically. The Jackson's hartebeest has been identified by the IUCN/SSC Antelope Specialist Group as a species facing long-term decline in the wild and for which a managed program will become increasingly important. Management strategies should optimize breeding opportunities for this species. The addition of new founders through importation of animals or genetic material is desperately needed to maintain this population in North American collections. There are still unresolved taxonomic issues for this hartebeest species. Malignant Catarrhal Fever issues with this species should be considered as a part of the population management planning process.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA Population Management Center
3. Recruit additional institutions with large spaces
4. Import new founders

[37] Nardi, M., 2014. AZA North American Regional Studbook for the Jackson's Hartebeest *Alcelaphus buselaphus jacksoni*, 2014. www.aza.org.

SPECIES:	Common wildebeest *Connochaetes taurinus* (Burchell, 1823)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION STATUS:	47.106.44 (197) in 18 institutions[38]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Kristen Wolfe, Disney's Animal Kingdom Kristen.wolfe@disney.com
SSP® VICE-COORDINATOR:	Jill Piltz, Disney's Animal Kingdom jill.m.piltz@disney.com
MANAGEMENT PLAN:	2012
ADVISOR(S):	Gina M. Ferrie, Disney's Animal Kingdom Gina.M.Ferrie@disney.com
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
EUROPE:	23.45.62 (130) in 19 institutions (*C. taurinus*) 11.21.1 (33) in 5 institutions (*C. t. albojubatus*) 63.108.11 (182) in 31 institutions (*C. t. taurinus*)
OTHER:	2.4.2 (6) in 3 institutions (*C. taurinus*) 0.0.29 (29) in 1 institution (*C. t. albojubatus*) 3.5.109 (117) in 6 institutions (*C. t. taurinus*)
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	White-tailed Gnu/Black Wildebeest Ultimate Ungulate Fact Sheet; Brindled Gnu/Blue Wildebeest Ultimate Ungulate Fact Sheet
HUSBANDRY MANUAL:	AZA Husbandry Manual for Alcelaphinae, 2001
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**11**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 57.51% gene diversity for 100 years

Target Population Size: 200

Wildebeest SSP® Demography Summary Table

Current size of population (N)	47.106.44 (197)
Number of individuals excluded from management	21.22 (43)
Population size following exclusions	26.84.44 (154)
Target population size (Kt)	122
Mean generation time (years)	5.7
Historical/Potential population growth rate needed for population to remain the same size (λ, lambda)	1.139/1.00

[38] Wolfe, K. and G. Ferrie, 2012. Population Analysis & Breeding and Transfer Plan for the AZA Wildebeest *(Connochaetes taurinus)* SSP® Yellow Program, 2012. www.aza.org.

SPECIES:	Common wildebeest *Connochaetes taurinus* (Burchell, 1823)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Wildebeest SSP® Genetic Summary Table

	Current	Potential
Founders	18	0
Founder genome equivalents (FGE)	5.38	8.17
Gene Diversity (GD %)	90.70	93.88
Population Mean Kinship (MK)	0.093	-----
Mean Inbreeding (F)	0.0714	-----
Effective population size/census size ration (Ne/N)	0.1043	-----
Percentage of pedigree known before assumptions & exclusions	2.6	-----
Percentage of pedigree known after assumptions & exclusions	99.6	-----
Years to 90% Gene Diversity	0	-----
Years to 10% Loss of Gene Diversity	22	-----
Gene Diversity at 100 Years from Present (%) Assuming λ = 1.00, Target size = 197	57.51	-----
Gene Diversity in 10 Generations from Present (%) Assuming λ = 1.00, Target size = 197	68.88	-----

Comments: This population is over its Target Population Size. Institutions are strongly recommended to comply with SSP® recommendations to decrease this population to its optimal size.

Despite low conservation concerns this species is popular and important to our institutions as a unique and identifiable antelope species. As with other members of the hartebeest group, screening of all individuals for Malignant Catarrhal Fever is recommended.

Some brindled gnu *(C. t. taurinus)* wildebeest that were misidentified as white-bearded gnu *(C. t. albojubatus)* were imported into the AZA population from Mexico several years ago. These animals and their descendents were mixed with white-bearded gnus, have reproduced and now 70% of the managed population consists of hybrids of these two subspecies leaving very few pure individuals in either subspecies program. In July 2012, the TAG voted to manage all wildebeest in the SSP® population as one large population regardless of individuals' suspected subspecies status.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Recruit additional institutions
3. Import new founders
4. Re-evaluate Target Population Size now that subspecies are lumped

SPECIES:	Bontebok *Damaliscus pygargus dorcas* (Pallas, 1767)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population
AZA POPULATION STATUS:	25.50.1 (76) at 15 institutions[39]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Lissa McCaffree, San Diego Zoo's Safari Park lmccaffree@sandiegozoo.org
SSP® VICE-COORDINATOR:	Vacant
MANAGEMENT PLAN:	2012[40]
ADVISOR(S):	Jamie Ivy, San Diego Zoo Global jivy@sandiegozoo.org
WILD POPULATION STATUS:	
IUCN:	Near Threatened
CITES:	Appendix II
USFWS:	Endangered
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
AFRICA:	2.1 (3) in 1 institution
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Bontebok Ultimate Ungulate Fact Sheet
HUSBANDRY MANUAL:	AZA Husbandry Manual for Alcelaphinae, 2001
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**12**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 75% gene diversity for 100 years

Target Population Size: 152

Bontebok SSP® Demography Summary Table

Current size of population (N)	23.35 (58)
Number of individuals excluded from management	6.4 (10)
Population size following exclusions	17.31 (48)
Target population size (Kt)	152
Mean generation time (years)	6.5
Projected/Historical/Recent population growth rate (λ, lambda)	1.04/1.08/0.97

[39] McCaffree, L., 2013. AZA North American Regional Studbook for Bontebok *Damaliscus dorcas*, 2013. www.aza.org.

[40] McCaffree, L. and J. Ivy, 2012. Population Analysis & Breeding and Transfer Plan for the AZA Bontebok *(Damaliscus pygargus pygargus)* SSP® Yellow Program, 2012. www.aza.org

SPECIES:	Bontebok *Damaliscus pygargus dorcas* (Pallas, 1767)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population

Bontebok SSP® Genetic Summary Table

	Current	Potential
Founders	18	0
Founder genome equivalents (FGE)	3.81	6.25
Gene Diversity (GD %)	86.86	92.00
Population Mean Kinship (MK)	0.1314	-----
Mean Inbreeding (F)	0.0994	-----
Effective population size/census size ration (Ne/N)	0.48	-----
Percentage of pedigree known before assumptions & exclusions	55	-----
Percentage of pedigree known after assumptions & exclusions	55	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	89	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.04$, Target size = 152	76	-----

Comments: Although the current wild population trend for this species is increasing, bontebok are still considered Near Threatened by the IUCN and Endangered by the USFWS. Due to the more critical conservation status of *Damaliscus pygargus dorcas*, the TAG recommends that blesbok be phased out of North American zoo collections and be replaced with bontebok. As with other members of the hartebeest group, screening of all individuals for Malignant Catarrhal Fever is recommended.

Program Goals and Objectives

1. Assurance Population
2. Recruit SSP Vice-Coordinator
3. Grow population to Target Population Size
4. Attempt to resolve unknown pedigrees
5. Import new founders

SPECIES:	Blesbok *Damaliscus pygargus phillipsi* (Pallas, 1767)
PROGRAM:	Phase Out
PRIMARY PROGRAM GOAL:	n/a

AZA POPULATION STATUS: 2.4 (6) at 2 institutions[41]

AZA PROGRAM STATUS:

- **PROGRAM LEADER:** n/a
- **MANAGEMENT PLAN:** n/a
- ADVISOR(S): n/a

WILD POPULATION STATUS:

- **IUCN:** Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

- **AFRICA:** 0.3.40 (43) in 2 institutions
- **EUROPE:** 65.104.1 (170) in 39 institutions
- **NORTH AMERICA (NON-AZA):** 0.4 (4) in 1 institution

RESOURCES AVAILABLE:

- **PHOTOS AND FACTS:** Blesbok Ultimate Ungulate Fact Sheet
- **HUSBANDRY MANUAL:** AZA Husbandry Manual for Alcelaphinae, 2001
- **AZA UNGULATE TAGS ANIMAL CARE MANUAL:** In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **7**

AZA PROGRAM SUMMARY

Sustainability Score: Phase Out - It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. A Species Suggestions Table (Table 6) is provided.

Target Population Size: 0

Comments: The wild population of blesbok is currently stable. Due to the more critical conservation status of *Damaliscus pygargus dorcas*, the TAG is recommending that blesbok be phased out of North American zoo collections. The studbook will continue to be maintained in order to track the population as it is phased out. The European EAZA managed program for this species is quite strong and serves as a significant conservation reservoir for the species.

Program Goals and Objectives

1. n/a

[41] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Topi *Damaliscus lunatus jimela* (Burchell, 1823)
PROGRAM:	Phase Out
PRIMARY PROGRAM GOAL:	n/a
AZA POPULATION STATUS:	1.1 (2) at 1 institution[42]
AZA PROGRAM STATUS:	
PROGRAM LEADER:	n/a
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
IUCN:	Least Concern
CITES:	Appendix III (*Damaliscus l. jimela*)
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
Not present in other regions.	
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Topi Ultimate Ungulate Fact Sheet
HUSBANDRY MANUAL:	AZA Husbandry Manual for Alcelaphinae, 2001
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**6**

AZA PROGRAM SUMMARY

Sustainability Score: Phase Out - It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. A Species Suggestions Table (Table 6) is provided.

Target Population Size: 0

Comments: The wild population of this species is experiencing a downward trend. Topi have been identified by the IUCN/SSC Antelope Specialist Group as a species facing decline in the wild and for which an *ex situ* program will become increasingly more important.

However, at this time, there is no formal management program recommended for this species, due to the non-viable status of the current population. Preliminary analysis of this population in 2003 indicated that genetically and demographically a long-term management program was not possible without additional animals/founders. Recruitment of additional institutions and importation of additional founders would be critical for a long-term management program for this species. For now, this population shall be phased out until importation is possible.

Program Goals and Objectives

1. Phase Out

[42] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

Hartebeest Subgroup
in situ Focus Species

Hirola, Hunter's Hartebeest ***Beatragus hunteri*** (PL Sclater 1889)
Range: Kenya, Somalia **Wild population estimate:** >500
Photos and Facts: Hirola Ultimate Ungulate Fact Sheet

The classification of the hirola is disputed as a unique member and genus of the hartebeests. Historically found in the regions north and east of the Tana River in Kenya and Somalia, poaching, periods of drought and pressure from domestic herds have decimated the wild population. Adequate protected areas are lacking and this species is not well-protected. In the early 1970's a translocation of hirola was undertaken and 14 animals were moved from Garissa District to Tsavo National Park in Kenya. The species survived in Tsavo, but was not particularly successful; meanwhile the wild population continues to plummet.

In 1996 the Hirola Task Force was formed between the Kenya Wildlife Service, the African Wildlife Foundation and the East African Wildlife Society to promote conservation of the species and develop and implement an action plan for its survival. Surveys at the time indicated only 1500 hirola survived in Kenya, and possibly in some numbers in Somalia. An additional translocation to Tsavo was implemented and 29 more hirola were moved by an international task force in 1996. The translocated animals are being studied and protected by KWS with support from various organizations.

The hirola was brought to zoos in the US in the early 70's but did not fare well and the program was unsuccessful. The current Action Plan for the hirola does not call for *ex situ* breeding activities and export of live animals from Kenya has been banned. The TAG and institutions in the US have been supportive of the conservation efforts for the species in Kenya through the Northern Rangelands Trust. Further support for hirola conservation activities is needed
For information on how to become involved, contact Martha Fischer, fischer@stlzoo.org

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Swayne's hartebeest ***Alcelaphus buselaphus swaynei*** (Pallas 1766)
Range: Ethiopia **Wild population estimate:** 200?

The Swayne's hartebeest is a critically endangered subspecies of hartebeest endemic to the Rift Valley regions in Ethiopia and Somalia. Little protection is afforded the species throughout its range and pressure from domestic herding and poaching have contributed to its decline. A small population is known to exist in Senkelle National Park but competition with herders inside the park complicates conservation efforts and the population has declined significantly over the last two decades. Nechisar National Park is purported to contain a small historic population of Swayne's hartebeest which is also in serious decline. A translocated population of 40 animals (from Senkelle NP) were moved to Awash National Park in 1974, but were not successful and only a handful of animals were reported in the mid-90's. The serious decline of the population and no serious protection efforts for this species results in a critical population in need of immediate conservation action and support
For information on how to become involved, contact Martha Fischer, fischer@stlzoo.org

Waterbuck Subgroup
Vice Chair, Randy Rieches, rrieches@sandiegozoo.org

SPECIES:	Common Waterbuck *Kobus ellipsiprymnus* (Ogilby, 1833)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION:	75.111.2 (188) at 24 institutions[43]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Jonnie Capiro, San Diego Zoo's Safari Park jcapiro@sandiegozoo.org
SSP® VICE-COORDINATOR:	Steve Metzler, Disney's Animal Kingdom Steve.f.metzler@disney.com
MANAGEMENT PLAN:	2013
ADVISOR(S):	Jamie Ivy, San Diego Zoo Global jivy@sandiegozoo.org
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
AFRICA:	5.4.22 (31) in 3 institutions
ASIA/MIDDLE EAST:	3.3.12 (18) in 3 institutions
AUSTRALIA:	6.8 (14) in 5 institutions
EUROPE:	34.103.7 (144) in 21 institutions
NORTH AMERICA (NON-AZA):	3.20.1 (24) in 5 institutions
SOUTH AMERICA:	6.13 (19) in 3 institutions
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Waterbuck Ultimate Ungulate Fact Sheet
HUSBANDRY MANUAL:	AZA Husbandry Manual for Reduncinae, 1999
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**10**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 60% gene diversity for 100 years

Target Population Size: 200

Common Waterbuck SSP® Demography Summary Table

Current size of population (N)	75.111.2 (188)
Number of individuals excluded from management	60.75.1 (136)
Population size following exclusions	15.36.1 (52)
Target population size (Kt)	150
Mean generation time (years)	6.6
Projected/Historical/Recent population growth rate (λ, lambda)	1.14/1.13/1.00

[43] Capiro, J. and J. Ivy, 2013. Population Analysis & Breeding and Transfer Plan for the AZA Common Waterbuck *(Kobus ellipsiprymnus ellipsiprymnus)* SSP® Yellow Program, 2012. www.aza.org

SPECIES:	Common Waterbuck *Kobus ellipsiprymnus* (Ogilby, 1833)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Common Waterbuck SSP® Genetic Summary Table

	Current	Potential
Founders	25	0
Founder genome equivalents (FGE)	3.59	6.13
Gene Diversity (GD %)	86.07	91.84
Population Mean Kinship (MK)	0.1393	-----
Mean Inbreeding (F)	0.1617	-----
Effective population size/census size ration (Ne/N)	n/a	-----
Percentage of pedigree known before assumptions & exclusions	3	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	n/a	-----
Years to 10% Loss of Gene Diversity	n/a	-----
Gene Diversity at 100 Years from Present (%)	n/a	-----

Comments: This population is over its Target Population Size. Institutions are strongly recommended to comply with SSP® recommendations to decrease this population to its optimal size.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Make recommendations to reduce population to Target Population Size
3. Attempt to resolve unknown pedigrees
4. Recruit additional institutions

SPECIES:	Uganda kob *Kobus kob thomasi* (Erxleben, 1777)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION:	5.7.1 (13) in 2 institutions[44]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER:	Daniel Lepping, Rolling Hills Zoo Lordone03@live.com
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
NORTH AMERICA (NON-AZA):	1.1 (2) in 1 institution
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Kob Ultimate Ungulate Fact Sheet
HUSBANDRY MANUAL:	AZA Husbandry Manual for Reduncinae, 1999
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**6**

AZA PROGRAM SUMMARY

Sustainability Score: TBD when program achieves Yellow Program status

Target Population Size: 75

Comments: Historically, no program has been recommended for Uganda kob by the TAG. The wild population has remained stable at 1,000,000 and the species is not of current high conservation concern.

This species continues to be held in AZA zoos despite the Phase Out recommendation, suggesting that institutional interest may be stronger than originally believed. Therefore, the TAG changed its recommendation for this program in the last edition of the RCP.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Publish studbook
3. If population is over 50, publish Population Analysis & Breeding and Transfer Plan; If population is under 50, grow population so it can receive formal population management from the AZA Population Management Center
4. Determine idea Target Population Size
5. Partner with non-AZA facilities to grow program

[44] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Red lechwe *Kobus leche* (Gray, 1850)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION:	3.13 (16) in 2 institutions[45]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER:	Melissa Covey, Disney's Animal Kingdom Melissa.a.covey@disney.com
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
CITES:	Appendix II
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
AFRICA:	8.29.1 (38) in 2 institutions
ASIA/MIDDLE EAST:	4.4.15 (23) in 1 institution
EUROPE:	35.51.36 (122) in 6 institutions
NORTH AMERICA (NON-AZA):	9.26 (35) in 4 institutions
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Lechwe Ultimate Ungulate Fact Sheet
HUSBANDRY MANUAL:	AZA Husbandry Manual for Reduncinae, 1999
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**8**

AZA PROGRAM SUMMARY

Sustainability Score: TBD when program achieves Yellow Program status

Target Population Size: 75

Comments: Historically, no AZA program has been recommended for the red and Kafue lechwe due to the perceived low level of institutional interest for these populations in North America. The EAZA program for this species is quite strong and serves as a significant conservation reservoir for the species.

This species continues to be held in AZA zoos despite the Phase Out recommendation, suggesting that institutional interest may be stronger than originally believed. Therefore, the TAG changed its recommendation for this program in the last edition of the RCP.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Publish studbook
3. If population is over 50, publish Population Analysis & Breeding and Transfer Plan; If it is under 50, grow population so it can receive formal population management from the AZA PMC
4. Determine ideal Target Population Size
5. Partner with non-AZA facilities to grow program

[45] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Nile lechwe *Kobus megaceros* (Fitzinger, 1855)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population

AZA POPULATION: 35.56 (91) at 8 institutions[46]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR: Matt Hohne, Disney's Animal Kingdom
Matthew.hohne@disney.com

SSP® VICE-COORDINATOR: Guy Lichty, North Carolina Zoo
guy.lichty@nczoo.org

MANAGEMENT PLAN: 2012

ADVISOR(S): Gina M. Ferrie, Disney's Animal Kingdom
Gina.m.ferrie@disney.com

WILD POPULATION STATUS:

CITES: Appendix II

IUCN: Endangered A2a

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA: 4.11.5 (20) in 1 institution

EUROPE: 52.143.20 (215) in 19 institutions

NORTH AMERICA (NON-SSP®): 2.5 (7) in 2 institutions

RESOURCES AVAILABLE:

SPECIES PROFILE: Nile Lechwe Species Profile

PHOTOS AND FACTS: Nile Lechwe Ultimate Ungulate Fact Sheet

HUSBANDRY MANUAL: AZA Husbandry Manual for Reduncinae, 1999

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **12**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 64.39% gene diversity for 100 years

Target Population Size: 200

Nile Lechwe SSP® Demography Summary Table

Current size of population (N)	35.56 (91)
Number of individuals excluded from management	15.4 (19)
Population size following exclusions	20.52 (72)
Target population size (Kt)	200
Mean generation time (years)	5.17
Historical/Potential population growth rate (λ, lambda)	1.08/1.08

[46] Hohne, M. and Gina M. Ferrie, 2012. Population Analysis & Breeding and Transfer Plan for the AZA Nile Lechwe *(Kobus megaceros)* SSP® Yellow Program, 2012. www.aza.org

SPECIES:	Nile lechwe *Kobus megaceros* (Fitzinger, 1855)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population

Nile Lechwe SSP® Genetic Summary Table

	Current	Potential
Founders	11	0
Founder genome equivalents (FGE)	2.84	4.89
Gene Diversity (GD %)	82.37	89.77
Population Mean Kinship (MK)	0.1763	-----
Mean Inbreeding (F)	0.2302	-----
Effective population size/census size ration (Ne/N)	0.2110	-----
Percentage of pedigree known before assumptions & exclusions	22.3	-----
Percentage of pedigree known after assumptions & exclusions	87	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	39	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.08$, Target size = 200	64.39	-----

Comments: A unique Reduncinae species of conservation concern, the Nile lechwe is a high priority program for the TAG.

Program Goals and Objectives

1. Assurance Population
2. Make recommendations to grow population to Target Population Size
3. Recruit additional institutions especially for bachelor herds
4. Import new founders
5. Identify and support field conservation efforts

Waterbuck Subgroup
in situ Focus Species

Western mountain reedbuck ***Redunca fulvorufula adamauae*** (Afzelius 1815)
Range: Nigeria, Cameroon **Wild population estimate:** 250?
Photos and Facts: Mountain Reedbuck Ultimate Ungulate Fact Sheet

Living in the montane grassland regions of Nigeria and Cameroon, the western mountain reedbuck is severely threatened due to disturbance from livestock and hunting. No recent surveys have been completed and no active conservation programs for the species are in place, however protected areas do exist within its range including Gashaka-Gumpti National Park in Nigeria. Conservation focus and support and scientific study may benefit the species. No *ex situ* program is known.

For information on how to become involved, contact Randy Rieches,
rrieches@sandiegozoo.org

Aridland Antelope, Gazelle and Pronghorn Subgroup
Vice Chair, Adam Eyres, adame@fossilrim.org

Photo courtesy of Chuck Dresner, Saint Louis Zoo

SPECIES:	Addax *Addax nasomaculatus* (Blainville, 1816)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action

AZA POPULATION STATUS: 81.132 (213) in 19 institutions[47]

AZA PROGRAM STATUS:

INTERNATIONAL STUDBOOK KEEPER: Wendy Enright, The Living Desert
wenright@livingdesert.org

SSP® COORDINATOR: Bill Houston, Saint Louis Zoo
Houston@stlzoo.org

SSP® VICE-COORDINATOR: Tim Their, Saint Louis Zoo
tthier@stlzoo.org

MANAGEMENT PLAN: 2014

ADVISOR(S): Ed Spevak, Saint Louis Zoo
spevak@stlzoo.org

WILD POPULATION STATUS:

IUCN: Critically Endangered A2cd C1+2a(ii)
CITES: Appendix I
USFWS: Endangered

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA: 3.4 (7) in 3 institutions
ASIA/MIDDLE EAST: 78.101 (179) in 6 institutions
AUSTRALIA: 22.25 (47) in 3 institutions
EUROPE: 76.147.7 (230) in 34 institutions
NORTH AMERICA (NON-SSP®): 11.17.5 (33) in 5 institutions

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Addax Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete
AZA POPULATION VIABILITY ANALYSIS REPORT Addax 2014 PVA

SPECIES SELECTION PROCESS SCORE: **19**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 73.71% gene diversity for 100 years

Target Population Size: 250

Addax SSP® Demography Summary Table

Current size of population (N)	81.132 (213)
Number of individuals excluded from management	16
Population size following exclusions	197
Target population size (Kt)	250
Mean generation time (years)	5.4
Historical/Potential population growth rate (λ, lambda)	1.222

[47] Houston, W. and E. Spevak, 2014. Population Analysis & Breeding and Transfer Recommendations for the AZA Addax (*Addax nasomaculatus*) SSP® Yellow Program, 2014. www.aza.org.

SPECIES:	Addax *Addax nasomaculatus* (Blainville, 1816)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action

Addax SSP® Genetic Summary Table

	Current	Potential
Founders	15	0
Founder genome equivalents (FGE)	3.04	6.80
Gene Diversity (GD %)	83.56	92.65
Population Mean Kinship (MK)	0.1628	-----
Mean Inbreeding (F)	0.1421	-----
Effective population size/census size ration (Ne/N)	0.3025	-----
Percentage of pedigree known before assumptions & exclusions	-----	-----
Percentage of pedigree known after assumptions & exclusions	94.4	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	-----	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.04$, Target size = 250	73.71	-----

Comments: Additional *ex situ* breeding space is needed to improve upon the population management goals. Efforts are underway to establish partnerships with non-AZA facilities capable of making the commitment of space and other resources necessary to bring this population greater demographic and genetic stability.

Recent work in Niger, Tunisia, Morocco and other addax range states in the Sahelo-Saharan region underscores the importance of maintaining our AZA addax population as a potential reservoir from which future reintroductions might one day spring. The Addax SSP® has worked with our European (EEP) counterparts to establish a global management dataset and to set priorities for responding to the growing number of inquiries about the availability of addax for reintroduction. Working with the Addax EEP as well as the Scimitar-horned Oryx SSP and EEP, the Addax SSP® was able to send 13 addax to Tunisia (Djebil National Park) joining animals from the EEP to reestablish this species to Tunisia in 2007.

Support from the international zoo community will also be needed for *in situ* efforts to establish protected areas and safeguard the last known wild population of significance (estimated at around 200 animals) in the Termit/Tin Toumma region of Niger. Institutions are encouraged to participate with this AZA program and to support conservation initiatives for the species through the Sahara Conservation Fund.

Thirty-five AZA facilities have joined with international zoos and conservation organizations to support the activities of the Sahara Conservation Fund (SCF). SCF is a young, dynamic organization with a unique mission – the conservation of the wildlife of the Sahara and its bordering Sahelian grasslands. To implement its mission, SCF forges partnerships between people, governments, the world zoo and scientific communities, international conventions, NGOs and donor agencies. A powerful network with a common goal – the conservation of deserts and their unique natural and cultural heritage. People working together to share their commitment, resources, skills and enthusiasm. The TAG strongly urges AZA institutions with an interest in addax to consider supporting the good work of the Sahara Conservation Fund. For more information, please visit www.saharaconservation.org.

Program Goals and Objectives

1. Conservation Action
2. Make recommendations to grow population to Target Population Size
3. Recruit additional institutions
4. Support the goals of the Sahara Conservation Fund

SPECIES:	Scimitar-horned oryx *Oryx dammah* (Cretzschmar, 1827)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action

AZA POPULATION STATUS: 71.115.1 (187) in 20 institutions[48]

AZA PROGRAM STATUS:

SSP® COORDINATOR: Sheri Horiszny, Santa Barbara Zoo
SHoriszny@sbzoo.org

SSP® VICE-COORDINATOR: Vacant

MANAGEMENT PLAN: 2013

ADVISOR(S): Andrea Putnam, San Diego Zoo Global
aputnam@sandiegozoo.org

WILD POPULATION STATUS:

IUCN: Extinct in Wild

CITES: Appendix I

USFWS: Endangered

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA: 16.29.3 (48) in 3 institutions

ASIA/MIDDLE EAST: 108.112.121 (341) in 9 institutions

AUSTRALIA: 12.26 (38) in 4 institutions

EUROPE: 147.253.3 (40) in 61 institutions

NORTH AMERICA (NON-SSP®): 19.39.12 (70) in 8 institutions

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Scimitar-horned Oryx Ultimate Ungulate Fact Sheet

HUSBANDRY MANUAL: The Biology, Husbandry and Conservation of Scimitar-horned oryx, c/o EEP, Tania Gilbert, taniag@marwell.org.uk

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **18**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 72.4% gene diversity for 100 years

Target Population Size: 250

Scimitar-horned Oryx SSP® Demography Summary Table

Current size of population (N)	71.115.1 (187)
Number of individuals excluded from management	47
Population size following exclusions	53.87 (140)
Target population size (Kt)	250
Mean generation time (years)	5.2
Projected/Recent population growth rate (λ, lambda)	1.1010/0.974

[48] Horiszny, S. and A. Putnam, 2013. Population Analysis & Breeding and Transfer Plan for the AZA Scimitar-horned Oryx (*Oryx dammah*) SSP® Yellow Program, 2013. www.aza.org

SPECIES:	Scimitar-horned oryx *Oryx dammah* (Cretzschmar, 1827)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action

Scimitar-horned Oryx SSP® Genetic Summary Table

	Current	Potential
Founders	36	0
Founder genome equivalents (FGE)	8.93	15.95
Gene Diversity (GD %)	94.40	96.87
Population Mean Kinship (MK)	0.056	-----
Mean Inbreeding (F)	0.050	-----
Effective population size/census size ration (Ne/N)	0.198	-----
Percentage of pedigree known before assumptions & exclusions	60	-----
Percentage of pedigree known after assumptions & exclusions	99	-----
Years to 90% Gene Diversity	17	-----
Years to 10% Loss of Gene Diversity	41	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.1010$, Target size = 250	72.4	-----

Comments: Conservation projects to return the scimitar-horned oryx to a portion of its original range are ongoing in several range states. The Scimitar-horned Oryx SSP® has worked with the EEP to establish a global management dataset and to set priorities for responding to the growing number of inquiries about the availability of scimitar-horned oryx for reintroduction. Working with the Scimitar-horned Oryx EEP as well as the Addax SSP and EEP, the Scimitar-horned Oryx SSP® was able to send seven oryx to Tunisia (Dghoumes National Park) joining animals from the EEP to reestablish this species to Tunisia.

Thirty-five AZA facilities have joined with international zoos and conservation organizations to support the activities of the Sahara Conservation Fund (SCF). SCF is a young, dynamic organization with a unique mission – the conservation of the wildlife of the Sahara and its bordering Sahelian grasslands. To implement its mission, SCF forges partnerships between people, governments, the world zoo and scientific communities, international conventions, NGOs and donor agencies. A powerful network with a common goal – the conservation of deserts and their unique natural and cultural heritage. People working together to share their commitment, resources, skills and enthusiasm. The TAG strongly urges AZA institutions with an interest in addax to consider supporting the good work of the Sahara Conservation Fund. For more information, please visit www.saharaconservation.org.

Program Goals and Objectives

1. Conservation Action
2. Make recommendations to grow population to Target Population Size
3. Recruit SSP® Vice-Coordinator
4. Support the goals of the Sahara Conservation Fund

SPECIES:	Gemsbok *Oryx gazella gazella*
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 34.44.5 (83) in 11 institutions[49]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR: Melissa McCartney, Sacramento Zoo
mmccartney@saczoo.org

SSP® VICE-COORDINATOR: Summer Copeland, Sacramento Zoo
scopeland@saczoo.org

MANAGEMENT PLAN: 2012

ADVISOR(S): Jamie Ivy, San Diego Zoo
jivy@sandiegozoo.org

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA: 6.14.8 (28) in 4 institutions
ASIA/MIDDLE EAST: 18.19.14 (51) in 7 institutions
EUROPE: 35.80.5 (120) in 20 institutions
NORTH AMERICA (NON-SSP®): 1.1.4 (6) in 2 institutions
SOUTH AMERICA: 5.5 (10) in 3 institutions

RESOURCES AVAILABLE:

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **10**

AZA PROGRAM SUMMARY

Sustainability Score: Genetic analysis not possible due to high level of unknown pedigree

Target Population Size: 75

Gemsbok SSP® Demography Summary Table

Current size of population (N)	34.44.5 (83)
Number of individuals excluded from management	8.0 (8)
Population size following exclusions	26.44.5 (75)
Target population size (Kt)	75
Mean generation time (years)	4.8
Projected/Historical/Recent population growth rate (λ, lambda)	1.24/1.07/0.98

[49] McCartney, M. and J. Ivy, 2012. Population Analysis & Breeding and Transfer Plan for the AZA Gemsbok (*Oryx gazella gazella*) SSP® Yellow Program, 2012. www.aza.org

SPECIES:	Gemsbok *Oryx gazella gazella*
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Gemsbok SSP® Genetic Summary Table

	Current	Potential
Founders	-----	-----
Founder genome equivalents (FGE)	-----	-----
Gene Diversity (GD %)	-----	-----
Population Mean Kinship (MK)	-----	-----
Mean Inbreeding (F)	-----	-----
Effective population size/census size ration (Ne/N)	-----	-----
Percentage of pedigree known before assumptions & exclusions	8.3	-----
Percentage of pedigree known after assumptions & exclusions	81.8	-----
Years to 90% Gene Diversity	-----	-----
Years to 10% Loss of Gene Diversity	-----	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.04$, Target size = 250	-----	-----

Comments: This population is over its Target Population Size. Institutions are strongly recommended to comply with SSP recommendations to decrease this population to its optimal size.

Comprehensive genetic analyses could not be performed on the living population due to the extent of unknown pedigree.

All three species of sub-Saharan oryx are of relatively low conservation concern but are representative programs of their respective ecosystems and regions. It is recommended that institutions consider working with oryx species of higher conservation concern.

ZIMS and the IUCN SSC Antelope Specialist Group are using different taxonomic names for several antelope species, including gemsbok: ZIMS: *Oryx gazella gazella*; IUCN: *Oryx gazella*

Program Goals and Objectives

1. Education/Exhibit Needs
2. Make recommendations to maintain population to Target Population Size
3. Resolve unknown pedigrees or use alternative genetic management strategies

SPECIES:	Beisa oryx *Oryx beisa beisa*
PROGRAM:	Phase Out
PRIMARY PROGRAM GOAL:	n/a
AZA POPULATION STATUS:	0.2 (2) in 2 institutions[50]
AZA PROGRAM STATUS:	
PROGRAM LEADER:	n/a
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
IUCN:	Near Threatened
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
ASIA/MIDDLE EAST:	30.61.121 (212) in 5 institutions
EUROPE:	13.21.2 (36) in 8 institutions
NORTH AMERICA (NON-AZA):	2.12.3 (17) in 4 institutions
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Beisa Oryx Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**7**

AZA PROGRAM SUMMARY

Sustainability Score: Phase Out - It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. A Species Suggestions Table (Table 6) is provided.

Target Population Size: 0

Comments: All three species of sub-Saharan oryx are of relatively low conservation concern but are representative programs of their respective ecosystems and regions. It is recommended that institutions consider working with oryx species of higher conservation concern.

ZIMS and the IUCN SSC Antelope Specialist Group are using different taxonomic names for several antelope species, including beisa oryx: ZIMS: *Oryx gazella beisa;* IUCN: *Oryx beisa beisa*

Program Goals and Objectives

1. Phase Out

[50] McCartney, M., 2011. AZA North American Regional Studbook for the SubSaharan Oryx *Oryx gazelle spp*, 2011. www.aza.org.

SPECIES:	Fringe-eared oryx *Oryx beisa callotis*
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Assurance Population

AZA POPULATION STATUS: 10.25 (35) in 5 institutions[51]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER: Melissa McCartney, Sacramento Zoo
mmccartney@saczoo.org

MANAGEMENT PLAN: 2012

ADVISOR(S): Andrea Putnam, San Diego Zoo Global
aputnam@sandiegozoo.org

WILD POPULATION STATUS:

IUCN: Vulnerable C1

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

ASIA/MIDDLE EAST: 0.0.63 (63) in 1 institution

RESOURCES AVAILABLE:

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES PROFILE: Fringe-eared Oryx Species Profile

SPECIES SELECTION PROCESS SCORE: **9**

AZA PROGRAM SUMMARY

Sustainability Score: Genetic analysis not possible due to high level of unknown pedigree

Target Population Size: 75

Fringe-eared Oryx Red Program Demography Summary Table

Current size of population (N)	10.25 (35)
Number of individuals excluded from management	7
Population size following exclusions	7.21 (28)
Target population size (Kt)	85
Mean generation time (years)	1.283
Historical population growth rate (λ, lambda)	1.000

Comments: It is recommended that institutions consider working with oryx species of higher conservation concern. There are several non-AZA facilities in North America that manage fringe-eared oryx. Institutions are encouraged to partner with non-AZA facilities to grow to the AZA population.

ZIMS and the IUCN SSC Antelope Specialist Group are using different taxonomic names for several antelope species, including the fringe-eared oryx: ZIMS: *Oryx gazella callotis;* IUCN: *Oryx beisa callotis*

Program Goals and Objectives

1. Assurance Population
2. Grow population to 50 so it can become a Yellow Program
3. Resolve unknown pedigrees or use alternative genetic management strategies
4. Work with non-AZA facilities to build AZA population up to a more sustainable level

[51] McCartney, M. and A. Putnam, 2012. Population Analysis & Breeding and Transfer Plan for the AZA Fringe-eared Oryx (*Oryx gazella callotis*) Red Program, 2012. www.aza.org

SPECIES:	Arabian oryx *Oryx leucoryx* (Pallax, 1777)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action

AZA POPULATION STATUS: 40.47 (87) in 7 institutions[52]

AZA PROGRAM STATUS:

SSP® COORDINATOR:	Michelle Hatwood, Phoenix Zoo mhatwood@thephxzoo.com
SSP® VICE-COORDINATOR:	Vacant
MANAGEMENT PLAN:	2011
ADVISOR(S):	Katelyn Marti, AZA Population Management Center kmarti@lpzoo.org

WILD POPULATION STATUS:

IUCN:	Vulnerable D1
CITES:	Appendix I
USFWS:	Endangered

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA:	5.13 (18) individuals in 3 institutions
ASIA/MIDDLE EAST:	297.442.1 (740) individuals in 11 institutions
EUROPE:	24.44 (68) individuals in 16 institutions
NORTH AMERICA (NON-SSP®):	3.7 (10) individuals in 1 institution

RESOURCES AVAILABLE:

SPECIES PROFILE:	Arabian Oryx Species Profile
PHOTOS AND FACTS:	Arabian Oryx Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
AZA POPULATION VIABILITY ANALYSIS REPORT	Arabian Oryx 2014 PVA

SPECIES SELECTION PROCESS SCORE: **16**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 68.45% gene diversity for 100 years

Target Population Size: 200

Arabian Oryx SSP® Demography Summary Table

Current size of population (N)	40.47 (87)
Number of individuals excluded from management	20
Population size following exclusions	67
Target population size (Kt)	200
Mean generation time (years)	6.1
Historical/Potential population growth rate (λ, lambda)	1.105/1.01

[52] Hatwood, M. and K. Marti, 2011. Population Analysis & Breeding and Transfer Plan for AZA Arabian Oryx *(Oryx leucoryx)* SSP® Yellow Program, 2011. www.aza.org.

SPECIES:	Arabian oryx *Oryx leucoryx* (Pallax, 1777)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action

Arabian Oryx SSP® Genetic Summary Table

	Current	Potential
Founders	14	0
Founder genome equivalents (FGE)	4.28	7.35
Gene Diversity (GD %)	88.32	93.20
Population Mean Kinship (MK)	0.1168	-----
Mean Inbreeding (F)	0.0707	-----
Effective population size/census size ration (Ne/N)	0.3184	-----
Percentage of pedigree known before assumptions & exclusions	73.5	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	36	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.01$, Target size = 200	68.45	-----

Comments: The historic success of the Arabian Oryx World Herd has suffered setbacks in recent years in some range states due to poaching. Large numbers of Arabian oryx are held in private facilities in the US and the Middle East and trade in this species continues. Though the Arabian oryx SSP has been downgraded in Target Population Size, conservation program focus should continue to return the demographics to a healthy state, and to sustain the SSP® as a Conservation and Safety Net population.

According to the 2014 Arabian Oryx AZA Population Viability Analysis Report, this population's status in AZA is vulnerable in the future. This population is challenged by large population size with limited space, very high reproduction rate and a high number of surplus males. The outlook for this population is more positive if the total number of spaces made available by AZA institutions is increased to 200. Essential actions listed for this population include careful management and breeding to fill available space while recruiting additional institutions and importation of unrelated individuals. Institutions are asked to work with the SSP® to import young unrelated individuals, to consider increasing the amount of space devoted to Arabian oryx or to add Arabian oryx to your collection and to keep detailed records of pedigree to track relatedness.

Program Goals and Objectives

1. Conservation Action
2. Make recommendations to grow population to Target Population Size
3. Recruit additional institutions
4. Recruit SSP Vice-Coordinator

SPECIES:	Cuvier's gazelle *Gazella cuvieri* (Ogilby, 1841)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Assurance Population

AZA POPULATION STATUS: 14.20 (34) at 3 institutions[53]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER: Wendy Enright, The Living Desert
wenright@livingdesert.org

MANAGEMENT PLAN: 2012

ADVISOR(S): Andrea Putnam, San Diego Zoo Global
aputnam@sandiegozoo.org

WILD POPULATION STATUS:

IUCN: Endangered C2a(i)

CITES: Appendix I

USFWS: Endangered

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

EUROPE: 4.0 (4) in 2 institutions

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Cuvier's Gazelle Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **11**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 37.2% gene diversity for 100 years

Target Population Size: 75

Cuvier's Gazelle Red Program Demography Summary Table

Current size of population (N)	14.20 (34)
Number of individuals excluded from management	1
Population size following exclusions	14.19 (33)
Target population size (Kt)	75
Mean generation time (years)	4.2
Historical/Projected population growth rate (λ, lambda)	0.993/1.133

[53] Enright, W. and A. Putnam, 2012. Population Analysis & Breeding and Transfer Plan for the AZA Cuvier's Gazelle (Gazella cuvieri) Red Program, 2012. www.aza.org.

SPECIES:	Cuvier's gazelle *Gazella cuvieri* (Ogilby, 1841)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Assurance Population

Cuvier's Gazelle Red Program Genetic Summary Table

	Current	Potential
Founders	3	0
Founder genome equivalents (FGE)	1.01	1.61
Gene Diversity (GD %)	50.66	68.86
Population Mean Kinship (MK)	0.4934	-----
Mean Inbreeding (F)	0.4564	-----
Effective population size/census size ration (Ne/N)	0.4991	-----
Percentage of pedigree known before assumptions & exclusions	12	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	75	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.133$, Target size = 75	37.2	-----

Comments: The Cuvier's gazelle program is a priority for the TAG and conservation efforts for the species in range states is ongoing.

Thirty-five AZA facilities have joined with international zoos and conservation organizations to support the activities of the Sahara Conservation Fund (SCF). SCF is a young, dynamic organization with a unique mission – the conservation of the wildlife of the Sahara and its bordering Sahelian grasslands. To implement its mission, SCF forges partnerships between people, governments, the world zoo and scientific communities, international conventions, NGOs and donor agencies. A powerful network with a common goal – the conservation of deserts and their unique natural and cultural heritage. People working together to share their commitment, resources, skills and enthusiasm. The TAG strongly urges AZA institutions with an interest in addax to consider supporting the good work of the Sahara Conservation Fund. For more information, please visit www.saharaconservation.org.

Program Goals and Objectives

1. Assurance Population
2. Grow population to 50 so it can become a Yellow Program
3. Recruit additional institutions
4. Provide management advice for aggression in female herds
5. Support the goals of the Sahara Conservation Fund

SPECIES:	Addra gazelle *Nanger dama* (Pallas, 1766)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action
AZA POPULATION STATUS:	54.80 (134) in 22 institutions[54]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Ann Petric, with support from Saint Louis Zoo annpetric2240@comcast.net
SSP® VICE-COORDINATOR:	Vacant
MANAGEMENT PLAN:	2012
ADVISOR(S):	Ed Spevak, Saint Louis Zoo spevak@stlzoo.org
WILD POPULATION STATUS:	
IUCN:	Critically Endangered A2cd; C2a(i)
CITES:	Appendix I
USFWS:	Endangered
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
AFRICA:	1.0 (1) in 1 institution
ASIA/MIDDLE EAST:	42.47.1 (90) in 4 institutions
EUROPE:	5.6 (11) in 2 institutions
NORTH AMERICA (NON-SSP®):	4.14 (18) in 3 institutions
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Dama Gazelle Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**15**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 68.26% gene diversity for 100 years

Target Population Size: 200

Addra Gazelle SSP® Demography Summary Table

Current size of population (N)	54.80 (134)
Number of individuals excluded from management	3.9 (12)
Population size following exclusions	51.71 (122)
Target population size (Kt)	200
Mean generation time (years)	4.7
Historical/Potential population growth rate (λ, lambda)	1.132

[54] Petric, A. and E. Spevak 2012. Population Analysis & Breeding and Transfer Plan for the AZA Addra Gazelle *(Gazella dama)* SSP® Yellow Program, 2012. www.aza.org.

SPECIES:	Addra gazelle *Nanger dama* (Pallas, 1766)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action

Addra Gazelle SSP® Genetic Summary Table

	Current	Potential
Founders	13	0
Founder genome equivalents (FGE)	3.51	6.19
Gene Diversity (GD %)	85.77	91.92
Population Mean Kinship (MK)	0.1423	-----
Mean Inbreeding (F)	0.1111	-----
Effective population size/census size ration (Ne/N)	0.2431	-----
Percentage of pedigree known before assumptions & exclusions	-----	-----
Percentage of pedigree known after assumptions & exclusions	97.2	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	-----	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.132$, Target size = 200	68.26	-----

Comments: The addra gazelle is of high conservation concern due to its nearly extinct status in the wild. The only significant zoo population of addra gazelle is in North America. The AZA program is a safety net to extinction and institutions are highly encouraged to consider working with this species and to support conservation efforts that benefit this endangered gazelle. There is also a large population of addra gazelle in private hands, especially in Texas.

Thirty-five AZA facilities have joined with international zoos and conservation organizations to support the activities of the Sahara Conservation Fund (SCF). SCF is a young, dynamic organization with a unique mission – the conservation of the wildlife of the Sahara and its bordering Sahelian grasslands. To implement its mission, SCF forges partnerships between people, governments, the world zoo and scientific communities, international conventions, NGOs and donor agencies. A powerful network with a common goal – the conservation of deserts and their unique natural and cultural heritage. People working together to share their commitment, resources, skills and enthusiasm. The TAG strongly urges AZA institutions with an interest in addax to consider supporting the good work of the Sahara Conservation Fund. For more information, please visit www.saharaconservation.org.

ZIMS and the IUCN SSC Antelope Specialist Group are using different taxonomic names for several antelope species, including Addra gazelle: ZIMS: *Gazella dama ruficollis*; IUCN: *Nanger dama ruficollis*

Program Goals and Objectives

1. Conservation Action
2. Make recommendations to grow population to Target Population Size
3. Recruit SSP® Vice-Coordinator
4. Support the goals of the Sahara Conservation Fund

SPECIES:	Mhorr gazelle *Nanger dama mhorr* (Pallas, 1766)
PROGRAM:	Phase Out
PRIMARY PROGRAM GOAL:	n/a

AZA POPULATION STATUS: 0.3 (3) in 2 institutions[55]

AZA PROGRAM STATUS:

PROGRAM LEADER:	n/a
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a

WILD POPULATION STATUS:

IUCN:	Critically Endangered A2cd; C2a(i)
CITES:	Appendix I
USFWS:	Endangered

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA:	1.0 (1) in 1 institution
ASIA/MIDDLE EAST:	24.42 (66) in 1 institution
EUROPE:	32.43.1 (76) in 12 institutions

RESOURCES AVAILABLE:

PHOTOS AND FACTS:	Dama Gazelle Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **11**

AZA PROGRAM SUMMARY

Sustainability Score: Phase Out - It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. A Species Suggestions Table (Table 6) is provided.

Target Population Size: 0

Comments: The EEP program for mhorr gazelle is strong. The TAG has decided to phase out this subspecies to devote more space to the addra gazelle program. Thirty-five AZA facilities have joined with international zoos and conservation organizations to support the activities of the Sahara Conservation Fund (SCF). SCF is a young, dynamic organization with a unique mission – the conservation of the wildlife of the Sahara and its bordering Sahelian grasslands. To implement its mission, SCF forges partnerships between people, governments, the world zoo and scientific communities, international conventions, NGOs and donor agencies. A powerful network with a common goal – the conservation of deserts and their unique natural and cultural heritage. People working together to share their commitment, resources, skills and enthusiasm. The TAG strongly urges AZA institutions with an interest in addax to consider supporting the good work of the Sahara Conservation Fund. For more information, please visit www.saharaconservation.org.

ZIMS and the IUCN SSC Antelope Specialist Group are using different taxonomic names for several antelope species, including Mhorr gazelle: ZIMS: *Gazella dama mhorr;* IUCN: *Nanger dama mhorr*

Program Goals and Objectives

1. Phase Out

[55] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Grant's gazelle *Nanger granti* (Brooke, 1872)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 18.39 (57) in 12 institutions[56]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Vacant
SSP® VICE-COORDINATOR:	Vacant
MANAGEMENT PLAN:	2013[57]
ADVISOR(S):	TBD

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

ASIA/MIDDLE EAST: 16.15 (31) 2 institutions

RESOURCES AVAILABLE:

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **8**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 44.42% gene diversity for 100 years

Target Population Size: 100

Grant's Gazelle SSP® Demography Summary Table

Current size of population (N)	18.39 (57)
Number of individuals excluded from management	5
Population size following exclusions	52
Target population size (Kt)	100
Mean generation time (years)	4
Historical/Potential population growth rate (λ, lambda)	1.192

[56] Poelker, C., 2013. AZA North American Regional Studbook for the Grant's Gazelle *Gazella granti,* 2013. www.aza.org.

[57] Poelker, C. and E. Spevak, 2013. Population Analysis & Breeding and Transfer Plan for the AZA Grant's Gazelle *(Nanger granti)* SSP® Yellow Program, 2013. www.aza.org

SPECIES:	Grant's gazelle *Nanger granti* (Brooke, 1872)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Grant's Gazelle SSP® Genetic Summary Table

	Current	Potential
Founders	13	0
Founder genome equivalents (FGE)	1.33	1.48
Gene Diversity (GD %)	62.49	66.30
Population Mean Kinship (MK)	0.3751	-----
Mean Inbreeding (F)	0.3436	-----
Effective population size/census size ration (Ne/N)	0.3826	-----
Percentage of pedigree known before assumptions & exclusions	-----	-----
Percentage of pedigree known after assumptions & exclusions	15.7	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	-----	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.192$, Target size = 100	44.42	-----

Comments: The Grant's gazelle is of low conservation concern but is a representative of East African ungulate systems. It is recommended that institutions consider working with gazelle species programs of higher conservation concern.

ZIMS and the IUCN SSC Antelope Specialist Group are using different taxonomic names for several antelope species, including Grant's gazelle: ZIMS: *Gazella granti*; IUCN: *Nanger granti*

Program Goals and Objectives

1. Education/Exhibit Needs
2. Recruit new Studbook Keeper/SSP Coordinator and recruit SSP Vice-Coordinator
3. Make recommendations to grow population to Target Population Size
4. Due to high level of pedigree unknowns, use alternative genetic management
5. Encourage institutions to follow SSP breeding and transfer recommendations

SPECIES:	Thomson's gazelle *Eudorcas thomsonii* (Guenther, 1884)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 53.111.6 (166) at 16 institutions[58]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR: Lanny Brown, Nashville Zoo
lbrown@nashvillezoo.org

SSP® VICE-COORDINATOR: Vacant

MANAGEMENT PLAN: 2013

ADVISOR(S): AZA Population Management Center
slong@lpzoo.org

WILD POPULATION STATUS:

IUCN: Near Threatened

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

ASIA/MIDDLE EAST: 77.131.47 (255) in 7 institutions

EUROPE: 20.33 (53) in 9 institutions

NORTH AMERICA (NON-SSP®): 9.12.8 (29) in 4 institutions

SOUTH AMERICA: 1.9 (10) in 2 institutions

RESOURCES AVAILABLE:

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **10**

AZA PROGRAM SUMMARY

Sustainability Score: Genetic analysis not possible due to high level of unknown pedigree

Target Population Size: 175

Thomson's Gazelle SSP® Demography Summary Table

Current size of population (N)	53.111.2 (166)
Number of individuals excluded from management	13.20 (33)
Population size following exclusions	40.91.2 (133)
Target population size (Kt)	175
Mean generation time (years)	4.1
Historical/Potential population growth rate (λ, lambda)	1.103/1.05

Comments: The Thomson's gazelle remains popular and is an important component of mixed species African exhibitry. Due to their low conservation concern it is recommended that institutions consider replacing Thomson's gazelles with a gazelle species of higher conservation priority.

ZIMS and the IUCN SSC Antelope Specialist Group are using different taxonomic names for several antelope species, including Thomson's gazelle: ZIMS: *Gazella thomsonii*; IUCN: *Eudorcas thomsonii*

[58] Brown, L and K. Schad, 2013. Population Analysis & Breeding and Transfer Plan for the AZA Thomson's Gazelle *(Gazella thomsonii)* SSP® Yellow Program, 2013. www.aza.org.

SPECIES:	Thomson's gazelle *Eudorcas thomsonii* (Guenther, 1884)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Program Goals and Objectives

1. Education/Exhibit Needs
2. Resolve unknown pedigrees or use alternative genetic management strategies
3. Make recommendations to main population at Target Population Size
4. Encourage institutions to consider switching to a more endangered gazelle
5. Recruit SSP® Vice-Coordinator

SPECIES:	Slender-horned gazelle *Gazella leptoceros* (Cuvier, 1842)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action
AZA POPULATION STATUS:	34.39.1 (74) in 7 institutions[59]
AZA PROGRAM STATUS:	
INTERNATIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Patricia Cassady, San Diego Zoo's Safari Park pcassady@sandiegozoo.org
SSP® VICE-COORDINATOR:	Adam Eyres, Fossil Rim Wildlife Center adame@fossilrim.org
MANAGEMENT PLAN:	2011[60]
ADVISOR(S):	Katelyn Marti, AZA Population Management Center kmarti@lpzoo.org
WILD POPULATION STATUS:	
IUCN:	Endangered C2a(i)
CITES:	Appendix I
USFWS:	Endangered
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
EUROPE:	3.13 (16) in 2 institutions
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Slender-horned Gazelle Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**12**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 27.27% gene diversity for 100 years

Target Population Size: 100

Slender-horned Gazelle SSP® Demography Summary Table

Current size of population (N)	21.36 (57)
Number of individuals excluded from management	3
Population size following exclusions	54
Target population size (Kt)	75
Mean generation time (years)	4.00
Historical/Potential population growth rate (λ, lambda)	1.082/1.03

[59] Correll, T., 2013. International Studbook for the Slender-horned Gazelle *Gazella leptoceros,* 2013. www.aza.org
[6060] Correll, T. and K. Marti, 2011. Population Analysis & Breeding and Transfer Plan for the Slender-horned Gazelle *(Gazella leptoceros)* SSP® Yellow Program, 2011. www.aza.org

SPECIES:	Slender-horned gazelle *Gazella leptoceros* (Cuvier, 1842)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action

Slender-horned Gazelle SSP® Genetic Summary Table

	Current	Potential
Founders	3	0
Founder genome equivalents (FGE)	1.20	2.00
Gene Diversity (GD %)	58.27	74.96
Population Mean Kinship (MK)	0.4173	-----
Mean Inbreeding (F)	0.4016	-----
Effective population size/census size ration (Ne/N)	0.2305	-----
Percentage of pedigree known before assumptions & exclusions	19.5	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	23	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.03$, Target size = 75	27.27	-----

Comments: Wild populations of slender-horned gazelles have been severely reduced in number and remaining populations are fragmented. The slender-horned gazelle is a high priority conservation species and institutions are encouraged to consider participating in this program. The recruitment of additional founders is encouraged.

Thirty-five AZA facilities have joined with international zoos and conservation organizations to support the activities of the Sahara Conservation Fund (SCF). SCF is a young, dynamic organization with a unique mission – the conservation of the wildlife of the Sahara and its bordering Sahelian grasslands. To implement its mission, SCF forges partnerships between people, governments, the world zoo and scientific communities, international conventions, NGOs and donor agencies. A powerful network with a common goal – the conservation of deserts and their unique natural and cultural heritage. People working together to share their commitment, resources, skills and enthusiasm. The TAG strongly urges AZA institutions with an interest in addax to consider supporting the good work of the Sahara Conservation Fund. For more information, please visit www.saharaconservation.org.

Program Goals and Objectives

1. Conservation Action
2. Consider increasing Target Population Size
3. Recruit additional institutions
4. Import new founders
5. Support the goals of the Sahara Conservation Fund

SPECIES:	Nubian red-fronted gazelle *Eudorcas rufifrons laevipes* (Gray, 1846)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Assurance Population
AZA POPULATION STATUS:	12.13 (25) in 1 institution[61]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER:	Lanny Brown, Nashville Zoo lbrown@nashvillezoo.org
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
IUCN:	Vulnerable A2cd
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
ASIA/MIDDLE EAST:	10.55 (65) in 2 institutions
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Red-fronted Gazelle Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**9**

AZA PROGRAM SUMMARY

Sustainability Score: TBD when program achieves Yellow Program status

Target Population Size: 50

Comments: Thirty-five AZA facilities have joined with international zoos and conservation organizations to support the activities of the Sahara Conservation Fund (SCF). SCF is a young, dynamic organization with a unique mission – the conservation of the wildlife of the Sahara and its bordering Sahelian grasslands. To implement its mission, SCF forges partnerships between people, governments, the world zoo and scientific communities, international conventions, NGOs and donor agencies. A powerful network with a common goal – the conservation of deserts and their unique natural and cultural heritage. People working together to share their commitment, resources, skills and enthusiasm. The TAG strongly urges AZA institutions with an interest in addax to consider supporting the good work of the Sahara Conservation Fund. For more information, please visit www.saharaconservation.org.

ZIMS and the IUCN SSC Antelope Specialist Group are using different taxonomic names for several antelope species, including the red-fronted gazelle: ZIMS: *Gazella rufifrons laevipes;* IUCN: *Eudorcas rufifrons laevipes*

Program Goals and Objectives

1. Conservation Action
2. Publish Studbook
3. Recruit additional institutions
4. Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA PMC
5. Support the goals of the Sahara Conservation Fund

[61] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Soemmerring's gazelle *Nanger soemmerringii* (Cretzschmar, 1828)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Assurance Population

AZA POPULATION STATUS: 20.24 (44) in 5 institutions[62]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER: Stacey Konwiser, Palm Beach Zoo
Skonwiser@palmbeachzoo.org

MANAGEMENT PLAN: 2012

ADVISOR(S): Andrea Putnam, San Diego Zoo Global
aputnam@sandiegozoo.org

WILD POPULATION STATUS:

IUCN: Vulnerable A2cd; C1

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

ASIA/MIDDLE EAST: 35.66 (101) in 2 intuitions

RESOURCES AVAILABLE:

SPECIES PROFILE: Soemmerring's Gazelle Species Profile

PHOTOS AND FACTS: Soemmerring's Gazelle Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **10**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 60.8% gene diversity for 100 years

Target Population Size: 75

Soemmerring's Gazelle Red Program Demography Summary Table

Current size of population (N)	20.24 (44)
Number of individuals excluded from management	1
Population size following exclusions	19.24 (43)
Target population size (Kt)	75
Mean generation time (years)	7.3
Historical/Potential population growth rate (λ, lambda)	0.937/1.063

[62] Konwiser, S. and A. Putnam, 2012. Population Analysis & Breeding and Transfer Plan for the Soemmerring's Gazelle *(Nanger soemmerringii)* Red Program, 2012. www.aza.org.

SPECIES:	Soemmerring's gazelle *Nanger soemmerringii* (Cretzschmar, 1828)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Assurance Population

Soemmerring's Gazelle Red Program Genetic Summary Table

	Current	Potential
Founders	13	0
Founder genome equivalents (FGE)	2.45	4.12
Gene Diversity (GD %)	79.60	87.86
Population Mean Kinship (MK)	0.2040	-----
Mean Inbreeding (F)	0.1566	-----
Effective population size/census size ration (Ne/N)	0.3619	-----
Percentage of pedigree known before assumptions & exclusions	0	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	51	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.063$, Target size = 75	60.8	-----

Comments: As a growing gazelle conservation program in North America, new holding institutions are being sought and the recruitment of additional founders is encouraged. This antelope program is a unique representation of ungulate conservation challenges in the Horn of Africa region and will continue to be prioritized as the program is successful.

ZIMS and the IUCN SSC Antelope Specialist Group are using different taxonomic names for several antelope species, including Soemmerring's gazelle: ZIMS: *Gazella soemmerringii soemmerringii;* IUCN: *Nanger soemmerringii*

Program Goals and Objectives

1. Assurance Population
2. Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA Population Management Center
3. Recruit additional institutions
4. Improve reproductive success and reduce infant mortality

SPECIES:	Speke's gazelle *Gazella spekei* (Blyth, 1863)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population
AZA POPULATION STATUS:	27.43 (70) at 10 institutions[63]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Christy Poelker, Saint Louis Zoo poelker@stlzoo.org
SSP® VICE-COORDINATOR:	Martha Fischer, Saint Louis Zoo fischer@stlzoo.org
MANAGEMENT PLAN:	2012[64]
ADVISOR(S):	Ed Spevak, Saint Louis Zoo spevak@stlzoo.org
WILD POPULATION STATUS:	
IUCN:	Endangered A2cd
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
ASIA/MIDDLE EAST:	41.90.3 (134) in 4 institutions
RESOURCES AVAILABLE:	
SPECIES PROFILE:	Speke's Gazelle Species Profile
PHOTOS AND FACTS:	Speke's Gazelle Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**12**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 33.99% gene diversity for 100 years

Target Population Size: 100

Speke's Gazelle SSP® Demography Summary Table

Current size of population (N)	28.43 (71)
Number of individuals excluded from management	3
Population size following exclusions	68
Target population size (Kt)	100
Mean generation time (years)	4.7
Historical/Potential population growth rate (λ, lambda)	1.059

[63] Fischer, M. and C. Poelker, 2014. AZA North American Regional Studbook for the Speke's Gazelle *Gazella spekei*, 2014. www.aza.org.

[64] Fischer, M. and E. Spevak, 2012. Population Analysis & Breeding and Transfer Plan for the Speke's Gazelle *(Gazella spekei)* SSP® Yellow Program, 2012. www.aza.org

SPECIES:	Speke's gazelle *Gazella spekei* (Blyth, 1863)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Assurance Population

Speke's Gazelle SSP® Genetic Summary Table

	Current	Potential
Founders	6	0
Founder genome equivalents (FGE)	2.01	3.55
Gene Diversity (GD %)	75.06	85.93
Population Mean Kinship (MK)	0.2494	-----
Mean Inbreeding (F)	0.1852	-----
Effective population size/census size ration (Ne/N)	0.1460	-----
Percentage of pedigree known before assumptions & exclusions	100	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	Already <90%	-----
Years to 10% Loss of Gene Diversity	-----	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.059$, Target size = 100	33.99	-----

Comments: The Speke's gazelle program continues to grow slowly however recruitment of additional founders is needed and possible importations are being pursued. Additional institutions are needed for this growing population to hold breeding and bachelor herds.

Conservation support for Horn of Africa antelope is a high priority for the IUCN SSC Antelope Specialist Group and several projects are listed within the Antelope and Giraffe TAG's Action Plan. The Saint Louis Zoo's WildCare Institute Center for Conservation in the Horn of Africa was established to provide *in situ* and *ex situ* conservation support and foster long-term conservation partnerships that will benefit the wildlife of the Horn of Africa, including the endangered Speke's gazelle. Conservation activities in Somalia and along the border of Ethiopia where Speke's gazelles are found are challenging due to political unrest.

Program Goals and Objectives

1. Assurance Population
2. Make recommendations to grow population to Target Population Size
3. Recruit additional institutions, especially for bachelor herds
4. Import new founders

SPECIES:	Saudi goitered gazelle *Gazella subgutturosa marica* (Guldenstaedt, 1780)
PROGRAM:	Phase Out
PRIMARY PROGRAM GOAL:	n/a
AZA POPULATION STATUS:	1.1 (2) in 1 institution[65]
AZA PROGRAM STATUS:	
PROGRAM LEADER:	n/a
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
IUCN:	Vulnerable A2cd
USFWS:	Endangered
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
ASIA/MIDDLE EAST:	330.588.84 (1,008) in 7 institutions
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Goitered Gazelle Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**7**

AZA PROGRAM SUMMARY

Sustainability Score: Phase Out - It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. A Species Suggestions Table (Table 6) is provided.

Target Population Size: 0

Comments: The vast range of the goitered gazelles and the current low conservation concern for these populations make these programs a low priority for the TAG. The sand gazelle (*G. s. marica*) population in North America is now at low numbers with little institutional interest in the species. Despite the conservation concerns of the wild sand gazelle population and the genetic and phenotypic uniqueness of this gazelle species, it is recommended that institutions consider other gazelle programs of higher conservation priority. There are thought to be tens of thousands of sand gazelles in the United Arab Emirates.

Program Goals and Objectives

1. Phase Out

[65] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Persian goitered gazelle *Gazella subgutturosa subgutturosa*
PROGRAM:	Phase Out
PRIMARY PROGRAM GOAL:	n/a

AZA POPULATION STATUS: 2.6 (8) in 1 institution[66]

AZA PROGRAM STATUS:

PROGRAM LEADER: n/a

MANAGEMENT PLAN: n/a

ADVISOR(S): n/a

WILD POPULATION STATUS:

IUCN: Vulnerable C2a(i)

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

EUROPE: 9.27 (36) in 7 institutions

ASIA/MIDDLE EAST: 64.91.2 (157) in 2 institutions (*G. s. marica*)

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Goitered Gazelle Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **6**

AZA PROGRAM SUMMARY

Sustainability Score: Phase Out - It is strongly suggested that institutions consider replacing unrecommended species with a recommended program species. A Species Suggestions Table (Table 6) is provided.

Target Population Size: 0

Comments: Due to the current reduced viability of the population, no AZA program is currently recommended for this species.

Program Goals and Objectives

1. Phase Out

[66] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Pronghorn *Antilocapra americana* (Ord, 1815)
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs
AZA POPULATION STATUS:	16.37.3 in 19 institutions[67]
AZA PROGRAM STATUS:	
NA REGIONAL STUDBOOK KEEPER:	Melodi Tayles, San Diego Zoo's Safari Park mtayles@sandiegozoo.org
MANAGEMENT PLAN:	n/a
ADVISOR(S):	n/a
WILD POPULATION STATUS:	
IUCN:	Least Concern
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
NORTH AMERICA (NON-AZA):	4.4.1 (9) in 2 institutions
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Pronghorn Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**11**

AZA PROGRAM SUMMARY

Sustainability Score: TBD when program achieves Yellow Program status

Target Population Size: 150

Comments: As a unique ungulate and an important component of North American landscapes, the pronghorn remains a popular program. Programs for pronghorn populations of conservation concern (*A. a. peninsularis, A. a. sonorensis*) are on-going and participating institutions are encouraged to support these efforts (See ISF Focus species, page 125).

Program Goals and Objectives

1. Education/Exhibit Needs
2. Publish Studbook
3. Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA Population Management Center
4. Determine ideal Target Population Size

[67] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

SPECIES:	Peninsular pronghorn *Antilocapra americana peninsularis*
PROGRAM:	Red Program
PRIMARY PROGRAM GOAL:	Conservation Action

AZA POPULATION STATUS: 17.11 (28) in 4 institutions[68]

AZA PROGRAM STATUS:

NA REGIONAL STUDBOOK KEEPER: Melodi Tayles, San Diego Zoo's Safari Park
mtayles@sandiegozoo.org

MANAGEMENT PLAN: n/a

ADVISOR(S): n/a

WILD POPULATION STATUS:

IUCN: Least Concern

CITES: Appendix I (Mexico)

USFWS: Endangered

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS:

Not present in other regions.

RESOURCES AVAILABLE:

PHOTOS AND FACTS: Pronghorn Ultimate Ungulate Fact Sheet

AZA UNGULATE TAGS ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **13**

AZA PROGRAM SUMMARY

Sustainability Score: TBD when program achieves Yellow Program status

Target Population Size: 50

Comments: As a unique ungulate and an important component of North American landscapes, the pronghorn remains a popular species in AZA facilities. A program for the Peninsular pronghorn has been implemented by the Mexican government with support from AZA zoos at the Vizcaino Biosphere Reserve on the Baja Peninsula. A propagation component has been successful in raising pronghorn for release in the Reserve.

An *ex situ* breeding program for the Peninsular pronghorn to be transferred to AZA institutions is also ongoing. Because institutional interest exists and because there are plans for future importations, the TAG is recommending this subspecies as a program.

Field conservation programs for the Peninsular pronghorn are on-going and participating institutions are encouraged to support these efforts.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Publish Studbook
3. Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA Population Management Center
4. Determine ideal Target Population Size

[68] ZIMS Species Holding, 2014. https://zims.isis.org/Main.aspx

Aridland Antelope, Gazelle and Pronghorn Subgroup
in situ Focus Species

Saiga, Mongolian and Russian ***Saiga tatarica spp.*** (Linnaeus, 1766)
Range: Russia, Mongolia, Kazakhstan, China **Wild population est:** ? declining drastically
Photos and Facts: Saiga Ultimate Ungulate Fact Sheet

The continuing critical decline of the Russian saiga and Mongolian saiga in range states requires significant applied conservation efforts to counter the negative effects of population declines and continued poaching. *Ex situ* breeding is recommended as a component of the international conservation program. The implementation of a program in North America has been suggested through an importation of founders, however, the husbandry for this species is challenging. Institutions are encouraged to support range state conservation efforts for these species.
For information on how to become involved, contact Conservation Centers for Species Survival. C2S2 contact Dan Beetem, dbeetem@thewilds.org.

Przewalski's gazelle, Dzeren ***Procapra przewalskii*** **(**Buchner, 1891)
Range: China and Mongolia **Wild population estimate:** <500

An inhabitant of arid grasslands associated with the Tibetan plateau, the Przewalski's gazelle has lost nearly its entire habitat to agriculture and herders. Conservation efforts and studies of the remaining gazelles are ongoing but the herding pressure has not diminished and only small protected areas are available to the animals. Technical and financial support for the conservation plan will be helpful to the species survival and is recommended.
For information on how to become involved, contact Steve Shurter, steves@wogilman.com

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Tibetan antelope, Chiru ***Pantholops hodgsonii*** (Abel ,1826)
Range: India, Tibet, China **Wild population estimate:** <30,000
Photos and Facts: Chiru Ultimate Ungulate Fact Sheet

An inhabitant of high elevation grasslands, the Tibetan antelope continues to be persecuted for its unique hair and hide which are used to make high quality wool for the garment trade. Efforts in recent years to stem the poaching and reduce the trade have been somewhat successful, however the wild population has been severely compromised and continues to decline, and conservation measures are required to assist its recovery. Scientific studies and support for conservation of the Tibetan antelope are needed.
For information on how to become involved, contact Martha Fischer, fischer@stlzoo.org

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Sonoran pronghorn ***Antilocapra americana sonoriensis***
Range: Southwest US, Mexico **Wild population estimates:** 742

The Sonoran pronghorn population is endangered in its natural range. A conservation program for the Sonoran pronghorn has been implemented jointly by the Mexican government, the USFWS and Arizona Game and Fish (AGF) to conserve and propagate this endangered species in both countries. US zoos are providing technical assistance with the propagation portion managed by USFWS and AGF.
For information on how to become involved, contact Jeff Holland, jeff.holland@lacity.org

Giraffe/Okapi Subgroup

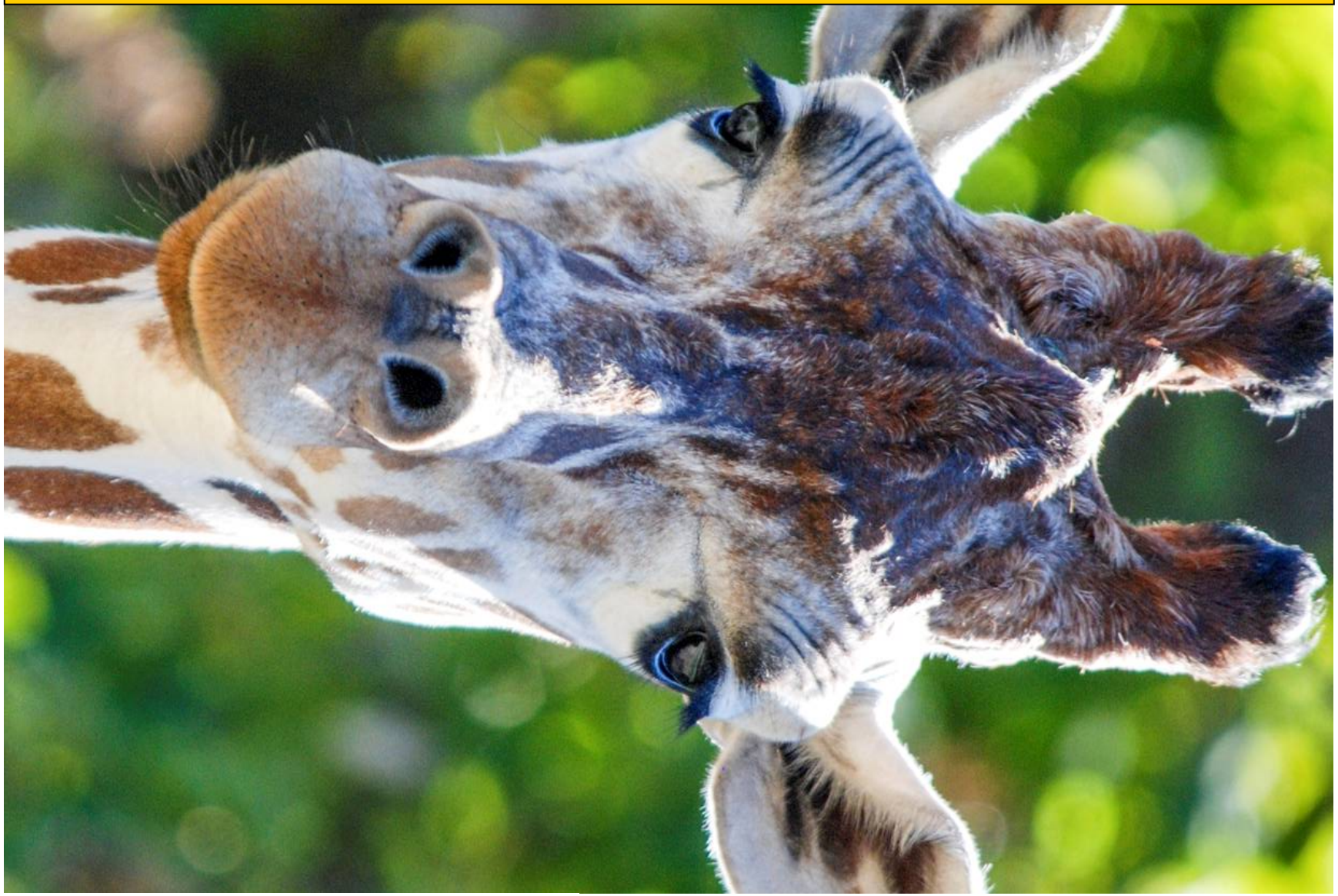

Photo courtesy of Robin Winkelmann, Saint Louis Zoo

SPECIES:	Masai Giraffe *Giraffa camelopardalis tippelskirchii* (Linnaeus, 1758)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 44.58 (102) in 28 institutions[69]

AZA PROGRAM STATUS:

INTERNATIONAL STUDBOOK KEEPER & SSP® COORDINATOR: Laurie Bingaman Lackey, with support from Disney's Animal Kingdom
giraffe3@bellsouth.net

SSP® VICE-COORDINATOR: Joe Christman, Disney's Animal Kingdom
Joseph.christman@disney.com

MANAGEMENT PLAN: 2013

ADVISOR(S): Laurie Bingaman Lackey
giraffe3@bellsouth.net

WILD POPULATION STATUS:

IUCN: Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM INTERNATIONAL STUDBOOK/SSP 2013:

ASIA/MIDDLE EAST: 8.9 (17) in 7 institutions

EUROPE: 0.2 (2) in 2 institutions

RESOURCES AVAILABLE:

AZA GIRAFFE ANIMAL CARE MANUAL: In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **16**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 86% gene diversity for 100 years

Target Population Size: 150

Masai Giraffe SSP® Demography Summary Table

Current size of population (N)	44.58 (102)
Number of individuals excluded from management	0
Population size following exclusions	44.58 (102)
Target population size (Kt)	150
Mean generation time (years)	11.8
Potential population growth rate (λ, lambda)	1.04

[69] Bingaman Lackey, L., 2013. Population Analysis & Breeding and Transfer Plan for the Masai Giraffe *(Giraffa camelopardalis)* SSP® Yellow Program, 2013. www.aza.org.

SPECIES:	Masai Giraffe *Giraffa camelopardalis tippelskirchii* (Linnaeus, 1758)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Masai Giraffe SSP® Genetic Summary Table

	Current	Potential
Founders	20	0
Founder genome equivalents (FGE)	6.55	10.38
Gene Diversity (GD %)	92.24	95.20
Population Mean Kinship (MK)	0.0760	-----
Mean Inbreeding (F)	0.0200	-----
Effective population size/census size ration (Ne/N)	0.4300	-----
Percentage of pedigree known before assumptions & exclusions	100	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	36	-----
Years to 10% Loss of Gene Diversity	-----	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.03$, Target size = 150	86	-----

Comments: Recruitment of additional institutions and importation of additional founders are critical to the long-term management of this subspecies in North America. Husbandry, particularly nutrition, requires investigation.

In Africa, southern populations of giraffe are increasing in abundance, while northern populations have been decreasing due to habitat degradation and poaching. More Masai giraffe exist in Africa (37,000) than any other species.

The TAG strongly urges AZA institutions with an interest in giraffe conservation to consider supporting the good work of the Giraffe Conservation Foundation and to support initiatives related to the most threatened subspecies in Africa - the West African (Nigerien) giraffe and the Rothschild's giraffe.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Grow population to Target Population Size
3. Encourage institutions to devote their giraffe spaces to the Masai Giraffe SSP instead of the Retic/Roth SSP
4. Support the goals of Giraffe Conservation Foundation

SPECIES:	Reticulated/Rothschild's Giraffe *Giraffa camelopardalis spp* (Linnaeus, 1758)
PROGRAM:	Species Survival Plan® – Green Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

AZA POPULATION STATUS: 147.251.24 (422) in 84 institutions[70]

AZA PROGRAM STATUS:

INTERNATIONAL STUDBOOK KEEPER & SSP® COORDINATOR:	Laurie Bingaman Lackey, with support from Disney's Animal Kingdom giraffe3@bellsouth.net
SSP® VICE-COORDINATOR:	Joe Christman, Disney's Animal Kingdom Joseph.christman@disney.com
MANAGEMENT PLAN:	2013
ADVISOR(S):	Laurie Bingaman Lackey giraffe3@bellsouth.net

WILD POPULATION STATUS:

IUCN:	Least Concern

OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:

AFRICA:	1.3.9 (13) in 3 institutions
ASIA/MIDDLE EAST:	53.98 (151) in 39 institutions
AUSTRALIA:	40.40 (80) in 16 institutions
EUROPE:	1341.493.2 (836) in 166 institutions
NORTH AMERICA (NON-SSP®):	20.35 (55) in 13 institutions
SOUTH AMERICA:	6.10 (16) in 6 institutions

RESOURCES AVAILABLE:

AZA GIRAFFE ANIMAL CARE MANUAL:	In process; 80% complete

SPECIES SELECTION PROCESS SCORE: **15**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 94% gene diversity for 100 years

Target Population Size: 400, including all Rothschild's, Reticulated, Hybrids and Unknown Provenance giraffes.

Retic/Roth Giraffe SSP® Demography Summary Table

Current size of population (N)	147.251.24 (422)
Number of individuals excluded from management	0
Population size following exclusions	147.251.24 (422)
Target population size (Kt)	400
Mean generation time (years)	10.4
Historical/Potential population growth rate (λ, lambda)	1.064

[70] Bingaman Lackey, L., 2013. Breeding and Transfer Recommendations for the Rothschild's/Reticulated Complex Giraffe (*Giraffa camelopardalis*) SSP® Green Program, 2013. www.aza.org.

SPECIES:	Reticulated/Rothschild's Giraffe *Giraffa camelopardalis spp* (Linnaeus, 1758)
PROGRAM:	Species Survival Plan® – Green Program
PRIMARY PROGRAM GOAL:	Education/Exhibit Needs

Retic/Roth SSP® Genetic Summary Table

	Current	Potential
Founders	94	0
Founder genome equivalents (FGE)	21.58	43.4
Gene Diversity (GD %)	97.7	98.9
Population Mean Kinship (MK)	0.0230	-----
Mean Inbreeding (F)	0.0280	-----
Effective population size/census size ration (Ne/N)	0.3330	-----
Percentage of pedigree known before assumptions & exclusions	97	-----
Percentage of pedigree known after assumptions & exclusions	97	-----
Years to 90% Gene Diversity	285	-----
Years to 10% Loss of Gene Diversity	-----	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.05$, Target size = 500	94	-----

Comments: This population is over its Target Population Size. Institutions are strongly recommended to comply with SSP® recommendations to decrease this population to its optimal size.

In Africa, poaching and armed conflict across the range of the Reticulated Giraffe in Somalia, Ethiopia and Kenya has reduced numbers to perhaps fewer than 5,000 individuals. The Rothschild's giraffe is estimated to number less than 470 individuals in Uganda and Kenya, with an unknown (but likely small) number in southern Sudan.

The TAG strongly urges AZA institutions with an interest in giraffe conservation to consider supporting the good work of the Giraffe Conservation Foundation and to support initiatives related to the most threatened subspecies in Africa - the West African (Nigerien) giraffe and the Rothschild's giraffe.

Program Goals and Objectives

1. Education/Exhibit Needs
2. Reduce population - encourage institutions to devote their giraffe spaces to the Masai Giraffe SSP instead of the Retic/Roth SSP®
3. Encourage institutions to reduce giraffe space in general to increase space available for more endangered ungulate species
4. Support the goals of Giraffe Conservation Foundation

SPECIES:	Okapi *Okapia johnstoni* (Lankester, 1901)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action
AZA POPULATION STATUS:	53.51 (104) in 28 institutions[71]
AZA PROGRAM STATUS:	
SSP® COORDINATOR:	Ann Petric, with support from Saint Louis Zoo annpetric2240@comcast.net
SSP® VICE-COORDINATOR:	Matt Hohne, Disney's Animal Kingdom Matthew.Hohne@disney.com
MANAGEMENT PLAN:	2014
ADVISOR(S):	Sarah Long, PMC slong@lpzoo.org
WILD POPULATION STATUS:	
IUCN:	Endangered A2abcd+4abcd
OTHER REGIONAL PROGRAM STATUS, FROM ZIMS 2014:	
EUROPE:	32.30 (62) in 19 institutions
RESOURCES AVAILABLE:	
PHOTOS AND FACTS:	Okapi Ultimate Ungulate Fact Sheet
AZA UNGULATE TAGS ANIMAL CARE MANUAL:	In process; 80% complete
SPECIES SELECTION PROCESS SCORE:	**19**

AZA PROGRAM SUMMARY

Sustainability Score: Retain 87.4% gene diversity for 100 years

Target Population Size: 200

Okapi SSP® Demography Summary Table

Current size of population (N)	53.51 (104)
Number of individuals excluded from management	2.5 (7)
Population size following exclusions	51.46 (97)
Target population size (Kt)	200
Mean generation time (years)	10.2
Current/Historical/Projected population growth rate (λ, lambda)	1.036/1.031/1.028

[71] Petric, A. and S. Long, 2014. Population Analysis & Breeding and Transfer Plan for the Okapi *(Okapia johnstoni)* SSP Yellow Program, 2014. www.aza.org

SPECIES:	Okapi *Okapia johnstoni* (Lankester, 1901)
PROGRAM:	Species Survival Plan® – Yellow Program
PRIMARY PROGRAM GOAL:	Conservation Action

Okapi SSP® Genetic Summary Table

	Current	Potential
Founders	25	0
Founder genome equivalents (FGE)	7.30	10.04
Gene Diversity (GD %)	93.15	95.02
Population Mean Kinship (MK)	0.0685	-----
Mean Inbreeding (F)	0.0156	-----
Effective population size/census size ration (Ne/N)	0.4113	-----
Percentage of pedigree known before assumptions & exclusions	100	-----
Percentage of pedigree known after assumptions & exclusions	100	-----
Years to 90% Gene Diversity	48	-----
Years to 10% Loss of Gene Diversity	180	-----
Gene Diversity at 100 Years from Present (%) Assuming $\lambda = 1.03$, Target size = 200	87.4	-----

Comments: The okapi remains popular with North American institutions as a unique species and as a strong conservation program representing African rainforest protection. New holders are being sought as the program continues its growth. The recruitment of additional founders is recommended.

The Okapi Conservation Project was initiated in 1987 to secure a protected area for okapi in the wild. For over two decades, this program has been dedicated to protecting and preserving the okapi, the flagship species of the Ituri forest in the Democratic Republic of the Congo, while also improving the lives of the people who live in the area. In 1992, the Okapi Wildlife Reserve was given official protected status creating a reserve in a portion of the Ituri rainforest, one of the most biologically diverse places on earth. This project provides support for training and equipping wildlife guards, community assistance (clean water, medical services, school supplies, etc) to the people living next to the reserve, conservation education for people and care for a managed breeding and research group of okapi in the reserve. Partners include Gilman International Conservation, White Oak Conservation Holdings LLC, 44 international participants in the AZA and EAZA Okapi SSP® and EEP programs, governmental and non-governmental conservation organizations in DRC and other donors. The TAG strongly urges AZA institutions with an interest in okapi to consider supporting the long-term good work of the Okapi Conservation Project. For more information, please visit www.giconline.org.

Program Goals and Objectives

1. Conservation Action
2. Grow population to Target Population Size
3. Recruit additional institutions
4. Import founders
5. Support the goals of the Okapi Conservation Project

Giraffe/Okapi Subgroup
in situ Focus Species

In 1999, it was estimated that there were 140,000 giraffes in Africa. More recent preliminary estimates put the total population at less than 80,000 animals. Some populations remain stable or are even increasing, but others are clearly in a more precarious position. Ongoing efforts to census the continent's giraffe populations will allow more accurate assessment of the species' overall conservation status. Two subspecies are of special concern at this time and warrant ISF programs:

West African (Nigerien) Giraffe ***Giraffa camelopardalis peralta*** **(Thomas, 1898)**
Range: Niger **Wild population est:** 200

This subspecies was elevated by IUCN to Endangered status in 2008. Recent genetic evidence has confirmed the subspecies identity of this taxon, and that it survives only in the wild. In West Africa, giraffe formerly ranged from Senegal to Lake Chad, but the only viable surviving population within this entire area is a small population in south-western Niger with a range of about 15,000 km². This represents the only surviving wild population of *G. c. peralta.* In Niger, conservation projects have facilitated the Niger giraffe's population recovery in an area outside any formal protected park or reserve. However, poaching and habitat loss and degradation as a result of increased aridity, and expansion of human activities remain threats. Support for this endangered subspecies through the Giraffe Conservation Foundation's Niger Giraffe Project is strongly encouraged.

For information on how to become involved, contact Amy Roberts, amy.roberts@czs.org

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Rothschild's Giraffe ***Giraffa camelopardalis rothschildi*** **(Lydekker, 1903)**
Range: Uganda, Kenya **Wild population estimate:** <500

This subspecies was elevated by IUCN to Endangered status in 2010. Rothschild's giraffe is one of the most imperiled giraffe subspecies remaining. When the subspecies was first described by Lydekker in 1903, it inhabited the region from the Rift Valley of west-central Kenya across Uganda to the Nile River and northward into southern Sudan. This subspecies has since severely declined in number and range and is thought to be extinct in Sudan. There now exists only one remaining natural population of Rothschild's giraffe in Uganda; the rest are in small, reintroduced populations in Kenya, all in fenced areas and isolated from one another. Current population estimates for the Rothschild giraffe now suggest there are less than 670 individuals remaining in the wild. Support for this endangered subspecies through the Giraffe Conservation Foundation's Rothschild's Giraffe Project is strongly encouraged.

For information on how to become involved, contact Amy Roberts, amy.roberts@czs.org

Appendix 1: Antelope and Giraffe TAG Leadership, Advisors and Program Leaders, 2014.

Program or Position	Name	Email and Phone
TAG Leadership		
Chair,	Martha Fischer Saint Louis Zoo	fischer@stlzoo.org 314-646-4610
Vice Chair, Forest/Woodland Antelope Subgroup	Sharon Joseph Houston Zoo	sjoseph@houstonzoo.org 713-533-6740
Vice Chair, Small Antelope Subgroup	Jeff Holland Los Angeles Zoo	jeff.holland@lacity.org 323-644-4220
Vice Chair, Hartebeest Subgroup	Dan Beetem The Wilds	dbeetem@thewilds.org 740-638-5030 ext 2110
Vice Chair, Waterbuck Subgroup	Randy Rieches San Diego Zoo's Safari Park	rrieches@sandiegozoo.org 760-738-5015
Vice Chair, Aridland Antelope, Gazelles and Pronghorn Subgroup	Adam Eyres Fossil Rim Wildlife Center	adame@fossilrim.org 254-898-4230
Secretary	Lisa Smith Great Plains Zoo	lsmith@gpzoo.org 605-367-8313 ext 119
Treasurer	Vickie Kunter Denver Zoo	vkunter@denverzoo.org 303-376-4929
Steering Committee	Sam Berner Disney's Animal Kingdom	sam.k.berner@disney.com 407-939-7303
Steering Committee	Andrea DeMuth Brookgreen Gardens	ADemuth@brookgreen.org 843-235-6054
Steering Committee	Joanne Kelly Como Park Zoo	Joanne.kelly@ci.stpaul.mn.us 651-487-8208
Steering Committee	Andi Kornak Cleveland Metroparks Zoo	amk@clevelandmetroparks.com 216-635-3373
Steering Committee	Amy Phelps Oakland Zoo	amyp@oaklandzoo.org 510-632-9525
Steering Committee	Amy Roberts Brookfield Zoo	amy.roberts@czs.org 708-688-8446
Steering Committee	Tracy Thessing Cheyenne Mountain Zoo	tthessing@cmzoo.org 719-633-9925
Steering Committee	Terry Webb Zoo Miami	webbt@miamidade.gov 305-251-0400 ext 84932
Advisors		
Education Advisor	Leanne White Greenville Zoo	lwhite@greenvillesc.gov 864-467-4850
Research Advisor	Steve Monfort NZP-CRC	monforts@si.edu 540-635-6589
Reproduction Advisor	Linda Penfold South-East Zoo Alliance for Reproduction and Conservation	linda.penfold@sezarc.com 904-225-3382
Veterinary Advisor	Barb Wolfe The Wilds	barbara.wolfe@cvm.osu.edu
Nutrition Advisor	Erin Kendrick Smithsonian Conservation Biology Institute, National Zoo	kendricke@si.edu 202-633-4199
Ungulate TAG Website Coordinators	RoxAnna Breitigan, Cheyenne Mountain Zoo Brent Huffman, Toronto Zoo Michelle Hatwood, Phoenix Zoo	rbreitigan@cmzoo.org 719-633-9925 ext 167 brent@ultimateungulate.com mhatwood@thephxzoo.org 602-273-1341 ext 7613
Program Leaders		
Forest/Woodland Subgroup - Sharon Joseph, Vice-Chair		
Eastern giant eland International Studbook Keeper	Lissa McCaffree San Diego Zoo's Safari Park	lmccaffree@sandiegozoo.org 760-747-8702 ext 5098
Western giant eland ISF Coordinator	Steve Shurter White Oak Conservation Center	steves@wogilman.com 904-225-3396
Common eland NA Regional Studbook Keeper & SSP Coordinator	Hollie Colahan Denver Zoo	hcolahan@denverzoo.org 720-337-1647

Program or Position	Name	Email and Phone
Lowland nyala NA Regional Studbook Keeper & SSP Coordinator	Steve Metzler Disney's Animal Kingdom	Steve.f.metzler@disney.com 321-263-6320
Mountain nyala ISF Coordinator	Martha Fischer Saint Louis Zoo	fischer@stlzoo.org 314-646-4610
Eastern bongo International Studbook Keeper	Lydia Frazier Bosley with support from Oregon Zoo	lfbosley@q.com 541-444-1265
Eastern bongo SSP Coordinator	Ron Surratt Forth Worth Zoo	rsurratt@fortworthzoo.org 817-759-7160
Southern lesser kudu NA Regional Studbook Keeper & SSP Coordinator	Lily Civili Saint Louis Zoo	civili@stlzoo.org 314-646-4824
Greater kudu NA Regional Studbook Keeper & SSP Coordinator	Dennis Charlton Smithsonian's National Zoo	charltond@si.edu 202-644-3190
Sitatunga NA Regional Studbook Keeper	Gil Myers Smithsonian's National Zoo	myersg@si.edu 202-633-3216
Roan antelope NA Regional Studbook Keeper & SSP Coordinator	Andi Kornak Binder Park Zoo	akornak@binderparkzoo.org 269-979-1351 ext 170
Sable antelope NA Regional Studbook Keeper & SSP Coordinator	Jill Piltz Disney's Animal Kingdom	Jill.m.piltz@disney.com 407-928-2850
Giant sable antelope ISF Coordinator	Sharon Joseph Houston Zoo	sjoseph@houstonzoo.org 713-533-6740
Impala NA Regional Studbook Keeper	Jennifer MacNaughton Busch Gardens – Tampa Bay	Jennifer.macnaughton@buschgardens.com 813-987-5552
Black-faced impala ISF Coordinator	Sharon Joseph Houston Zoo	sjoseph@houstonzoo.org 713-533-6740
South African springbok NA Regional Studbook Keeper & SSP Coordinator	Jessica Scallan Tulsa Zoo	Jessica.scallan@sbcglobal.net 918-669-6202
Southern gerenuk NA Regional Studbook Keeper & SSP Coordinator	Christina Seely Denver Zoo	cseely@denverzoo.org 720-337-1500
Dibatag ISF Coordinator	Martha Fischer Saint Louis Zoo	fischer@stlzoo.org 314-646-4610
Small Antelope Subgroup - Jeff Holland, Vice-Chair		
Jentink's duiker ISF Coordinator	Jeff Holland Los Angeles Zoo	Jeff.holland@lacity.org 323-644-4220
Blue duiker NA Regional Studbook Keeper	Sarah Ksiazek Dallas Zoo	Alphadawg7@gmail.com 678-516-5146
Ader's duiker ISF Coordinator	Jeff Holland Los Angeles Zoo	Jeff.holland@lacity.org 323-644-4220
Red-flanked duiker NA Regional Studbook Keeper	Nate Oliveira Saint Louis Zoo	oliveira@stlzoo.org 314-646-4546
Yellow-backed duiker NA Regional Studbook Keeper & SSP Coordinator	Linda Rohr Bachers Milwaukee Zoo	Linda.bachers@milwcnty.com 414-256-5448
Abbott's duiker ISF Coordinator	Jeff Holland Los Angeles Zoo	Jeff.holland@lacity.org 323-644-4220
Zebra duiker ISF Coordinator	Jeff Holland Los Angeles Zoo	Jeff.holland@lacity.org 323-644-4220
Kenyan Günther's dik dik NA Regional Studbook Keeper	Paige McNickle Phoenix Zoo	PMcnickle@thephxzoo.com 602-273-1351
Kirk's dik dik NA Regional Studbook Keeper	Paige McNickle Phoenix Zoo	PMcnickle@thephxzoo.com 602-273-1351
Silver dik dik ISF Coordinator	Jeff Holland Los Angeles Zoo	Jeff.holland@lacity.org 323-644-4220
Royal Antelope NA Regional Studbook Keeper	Amy Roberts Brookfield Zoo	amy.roberts@czs.org 708-688-8446
Beira ISF Coordinator	Martha Fischer Saint Louis Zoo	fischer@stlzoo.org 314-646-4610
Steenbok NA Regional Studbook Keeper	Steve Metzler Disney's Animal Kingdom	Steve.f.metzler@disney.com 321-263-6320
Klipspringer NA Regional Studbook Keeper	Michael Lebanik Disney's Animal Kingdom	Michael.g.lebanik.jr@disney.com 407-938-2342
Hartebeest Subgroup - Dan Beetem, Vice-Chair		
Jackson's hartebeest NA Regional Studbook Keeper	Mollye Nardi Zoo Atlanta	mnardi@zooatlanta.org 404-936-5806
Swayne's hartebeest ISF Coordinator	Martha Fischer Saint Louis Zoo	fischer@stlzoo.org 314-646-4610

Program or Position	Name	Email and Phone
Wildebeest NA Regional Studbook Keeper & SSP Coordinator	Kristen Wolfe Disney's Animal Kingdom	Kristen.wolfe@disney.com 407-938-2950
Bontebok NA Regional Studbook Keeper & SSP Coordinator	Lissa McCaffree San Diego Zoo's Safari Park	Lmccaffree@sandiegozoo.org 760-747-8702 ext 5098
Hunter's hartebeest, Hirola ISF Coordinator	Martha Fischer Saint Louis Zoo	fischer@stlzoo.org 314-646-4610
Waterbuck Subgroup - Randy Rieches, Vice-Chair		
Common waterbuck NA Regional Studbook Keeper & SSP Coordinator	Jonnie Capiro San Diego Zoo's Safari Park	jcapiro@sandiegozoo.org 760-747-8702 ext 25583
Uganda Kob NA Regional Studbook Keeper	Danny Lepping Rolling Hills Zoo	Lordon03@live.com 910-748-9997
Nile lechwe NA Regional Studbook Keeper & SSP Coordinator	Matt Hohne Disney's Animal Kingdom	Matthew.hohne@disney.com 407-938-2672
Red Lechwe NA Regional Studbook Keeper	Melissa Covey Disney's Animal Kingdom	Melissa.a.covey@disney.com 402-490-9487
Western mountain reedbuck ISF Coordinator	Randy Rieches SDWAP	rrieches@sandiegozoo.org 760-738-5015
Aridland Antelope, Gazelle and Pronghorn Subgroup – Adam Eyres, Subgroup Vice-Chair		
Addax International Studbook Keeper	Wendy Enright The Living Desert	wenright@livingdesert.org 760-346-5694
Addax SSP Coordinator	Bill Houston Saint Louis Zoo	Houston@stlzoo.org 314-646-4826
Scimitar-horned oryx SSP Coordinator	Sheri Horiszny Santa Barbara Zoo	shoriszny@sbzoo.org 805-962-5339 ext135
Gemsbok NA Regional Studbook Keeper & SSP Coordinator	Melissa McCartney Sacramento Zoo	mmccartney@saczoo.org 805-452-9741
Fringe-eared oryx NA Regional Studbook Keeper	Melissa McCartney Sacramento Zoo	mmccartney@saczoo.org 805-452-9741
Arabian oryx SSP Coordinator	Michelle Hatwood Phoenix Zoo	mhatwood@thephxzoo.org 602.273.1341 x7613
Cuvier's gazelle NA Regional Studbook Keeper	Wendy Enright The Living Desert	wenright@livingdesert.org 760-346-5694
Addra gazelle NA Regional Studbook Keeper & SSP Coordinator	Ann Petric with support from the Saint Louis Zoo	annpetric2240@comcast.net 708-442-6531
Grant's gazelle NA Regional Studbook Keeper & SSP Coordinator	Vacant	Vacant
Thomson's gazelle NA Regional Studbook Keeper & SSP Coordinator	Lanny Brown Nashville Zoo	lbrown@nashvillezoo.org 615-627-3051
Slender-horned gazelle International Studbook Keeper & SSP Coordinator	Patricia Cassady San Diego Zoo's Safari Park	pcassady@sandiegozoo.org 760-747-8702
Red-fronted gazelle NA Regional Studbook Keeper	Lanny Brown Nashville Zoo	lbrown@nashvillezoo.org 615-627-3051
Soemmerring's gazelle NA Regional Studbook Keeper	Stacey Konwiser Palm Beach Zoo	skonwiser@palmbeachzoo.org 561-533-0887
Speke's gazelle NA Regional Studbook Keeper & SSP Coordinator	Christy Poelker Saint Louis Zoo	poelker@stlzoo.org 314-646-4651
Pronghorn NA Regional Studbook Keeper	Melodi Tayles San Diego Zoo's Safari Park	mtayles@sandiegozoo.org 760-738-5026
Peninsular pronghorn NA Regional Studbook Keeper	Melodi Tayles San Diego Zoo's Safari Park	mtayles@sandiegozoo.org 760-738-5026
Sonoran pronghorn ISF Coordinator	Jeff Holland Los Angeles Zoo	Jeff.holland@lacity.org 323-644-4220
Saiga, Russian and Mongolian ISF Coordinator	C2S2 (Contact: Dan Beetem, The Wilds)	dbeetem@thewilds.org 740-638-5030 ext 2110
Tibetan antelope ISF Coordinator	Martha Fischer Saint Louis Zoo	fischer@stlzoo.org 314-646-4610
Przewalski's gazelle ISF Coordinator	Steve Shurter White Oak Conservation Center	steves@wogilman.com 904-225-3396
Giraffe Subgroup - Vice-Chair, Vacant		
Masai giraffe International Studbook Keeper & SSP Coordinator	Laurie Bingaman Lackey with support from Disney's Animal Kingdom	Giraffe3@bellsouth.net 828-693-4336

Program or Position	Name	Email and Phone
Giraffe, retic/roth complex International Studbook Keeper & SSP Coordinator	Laurie Bingaman Lackey with support from Disney's Animal Kingdom	Giraffe3@bellsouth.net 828-693-4336
West African (Nigerien) giraffe ISF Coordinator	Amy Roberts Brookfield Zoo	amy.roberts@czs.org 708-688-8446
Rothschild's giraffe ISF Coordinator	Amy Roberts Brookfield Zoo	amy.roberts@czs.org 708-688-8446
Okapi SSP Coordinator	Ann Petric with support from Saint Louis Zoo	annpetric2240@comcast.net 708-442-6531

Appendix 2. Conservation Status of Antelope and Giraffe TAG Species (IUCN/CITES/USFWS), 2014

Species	IUCN 2014[72]	CITES[73]	USFWS[74]
Forest/Woodland Subgroup			
Eastern Giant Eland	Least Concern	Not listed	Not listed
Common Eland	Least Concern	Not listed	Not listed
Lowland Nyala	Least Concern	Not listed	Not listed
Eastern Bongo	Critically Endangered C2a(i)	Not listed	Not listed
Southern lesser Kudu	Near Threatened	Not listed	Not listed
Harnessed bushbuck	Least Concern	Not listed	Not listed
Greater Kudu	Least Concern	Not listed	Not listed
Sitatunga	Least Concern	Not listed	Not listed
Roan Antelope	Least Concern	Not listed	Not listed
Sable Antelope	Least Concern	Not listed	Not listed
Impala	Least Concern	Not listed	Not listed
Springbok	Least Concern	Not listed	Not listed
S. African Springbok	Least Concern	Not listed	Not listed
Blackbuck	Near Threatened	Appendix III (Nepal)	Not listed
Southern Gerenuk	Near Threatened	Not listed	Not listed
Nilgai	Least Concern	Not listed	Not listed
Small Antelope Subgroup			
Bay Duiker	Least Concern	Appendix II	Not listed
Maxwell's Duiker	Least Concern	Not listed	Not listed
Blue Duiker	Least Concern	Appendix II	Not listed
Black Duiker	Least Concern	Not listed	Not listed
Red-flanked Duiker	Least Concern	Not listed	Not listed
Yellow-backed Duiker	Least Concern	Appendix II	Not listed
Günther's Dik Dik	Least Concern	Not listed	Not listed
Kirk's Dik Dik	Least Concern	Not listed	Not listed

[72] IUCN 2013. IUCN Red List of Threatened Species. Version 2013.2. <www.iucnredlist.org>. Downloaded on 06 May 2014.
[73] Convention on International Trade in Endangered Species of Wild Fauna and Flora, 2013. Appendices I, II and III valid from 12 June 2013. http://www.cites.org/sites/default/files/eng/app/2013/E-Appendices-2013-06-12.pdf
[74] United States Fish and Wildlife System, 2014. Environmental Conservation Online System – Listed Species. http://ecos.fws.gov/tess_public/pub/listedAnimals.jsp

Species	IUCN 2014[72]	CITES[73]	USFWS[74]
Royal Antelope	Least Concern	Not listed	Not listed
Steenbok	Least Concern	Not listed	Not listed
Klipspringer	Least Concern	Not listed	Not listed
Hartebeest Subgroup			
Jackson's Hartebeest	Least Concern	Not listed	Not listed
Wildebeest	Least Concern	Not listed	Not listed
Bontebok	Near Threatened	Appendix II	Endangered
Blesbok	Least Concern	Not listed	Not listed
Topi	Least Concern	Not listed	Not listed
Waterbuck Subgroup			
Common Waterbuck	Least Concern	Not listed	Not listed
Uganda Kob	Least Concern	Not listed	Not listed
Red Lechwe	Least Concern	Appendix II	Threatened
Nile Lechwe	Endangered A2a	Not listed	Not listed
Aridland Antelope, Gazelles and Pronghorn Subgroup			
Addax	Critically Endangered A2cd; C1+2a(ii)	Appendix I	Endangered
Scimitar Horned Oryx	Extinct in the Wild	Appendix I	Endangered
Gemsbok	Least Concern	Not listed	Not listed
Beisa Oryx	Near Threatened	Not listed	Not listed
Fringe-eared Oryx	Vulnerable C1	Not listed	Not listed
Arabian Oryx	Vulnerable D1	Appendix I	Endangered
Cuvier's Gazelle	Endangered C2a(i)	Appendix I	Endangered
Addra Gazelle	Critically Endangered A2cd; C2a(i)	Appendix I	Endangered
Mhorr Gazelle	Critically Endangered A2cd; C2a(i)	Appendix I	Endangered
Dorcas Gazelle	Vulnerable A2cd	Appendix III	Endangered
Grant's Gazelle	Least Concern	Not listed	Not listed
Thomson's Gazelle	Near Threatened	Not listed	Not listed
Slender-horned Gazelle	Endangered C2a(i)	Appendix I	Endangered
Red-fronted Gazelle	Vulnerable A2cd	Not listed	Not listed
Soemmerring's Gazelle	Vulnerable A2cd; C1	Not listed	Not listed
Speke's Gazelle	Endangered A2cd	Not listed	Not listed
Saudi Goitered Gazelle	Vulnerable C2a(i)	Not listed	Endangered

Species	IUCN 2014[72]	CITES[73]	USFWS[74]
Persian Goitered Gazelle	Vulnerable A2ad	Not listed	Not listed
Pronghorn	Least Concern	Not listed	Not listed
Peninsular Pronghorn	Least Concern	Appendix I (Mexico)	Endangered
Giraffe/Okapi Subgroup			
Masai Giraffe	Least Concern	Not listed	Not listed
Roth/Retic Giraffe	Least Concern	Not listed	Not listed
Okapi	Endangered A2abcd+4abcd	Not listed	Not listed
Additional species of concern			
Western Giant Eland	Critically Endangered C2a(ii)	Not listed	Endangered
Mountain Nyala	Endangered C1	Not listed	Not listed
Giant Sable Antelope	Critically Endangered A2cd; C2a(i)	Appendix I	Endangered
Black faced Impala	Vulnerable D1	Not listed	Endangered
Dibatag	Vulnerable A2cd	Not listed	Endangered
Jentink's Duiker	Endangered C1	Appendix I	Endangered
Ader's Duiker	Critically Endangered A4cd	Not listed	Not listed
Abbott's Duiker	Endangered C2a(i)	Not listed	Not listed
Zebra Duiker	Vulnerable A2cd; C1	Appendix II	Not listed
Silver Dik Dik	Data Deficient	Not listed	Not listed
Beira	Vulnerable C1	Not listed	Not listed
Swayne's Hartebeest	Endangered C2a(i)	Not listed	Endangered
Hirola	Critically Endangered A2cd	Not listed	Not listed
Western Mountain reedbuck	Endangered C2a(i); D	Not listed	Not listed
Sonoran Pronghorn	Least Concern	Not listed	Not listed
Saiga	Critically Endangered A2acd (Mongolia and Russia)	Appendix II (Mongolia and Russia)	Endangered (Mongolia)
Chiru/Tibetan Antelope	Endangered A2d	Appendix I	Endangered
Przewalski's Gazelle	Endangered C2a(i)	Not listed	Not listed
West African (Nigerien) Giraffe	Endangered D	Not listed	Not listed
Rothschild's Giraffe	Endangered C2a(i)	Not listed	Not listed

Appendix 3. AZA Antelope & Giraffe TAG Species Selection Criteria, 2014.

1. Will the zoo population serve as a reservoir for genetic or demographic diversity for wild populations?
   2 = need for zoo population as a genetic reservoir great
   1 = need for zoo population as a genetic reservoir unknown or not significant at this time
   0 = generic population, not suitable for reintroduction

2. If a zoo population presently exists, is the current population genetically and demographically viable?
   2 = population is relatively healthy genetically and demographically, and there are sources for additional founders as needed in the future
   1 = population is compromised genetically and/or demographically, but the outlook for acquisition of additional founders is good
   0 = population is compromised genetically and/or demographically, and the outlook for acquisition of additional founders is not good

   OR

3. If a zoo population doesn't presently exist, is there potential for the development of a viable zoo population?
   2 = animals are readily available from other zoo programs or from wild or rescued populations and institutions are interested in acquiring them
   1 = animals are readily available from other zoo programs or from wild or rescued populations, but institutional commitment will need to be sought
   0 = there are few of no known sources of founders to begin a zoo program

4. Is there husbandry expertise for the species?
   2 = easily bred and maintained in zoos
   1 = moderate success in breeding and management
   0 = difficult to breed and/or maintain in zoos

5. Is there educational value to keeping the species in zoos?
   2 = species has unique ecological, physiological or conservation characteristics that may be used in wildlife interpretation and/or conservation education
   1 = species lacks unique characteristics as given above, but is in a managed program which may be used to teach about the role of zoos in conservation
   0 = species has no unique ecological, physiological or conservation characteristics and is not a part of a managed program

6. Is the species taxonomically unique?
   2 = monotypic genus (only one extant member of the genus)
   1 = monotypic species (only one form, no subspecies)
   0 = several (or many) species and/or subspecies

7. What is the degree of threat to the species in the wild? (using Mace-Lande, Endangered Species Act, and/or IUCN)
   2 = threatened or endangered
   1 = unknown or low risk
   0 = safe or not listed

8. What is the species' degree of exhibit appeal?
   2 = species is charismatic, has unique appearance, is familiar to visitors, and/or has good public relations/marketing potential
   1 = species adds aesthetic element to mixed-species or zoogeographic exhibits, otherwise little-noticed by visitors
   0 = species is generally cryptic, has low profile, and/or is generally overlooked by visitors

9. What is the species' ability to generate attention and support for field conservation programs?
   2 = an *in situ* program exists with strong ties
   1 = there is a potential or an existing *in situ* program, but there are presently no ties to the zoo program
   0 = an *in situ* program for the species is unknown or non-existent

10. What is the species' ability to serve as a research or management model for more endangered taxa, or, is there a need for conservation or management research on the species to improve zoo management?
    2 = is currently serving as a model in either basic or applied research
    1 = research potential exists as a model population, basic husbandry research is needed for the species
    0 = no need to use the species as a model, low conservation priority does not warrant research at this time

11. Is there sufficient institutional interest and commitment to support inclusion of the species?
    2 = space and other critical resources are easily obtainable, species is popular and in demand by institutions
    1 = space and critical resources are needed and development of a program will probably help secure additional space
    0 = space and other critical resources will be difficult to obtain, species not popular with institutions

12. What is the species' ability to be managed in mixed-species exhibits?
    2 = presently managed in mixed-species exhibits with few problems
    1 = potential is good for mixed-species management, certain groups (i.e. nonbreeding or same-sex groups) are successful in mixed-species exhibits
    0 = potential for management in mixed-species exhibits is low or unknown

Appendix 4. AZA Antelope & Giraffe TAG Species Evaluation Summary by Steering Committee Members, 2014.

Species	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	Mean	Ranking
Forest/Woodland Subgroup																	
Eastern Giant Eland	9	12	8	13	9	8	8	6	17	10	10	11	13	12	11	10.47	11
Common Eland	12	10	10	11	9	9	10	7	7	8	10	13	10	14	12	10.13	10
Lowland Nyala	11	13	9	16	10	9	9	12	11	7	10	10	12	14	16	11.27	11
Eastern Bongo	19	18	17	18	17	17	17	18	22	20	21	20	21	18	22	19.00	19
Lesser Kudu	13	13	11	16	9	11	11	12	12	11	12	11	11	14	12	11.93	12
Harnessed bushbuck	3	2	2	12	7	6	2	2	5	0	3	4	1	9	4	4.13	4
Greater Kudu	12	12	13	13	11	10	13	12	16	8	12	13	10	15	12	12.13	12
Sitatunga	10	10	8	13	8	12	8	11	10	8	11	6	9	14	9	9.80	10
Roan Antelope	9	9	8	13	9	9	8	11	13	9	8	7	8	15	7	9.53	10
Sable Antelope	11	9	9	13	11	11	9	11	12	9	12	10	9	16	13	11.00	11
Impala	9	8	8	11	9	10	8	10	11	11	11	10	9	10	10	9.67	10
Springbok	6	5	4	12	7	6	4	4	5	8	9	5	5	11	4	6.33	6
South African Springbok	10	11	6	12	8	8	6	12	8	12	11	8	10	12	9	9.53	10
Blackbuck	10	8	11	13	13	8	11	9	11	12	11	9	9	15	15	11.00	11
Gerenuk	12	13	12	12	13	12	12	15	17	18	12	11	17	14	13	13.53	14
Nilgai	9	9	9	11	11	8	9	7	5	9	11	4	7	15	14	9.20	9
Small Antelope Subgroup																	
Bay Duiker	5	5	5	8	5	8	5	6	2	3	5	6	6	8	8	5.67	6
Maxwell's Duiker	5	5	5	8	5	5	5	5	0	3	5	4	5	8	8	5.07	5
Blue Duiker	9	11	10	8	8	9	10	10	8	11	9	11	9	10	9	9.47	9
Black Duiker	9	10	8	8	6	7	8	7	5	9	10	4	10	9	8	7.87	8
Red-flanked Duiker	10	10	10	9	7	10	10	7	6	9	10	9	9	9	10	9.00	9
Yellow-backed Duiker	13	13	13	10	9	10	13	12	8	11	11	14	13	10	15	11.67	12
Günther's Dik-Dik	9	7	8	8	8	9	8	7	2	8	10	7	7	9	7	7.60	8
Kirk's Dik-Dik	11	9	8	8	8	9	8	7	6	10	9	8	8	9	7	8.33	8
Suni	6	4	4	10	8	7	4	7	2	9	8	8	5	11	8	6.73	7
Royal Antelope	11	7	5	10	6	5	5	7	3	6	8	4	10	8	13	7.20	7
Steenbok	9	7	7	9	5	10	7	7	6	7	8	5	10	8	9	7.60	8
Klipspringer	11	14	8	10	8	11	8	7	9	12	9	9	11	8	14	9.93	10
Hartebeest Subgroup																	
Jackson's Hartebeest	10	8	4	10	7	7	4	8	9	6	6	3	8	10	9	7.27	7
Wildebeest	13	11	12	9	8	11	12	9	10	12	10	13	11	8	14	10.87	11
Bontebok	14	10	8	14	11	10	8	10	16	12	12	11	14	11	15	11.73	12

Species	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	Mean	Ranking
Blesbok	7	8	3	8	10	8	3	8	7	8	6	5	10	10	11	7.47	7
Topi	4	4	2	11	6	6	2	8	0	5	6	6	6	9	10	5.67	6
Waterbuck Subgroup																	
Common Waterbuck	13	12	9	9	9	10	9	8	12	10	9	9	12	14	13	10.53	10
Uganda Kob	7	3	5	9	8	6	5	6	4	7	6	5	8	11	7	6.47	6
Red Lechwe	9	8	5	12	7	8	5	9	8	7	7	7	8	9	10	7.93	8
Nile Lechwe	13	14	12	12	10	11	12	9	10	13	13	11	13	10	14	11.80	12
Aridland Antelope, Gazelles and Pronghorn Subgroup																	
Addax	18	20	18	20	17	17	18	20	21	18	19	13	19	19	21	18.53	19
Scimitar-horned Oryx	18	19	18	20	16	14	18	19	21	18	18	13	19	19	19	17.93	18
Gemsbok	10	9	9	12	8	8	9	7	15	9	8	9	7	14	10	9.60	10
Beisa Oryx	6	4	4	10	8	7	4	7	2	9	8	8	5	11	8	6.73	7
Fringe-eared Oryx	10	12	7	10	8	9	7	7	6	9	10	8	7	11	10	8.73	9
Arabian Oryx	15	13	17	19	13	12	17	19	17	14	15	14	19	16	19	15.93	16
Cuvier's Gazelle	11	12	8	12	8	12	8	13	16	10	13	7	10	15	11	11.07	11
Addra Gazelle	15	14	14	16	12	15	14	20	19	16	13	11	15	17	19	15.33	15
Mhorr Gazelle	7	7	4	16	10	13	4	10	11	13	13	11	10	12	15	10.40	11
Grant's Gazelle	10	9	8	9	7	8	8	9	10	8	8	7	9	9	8	8.47	8
Thomson's Gazelle	13	9	9	9	9	7	9	10	13	11	8	7	11	13	12	10.00	10
Slender-horned Gazelle	16	12	9	15	11	12	9	15	15	14	12	7	11	14	18	12.67	12
Red-fronted Gazelle	10	9	9	14	6	12	9	5	7	9	8	4	7	15	7	8.73	9
Soemmerring's Gazelle	9	13	9	12	7	9	9	11	9	14	11	4	10	12	10	9.93	10
Speke's Gazelle	14	15	12	12	7	12	12	12	10	15	11	4	13	12	16	11.80	12
Saudi Goitered Gazelle	6	5	4	12	6	7	4	9	6	7	9	4	7	11	8	7.00	7
Persian Goitered Gazelle	6	5	3	8	6	7	3	5	6	7	7	4	6	11	8	6.13	6
Pronghorn	10	13	9	9	11	8	9	11	13	9	11	13	15	17	12	11.33	11
Peninsular Pronghorn	11	17	12	13	13	11	12	12	4	15	11	15	15	17	16	12.93	13
Giraffe Subgroup																	
Masai Giraffe	14	16	16	14	14	12	16	16	21	14	14	18	16	18	16	15.67	16
Roth/Retic Giraffe	15	17	15	13	13	12	15	16	21	14	15	18	17	15	15	15.40	15
Okapi	17	19	18	19	17	18	18	19	20	19	18	21	17	21	20	18.73	19

Appendix 5. AZA Antelope & Giraffe TAG Space Survey Results, 2014.

compiled by Lily Civili, Amy Neidbalski and Martha Fischer, Saint Louis Zoo, 2014

Species currently managed in AZA institutions	Current # of animals per species	Current maximum # of spaces available now per species	Future maximum # of spaces available in 5 years per species
Forest/Woodland Subgroup			
Eastern Giant Eland	66	105	105
Common Eland	216	270	280
Lowland Nyala	133	200	221
Eastern Bongo	215	326	363
Southern Lesser Kudu	108	152	167
Harnessed Bushbuck	6	31	36
Greater Kudu	204	273	292
Sitatunga	57	101	108
Roan Antelope	88	115	140
Sable Antelope	124	171	222
Impala	223	292	315
Springbok	83	168	193
South African Springbok	47	81	95
Blackbuck	249	200	189
Gerenuk	99	145	156
Nilgai	74	86	83
Small Antelope Subgroup			
Bay Duiker	9	9	9
Maxwell's Duiker	5	5	3
Blue Duiker	78	92	101
Black Duiker	20	23	23
Red-flanked Duiker	37	47	50
Yellow-backed Duiker	113	119	128
Günther's Dik-Dik	13	20	20
Kirk's Dik-Dik	87	138	143
Suni	0	0	0
Klipspringer	49	72	61
Steenbok	16	25	27

Species currently managed in AZA institutions	Current # of animals per species	Current maximum # of spaces available now per species	Future maximum # of spaces available in 5 years per species
Royal Antelope	11	15	15
Hartebeest Subgroup			
Jackson's Hartebeest	11	23	25
Wildebeest	192	220	268
Bontebok	64	89	101
Blesbok	24	42	58
Topi	8	10	17
Waterbuck Subgroup			
Common Waterbuck	145	177	183
Uganda Kob	18	19	23
Red Lechwe	22	40	40
Nile Lechwe	88	131	146
Aridland Antelope, Gazelles and Pronghorn Subgroup			
Addax	210	256	261
Scimitar-horned Oryx	214	231	230
Gemsbok	100	70	143
Beisa Oryx	9	29	38
Fringe-eared Oryx	64	93	111
Arabian Oryx	89	103	99
Cuvier's Gazelle	0	0	0
Addra Gazelle	161	192	199
Mhorr Gazelle	10	13	6
Dorcas Gazelle	0	0	0
Grant's Gazelle	59	91	118
Thomson's Gazelle	187	245	267
Slender-horned Gazelle	72	88	95
Red-fronted Gazelle	38	31	36
Soemmerring's Gazelle	35	68	66
Speke's Gazelle	73	98	98
Saudi Goitered Gazelle	4	4	3

Species currently managed in AZA institutions	Current # of animals per species	Current maximum # of spaces available now per species	Future maximum # of spaces available in 5 years per species
Persian Goitered Gazelle	13	20	20
Pronghorn	87	141	166
Peninsular Pronghorn	12	54	73
Giraffe/Okapi Subgroup			
Masai Giraffe	141	198	211
Retic/Roth Giraffe	506	576	619
Okapi	147	182	209
Total Antelope Spaces	**4,439**	**5,859**	**6,435**
Total Giraffe/Okapi Spaces	**794**	**956**	**1,039**
Total	**5,233**	**6,814**	**7,474**

Additional species/subspecies of concern
Western Giant Eland
Mountain Nyala
Giant Sable Antelope
Black faced Impala
Dibatag
Jentink's Duiker
Ader's Duiker
Abbott's Duiker
Zebra Duiker
Silver Dik Dik
Beira
Swayne's Hartebeest
Hirola
Western Mountain reedbuck
Sonoran Pronghorn
Saiga
Chiru/Tibetan Antelope
Przewalski's Gazelle
West African (Nigerien) Giraffe
Rothschild's Giraffe

Isaqbini Conservancy Hirola Sanctuary. Photo courtesy of Northern Rangelands Trust, Kenya

Appendix 6. AZA Facilities with IRS – No Response to Space Survey

Non-responding Institutions with IRs		
Abilene Zoo	Ellen Trout Zoo	Oklahoma City Zoo
African Safari Wildlife Park	Erie Zoo	Omaha's Henry Doorly Zoo
Akron Zoo	Gladys Porter Zoo	Palm Beach Zoo
Audubon Zoo	Greenville Zoo	Potawatomi Zoo
B. Bryan Preserve	Henry Vilas Zoo	Riverbanks Zoo
Beardsly Zoo	Honolulu Zoo	Riverside Zoo
Binder Park Zoo	Hutchison Zoo	Rolling Hills Wildlife
Blank Park Zoo	Jackson Zoo	Rosamond Gifford Zoo
Brookgreen Gardens	John Ball Zoo	Sacramento Zoo
Cameron Park Zoo	Lehigh Valley Zoo	San Diego Zoo
Charles Paddock Zoo	Lion Country Safari	Santa Ana Zoo
Chattanooga Zoo	Lincoln Park Zoo	Santa Barbara Zoo
Cosley Zoo	Living Desert	Santa Fe Teaching Zoo
Dallas Zoo	Los Angeles Zoo	Toledo Zoo
Dakota Zoo	Memphis Zoo	Woodland Park Zoo
David Traylor Zoo of Emporia	Moody Gardens	Zoo New England
Detroit Zoo	Oglebay's Good Zoo	

Appendix 7. AZA Antelope and Giraffe TAG Action Plan, 2014-19

The Action Plan for the Antelope and Giraffe TAG has evolved to include the prioritization of antelope management, health, education, conservation, and research efforts. These action areas are intended to focus institutional efforts and support in linking *ex situ* and *in situ* antelope, pronghorn, giraffe, and okapi conservation and management programs.

The goals of the Action Plan include:

- Development of antelope, pronghorn, giraffe and okapi *ex situ* conservation programs.
- Development of new and refinement of existing management strategies to support antelope, pronghorn, giraffe and okapi programs, such as bachelor herd and multi-species management, assisted reproduction, reversible contraception, and management euthanasia.
- Support of strategies to promote global antelope, pronghorn, giraffe and okapi conservation and species diversity.
- Strengthening of education programs that create awareness, understanding, and appreciation of antelope, pronghorn, giraffe and okapi.
- Support of multi-disciplinary research designed to improve the health, welfare, and management, of managed and free living antelope, pronghorn, giraffe and okapi populations.
- Investigation of bovidae health and veterinary issues that impact conservation programs or wild populations.
- Development of collaborative partnerships to achieve mutual and bio-diverse conservation goals.

Summary of Priorities for 2014-19

- Promote conservation program development and assist program leaders as possible to achieve TAG and antelope, pronghorn, giraffe and okapi conservation program goals. (Program Management)
- If the importation hurdles can be resolved, investigate the possibility of global population management of certain species in collaboration with other regional programs. (Program Management)
- Promote and support *in situ* conservation initiatives for antelope, pronghorn, giraffe and okapi and habitats related to priority AZA programs. (Conservation)
- Complete an updated version of the ungulate multi-species manual (Animal Management)
- Maintain Ungulate TAG website (www.AZAUngulates.org) and materials and update as needed (Education)
- Develop importation protocols and methods to import frozen gametes of non-domestic ruminants. (Research-Assisted Reproduction)
- Ongoing infectious disease monitoring and vigilance for bovid diseases in AZA institutions, which may seriously impact conservation program health and management. (Animal Health)

Specific action steps have been identified in each of the goal areas as defined below:

Program Management Action Steps

Continue to implement and refine managed programs for recommended species, including the recruitment of studbook keepers and SSP coordinators, the refinement of studbook databases and

population management strategies, the development of husbandry guidelines and manuals, and reviewing and updating the Regional Collection Plan.

Encourage antelope conservation program leaders to participate in AZA/PMC Small Population Management courses to ensure the highest possible level of understanding and applied management for Antelope and Giraffe TAG programs.

- Provide venue at TAG working meetings to help program leaders to address specific Antelope and Giraffe TAG population management issues.
- Steering Committee to take an active role in conservation program development and capacity building through training and working with program leaders.

Develop and strengthen links and collaborative antelope conservation programs with other regions.

- Continue to pursue global masterplanning and metapopulation management with our EEP counterparts, especially with regard to selection of animals for reintroduction, evaluation/prioritization of requests for AZA animals for that purpose, and pooling support for in situ conservation priorities for said species.
- Convene international Antelope and Giraffe TAG meetings with our counterparts in Europe on a regular basis (proposed at 3 year intervals).
- Attend the Joint TAG meeting in June 2014 and identify options for global collaboration (further action steps TBD).

In collaboration with all of the Ungulate TAGs, develop partnerships in the establishment of additional and sustainable USDA embarkation quarantine(s) to provide avenues and support for the continued importation of non-native ruminants to augment and sustain *ex situ* ungulate programs.

Further develop cooperative management programs between AZA institutions and non-member participating organizations.

Develop guidelines regarding institutional support of/for sustainable Antelope and Giraffe TAG programs including annual management costs, importation/augmentation, research, and conservation.

- Develop priorities lists and figures to assess and promote priority program needs
- Circulate antelope programs needs to AZA institutions (mailings, Directors list serve)

Animal Management Action Steps

Develop new and refine existing management strategies to support antelope, pronghorn, giraffe and okapi programs, such as bachelor herd and multi-species management, assisted reproduction, reversible contraception, and management euthanasia.

Update ungulate multi-species database last published in 1999.

Develop an AZA Animal Care Manual for giraffes.

In collaboration with other Ungulate TAGs, continue to develop a combined ungulate AZA Animal Care Manual for all other Antelope and Giraffe TAG species.

Conservation Action Steps

Support and participate with antelope, pronghorn, giraffe and okapi population and habitat conservation in range states, including:

Sahel/Sahara Focus

Continue to support and participate with antelope and giraffe conservation efforts in the Sahel and Sahara as outlined by the Convention of Migratory Species 1998 meeting in Djerba, and as implemented through the efforts of the Sahara Conservation Fund. Projects potentially include: habitat survey and assessment, education and awareness, training and capacity building, regional conservation program development, species reintroduction, and habitat and species protection efforts. This relates particularly to the TAG antelope programs for addax, scimitar-horned oryx, addra gazelle, slender-horned gazelle, red-fronted gazelle and Cuvier's gazelle.

- Support the protected area in the Termit and Tin Toumma region of Niger, in partnership with SCF, CMS/FFEM, local NGOs and the government of Niger.
- Continue relationship with managers of Tunisian parks where addax and scimitar-horned oryx were repatriated in 2007.
- Establish relationship with managers of addax population in Sous Massa, Morocco to explore utilization of their herd for reintroduction efforts in the Sahelo-Saharan region.
- Partner with relevant AZA programleaders on projects that are mutually beneficial to a broad spectrum of Sahelo-Saharan species.

Partners: Saharan Conservation Fund, IUCN/SSC Antelope Specialist Group, EAZA Antelope TAG, Convention on Migratory Species, Senegal Government, Nigerien Government, Tunisian Government, Moroccan Government, FFEM, Fondation IGF, Addax SSP, Scimitar-horned Oryx SSP, Addra Gazelle SSP, Cuvier's Gazelle Red Program, Red-fronted Gazelle Red Program.

Okapi Conservation Project

Promote and support the ongoing efforts to conserve the okapi and manage the Okapi Wildlife Reserve in the Ituri Forest of the Democratic Republic of Congo. Projects include: public awareness and school education programs, wildlife protection and capacity building, sustainable agroforestry and gardening techniques, and breeding and research.

- Provide support to the Okapi Conservation Project

Partners: Okapi SSP, Okapi EEP, Institute in Congo for Conservation of Nature, IUCN/SSC Giraffe and Okapi Specialist Group.

Bushmeat Focus

In conjunction with the Bush Meat Crisis Task Force (BCTF), continue to participate in research projects and awareness campaigns to identify and manage antelope bush meat and antelope product utilization and exploitation in range states. This is of particular interest in west and central Africa in conjunction with BCTF conservation work there.

- Investigate potential partnership to support Sapo National Park in Liberia and its conservation projects focusing on ungulates and antelope.
- Work with ongoing projects in Liberia concerning bushmeat surveys and bushmeat utilization, including support of student researchers and data gathering.
- Investigate formal TAG involvement in the Bushmeat Crisis Task Force

Partners: Bushmeat Crisis Task Force.

Ungulates of the Horn of Africa

Develop, partner, and participate, with various conservation programs and projects related to the severely threatened (and often endemic) ungulate populations in the region. Focal species would include: mountain nyala, Swayne's hartebeest, hirola, Speke's gazelle, dibatag, Soemmerring's gazelle, beira, mountain bongo, and giraffe.

- Support bongo repatriation program and conservation efforts in Kenya.
- Support conservation projects and research for the mountain nyala in Bale National Park, Ethiopia.
- Support conservation efforts for hirola in Kenya through Kenya Wildlife Service and Northern Rangelands Trust.

Partners: Bongo SSP, Kenya Wildlife Service, Ethiopian Wildlife Conservation Department, Northern Rangelands Trust, WildCare Institute Center for Conservation in the Horn of Africa, IUCN/SSC Antelope Specialist Group and its Northeast Africa Regional Subgroup, IUCN/SSC Giraffe and Okapi Specialist Group.

Giraffe Conservation

Develop, partner, and participate, with various conservation programs and projects related to giraffes, particularly the severely threatened giraffe subspecies -West African (Nigerien) Giraffe and Rothschild's Giraffe. Related species and projects such as, Grevy's zebra, cheetahs and lions should be incorporated through inter-TAG programs.

- Support giraffe conservation goals of the Giraffe Conservation Foundation
- Support giraffe conservation goals of Northern Rangelands Trust
- Support giraffe conservation goals of Care for Karamoja

Partners: Giraffe SSP, Giraffe Conservation Foundation, Northern Rangelands Trust, Care for Karamoja, IUCN/SSC Giraffe and Okapi Specialist Group.

Asian Steppe Antelope

Develop, partner, and participate with various conservation programs and projects related to the severely threatened and declining antelope populations in Mongolia, China, and Tibet. These efforts include ISF antelope species such as the, Russian saiga, Mongolian saiga, Tibetan antelope, Mongolian gazelle, and Przewalski's gazelle.

- Assist and support related conservation actions, including components, based on the 2004 Action Plan for the species for Qinghai Province, China, in conjunction with Qinghai Forestry Department, FFI, and IUCN/SSC Antelope Specialist Group.
- Assist Mongolia to develop conservation programs for the saiga (*S. t. mongolica*)
- Assist China to further develop their saiga program for China in Gansu Province, assist with saiga horn trade surveys, and market evaluation and control.
- Assist and support work by the Russian Academy of Science and Kalmykia Biosphere Reserve for the conservation of the Russian saiga (*S. t. tatarica*). Projects include protection, awareness, biology studies, reintroduction, and production components, both in Kazakhstan and Kalmykia.
- Assist China/Tibet and partners to study and conserve the Tibetan antelope and the Tibetan plateau ecosystem.

Partners: Russian Academy of Science, Kalmykia Biosphere Reserve, Flora and Fauna International, IUCN/SSC Antelope Specialist Group, Conservation Centers for Species Survival.

Pronghorn

Participate with the development of conservation programs in Mexico and the US for the endangered Peninsular and Sonoran pronghorn populations.

- Find additional partners and seek additional support for Peninsular Pronghorn Project
- Support conservation for ISF species, Sonoran pronghorn

Partners: Vizcaino Biosphere Reserve, USFWS, Arizona Game and Fish

Small Antelope

Participate with the IUCN/SSC Antelope Specialist Group Small Antelope Working Group in promoting and supporting related conservation projects, research, and awareness.

- Support conservation of ISF species, including: Ader's duiker, zebra duiker, Jentink's duiker, Abbott's duiker, beira.
- Assist in the development of a conservation program for the Ader's duiker on Zanzibar including, public awareness, protection, capacity building, and breeding projects.
- Develop conservation efforts for duiker populations in critical west African range states (Sapo National Park, Liberia, etc.)

Partners: IUCN/SSC Antelope Specialist Group and its Small Antelope Working Group.

Research Action Steps

Continue to partner with USDA to develop protocols for the import/export of non-domestic ruminant genomes in promoting international genome transfer as a tool for managed antelope, pronghorn, giraffe and okapi programs.

Provide a regular meeting forum for ungulate research focus to disseminate research results and stimulate discussion and further projects.

Endocrine / Contraception

Conduct basic and applied research to develop and refine routine, safe, and effective methods of contraception for antelope, pronghorn, giraffe and okapi.

Investigate potential for aggression management (mixed species, bachelor groups, intra-specific) utilizing reversible chemical or hormonal methods.

Characterize reproductive norms for both male and female of all Antelope and Giraffe TAG species.

Assisted Reproduction

Conduct basic research in genome banking needed to optimize biomaterial viability after cryopreservation, and develop information systems to manage and integrate genome resource banking in population management programs.

Apply the use of assisted reproduction and non-invasive hormone monitoring in population management programs to assist antelope program leaders in solving related population problems and meeting program goals.

Behavior

Support behavioral research that will lead to non-invasive physiological measures and better understanding of species biology.

Nutrition

Investigate antelope and giraffe nutrition issues. This is of particular importance in browsing species and duikers.

- Conduct follow up research to verify or support recommendations for giraffe nutrition and feeding management.

Investigate micro and macro nutrient requirements for antelopes and giraffe and their role in health, reproduction, nutrition, and immune response.

Genetics/Systematics
Recruit scientists to address issues related to antelope taxonomy, systematics, and population genetics.

Promote current and applied research regarding group/herd demographic and genetic small population management.

Education/Marketing Action Steps

Maintain Ungulate TAG website (www.AZAUngulates.org) and update as needed.

Develop education tools to promote awareness of ungulate issues and generate interest in Antelope and Giraffe TAG conservation programs. These tools may address awareness campaigns for zoo visitors and the general public; field conservation projects; and/or AZA institutional personnel (directors, curators, managers, educators, keepers, etc.).

Promote ties with the IUCN/SSC Antelope Specialist Group and TAG institutional support of the Gnusletter and IUCN/SSC Antelope Specialist Group documents and publications.

Work with AZA Ungulate TAGs to promote ungulate conservation and programs on a broader basis.

Animal Health Action Steps

Maintain vigilance regarding infectious disease issues concerning antelopes in the US, including regional focus. Compile screening protocols including current diagnostic tests, pertinent recommended laboratories, and regulatory agencies (MCF, Blue Tongue, EHD, FMD, Anthrax, BSE, TB, Brucella).

Encourage the AZA institutional use of TAG-endorsed ungulate health screening protocols for antelope, pronghorn, giraffe and okapi.

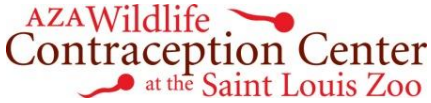
Continue to work with AZA Animal Health Committee and the AAZV Infectious Disease Committee regarding USDA regulations affecting ungulate management.

Encourage AZA institutional participation with recommendations regarding Johnes disease (*Mycobacterium paratuberculosis*) surveillance and control as recommended by the AAZV Johnes Advisory Group.

Establish recommended vaccination protocols for Antelope and Giraffe TAG species including regional and age based information.

Compile current data on parasite control and management in antelope, pronghorn, giraffe and okapi. Include diagnostic procedures, anthelminic dosing regimens, and environmental management.

Appendix 8. AZA Wildlife Contraception Center



The mission of the AZA Wildlife Contraception Center (WCC) is to provide information and recommendations to the AZA community about contraceptive products that are safe, effective, and reversible. These recommendations are used by zoo professionals to make informed decisions on how to sustainably manage their animal collections. Contraception is an essential, proven, and humane tool for reproductive management while still allowing individuals to live in natural social and family groups. It allows managers to maximize available space by preventing births from animals that are not high priorities for breeding or animals that are not currently recommended for breeding, but will be in the future.

The WCC includes scientists, veterinarians, and animal managers with research and management expertise in wildlife contraception. The WCC houses a Contraception Database which contains over 29,000 records for animals treated with contraception. Using these data, the WCC is able to make taxon- and species-specific recommendations about products that are safe, effective, and reversible.

The WCC ensures that contraceptives are safe and effective by:

- maintaining databases that monitor all contraceptive use in all mammalian species
- analyzing data on the efficacy and safety of contraceptives
- conducting comprehensive pathologic examinations on reproductive tracts to detect if deleterious effects are associated with contraceptives through the Reproductive Health Surveillance Program

The WCC assists AZA Species Survival Plan® (SSP) coordinators, mammal curators, wildlife managers, and veterinarians in choosing and administering appropriate contraceptives by:

- annually producing and distributing up-to-date contraceptive recommendations for all mammals
- providing AZA SSP coordinators and Taxon Advisory Group (TAG) chairs with species-specific contraception guidelines for husbandry manuals
- providing a "Help Line" to assist animal managers with specific contraceptive questions
- maintaining a website with the latest wildlife contraceptive information
- attending SSP or TAG planning meetings if relevant to the population
- providing written recommendations to be included in the Master Plan as an Appendix

The WCC relies on feedback from the zoo community to update and improve contraception recommendations. While safety and efficacy are vital components of a contraceptive suitable for zoo animals, reversibility is the third integral element that has far-reaching consequences for sustainable population management. The WCC's goal is to produce reversibility data for different contraceptives so that managers are well-informed and know what to expect from a particular product. This is often the most challenging data to collect because pregnancies and births can occur years after treatment or at a different institution than the one at which the contraceptive was administered. It is essential details be reported not only during treatment to obtain efficacy parameters, but also after treatment is stopped for breeding. The WCC requests reversal data in the annual Contraception Survey, but asks that program managers keep the WCC in mind when births occur in their respective populations throughout the year.

More information can be found at www.stlzoo.org/contraception, by emailing contraception@stlzoo.org or calling (314) 646-4595.

Appendix 9. Antelope and Giraffe TAG Program Recommendations Updates from the 2008 RCP (changes in bold).

Program	2008 Recommendation	2014 Recommendation	Program Leader Change	New Program Leader and/or Program Leader Contact Information Change
Forest/Woodland Subgroup				
Eastern giant eland	**PMP**	**Unmanaged Population – International Studbook Only**	**Yes**	**New International Studbook Keeper** **Lissa McCaffree, San Diego Zoo's Safari Park** **lmccaffree@sandiegozoo.org 760-747-8702 ext 5098**
Western Giant Eland	ISF	ISF	No	Steve Shurter, White Oak Conservation Center steves@wogilman.com 904-225-3396
Common eland	**PMP**	**SSP**	**Yes**	**New Program Leader** **Hollie Colahan, Denver Zoo** **hcolahan@denverzoo.org**
Cape eland	**Combine with Common eland PMP**	n/a	n/a	n/a
Lowland nyala	**PMP**	**SSP**	**Yes**	**New Program Leader** **Steve Metzler, Disney's Animal Kingdom** **Steve.f.metzler@disney.com 321-263-6320**
Mountain nyala	ISF	ISF	No	Martha Fischer, Saint Louis Zoo fischer@stlzoo.org 314-646-4610
Eastern bongo	SSP	SSP	No	**Studbook Keeper Contact Info Change** **International Studbook Keeper** **Lydia Bosley, supported by Oregon Zoo** **lfbosley@q.com 541-444-1265** SSP Coordinator Ron Surratt, Fort Worth Zoo rsurratt@fortworthzoo.org 817-759-7160
Southern lesser kudu	**PMP**	**SSP**	**Yes**	**New Program Leader** **Lily Civili, Saint Louis Zoo** **civili@stlzoo.org 314-646-4824**
Harnessed bushbuck	P/O	P/O	No	No Program Leader required
Greater kudu	**PMP**	**SSP**	**Yes**	**New Program Leader** **Denny Charlton, Smithsonian's National Zoological Park** **charltond@si.edu 202-633-3190**
Sitatunga	**PMP**	**SSP**	No	Gil Myers, Smithsonian's National Zoo myersg@si.edu 202-633-3216
Roan antelope	**PMP**	**SSP**	No	**Program Leader Contact Information Change** **Andi Kornak, Cleveland Metroparks Zoo** **amk@clevelandmetroparks.com 216-635-3373**
Sable antelope	**PMP**	**SSP**	No	Jill Piltz, Disney's Animal Kingdom Jill.m.piltz@disney.com 407-928-2850
Zambian sable antelope	**PMP**	**Phased Out**	n/a	No Program Leader required - No more animals remain in AZA

Program	2008 Recommendation	2014 Recommendation	Program Leader Change	New Program Leader and/or Program Leader Contact Information Change
Giant sable antelope	ISF	ISF	No	Sharon Joseph, Houston Zoo sjoseph@houstonzoo.org 713-533-6740
Impala	**DERP**	**Red Program**	**Yes**	**New Program Leader** **Jennifer MacNaughton, Busch Gardens/Tampa** **Jennifer.macnaughton@buschgardens.com 813-987-5552**
Black-faced impala	ISF	ISF	No	Sharon Joseph, Houston Zoo sjoseph@houstonzoo.org 713-533-6740
Springbok	P/O	P/O	No	No Program Leader required
South African springbok	**PMP**	**SSP**	No	Jessica Scallan, Tulsa Zoo Jessica.scallan@sbcglobal.net 918-669-6202
Blackbuck	**DERP**	**Unmanaged Population**	No	No Program Leader required
Southern gerenuk	**PMP**	**SSP**	**Yes**	**New Program Leader** **Christina Seely, Denver Zoo** **cseely@denverzoo.org** 720-337-1500
Dibatag	ISF	ISF	No	Martha Fischer, Saint Louis Zoo fischer@stlzoo.org 314-646-4610
Nilgai	**DERP**	**Unmanaged Population**	No	No Program Leader required
Saola	**ISF**	**Moved to a different TAG**	n/a	**Species is now covered under AZA Bison, Buffalo and Cattle TAG umbrella**
Small Antelope Subgroup				
Bay duiker	P/O	P/O	No	No Program Leader required
Jentink's duiker	ISF	ISF	No	Jeff Holland, Los Angeles Zoo jeff.holland@lacity.org 323-644-4220
Maxwell's duiker	P/O	P/O	n/a	No Program Leader required
Blue duiker	**PMP**	**SSP**	**Yes**	**Program Leader Contact Info Change** **Sarah Ksiazek, Dallas Zoo** **Alphadawg7@gmail.com**
Ader's duiker	ISF	ISF	No	Jeff Holland, Los Angeles Zoo jeff.holland@lacity.org 323-644-4220
Black duiker	**DERP**	**Red Program**	**Yes**	**New Program Leader** **Jeff Holland, Los Angeles Zoo** **Jeff.holland@lacity.org 323-644-4220**
Red-flanked duiker	**PMP**	**Red Program**	**Yes**	**New Program Leader** **Nate Oliveira, Saint Louis Zoo** **oliveira@stlzoo.org 314-646-4546**

Program	2008 Recommendation	2014 Recommendation	Program Leader Change	New Program Leader and/or Program Leader Contact Information Change
Yellow-backed duiker	**PMP**	**SSP**	No	Linda Rohr Bachers, Milwaukee Zoo Linda.bachers@milwcnty.com 414-256-5448
Abbott's duiker	ISF	ISF	No	Jeff Holland, Los Angeles Zoo jeff.holland@lacity.org 323-644-4220
Zebra duiker	ISF	ISF	No	Jeff Holland, Los Angeles Zoo jeff.holland@lacity.org 323-644-4220
Kenyan Günther's dik dik	**PMP**	**Red Program**	No	Paige McNickle, Phoenix Zoo PMcnickle@thephxzoo.com 602-273-1351
Kirk's dik dik	**PMP**	**Red Program**	No	Paige McNickle, Phoenix Zoo PMcnickle@thephxzoo.com 602-273-1351
Silver dik dik	ISF	ISF	No	Jeff Holland, Los Angeles Zoo jeff.holland@lacity.org 323-644-4220
Suni	P/O	P/O	n/a	No Program Leader required
Royal antelope	**DERP**	**Red Program**	**Yes**	**New Program Leader** **Amy Roberts, Brookfield Zoo** **Amy.roberts@czs.org** 708-688-8446
Beira	ISF	ISF	No	Martha Fischer, Saint Louis Zoo fischer@stlzoo.org 314-646-4610
Steenbok	**PMP**	**Red Program**	**Yes**	**New Program Leader** **Steve Metzler, Disney's Animal Kingdom** **Steve.f.metzler@disney.com 321-263-6320**
Crowned duiker	**P/O**	**Phased Out**	n/a	No Program Leader required - No more animals remain in AZA
Klipspringer	**PMP**	**SSP**	No	Michael Lebanik, Disney's Animal Kingdom Michael.g.lebanik.jr@disney.com 407-938-2342
Hartebeest Subgroup				
Jackson's hartebeest	**PMP**	**Red Program**	No	Mollye Nardi, Zoo Atlanta mnardi@zooatlanta.org 404-936-5806
Cape hartebeest	**P/O**	**Phased Out**	n/a	No Program Leader required - No more animals remain in AZA
Swayne's hartebeest	ISF	ISF	No	Martha Fischer, Saint Louis Zoo fischer@stlzoo.org 314-646-4610
Wildebeest	**PMP**	**SSP**	No	Kristen Wolfe, Disney's Animal Kingdom Kristen.wolfe@disney.com 407-938-2950
Bontebok	**PMP**	**SSP**	**Yes**	**New Program Leader** **Lissa McCaffree, San Diego Zoo's Safari Park** **lmccaffree@sandiegozoo.org 760-747-8702 ext 5098**
Blesbok	P/O	P/O	No	No Program Leader Required

Program	2008 Recommendation	2014 Recommendation	Program Leader Change	New Program Leader and/or Program Leader Contact Information Change
Hunter's hartebeest, Hirola	ISF	ISF	No	Martha Fischer, Saint Louis Zoo fischer@stlzoo.org 314-646-4610
Topi	DERP	P/O	No	No Program Leader Required
Waterbuck Subgroup				
Common waterbuck	**PMP**	**SSP**	**Yes**	**New Program Leader** **Jonnie Capiro, San Diego Zoo's Safari Park** **jcapiro@sandiegozoo.org 760-747-8702 ext 25583**
Defassa waterbuck	**P/O**	**Phased Out**	n/a	No Program Leader required - No more animals remain in AZA
Uganda kob	**DERP**	**Red Program**	**Yes**	**New Program Leader** **Daniel Lepping, Rolling Hills Zoo** **Lordone03@live.com 910-748-9997**
Red lechwe	**DERP**	**Red Program**	**Yes**	**New Program Leader** **Melissa Covey, Disney's Animal Kingdom** **Melissa.a.covey@disney.com 402-490-9487**
Nile lechwe	**PMP**	**SSP**	No	Matt Hohne, Disney's Animal Kingdom Matthew.hohne@disney.com 407-938-2672
Rhebok	**PMP**	**Phased Out**	n/a	No Program Leader required - No more animals remain in AZA
Western mountain reedbuck	ISF	ISF	No	Randy Rieches, San Diego Wild Animal Park rrieches@sandiegozoo.org 760-738-5015
Aridland Antelope, Gazelles and Pronghorn Subgroup				
Addax	SSP	SSP	**Yes**	**New International Studbook Keeper** **Wendy Enright, The Living Desert** **wenright@livingdesert.org 760-346-5694** SSP Coordinator Bill Houston, Saint Louis Zoo Houston@stlzoo.org 314-646-4826
Scimitar-horned oryx	SSP	SSP	**Yes**	**New Program Leader** **Sheri Horiszny, Santa Barbara Zoo** **shoriszny@sbzoo.org 805-962-5339 ext135**
Gemsbok	**PMP**	**SSP**	**Yes**	**New Program Leader** **Melissa McCartney, Sacramento Zoo** **mmccartney@saczoo.org 805-452-9741**
Beisa oryx	P/O	P/O	No	No Program Leader required
Fringe-eared oryx	**PMP**	**Red Program**	**Yes**	**New Program Leader** **Melissa McCartney, Sacramento Zoo** **mmccartney@saczoo.org 805-452-9741**
Arabian oryx	SSP	SSP	**Yes**	**New SSP Coordinator** **Michelle Hatwood, Phoenix Zoo**

Program	2008 Recommendation	2014 Recommendation	Program Leader Change	New Program Leader and/or Program Leader Contact Information Change
				mhatwood@thephxzoo.com 602.273.1341 x7613
Cuvier's gazelle	**PMP**	**Red Program**	No	Wendy Enright, The Living Desert wenright@livingdesert.org 760-346-5694
Addra gazelle	SSP	SSP	No	**Program Leader Contact Info Change** **Ann Petric, with support from Saint Louis Zoo** **annpetric2240@comcast.net 708-442-6531**
Mhorr gazelle	P/O	P/O	n/a	No Program Leader required
Dorcas gazelle	**P/O**	**Phased Out**	n/a	No Program Leader required - No more animals remain in AZA
Grant's gazelle	**PMP**	**SSP**	**Yes**	**Vacant**
Thomson's gazelle	**PMP**	**SSP**	No	**Program Leader Contact Info Change** **Lanny Brown, Nashville Zoo** **lbrown@nashvillezoo.org 615-627-3051**
Slender-horned gazelle	SSP	SSP	**Yes**	**New Program Leader** **Patricia Cassady, San Diego Zoo's Safari Park** **pcassady@sandiegozoo.org 760-747-8702**
Red-fronted gazelle	**P/O**	**Red Program**	**Yes**	**New Program Leader** **Lanny Brown, Nashville Zoo** **lbrown@nashvillezoo.org 615-627-3051**
Soemmerring's gazelle	**PMP**	**SSP**	No	**Program Leader Contact Info Change** **Stacey Konwiser, Palm Beach Zoo** **skonwiser@palmbeachzoo.org 561-533-0887**
Speke's gazelle	SSP	SSP	**Yes**	**New Program Leader** **Christy Poelker, Saint Louis Zoo** **poelker@stlzoo.org 314-646-4651**
Saudi goitered gazelle	P/O	P/O	No	No Program Leader required
Persian gazelle	P/O	P/O	No	No Program Leader required
Pronghorn	DERP	**Red Program**	**Yes**	**New Program Leader** **Melodi Tayles, San Diego Zoo's Safari Park** **mtayles@sandiegozoo.org 760-738-5026**
Peninsular pronghorn	**DERP**	**Red Program**	**Yes**	**New Program Leader** **Melodi Tayles, San Diego Zoo's Safari Park** **mtayles@sandiegozoo.org 760-738-5026**
Sonoran pronghorn	ISF	ISF	No	Jeff Holland, Los Angeles Zoo jeff.holland@lacity.org 323-644-4220
Saiga, Russian and Mongolian	ISF	ISF	No	Conservation Centers for Species Survival C2S2 contact: Dan Beetem, dbeetem@thewilds.org

Program	2008 Recommendation	2014 Recommendation	Program Leader Change	New Program Leader and/or Program Leader Contact Information Change
Tibetan antelope	ISF	ISF	No	Martha Fischer, Saint Louis Zoo fischer@stlzoo.org 314-646-4610
Przewalski's gazelle	ISF	ISF	No	Vacant
Giraffe/Okapi Subgroup				
Masai giraffe	**PMP**	**SSP**	No	Laurie Bingaman Lackey, with support from Disney's Animal Kingdom Giraffe3@bellsouth.net 828-693-4336
Giraffe, retic/roth complex	**PMP**	**SSP**	No	Laurie Bingaman Lackey, with support from Disney's Animal Kingdom Giraffe3@bellsouth.net 828-693-4336
West African (Nigerien) giraffe	**n/a**	**ISF**	**Yes**	**New Program** **Amy Roberts, Brookfield Zoo** **amy.roberts@czs.org 708-688-8446**
Rothschild's giraffe	**n/a**	**ISF**	**Yes**	**New Program** **Amy Roberts, Brookfield Zoo** **amy.roberts@czs.org 708-688-8446**
Okapi	SSP	SSP	No	**Program Leader Contact Info Change** **Ann Petric, with support from Saint Louis Zoo** **annpetric2240@comcast.net 708-442-6531**

Appendix 10. AZA Antelope and Giraffe TAG Program Status Table, 2014.

Program AZA Designation	Date Program Initiated	Current Program Leader Current Vice-Chair or Vice-Coordinator	Date Leadership Assumed	Date of Last Studbook Publication	Date of Last Program Plan	Population Size and Number of Institutions Increasing or Decreasing	Sustainability Score as of Last Plan	Target Population Size (TPS) (Spaces to TPS)	IUCN CITES USFWS	Goals
Antelope and Giraffe TAG	1991	Chair Martha Fischer Saint Louis Zoo Vice-Chairs Dan Beetem The Wilds Adam Eyres Fossil Rim Jeff Holland Los Angeles Zoo Sharon Joseph Houston Zoo Randy Rieches San Diego Zoo's Safari Park	2008	n/a	2014 *Draft currently under review*	n/a	n/a	n/a	n/a	• Facilitate program mgmt & oversee PL performance • Recruit next generation of TAG leaders & mentor PLs • Facilitate changes to regulations to import ruminants • Market antelope to encourage increased space • Encourage support of field conservation
Forest/Woodland Subgroup										
Giant eland **Unmanaged Population**	1988	International Studbook Keeper Lissa McCaffree San Diego Zoo's Safari Park	2010	2011 (current to 11/1/11)	n/a	21.28 (49) in 6 Institutions Population Decreasing	n/a	TPS 75 (+26)	IUCN - Least Concern	• Education/Exhibit Needs • Maintain International Studbook • Broker relationships between institutions • Encourage research that will address nutritional and vet challenges
Western giant eland ***in situ* Focus**	2005	ISF Champion Steve Shurter White Oak Conservation Center	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Critically Endangered C2a(ii) USFWS – Endangered	• Identify and support field conservation programs
Common eland **Regional Studbook & SSP** **Yellow SSP**	2000	Regional Studbook Keeper & SSP Coordinator Hollie Colahan Denver Zoo SSP Vice-Coordinator Vacant	2012	2013 (current to 12/31/12)	2014	81.147.7 (235) in 25 Institutions Population Decreasing	Genetic analysis not possible due to high level of unknown pedigree	TPS 250 (+15)	IUCN - Least Concern	• Education/Exhibit Needs • Attempt to further resolve unknown pedigrees or use alternative genetic management strategies • Update Population Analysis & Breeding and Transfer Plan • Make recommendations to maintain population at TPS • Recruit SSP Vice-Coordinator

Program AZA Designation	Date Program Initiated	Current Program Leader Current Vice-Chair or Vice-Coordinator	Date Leadership Assumed	Date of Last Studbook Publication	Date of Last Program Plan	Population Size and Number of Institutions Increasing or Decreasing	Sustainability Score as of Last Plan	Target Population Size (TPS) (Spaces to TPS)	IUCN CITES USFWS	Goals
Lowland nyala **Regional Studbook & SSP** **Yellow SSP**	1993	Regional Studbook Keeper & SSP Coordinator Steve Metzler Disney's Animal Kingdom --- SSP Vice-Coordinator Jason Green Busch Gardens Tampa	2011	2012 (current to 10/31/12)	2013	60.84 (144) in 14 Institutions Population Increasing	Current GD 79.86% GD Goal 60.3% at 100 years	TPS 200 (+56)	IUCN - Least Concern	• Education/Exhibit Needs • Make recommendations to grow population to TPS • Develop bachelor herds • Import new founders
Mountain nyala ***in situ* Focus**	2005	ISF Champion Martha Fischer Saint Louis Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Endangered C1	• Support field conservation, research & education programs
Eastern bongo **International Studbook**	1993	International Studbook Keeper Lydia Frazier Bosley with support of Oregon Zoo	1998	2014	n/a	n/a	n/a	n/a	IUCN – Critically Endangered C2a(i)	• Conservation Action • Maintain International Studbook
Eastern bongo **SSP** **Yellow SSP**	1999	SSP Coordinator Ron Surratt Fort Worth Zoo --- SSP Vice-Coordinator John Ward Fort Worth Zoo	1999	n/a	2013	46.82 (128) in 38 Institutions Population Increasing	Current GD 93.5%% GD Goal 83.00% at 100 years	TPS 250 (+122)	IUCN – Critically Endangered C2a(i)	• Conservation Action • Make recommendations to grow population to TPS • Recruit additional institutions • Investigate recruitment of specimens from the private sector in cases where the pedigree is known. • Encourage institutions to support field conservation and repatriation efforts in Kenya
Southern lesser kudu **Regional Studbook & SSP** **Yellow SSP**	1989	Regional Studbook Keeper & SSP Coordinator Lily Civili Saint Louis Zoo --- Vice-Coordinator Vacant	2010 (stbk) 2011 (ssp)	2013	2014	59.54 (113) in 19 Institutions Population Increasing	Current GD 80.51% GD Goal 62.81% at 100 years	TPS 150 (+37)	IUCN – Near Threatened	• Assurance Population • Make recommendations to grow population to Target Population Size • Recruit additional institutions • Import new founders • Recruit SSP Vice-Coordinator
Harnessed bushbuck **Phase Out**	n/a	n/a	n/a	n/a	n/a	6.5 (11) in 1 Institution (ZIMS) Population Stable	n/a	TPS 0 (-11)	IUCN – Least Concern	• Phase Out

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Greater kudu **Regional Studbook & SSP** **Yellow SSP**	1997	Regional Studbook Keeper & SSP Coordinator Dennis Charlton Smithsonian's National Zoo --- SSP Vice-Coordinator Scotty Stainback Caldwell Zoo	2011	2012 (current to 12/31/12)	2012	86.154.5 (245) in 37 Institutions Population Decreasing	Genetic analysis not possible due to high level of unknown pedigree	TPS 250 (+5)	IUCN - Least Concern	• Education/Exhibit Needs • Attempt to further resolve unknown pedigrees or use alternative genetic management strategies • Encourage permanent identification of animals • Manage the population to maintain the Target Population Size • Encourage institutions to follow SSP breeding and transfer recommendations
Sitatunga **Regional Studbook** **Red Program**	2000	Regional Studbook Keeper Gil Myers Smithsonian's National Zoo	2002	2014 (current to 4/7/14)	2011	18.34 (52) in 10 Institutions Population Increasing	n/a	TPS 75 (+23)	IUCN - Least Concern	• Education/Exhibit Needs • Complete a formal Population Analysis & Breeding and Transfer Plan • Recruit additional institutions • Import new founders
Roan antelope **Regional Studbook & SSP** **Yellow SSP**	1991	Regional Studbook Keeper & SSP Coordinator Andi Kornak Cleveland Metroparks Zoo --- SSP Vice-Coordinator Scotty Wade White Oak Conservation Center	2002	2012 (current through 8/1/12)	2012	41.56 (97) in 10 Institutions Population Stable	Current GD 86.09% GD Goal 66.10% at 100 years	TPS 125 (+28)	IUCN - Least Concern	• Education/Exhibit Needs • Make recommendations to grow population to TPS • Recruit additional institutions • Import new founders
Sable antelope **Regional Studbook & SSP** **Yellow SSP**	1991	Regional Studbook Keeper & SSP Coordinator Jill Piltz Disney's Animal Kingdom --- SSP Vice-Coordinator Tracy Sorensen Brevard Zoo	2000	2013 (current to 12/31/12)	2012	37.100.2 (139) in 16 Institutions Population Increasing	Genetic analysis not possible due to high level of unknown pedigree	TPS 175 (+36)	IUCN - Least Concern	• Education/Exhibit Needs • Attempt to further resolve unknown pedigrees or use alternative genetic management strategies • Make recommendations to grow population to TPS • Recruit additional institutions, especially for bachelor herds • Import new founders

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Zambian sable antelope **Phased Out**	n/a	n/a	n/a	n/a	n/a	0	n/a	TPS 0	IUCN - Least Concern	• Phased Out of AZA since last RCP
Giant sable antelope ***in situ* Focus**	2005	ISF Champion Sharon Joseph Houston Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Critically Endangered A2cd; C2a(i) CITES – Appendix I USFWS - Endangered	• Identify & support field conservation programs
Impala **Regional Studbook** **Red Program**	2012	Regional Studbook Keeper Jennifer MacNaughton Busch Gardens – Tampa Bay	2013	Pending	n/a	40.68.7 (115) in 15 NA institutions (ZIMS) Population Trend TBD	n/a	TPS 150 (+35)	IUCN – Least Concern	• Education/Exhibit Needs • Update and publish studbook. Attempt to resolve unknown pedigrees • Attempt to produce a Population Analysis & Breeding and Transfer Plan, using alternative genetic management strategies if necessary • Determine ideal Target Population Size
Black-faced impala ***in situ* Focus**	2005	ISF Champion Sharon Joseph Houston Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Vulnerable D1 UWFWS - Endangered	• Identify & support field conservation programs
Springbok **Phase Out**	n/a	n/a	n/a	2012 (current to 1/23/12)	n/a	4.6.2 (12) in 3 Institutions Population Decreasing	n/a	TPS 0 (-12)	IUCN – Least Concern	• Phase Out
South African Springbok **Regional Studbook & SSP** **Yellow SSP**	2000	Regional Studbook Keeper & SSP Coordinator Jessica Scallan Tulsa Zoo --- SSP Vice-Coordinator Vacant	2008	2012 (current to 1/23/12)	2013	30.30 (60) in 14 Institutions Population Increasing	Current GD 85.96% GD Goal 61.40% at 100 years	TPS 100 (+40)	IUCN - Least Concern	• Education/Exhibit Needs • Encourage current holders of generic springbok to phase those specimens out in favor of South African springbok. • Make recommendations to grow population to TPS • Recruit additional institutions • Recruit SSP Vice-Coordinator

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Blackbuck **Unmanaged Population**	n/a	n/a	n/a	n/a	n/a	84.181.5 (270) in 11 institutions (ZIMS) Population Stable	n/a	TPS 150 (-120)	IUCN – Near Threatened CITES – Appendix III (Nepal)	• Education/Exhibit Needs • Monitor population
Southern gerenuk **Regional Studbook & SSP** **Yellow SSP**	1988	Regional Studbook Keeper & SSP Coordinator Christina Seely Denver Zoo SSP Vice-Coordinator Manda Butler Cameron Park Zoo	2011	2013 (current to 7/1/13)	2014	24.48 (72) in 17 Institutions Population Stable	Current GD 85.03.00% GD Goal at 100 47% at 100 years	TPS 150 (+78)	IUCN – Near Threatened	• Assurance Population • Make recommendations to grow population to TPS • Import new founders
Dibatag ***in situ* Focus**	2005	ISF Champion Martha Fischer Saint Louis Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Vulnerable A2cd USFWS – Endangered	• Identify & support field conservation programs
Nilgai **Unmanaged Population**	n/a	n/a	n/a	n/a	n/a	17.41 (58) in 8 Institutions (ZIMS) Population Decreasing	n/a	TPS 100 (+42)	IUCN – Least Concern	• Education/Exhibit Needs • Monitor population
Saola ***in situ* Focus**	2005	n/a (now under AZA Bison, Buffalo and Cattle TAG)	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Critically Endangered CITES – Appendix I	• Moved under purview of AZA Bison, Buffalo and Cattle TAG
Small Antelope Subgroup										
Bay duiker **Phase Out**	n/a	n/a	n/a	n/a	n/a	5.7.1 (13) in 2 Institutions (ZIMS) Population Stable	n/a	TPS 0 (-13)	IUCN – Least Concern CITES – Appendix II	• Phase Out

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Jentink's duiker ***in situ* Focus**	2005	ISF Champion Jeff Holland Los Angeles Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Endangered C1 CITES – Appendix I USFWS - Endangered	• Identify & support field conservation programs
Maxwell's duiker **Phase Out**	n/a	n/a	n/a	n/a	n/a	1.1 (2) in 1 Institutions (ZIMS) Population Decreasing	n/a	TPS 0 (-2)	IUCN – Least Concern	• Phase Out
Blue duiker **Regional Studbook** **Red Program**	1994	Regional Studbook Keeper Sarah Ksiazek Dallas Zoo	2008	2013 (current to 2/28/13)	2011	22.28.1 (51) in 16 Institutions Population Stable	Last analyzed in 2011 2011 GD 89.08% GD Goal 58.00% at 100 years or 70.00% after 10 generations	TPS 75 (+24)	IUCN - Least Concern CITES – Appendix II	• Assurance Population • Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA PMC • Recruit additional institutions • Import new founders
Ader's duiker ***in situ* Focus**	2005	ISF Champion Jeff Holland Los Angeles Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Critically Endangered A4cd CITES – Not Listed	• Identify & support field conservation programs
Black duiker **Regional Studbook** **Red Program**	2012	Regional Studbook Keeper Jeff Holland Los Angeles Zoo	2013	2014 (current to 4/14/14)	2013	9.7 (16) in 7 Institutions Population Stable	n/a	TPS 25 (+9)	IUCN – Least Concern	• Education/Exhibit Needs • Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA PMC • Recruit additional institutions • Import new founders

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Red-flanked duiker **Regional Studbook** **Red Program**	1997	Regional Studbook Keeper Nate Oliveira Saint Louis Zoo	2011	2013 (current to 7/1/13)	2012	22.12 (34) in 14 Institutions Population Decreasing	Current GD 91.57% GD Goal 48.68% at 100 years	TPS 75 (+41)	IUCN - Least Concern	• Education/Exhibit Needs • Make recommendations to grow population to 50 so it can become a Yellow Program. • Encourage institutions to follow recommendations even though this is a Red Program and participation is not mandatory • Recruit additional institutions • Import new founders
Yellow-backed duiker **International Studbook & SSP** **Yellow SSP**	1995	International Studbook Keeper & SSP Coordinator Linda Rohr Bachers Milwaukee Zoo --- SSP Vice-Coordinator Jeff Holland Los Angeles Zoo	1995	2012 (current to 11/15/12)	2012	46.42.1 (89) in 30 Institutions Population Increasing	Current GD 89.67% GD Goal 77.70% at 100 years	TPS 125 (+36)	IUCN - Least Concern CITES – Appendix II	• Assurance Population • Continue to collaborate globally • Recruit additional institutions • Evaluate TPS and consider increasing
Abbott's duiker ***in situ* Focus**	2005	ISF Champion Jeff Holland Los Angeles Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Endangered C2a(i)	• Identify & support field conservation programs
Zebra duiker ***in situ* Focus**	2005	ISF Champion Jeff Holland Los Angeles Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Vulnerable A2cd; C1 CITES – Appendix II	• Identify & support field conservation programs
Günther's dik dik **Regional Studbook** **Red Program**	1989	Regional Studbook Keeper Paige McNickle Phoenix Zoo	2008	2012 (current to 10/1/12)	2008	9.4 (13) in 7 Institutions Population Decreasing	Last analyzed in 2008 2008 GD 79.05% GD Goal 24.00% at 100 years	TPS 25 (+12)	IUCN - Least Concern	• Education/Exhibit Needs • Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA PMC • Import new founders
Kirk's dik dik **Regional Studbook** **Red Program**	1989	Regional Studbook Keeper Paige McNickle Phoenix Zoo	2008	2012 (current to 11/15/12)	2014	23.26 (49) in 20 Institutions Population Stable	Current GD 91.94% GD Goal 30.1% at 100 years	TPS 75 (+26)	IUCN - Least Concern	• Education/Exhibit Needs • Grow population to 50 so it can become a Yellow Program and receive formal population management from AZA PMC • Import new founders • Determine cytotype for all individuals

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Silver dik dik ***in situ* Focus**	2005	ISF Champion Jeff Holland Los Angeles Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Data Deficient	• Identify & support field conservation programs
Suni Phase Out	n/a	n/a	n/a	n/a	n/a	0.1 (1) in 1 Institution Population Decreasing	n/a	TPS 0 (-1)	IUCN – Least Concern	• Phase Out
Royal Antelope Regional Studbook Red Program	2012	Regional Studbook Keeper Amy Roberts Brookfield Zoo	2013	Pending	n/a	2.10 (12) in 4 Institutions (ZIMS) Population Trend TBD	n/a	25 (+13)	IUCN – Least Concern	• Education/Exhibit Needs • Produce Studbook • Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA PMC • Determine ideal TPS
Beira ***in situ* Focus**	2005	ISF Champion Martha Fischer Saint Louis Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Vulnerable C1	• Identify & support field conservation programs
Steenbok Regional Studbook Red Program	2008	Regional Studbook Keeper Steve Metzler Disney's Animal Kingdom	2008	2014 (current to 1/20/14)	2014	8.7 (15) in 7 Institutions Population Decreasing	Current GD 79.69% GD Goal 47.7% at 100 years	TPS 50 (+35)	IUCN - Least Concern	• Education/Exhibit Needs • Make recommendations to grow population to 50 so it can become a Yellow Program. • Recruit additional institutions • Import new founders
Crowned duiker Phased Out	n/a	n/a	n/a	n/a	n/a	0	n/a	TPS 0	IUCN – Least Concern	• Phased Out of AZA since last RCP
Klipspringer Regional Studbook Red Program	2002	Regional Studbook Keeper Michael Lebanik Disney's Animal Kingdom	2007	2011 (current to 6/13/11)	2012	23.23.2 (48) in 19 Institutions Population Stable	Current GD 78.74% GD Goal 64.39% at 100 years	TPS 100 (+52)	IUCN - Least Concern	• Education/Exhibit Needs • Make recommendations to grow population to 50 so it can become a Yellow Program. • Recruit additional institutions • Import new founders
Hartebeest Subgroup										
Jackson's hartebeest Regional Studbook Red Program	1993	Regional Studbook Keeper Mollye Nardi Zoo Atlanta	2009	2014 (current to 2/13/14)	n/a	7.13 (20) in 5 Institutions Population Decreasing	n/a	TPS 50 (+30)	IUCN - Least Concern	• Education/Exhibit Needs • Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA PMC • Recruit additional institutions with large spaces • Import new founders

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Cape hartebeest **Phased Out**	n/a	n/a	n/a	n/a	n/a	0	n/a	TPS 0	IUCN – Least Concern	• Phased Out of AZA since last RCP
Swayne's hartebeest ***in situ* Focus**	2005	ISF Champion Martha Fischer Saint Louis Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Endangered C2a(i) USFWS - Endangered	• Identify & support field conservation programs
Wildebeest **Regional** **Studbook & SSP** **Yellow SSP**	2000	Regional Studbook Keeper & SSP Coordinator Kristen Wolfe Disney's Animal Kingdom --- SSP Vice- Coordinator Jill Piltz Disney's Animal Kingdom	2009	2011 (current to 12/15/11)	2012	47.106.44 (197) in 18 Institutions Population Stable	Current GD 90.70% GD Goal 57.51% at 100 years or 68.88% after 10 generations	TPS 200 (+3)	IUCN - Least Concern	• Education/Exhibit Needs • Recruit additional institutions • Import new founders • Re-evaluate TPS now that subspecies are lumped
Bontebok **Regional** **Studbook & SSP** **Yellow SSP**	1989	Regional Studbook Keeper & SSP Coordinator Lissa McCaffree San Diego Zoo Safari Park --- SSP Vice- Coordinator Vacant	2012	2013 (current to 4/10/13)	2012	29.44.7 (80) in 15 Institutions Population Increasing	Current GD 86.86% GD Goal 76.00% at 100 years	TPS 152 (+72)	IUCN – Near Threatened CITES – Appendix II USFWS – Endangered	• Assurance Population • Recruit SSP Vice-Coordinator • Grow population to TPS • Attempt to resolve unknown pedigrees • Import new founders
Blesbok **Phase Out**	n/a	n/a	n/a	n/a	n/a	2.4 (6) in 2 Institutions (ZIMS) Population Decreasing	n/a	TPS 0 (-6)	IUCN – Least Concern	• Phase Out
Hirola ***in situ* Focus**	2005	ISF Champion Martha Fischer Saint Louis Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Critically Endangered A2cd	• Support Recovery Effort through Northern Rangelands Trust

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Topi **Phase Out**	n/a	n/a	n/a	n/a	n/a	1.1 (2) in 1 Institution (ZIMS) Population Decreasing	n/a	TPS 0 (-2)	IUCN – Least Concern	• Phase Out
Waterbuck Subgroup										
Common waterbuck **Regional Studbook & SSP** **Yellow SSP**	2000	Regional Studbook Keeper & SSP Coordinator Jonnie Capiro San Diego Zoo Safari Park SSP Vice-Coordinator Steve Metzler Disney's Animal Kingdom	2011	2013 (current to 6/14/13)	2013	75.111.2 (188) in 24 Institutions Population Decreasing	Current GD 86.07% GD at 100 years not possible due to high level of unknown pedigree	TPS 200 (+12)	IUCN - Least Concern	• Education/Exhibit Needs • Make recommendations to reduce population to TPS • Attempt to resolve unknown pedigrees • Recruit additional institutions
Defassa waterbuck **Phased Out**	n/a	n/a	n/a	n/a	n/a	0	n/a	0	IUCN – Near Threatened	• Phased Out of AZA since last RCP
Uganda kob **Regional Studbook** **Red Program**	2012	Regional Studbook Keeper Daniel Lepping Rolling Hills Zoo	2013	Pending	n/a	5.7.1 (13) in 1 Institution (ZIMS) Population Trend TBD	n/a	75 (+62)	IUCN – Least Concern	• Education/Exhibit Needs • Publish studbook • If population is over 50, publish Population Analysis & Breeding and Transfer Plan; If population is under 50, grow population so it can receive formal population management from the AZA PMC • Determine ideal TPS • Partner with non-AZA facilities to grow program
Red lechwe **Regional Studbook** **Red Program**	2012	Regional Studbook Keeper Melissa Covey Disney's Animal Kingdom	2013	Pending	n/a	3.13 (16) in 2 Institutions (ZIMS) Population Trend TBD	n/a	75 (+59)	IUCN – Least Concern CITES – Appendix II USFWS - Threatened	• Education/Exhibit Needs • Publish studbook • If population is over 50, publish Population Analysis & Breeding and Transfer Plan; If population is under 50, grow population so it can receive formal population management from the AZA PMC • Determine ideal TPS • Partner with non-AZA facilities

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Nile lechwe **Regional Studbook & SSP** **Yellow SSP**	1990	Regional Studbook Keeper & SSP Coordinator Matt Hohne Disney's Animal Kingdom --- SSP Vice-Coordinator Guy Lichty North Carolina Zoo	2003	2014 (current to 12/1/13)	2012	35.56 (91) in 8 Institutions Population Increasing	Current GD 82.37% GD Goal 64.39% at 100 years or 70.6 after 10 generations	TPS 200 (+109)	IUCN – Endangered A2a	• Assurance Population • Make recommendations to grow population to TPS • Recruit additional institutions especially for bachelor herds • Import new founders • Identify and support field conservation efforts
Rhebok **Phased Out**	n/a	n/a	n/a	n/a	n/a	0	n/a	TPS 0	IUCN – Least Concern	• Phased out of AZA since last RCP
Western mountain reedbuck ***in situ* Focus**	2005	ISF Champion Randy Rieches San Diego Zoo Safari Park	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Endangered C2a(i); D CITES – Not Listed	• Identify & support field conservation programs
Aridland Antelope, Gazelle and Pronghorn Subgroup										
Addax **International Studbook**	1989	International Studbook Keeper Wendy Enright Living Desert	2010	2012 (current to 1/1/12)	n/a	n/a	n/a	n/a	IUCN – Critically Endangered A2cd; C1+2a(ii) CITES – Appendix I USFWS - Endangered	• Maintain International Studbook
Addax **SSP** **Yellow SSP**	1989	SSP Coordinator Bill Houston Saint Louis Zoo --- SSP Vice-Coordinator Tim Thier Saint Louis Zoo	1996	n/a	2013	81.132 (213) in 19 Institutions Population Increasing	Current GD 83.72% GD Goal 73.17% at 100 years	TPS 250 (+51)	IUCN – Critically Endangered A2cd; C1+2a(ii) CITES – Appendix I USFWS - Endangered	• Conservation Action • Make recommendations to grow population to TPS • Recruit additional institutions • Support goals of Sahara Conservation Fund

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Scimitar-horned oryx **SSP** **Yellow SSP**	1986	SSP Coordinator Sheri Horiszny Santa Barbara Zoo --- SSP Vice-Coordinator Vacant	2011	n/a	2013	71.115.1 (187) in 20 Institutions Population Increasing	Current GD 94.40% GD Goal 72.40% at 100 years	TPS 250 (+63)	IUCN – Extinct in the Wild CITES – Appendix I USFWS - Endangered	• Conservation Action • Make recommendations to grow population to TPS • Recruit SSP Vice-Coordinator • Support goals of Sahara Conservation Fund
Gemsbok **Regional Studbook & SSP** **Yellow SSP**	1995	Regional Studbook Keeper and SSP Coordinator Melissa McCartney Sacramento Zoo --- SSP Vice-Coordinator Summer Copeland Sacramento Zoo	2010	2011 (current to 11/5/11)	2012	34.44.5 (83) in 11 Institutions Population Decreasing	Genetic analysis not possible due to high level of unknown pedigree	TPS 75 (-8)	IUCN – Least Concern	• Education/Exhibit Needs • Make recommendations to maintain population to TPS • Resolve unknown pedigrees or use alternative genetic management strategies
Beisa oryx **Phase Out**	n/a	n/a	n/a	2011 (current to 11/5/11)	n/a	0.2 (2) in 2 Institutions Population Decreasing	n/a	TPS 0 (-2)	IUCN – Near Threatened	• Phase Out
Fringe-eared oryx **Regional Studbook** **Red Program**	1995	Regional Studbook Keeper Melissa McCartney Sacramento Zoo	2010	2011 (current to 11/5/11	2012	10.25 (35) in 5 Institutions Population Decreasing	Genetic analysis not possible due to high level of unknown pedigree	TPS 75 (+40)	IUCN – Vulnerable C1	• Assurance Population • Grow population to 50 so it can become a Yellow Program • Resolve unknown pedigrees or use alternative genetic management strategies • Work with non-AZA facilities to build AZA population up to a more sustainable level
Arabian oryx **International Studbook**	1984	As of 2012, no longer managed in AZA	n/a	1996	n/a	n/a	n/a	n/a	IUCN – Vulnerable D1 CITES – Appendix I USFWS – Endangered	• As of 2012, International Stbk no longer managed in AZA

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Arabian oryx **SSP** **Yellow SSP**	1986	SSP Coordinator Michelle Hatfield Phoenix Zoo --- SSP Vice- Coordinator Vacant	2011	n/a	2011	40.47 (87) in 7 Institutions Population Decreasing	Current GD 88.00% GD Goal 68.00% at 100 years	TPS 200 (+113)	IUCN – Vulnerable D1 CITES – Appendix I USFWS – Endangered	• Conservation Action • Make recommendations to grow population to TPS • Recruit additional institutions • Recruit SSP Vice-Coordinator
Cuvier's gazelle **Regional** **Studbook** **Red Program**	1990 (stbk) 1995 (SSP)	Regional Studbook Keeper Wendy Enright Living Desert	2002	2011 (current to 5/31/11)	2012	14.20 (34) in 3 Institutions Population Decreasing	Current GD 50.66% GD Goal 37.20% at 100 years	TPS 75 (+41)	IUCN – Endangered C2a(i) CITES – Appendix I USFWS – Endangered	• Assurance Population • Grow population to 50 so it can become a Yellow Program • Recruit additional institutions • Provide management advice for aggression in female herds • Support goals of Sahara Conservation Fund
Addra gazelle **Regional** **Studbook & SSP** **Yellow SSP**	1995	Regional Studbook Keeper & SSP Coordinator Ann Petric with support from Saint Louis Zoo --- SSP Vice- Coordinator Vacant	2008	2012 (current to 7/15/12)	2012	54.80 (134) in 22 Institutions Population Increasing	Current GD 85.77% GD Goal 68.26% at 100 years	TPS 200 (+66)	IUCN – Critically Endangered A2cd; C2a(i) CITES – Appendix I USFWS – Endangered	• Conservation Action • Make recommendations to grow population to TPS • Recruit SSP Vice-Coordinator • Support goals of Sahara Conservation Fund
Mhorr gazelle **Phase Out**	1995	n/a	n/a	2007	2009	0.3 (3) in 2 Institutions (ZIMS) Population Decreasing	n/a	TPS 0 (-3)	IUCN – Critically Endangered A2cd; C2a(i) CITES – Appendix I USFWS – Endangered	• Phase Out • Support goals of Sahara Conservation Fund
Dorcas gazelle **Phased Out**	2006	n/a	n/a	n/a	n/a	0	n/a	0	IUCN – Vulnerable A2cd CITES – Appendix III USFWS - Endangered	• Phased Out of AZA since last RCP • Support goals of Sahara Conservation Fund

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Grant's gazelle **Regional Studbook & SSP** **Yellow SSP**	1995	Vacant	2007	2013 (current through 12/1/13)	2013	18.39 (57) in 12 Institutions Population Stable	Current GD 62.49% GD Goal 44.42% at 100 years	TPS 100 (+43)	IUCN – Least Concern	• Education/Exhibit Needs • Recruit new Studbook Keeper/SSP Coordinator and recruit SSP Vice-Coordinator • Make recommendations to grow population to TPS • Due to high level of pedigree unknowns, use alternative genetic management • Encourage institutions to follow SSP breeding and transfer recommendations
Thomson's gazelle **Regional Studbook & SSP** **Yellow SSP**	1995	Regional Studbook Keeper & SSP Coordinator Lanny Brown Nashville Zoo --- SSP Vice-Coordinator Vacant	2009	2011 (current through 3/1/11)	2013	53.111.2 (166) in 16 Institutions Population Decreasing	Genetic analysis not possible due to high level of unknown pedigree	TPS 175 (+9)	IUCN – Near Threatened	• Education/Exhibit Needs • Resolve unknown pedigrees or use alternative genetic management strategies • Make recommendations to main population at TPS • Encourage institutions to consider switching to a more endangered gazelle • Recruit SSP Vice-Coordinator
Slender-horned gazelle **International Studbook & SSP** **Yellow SSP**	1980 (stbk) 1995 (SSP)	International Studbook Keeper & SSP Coordinator Patricia Cassady San Diego Zoo's Safari Park --- SSP Vice-Coordinator Adam Eyres Fossil Rim	2008	2013 (current through 5/31/13)	2011	34.39.1 (74) in 7 Institutions Population Increasing	Current GD 58.27% GD Goal 27.27% at 100 years	TPS 100 (+26)	IUCN – Endangered C2a(i) CITES – Appendix I USFWS – Endangered	• Conservation Action • Consider increasing TPS • Recruit additional institutions • Import new founders • Support goals of Sahara Conservation Fund
Red-fronted gazelle **Regional Studbook** **Red Program**	2012	Regional Studbook Keeper Lanny Brown Nashville Zoo	2012	Pending	n/a	12.13 (25) in 1 Institution (ZIMS) Population Trend TBD	n/a	TPS 50 (+25)	IUCN – Vulnerable A2cd	• Conservation Action • Publish Studbook • Recruit additional institutions • Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA PMC • Determine ideal TPS • Support goals of Sahara Conservation Fund

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Soemmerring's gazelle **Regional Studbook** **Red Program**	1991 (stbk) 2003 (SSP)	Regional Studbook Keeper Stacey Konwiser Palm Beach Zoo	2006	2011 (current to 12/31/11)	2012	20.24 (44) in 5 Institutions Population Decreasing	Current GD 79.60% GD Goal 60.80% at 100 years	TPS 75 (+31)	IUCN – Vulnerable A2cd; C1	• Assurance Population • Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA PMC • Recruit additional institutions • Improve reproductive success and reduce infant mortality
Speke's gazelle **Regional Studbook & SSP** **Yellow SSP**	1986	Regional Studbook Keeper & SSP Coordinator Christy Poelker Saint Louis Zoo --- SSP Vice-Coordinator Martha Fischer Saint Louis Zoo	1992	2014 (current to 12/31/13)	2012	27.43 (70) in 10 Institutions Population Stable	Current GD 75.06% GD Goal 33.99% at 100 years	TPS 100 (+30)	IUCN – Endangered A2cd	• Assurance Population • Make recommendations to grow population to TPS • Recruit additional institutions, especially for bachelor herds • Import new founders
Saudi goitered gazelle **Phase Out**	n/a	n/a	n/a	n/a	n/a	1.1 (2) in 1 Institution (ZIMS) Population Decreasing	n/a	TPS 0 (-2)	IUCN – Vulnerable C2a(i) USFWS - Endangered	• Phase Out
Persian gazelle **Phase Out**	n/a	n/a	n/a	n/a	n/a	2.6 (8) in 1 Institution (ZIMS) Population Decreasing	n/a	TPS 0 (-8)	IUCN – Vulnerable A2ad	• Phase Out
Pronghorn **Regional Studbook & SSP** **Red Program**	2003	Regional Studbook Keeper Melodi Tayles San Diego Zoo Safari Park	2013	Pending	n/a	39.60 (99) in 10 Institutions (ZIMS) Population Trend TBD	n/a	150 (+51)	IUCN – Least Concern	• Education/Exhibit Needs • Publish Studbook • Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA PMC • Determine ideal TPS

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Peninsular pronghorn **Regional Studbook** **Red Program**	2009	Regional Studbook Keeper Melodi Tayles San Diego Zoo Safari Park	2013	Pending	n/a	15.10 (25) in 4 Institutions (ZIMS) Population Trend TBD	n/a	50 (+25)	IUCN – Least Concern CITES – Appendix I (Mexico) USFWS - Endangered	• Education/Exhibit Needs • Publish Studbook • Grow population to 50 so it can become a Yellow Program and receive formal population management from the AZA PMC • Determine ideal TPS
Sonoran pronghorn ***in situ* Focus**	2005	ISF Champion Jeff Holland Los Angeles Zoo	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Least Concern	• Identify & support field conservation programs
Saiga ***in situ* Focus**	2005	ISF Champion Dan Beetem The Wilds	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Critically Endangered A2acd (Mongolia & Russia) CITES – Appendix II (Mongolia & Russia USFWS – Endangered (Mongolia)	• Identify & support field conservation programs
Tibetan antelope ***in situ* Focus**	2005	ISF Champion *Vacant*	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Endangered A2d CITES – Appendix I USFWS – Endangered	• Recruit ISF Champion • Identify & support field conservation programs
Przewalski's gazelle ***in situ* Focus**	2005	ISF Champion Steve Shurter White Oak Conservation Center	2005	n/a	n/a	0	n/a	TPS 0	IUCN – Endangered C2a(i)	• Identify & support field conservation programs

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Giraffe/Okapi Subgroup										
Masai and Retic/Roth giraffe **International Studbook**	1989	International Studbook Keeper Laurie Bingaman Lackey with support from Disney's Animal Kingdom	1992	2011	n/a	n/a	n/a	n/a	IUCN – Least Concern	• Maintain International Studbook
Masai giraffe **SSP** **Yellow SSP**	1999	SSP Coordinator Laurie Bingaman Lackey with support from Disney's Animal Kingdom SSP Vice-Coordinator Joe Christman Disney's Animal Kingdom	1992	n/a	2013	44.57 (101) in 25 Institutions Population Increasing	Current GD 92.40% GD Goal 85.00% at 100 years	TPS 150 (+49)	IUCN – Least Concern	• Education/Exhibit Needs • Grow population to TPS • Encourage institutions to devote their giraffe spaces to the Masai Giraffe SSP instead of the Retic/Roth SSP • Support goals of Giraffe Conservation Foundation
Retic/Roth giraffe **SSP** **Green SSP**	1999	SSP Coordinator Laurie Bingaman Lackey with support from Disney's Animal Kingdom SSP Vice-Coordinator Joe Christman Disney's Animal Kingdom	1992	n/a	2013	171.251 (422) in 82 Institutions Population Increasing	Current GD 97.70% GD Goal 94.00% at 100 years	TPS 400 (-22)	IUCN – Least Concern	• Education/Exhibit Needs • Reduce population - encourage institutions to devote their giraffe spaces to the Masai Giraffe SSP instead of the Retic/Roth SSP • Encourage institutions to reduce giraffe space in general to increase space available for more endangered ungulate species • Support goals of Giraffe Conservation Foundation
West African (Nigerien) giraffe ***in situ* Focus**	2014	ISF Champion Amy Roberts Brookfield Zoo	2014	n/a	n/a	0	n/a	TPS 0	IUCN – Endangered D	• Support the goals of the Giraffe Conservation Foundation
Rothschild's giraffe ***in situ* Focus**	2014	ISF Champion Amy Roberts Brookfield Zoo	2014	n/a	n/a	0	n/a	TPS 0	IUCN – Endangered C2a(i)	• Support the goals of the Giraffe Conservation Foundation

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Okapi **SSP** **Yellow SSP**	1981	SSP Coordinator Ann Petric with support from the Saint Louis Zoo SSP Vice-Coordinator Matt Hohne Disney's Animal Kingdom	2000	n/a	2011	51.51 (102) in 27 Institutions including NA, Japan and South Africa Population Stable	Current GD 93.15% GD Goal 85.92% at 100 years	TPS 200 (+98)	IUCN – Endangered A2abcd + 4abcd	• Conservation Action • Grow population to Target Population Size • Recruit additional institutions • Import founders • Support goals of Okapi Conservation Project