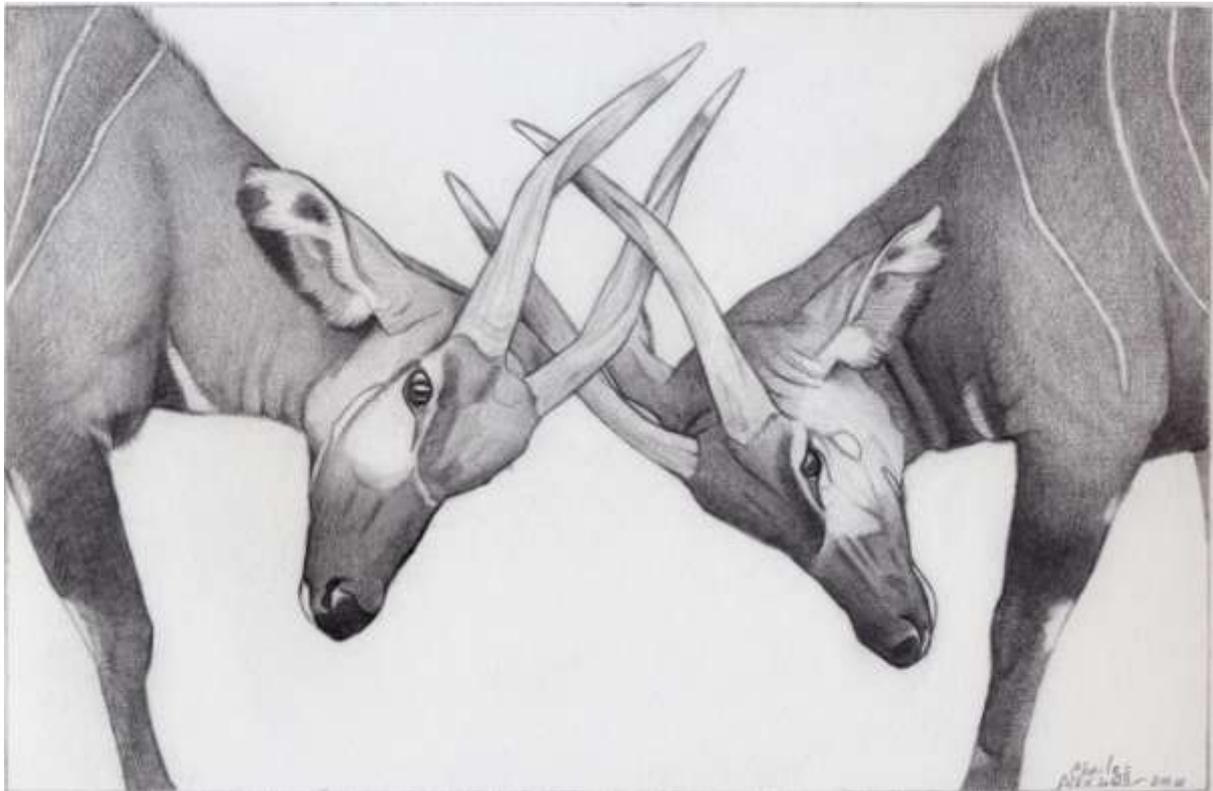


Mountain Bongo Conservation Planning Workshop Report

26-28 July 2010, Nyeri, Kenya



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Foreword

It is always a great pleasure to see scientists from all over the world come together to look at a species that is close to extinction. When it comes to the bongo we are living on borrowed time; we need to look urgently at what we can do to prevent bongo extinction and we need to begin by looking at how we can reduce threats. Conservation is a difficult and expensive undertaking in a third world country such as Kenya. Our challenge is to conserve in the face of great pressure from the following realities:

1. **Human population increase:** *there are 40 million people in Kenya and the human population is set to double by 2050. The population around Mt. Kenya is increasing, placing pressure on the ecosystem there. The Aberdares National Park and Reserve supports many livelihoods and though fenced, the fence is only a management tool; it needs to be enforced and combined with measures to conserve the ecosystem within it and to manage responsibly the impact on dependent livelihoods.*
2. **Land use:** *we must consider the ways in which land-use impacts on protected areas. Kenyans have a culture of planting maize everywhere, even in areas where it grows poorly. This is a serious challenge; we need to optimise our land use practices at the policy level so that we begin to realise the potential of land as an asset and minimise damage to natural systems.*
3. **Energy:** *needs are set to increase and there is an expected growth rate of 10% per year in line with Vision 2030. Additional power generation will inevitably put pressure on ecosystems and we need to look for ways and means to do this in ways that minimise damage to the environment.*
4. **Water:** *Kenyans rely on water from declining forest ecosystems and this demand will increase dramatically in coming years. This is a major challenge now and will continue to be in the future.*

We are facing pressure from all corners. We need fresh eyes and radical re-thinking to develop an appropriate way forward. We will need to consider:

- **How to share expertise:** *we need to bring universities on-board as a large reservoir of knowledge and research potential.*
- **Funds:** *we need to mobilize resources and use them efficiently. Gathering financial resources in a country where most people live on less than a dollar a day is extremely challenging. How do we sustainably fund conservation activity in a third world country? Our strategy must include attracting financial support from developed countries.*
- **Trade-offs:** *we need to take risks to make progress. Management is all about risk taking, life is about trade-offs and choices. For example, we may have to accept that in a release exercise we will lose 1% of the release animals to poachers, or that individuals may not breed and the exercise may fail in the longer-term. The challenge lies in anticipating and managing risks, and in maximising benefits.*

- **Partnerships:** *how do we sustain partnerships? Collaboration is key to effective conservation. Of particular importance is that we should all be bound by whatever key decisions we make. We need to go forward together and keep in mind that our goal is the survival of the species.*

I look to this meeting to shed new light on these issues and to forge an effective path to the survival of the mountain bongo in Kenya.

Julius Kipng'etich

Director, Kenya Wildlife Service

Executive Summary

From 26-28 July, 59 participants from 20 organisations gathered at the Green Hills Hotel in Nyeri to build a national strategy for conserving the mountain bongo (*Tragelaphus eurycerus isaaci*). The workshop was facilitated by the IUCN/SSC Conservation Breeding Specialist Group (CBSG) and principal sponsors were Woburn Safari Park (UK) and the Kenya Wildlife Service.

The mountain bongo (*Tragelaphus eurycerus isaaci*) is an endangered *tragelaphine* antelope sub-species, endemic to the Aberdares, Mount Kenya, the Mau and Cherangani. The species has undergone a drastic decline in these forests over the last four decades, with the exact number of animals currently not known, though inferential figures suggest there may be fewer than 100 individuals remaining, mainly confined to the Aberdares. Principal threats are considered to be poaching, and habitat loss or disturbance.

Participants began the planning process by developing the following shared vision for the future of bongo in Kenya:

A **50-100 year vision** for bongo in Kenya.

We envisage viable, free-ranging and genetically representative populations of mountain bongo, thriving across intact historic mountain ecosystem ranges, cherished by the Kenyan people and the global community.

Following plenary discussions, a working group was tasked with the development of more specific population size targets and, with various caveats, the following initial working targets were agreed:

Table 1. Fifty-year working target population sizes for mountain bongo in Kenya.

Region	Working targets for population size	Region	Working targets for population size
Aberdares	300	Londiani	20
Mt. Kenya	250	Chepalungu	20
Mau	100	Cherangani	20
Eburu	20	Mt. Elgon	20
Total for Kenya = 730			

A mind-map was developed in plenary to document current and expected threats to realising the agreed vision. These threats were grouped into four broad categories: Poaching, Habitat, Small Population Issues and Disease. Three working groups were formed by combining the latter two. Each group worked methodically through a process of clearly defining each threat and then developing goals and actions to mitigate it. Goals were brought to plenary and prioritised by all participants in terms of both their urgency and importance in the recovery of mountain bongo. Actions were developed to be S.M.A.R.T (Specific, Measurable, Achievable, Relevant and Time-bound).

A detailed listing of workshop goals is provided overleaf along with the scores allocated to each for urgency and importance in mountain bongo recovery. The three highest priorities are considered to be, in order of both urgency and importance:

Security: to increase security from poaching and other direct threats by providing, for each remaining mountain bongo population, an Intensive Protection Zone, staffed by a permanent security force engaged in daily patrols, anti-poaching and de-snaring activities, and law enforcement.

Human Activities: to manage legal activities to ensure sustainability, and to stop illegal human activities that destroy mountain bongo habitat.

Policy Harmonisation: to ensure that all policy issues that threaten the conservation of mountain bongos and their habitats are harmonised within one year; key to this being the establishment of a central coordinating body.

A summary of **recommended actions**, in order of goal priority, is provided in Table 3 below.

An **implementation framework** to drive the mountain bongo recovery strategy was proposed, to be jointly overseen by the Kenya Wildlife Service (KWS) and the Kenya Forest Service (KFS). Once in place, this framework will replace the existing KWS constituted “Bongo Task Force”.

A **release of captive bongo** to Mount Kenya is planned, by the Mount Kenya Wildlife Conservancy in partnership with the American Association of Zoos and Aquariums (AZA) Bongo Species Survival Program (Bongo SSP). Though this was discussed, a further workshop will be required to build consensus on all of the issues involved.

Table 2. Workshop goals listed in order of total points allocated for both urgency and importance.

Goals	Points allocated		
	Urgency	Importance	Total
1. Security. To increase security by increasing the number of well staffed, properly equipped, mobilised teams and by creating a bongo conservation programme comprising, <u>for each population</u> : an Intensive Protection Zone (IPZ) and a permanent security force.	25	50	75
2. Human Activities. to manage legal activities to ensure sustainability, and to stop illegal human activities that destroy mountain bongo habitat, through: <ul style="list-style-type: none"> a. zoning and demarcating controlled utilisation areas so that they do not interfere with bongo habitat b. stopping illegal activities in bongo habitat and in the whole ecosystem c. curtailing any further development of infrastructure in critical bongo habitats d. during construction, ensuring there is adequate wildlife and forest security personnel to prevent any removal of flora and fauna. 	22	26	48
3. Policy Harmonisation. To ensure that all policy issues that threaten conservation of bongos and their habitat are harmonised within 1 year, by: <ul style="list-style-type: none"> a. establishing a national bongo conservation coordination committee; b. comprehensive mapping of existing and potential bongo habitat; c. development of protocols to guide bongo conservation (6 months). 	15	14	29
4. Resources and Research (small population-related). To identify bongo conservation and research needs over the next five years, construct budgets and identify funding sources within eight months. Secure funds to	7	13	20

Goals	Points allocated		
	Urgency	Importance	Total
implement the conservation action plan within two years.			
5. Captive Breeding. To achieve best practice in the management of all captive bongo populations and in all reintroduction and translocation activities, in support of mountain bongo conservation in Kenya.	14	4	18
6. Community Awareness. To coordinate efforts among awareness and education organisations, i.e. KWS, BSP, MKT, WHWF.	13	3	16
7. Limited Alternative Livelihoods. Support activities aimed at diversification of livelihoods, at the community level, through promotion of nature-based income generating activities.	2	11	13
8. Genetic. a. To profile 50% of all remaining bongo populations, both wild and captive, based on prevailing population estimates within 6 months. b. To develop a strategy which best secures genetically viable populations of mountain bongo which are as representative as possible of historic mountain bongo populations utilising best practice and all available data within one year.	6	5	11
9. Demographic. a. To provide more accurate estimates of wild populations within 6 months (using the profiling data to assist in population estimates). b. To develop a strategy which best secures demographically stable populations of mountain bongo whilst being mindful of genetic considerations utilising best practice and all available data within one year.	5	6	11
10. Community Issues. To ensure that communities living adjacent to bongo habitat are involved in bongo conservation through education awareness creation and livelihood improvement. Also, to identify livelihood options compatible with bongo conservation amongst prospective communities adjacent to bongo habitat.	8	0	8
11. Information Feedback Mechanisms. Improve information feedback systems by: a. Increasing awareness of KWS hot-line numbers and setting up new numbers and networks where needed. b. Encouraging the community to use hot-line numbers to report poaching activity (e.g. using toll free and reward systems). c. Improving information sharing between stakeholders	3	5	8
12. Prevailing poverty levels. To improve food security and protein sources, including from: a. fish farms; b. poultry, farmed rabbit; c. sack gardens; and to sensitise communities about the consequences of bush meat consumption: a. diseases; b. value of wildlife; c. legal implications.	7	0	7
13. Greater Inter-agency Cooperation. To encourage greater cooperation between government agencies and other stakeholders, including: a. finalising the new Wildlife Act; b. encouraging participatory management planning.	4	0	4
14. Lenient Penalties. To encourage the completion of the new Wildlife Act, to lobby for more punitive sentences and to sensitise and engage the judiciary to the critical status of the bongo.	1	3	4
15. Corruption. To encourage both individuals and community-based	2	1	3

Goals	Points allocated		
	Urgency	Importance	Total
organisations on the boundaries of the forest to report corruption to the police and the Kenyan Anti-Corruption Commission (KACC).			
16. Species Interaction. To ensure that all native species interactions affecting bongo conservation are minimised within 5 years by: <ul style="list-style-type: none"> a. developing a species/habitat interaction monitoring programme; b. opening up migratory corridors in fenced areas to ease pressure from mega-herbivores such as elephants and buffalos (habitat modifiers) 	1	0	1
17. Disease: <ul style="list-style-type: none"> a. To remain abreast of District Veterinary Officer (DVO) reporting, investigate all bongo mortalities, performing diagnostic necropsies where possible, and investigate mortality events in related species. b. To reduce mortality of any future bongo imports. c. In the case of reintroduction/translocation: to carry out health screening of source and destination populations and perform risk assessments in accordance with IUCN reintroduction specialist group guidelines. 	0	0	0

Table 3: Workshop actions listed in order of goals above.

Recommended Action	Responsibility	Time-line
Goal 1: Security		
Establish an Intensive Protection Zone (IPZ) at each remaining bongo site, to be staffed by a permanent security team of specialist rangers This will involve increasing the operations of the Bongo Surveillance Project (BSP) and existing community/KWS forces in the Aberdares, Mt Kenya, and Eburu, and extending them to west Mau and Londiani. IPZ forces will be actively engaged in anti-poaching field operations, to include daily patrols of boundaries and the interiors of each IPZ, de-snaring operations and enforcement via arrests of offenders. Training should be provided for both KWS rangers and community scouts for work in bongo areas, where this is needed.	KWS, BSP, Community Forces, MKT	IPZ in place within 6 months. Teams operational in 6-12 months
Goal 2: Human Activities		
Stop illegal activities in bongo ecosystems.	KWS, KFS	Ongoing
Stop illegal harvesting of wood products	KFS	1 year
Control/regulate consumptive utilisation of bongo habitats (e.g. grazing, cultivation) as per site-specific plans.	KFS	1 year
Zone and demarcate controlled utilization areas.	KFS	1 year
Review existing ecosystem management plans to incorporate protection for critical bongo habitats.	KWS, KFS	3 years
Continuously monitor and survey bongo and their habitats.	BSP	Ongoing
Goal 3: Policy Harmonisation		
Establish a National Bongo Management Committee (NBMC)	BTF	3 months
Undertake comprehensive mapping of current and potential bongo habitat.	NBMC	2 years
Harmonise KWS and KFS activities at bongo sites.	NBMC	6 months
Develop and agree a set of rules or "Code of Conduct" for human behaviour in critical bongo habitat.	NBMC	1 year
Goal 4: Resources and Research (small population related)		

Recommended Action	Responsibility	Time-line
Identify research needed (see also under genetic and demographic requirements) over the next five years to support conservation of bongo in the wild.	KWS Senior Research Scientist, Mountain Area (James Mathenge) and BSP Senior Scientist (Adam Mwange).	8 months
Secure funds to implement research needs.	KWS, BSP	2 years
Goal 5: Captive Breeding		
Draft a comprehensive management plan for the MKWC release project proposing: <ul style="list-style-type: none"> • how the captive population will be managed to support release • how release will be carried out • how post-release monitoring will occur 	MKWC	6 months
Draft a meta-population plan for all captive (in-country and international) and wild populations, documenting intended genetic and demographic management, disease risk management and reintroduction strategies.	NBMC/BTF with EEP, SSP, MKWC	9 months
Request the review and, ultimately, the endorsement of the work described above by a neutral, independent, expert review panel.	BTF/NBMC	Within 1 year
Convene an independently facilitated workshop to achieve consensus within the Bongo Task Force on the captive management and reintroduction-related issues described, in particular: <ul style="list-style-type: none"> • how best to manage the Nanyuki herd towards the goal of conserving genetic diversity within Kenya; • how best to incorporate in-country, international and wild populations into a global meta-population supporting long-term conservation goals, including strategies for genetic, demographic and disease risk management; • how best to manage current and future reintroduction and translocation efforts. This workshop would be informed by the draft documents prepared (see above), by the peer review of those documents, and by the results of proposed genetic analyses (see below).	BTF/NBMC	Within 1 year
Apply best practice captive management (demographic, genetic, husbandry, disease risk management) to all in-country and international bongo populations.	EEP, SSP, MKWC	Ongoing once above plans in place.
Apply best practice in reintroduction and translocation through close adherence to the IUCN Guidelines for Reintroduction.	KWS, NBMC	Ongoing once above plans in place.
Instigate a process for developing “habitat suitability” criteria for bongo, and conducting a thorough ecological assessment of potential sites based on these criteria, to inform future reintroduction initiatives.	BTF/NBMC	1 year
Goal 6: Community Awareness (see Goal 12)		
Goal 7: Limited Alternative Livelihoods (see Goal 12)		
Goal 8: Genetic		
Collect samples representative of at least 50% of all mountain bongo populations worldwide and have these independently analysed with the explicit remit of developing an evidence-based, global metapopulation management plan for mountain bongo.	<u>Sample analysis:</u> Paul Reillo and American Museum, University of Uppsala, Dr Muya.	6 months

Recommended Action	Responsibility	Time-line
	<u>Collection of data in-situ and transfer of samples to research sites:</u> BSP <u>Determination of other logistical details and responsibilities:</u> BTF/NBMC	
Goal 9: Demographic		
Collect accurate demographic, ecological and distribution data from bongo in the wild through localised studies.	KWS Senior Research Scientist, Mountain Area (James Mathenge) and BSP Senior Scientist (Adam Mwange).	6 months
Develop a strategy which best secures demographically stable populations of mountain bongo in the wild, using best practice and all available data.	KWS	1 year
Goal 10: Community Issues (see Goal 12)		
Goal 11: Information Feedback Mechanisms		
<ul style="list-style-type: none"> Gather existing (anti-poaching) hotline numbers to ensure they are working, and avail them to the communities on a wider scale through existing outreach programmes. Contact network providers of toll-free numbers used in reporting illegal activity by community members. Provide tie-ins with providers for collaboration, in the form of advertising /publicity. Establish a reward system for reports leading to arrest and successful prosecution. 	KWS, BSP, WHWF, MKT, senior warden of each national park.	6 months
Goal 12: Prevailing Poverty Levels – also includes actions for Goals 6, 7 & 10.		
Build community self-sufficiency in alternative protein sources: <ul style="list-style-type: none"> identify bush meat hotspots in bongo habitat areas; identify/establish at least 2 community based organisations (CBOs) in each bongo habitat area; identify NGOs and agencies working in the area and doing similar work e.g. Fisheries Dept, KWS, MKT, BSP, WHWF, appraise CBOs to identify suitable projects and capacities/abilities; draft suitable proposals for funding with all relevant stakeholders; train CBO members. 	KWS, KFS, MKT	3-5 years
Educate about the consequences of bush meat consumption: <ul style="list-style-type: none"> identify NGOs and agencies providing environmental and wildlife education; coordinate efforts to cover a wider area, eliminate duplication and specifically target poaching hotspots and bongo habitats. 	KWS, WHWF, MKT	2-5 years
Incorporate alternative livelihood support activities into the actions above.	KWS, WHWF, MKT	2-5 years
Develop bongo information, education and communication materials.	KWS	4 months
Create awareness through in-house and outreach programmes.	KWS	Ongoing
Identify appropriate nature-based enterprises and promote:	KFS	1 year

Recommended Action	Responsibility	Time-line
<ul style="list-style-type: none"> • alternative livelihoods in community areas with focus on high value options; • sources of cooking fuels that do not depend on forest products; • niche market-based farm forestry; • appropriate energy saving technology. 		
Goal 13: Greater Inter-agency Cooperation		
NGOs and other organisations, with Kenya Forest Working Group, to lobby for better management of forest areas.	KWS/KFWG	1 year
Establish a liaison office/officer with help of KWS/KFS/Kenya Forest Working Group /Local NGOs.	KWS/KFS/KFWG	1 year
Run two workshops to establish an MOU and identify a contact from each of the collaborators who can be responsible for recording and sharing information.	KWS/KFS/KFWG	1 year
Goal 14: Lenient Penalties		
Collate informative statistics on poaching and its effect on the conservation of endangered species, for distribution to the judiciary community.	KWS, KFWG, KFS, MKT, BSP	1 year
Tie this in with the workshops recommended in the section on Communities (see Section 9.), which are aimed at encouraging greater cooperation between government agencies	KWS, KFWG, KFS, MKT, BSP	1 year
Goal 15: Corruption		
Use existing field coordinators as well as KWS personnel to sensitize the community on their rights and how they may report illegal activity in the areas they live in.	KWS, KFWG, KFS, MKT, BSP	6 months
Distribute information (on KACC) when distributing information on anti-poaching hot-line numbers and running community education visits.	KWS, KFWG, KFS, MKT, BSP	6 months
Goal 16: Species Interaction		
Develop and implement a species-habitat interaction monitoring programme.	KWS	6 months
Open up migratory corridors in Aberdares and restore habitat connectivity in Mau/Eburu.	KWS/KFS	5 years
Continue management of lion numbers in Aberdares National Park	KWS	Ongoing
Manage populations of mega herbivores and other predators actively in bongo areas.	KWS	Ongoing
Goal 17: Disease		
Remain up-to-date on regional DVO reports relating to livestock disease events.	KWS regional warden and KWS DVS	Immediate and continuous
Rapidly respond and investigate all reported bongo mortalities and report observations to KWS Dept. Vet. Services (KWS DVS). (Note: investigation should be same day or within 12 hours)	Regional KWS ranger staff	Immediately and continuous.
Perform diagnostic necropsies to the extent possible with respect to carcass condition. (Note: DVS staff is immediately mobilised and necropsy accomplished as soon as possible).	KWS DVS	Immediately and continuous.
Investigate and necropsy mortality events in related species and range areas.	KWS DVS	Immediately and continuous.
Develop a response to Theileria infection of mountain bongo including test validation, vaccine methods, and treatment modalities.	KWS DVS, AZA or EAZA veterinarians responsible for the source population.	Before next importation.
Develop guidelines for relevant disease profiles, testing protocols and	KWS DVS	Before any animal

Recommended Action	Responsibility	Time-line
sample acquisition. Acquire samples and perform testing. Construct and perform risk analyses on results.		translocation.

Introduction

In preparing for the Nyeri mountain bongo workshop, organisers agreed the following goal:

To develop a strategy to ensure genetically viable populations of bongo persist in their natural habitat, within Kenya by:

- **agreeing appropriate conservation goals for Kenyan bongo populations;**
- **identifying the full breadth of issues that may impact on achieving these goals;**
- **identifying courses of action that will maximize the chance of success;**
- **engaging the knowledge, skills, and support of stakeholders in the action planning process;**
- **developing the criteria by which success will be evaluated.**

The following pages document progress made at the workshop towards this.

The workshop process engaged representatives from all of the key stakeholders in mountain bongo conservation and in total **59 participants from 20 organisations** attended the meeting.

Participants began by contributing ideas and themes towards a **long-term, shared vision for mountain bongo** in Kenya and a smaller working group was charged with crafting a vision statement (see Section 5). In a brainstorming exercise, participants identified what they considered to be the **full breadth of issues threatening bongo in the wild** and these were illustrated by mind-map. Issues were grouped into four broad categories: Poaching, Habitat, Small Population Issues and Disease. Three working groups were formed by combining the latter two. Sub-sets of the issues were further developed within working groups to produce a series of pertinent “threat statements” (see Table 6, *List of Recommended Actions*). Using these threat statements, each group worked methodically to develop mitigating goals and actions. **Goals were brought to plenary and prioritised** by all participants in terms of both their urgency and importance in the recovery of mountain bongo. **Actions were developed to be S.M.A.R.T** (Specific, Measurable, Achievable, Relevant and Time-bound), and to be both necessary and sufficient for achieving the goals identified. Two additional working groups were formed, one to progress site-specific population size targets for mountain bongo and the other to build consensus on a proposed captive release project. The latter will require a further workshop and results from the former are provided in Table 1, *Executive Summary*.

The time-lines and “measurables” attached to each action (see Table 6, *List of Recommended Actions*) provide the means to evaluate successful completion of actions, and the **site-specific population targets provide a means of evaluating the success** or otherwise of those actions in furthering the recovery of mountain bongo in the wild.

Though the working groups were dealing with different topics, some of the actions recommended were similar – particularly those relating to awareness and capacity building in local communities and to policy harmonisation. To reduce duplication, some post-workshop consolidation of goals was carried out by the facilitator. Table 2, *Executive Summary*, shows the original list of goals which were laid out and prioritised by workshop participants and the table below (Table 3) shows how these goals were re-grouped under eight topic headings. Points allocated for urgency and importance

travelled with each goal, to provide a final score for each of the eight topics. This combined score was used to order the topics in the report. The final Urgency and Importance rankings for each topic are provided at the top of the relevant section.

Table 4: Consolidation of Goals into Eight Topics, Ranked by Amalgamated Urgency and Importance Scores.

	Ranked, Consolidated Topics
1	Security Security, Information Feedback Mechanisms (Total =75)
2	Human Activities (Total = 48)
3	Small Population Issues Captive Breeding, Resources and Research, Genetic, Demographic (Total = 46)
4	Communities Community Awareness, Community Issues, Prevailing Poverty Levels, Limited Alternative Livelihoods (Total = 40)
5	Policy Harmonisation Policy Harmonisation, Greater Inter-agency Cooperation (Total = 29)
6	Law, Judiciary, Corruption Lenient Penalties, Corruption (Total = 7)
7	Species Interaction (Total = 1)
8	Disease (Total = 0)

In the following sections, each topic or threat issue is described using text and statements recorded at the workshop, with some additional clarification provided during the editing process in some cases. Goals and recommended actions are listed beneath. Table 3 (see Executive Summary) can be used as a reference, to interpret the relative importance of the goals listed in each section, between sections and also of the corresponding actions. Goals do not align entirely because of some re-working by the groups following the initial prioritisation process, but in general this approach should provide an adequate guide.

The Kenya Wildlife Service, in consultation with other key stakeholders, will need to review this document carefully, in the context of available resources and existing commitments and policies, in order to finalise actions and time-lines. Nevertheless, this report should provide much of the material needed to complete a national strategy for mountain bongo conservation in Kenya.

Status Review

The Kenyan mountain bongo (*Tragelaphus eurycerus isaaci*) is an endangered *tragelaphine* antelope sub-species, endemic to the Aberdares, Mount Kenya, the Mau and Cheranganyis, with only a few individuals now only left in the Eburu, West Mau and Londiani forests. The species has undergone a drastic decline in all these forests with the exact number of animals not known, though inferential figures stand at less than 100 individuals mainly confined to the Aberdares (East, 1999; Reillo, 2002). In Mount Kenya the species was believed to have been extirpated in the early 1990s, but the Bongo Surveillance Project (BSP) reported sightings and obtained camera trap images of mountain bongo near Chehe and Ragati forest in the south west of the mountain. Various causes have been documented as having led to the bongo antelope decline, namely: habitat fragmentation, poaching, predation pressure, disease and human factors (Stanley 1969, Ralls, 1978; Schiller et al., 1995; Kock et al., 1999). However the genetic effects on the bongo have not been assessed. It is likely that a combination of genetic, physical and biological factors have led to the drastic decline of the bongo.

A bongo reintroduction strategy to provide animals for Kenya was initiated, and in 2004 14 female and 4 male bongos were acquired from AZA facilities in the USA and repatriated to the Mount Kenya Wildlife Conservancy (originally known as the Mount Kenya Game Ranch).

The project aimed to re-establish a viable and self-sustaining population in the bongo's native habitat. The repatriated bongos are currently in enclosures pending their release into the wild. Other conservation measures have been undertaken alongside the repatriation to conserve and understand various biological aspects of the bongo in the wild. These have been through concerted efforts between the government and various stakeholders, mainly involving conservation agencies. The government, through KWS, has realised the need to conserve bongo habitat and several mechanisms have been put in place that include: fencing of the Aberdare and Mt. Kenya forests, strict reinforcement of anti-poaching as well as anti-logging laws, engaging armed and experienced rangers to man the forest as well supporting community based projects and education aimed at sensitising people on the need to conserve the bongo (Butynski, 1999; Vanleeuwe et al., 2003).

The bongo species recovery strategy relies heavily on the Bongo Surveillance Project (BSP), which is a group of experienced trackers and rangers. The team tracks bongo movements in the forest. They follow signs feeding and drinking, resting and defecating. Their work is invaluable, as they have reported bongo in areas where they were thought to have been extirpated, such as in Eburu and Mt. Kenya. Current estimates of wild bongo populations are based on their reports which are based mainly on faecal counts and track sightings.

For successful species recovery there is a great need to understand the geographical and genetic processes that affect bongos in the wild. There is a need to ascertain the real bongo refuge sites so as to direct conservation efforts to areas with bongo herds.

The mountain bongo is listed as Critically Endangered by the IUCN/SSC Antelope Specialist Group (IUCN, 2003) and listed on Appendix III of the Convention on International Trade of Endangered Species of Flora and Fauna (CITES), which allows limited trade on the species. In Kenya, bongo hunting used to be licensed but since 1977, the species has been accorded protection by a ban on hunting.

The charisma and endangered status of the mountain bongo make it an ideal “flagship species” (Reillo, 2002), capable of attracting public concern and support for research and conservation efforts. Indeed, Aberdares National Park (ANP) has been branded under the bongo flagship and this is being used as a tool to market ANP as a tourist destination.

Classification

According to Huffman (2004) mountain bongo is taxonomically classified as follows:

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Artiodactyla

Family: Bovidae

Subfamily: Bovinae

Genus: Tragelaphus

Framework for species conservation within Kenya

In the wake of continual decline of important wildlife species in Kenya, KWS is in a continual process of formulating conservation strategies for threatened species in order to ensure their survival. These strategies will act as a guideline in the conservation and protection of the species. So far, national strategies for the conservation of the Grevy’s zebra and rhino, among others, have been successfully formulated.

The Kenya Wildlife Service has over the years geared efforts to the conservation of the mountain bongo. This has been through collaboration with its conservation partners, Mount Kenya Wildlife Conservancy (MKWC), the Bongo Surveillance Project (BSP) and other collaborating institutions. MKWC in collaboration with KWS has been involved in the conservation of the bongo since 1967. KWS has the legal mandate to conserve and manage wildlife in the country, hence the need to take the initiative to develop and implement the mountain bongo national strategy. In pursuit of this, a bongo taskforce was formed in the year 2008 that included species specialists and stakeholders to promote conservation efforts by formulating a National Bongo Conservation Strategy.

Distribution and Present Status of the Species in Kenya

Biology and conservation needs of the species

The bongo, *Tragelaphus eurycerus*, is the largest and heaviest African forest-dwelling antelope weighing up to 300kg. Its colour is bright chestnut red, becoming darker with age, and it has 12-14 transverse narrow white stripes on the shoulders, flanks and hindquarters. Both sexes have massive spiral horns with light yellowish tips, (Dorst and Dandelot, 1995). It is highly prized by game hunters and wildlife lovers alike for its rarity and stunningly handsome coat.

Two subspecies, lowland rain forest and eastern montane race, are known to exist. The range of the lowland rain forest subspecies, *Tragelaphus eurycerus eurycerus*, is discontinuous from the lowland rain forest of West Africa and Congo basin to the Southern Sudan. The eastern montane race, *Tragelaphus eurycerus isaaci*, on the other hand, has isolated populations existing in the montane forests of East Africa, namely Mount Kenya, the Aberdares and Mau forests. Populations in Cherengani Hills and Chepalungu forest became extinct 27 years ago (Klaus-Hulgi *et al.*, 2000).

Previously there was scant information on the ecology of the bongo due to the highly elusive nature of the species, which is armed with an acute sense of hearing and dwells in densely forested habitats coupled with rugged terrain, thereby making its behaviour difficult to observe. Most information came from former hunters (Kingdon, 1982) and a single captive breeding program at Mount Kenya Wildlife Conservancy. However, recent comprehensive studies (Estes *et al.*, 2010, 2008 & *in press*) conducted in the Aberdares, Mt. Kenya and Eburu have generated a wealth of information on bongo ecology. This strategy will build on the platform set up by the above studies.

Previously bongo was thought as entirely a browser. Hoffman and Stewart (1972) in Hillman & Gwynne (1987) described bongo as a 'tree and shrub foliage eater' and as 'selectors of juicy, concentrated foliage'. However recent studies found that in forest-bush land ecotones and forest glades, grass can make up a large proportion of bongo food intake (Klaus-Hugi *et al.*, 1999).

Feeding ecology of bongo

Area	Food material	Source
Forests of Kikuyu and Mau escarpments, Kenya.	"Nettles", <i>Arundinalia alpina</i> (bamboo leaves), bark of tree roots and saplings roots dug using its horns.	Stigand, 1909
Forests of Kikuyu and Mau escarpments, Kenya.	Charred wood, dead bark, burnt wood, <i>Mimulopsis sp.</i> ,	Stevenson-Hamilton, 1912, Percival 1927
Mau forest, Kenya	Bamboo, horns used to bring down higher vegetation.	Ionides, 1946
Mt. Kenya	<i>Parothesis communis</i> , <i>Senecio bieffrae</i>	Edmond-Blanc, 1960
Mau, Aberdares	<i>Mimulopsis solmsii</i> which is characterised by periodic toxicity	Simon , 1962
Cherangani Hills	Bark of wild croton (<i>Macrostachyus</i>), dead wood, and horns used to obtain food.	Tisti,1964
Aberdares	<i>Impatiens sp</i> , various creepers, not much bamboo	Roots pers com in Kingdon, 1982.
Treetop, Aberdares and ragati, Mt. Kenya	HERBS: <i>Hypoestis verticillaris</i> , <i>Justicia striata</i> , <i>Crassocephalum montuosum</i> , <i>Patochetus communis</i> . CREEPERS: <i>Senecio pelitianus</i> , <i>S. nandensis</i> , <i>Basella alba</i> , <i>Phytolacca dodecandra</i> . SHRUB: <i>Erythrococca bongenesis</i> .	J. Sutton pers. comm
Upper congo, Zaire	Does not graze, eats leaves and other herbage.	Christy, 1924
South West Sudan	Bark of <i>Ficus natalensis</i> ,leaves of saplings such as <i>Ceiba Sp.</i>	Brocklehurst, 1931
Gold coast, Ghana	Visits old farm feeding on sweet potatoes vines, cassava and cocoyam	Canadale, 1947
Belgian congo, Zaire	Shrub and tree shoots, buds, leaves, herbs beneath trees, stinging nettles; young tree roots obtained by digging with horns.	Van Den Bergh, 1961
Ivory coast west Africa	<i>Musanga sp.</i> , <i>Ceiba sp.</i> , and grass <i>Paspalum conjugatum</i>	Rall, 1978

Source: Hillman and Gwynne, 1987.

Historical distribution and status

The bongo's range extends across the rainforests of Central Africa, from Sierra Leone, Liberia, Ivory Coast, Cameroon, Central African Republic Congo and Zaire, Sudan, Kenya, Uganda, Tanzania and Ethiopia, **Fig 1.**, (Hillman, 1982). In Kenya there are isolated pockets hosting various metapopulations. These include the Aberdares conservation area, Mt. Kenya, Mau south west forest reserve; **Fig 2.**, Mt. Londiani and Cherangani hills (Estes, 1991). Lam (1997) found that within the Aberdares Conservation Area, bongo range included the northern salient and bamboo zone.

In the last few decades there has been a rapid decline in numbers (Estes, 1991) due to poaching and human pressure on habitat (Ralls, 1978). In Kenya, the population of bongo has been on a downward trend and indeed in some of the ranges local extinction has been reported. These include the Cherangani and Chepalungu hills.

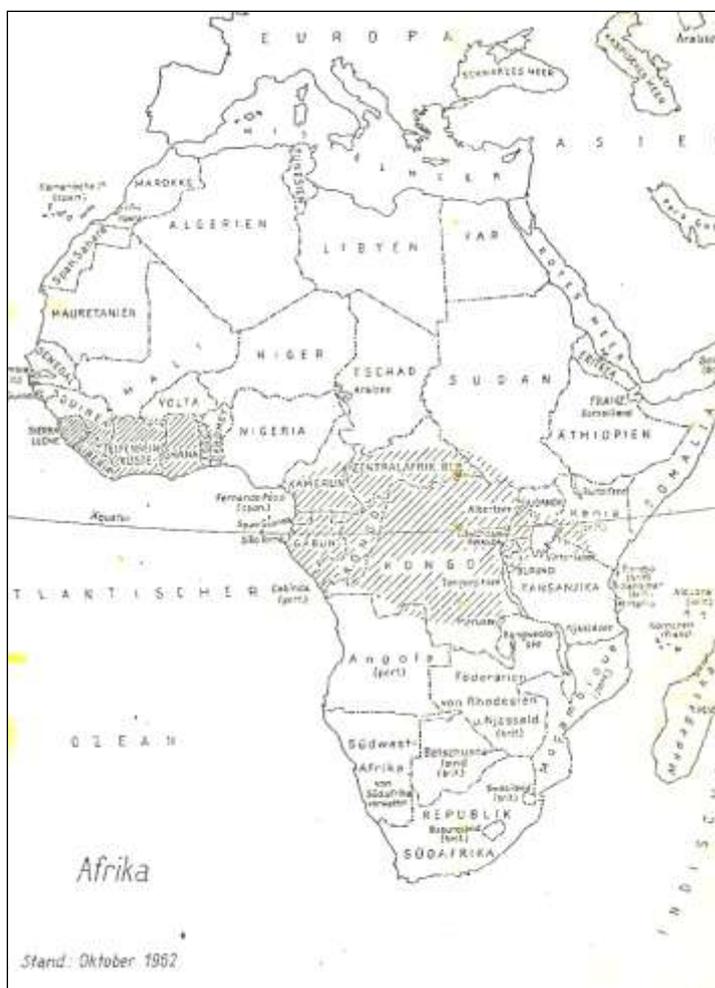


Figure 1: Historical bongo ranges in Africa (the checked area denotes bongo range).

Current distribution and status

The Aberdares National Park was previously a mountain bongo stronghold, evidenced by the enormous number of individuals known to have been captured from the area (Ronald 1964). Around 1975 the bongo population there numbered more than 500 individuals, however, the population has been on a downward trend (Kingdon, 1982). The current population is estimated to be about 50 -75 individuals and these are mainly in the northern sector (around Kanjwiri Hill) and the salient sector (around subheadquarters) with a scattered few of 2-4 animals per group dispersed across the eastern side, south to the Maragua River area.

Table 1: Trend in bongo population in the Aberdares National Park

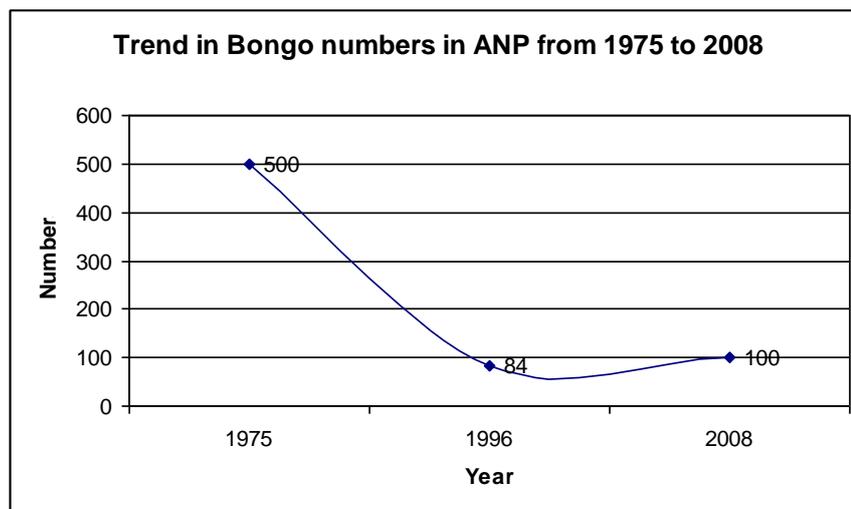
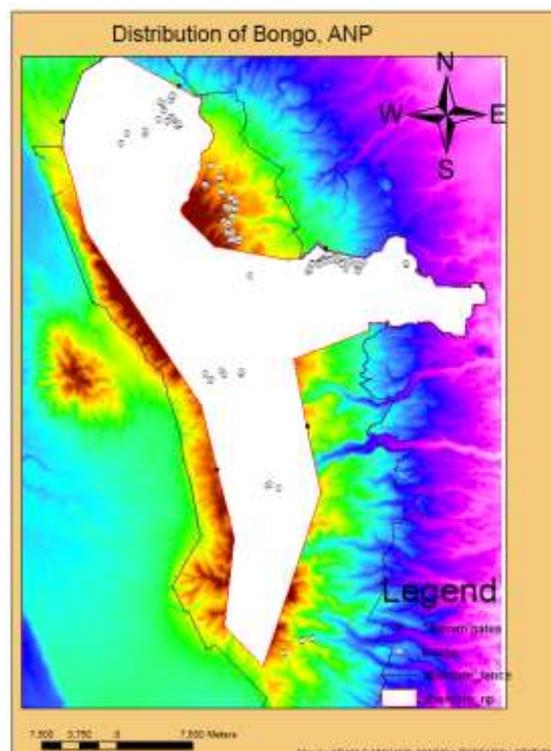


Figure 2: Distribution of bongo in the Aberdares National Park and Forest Reserve



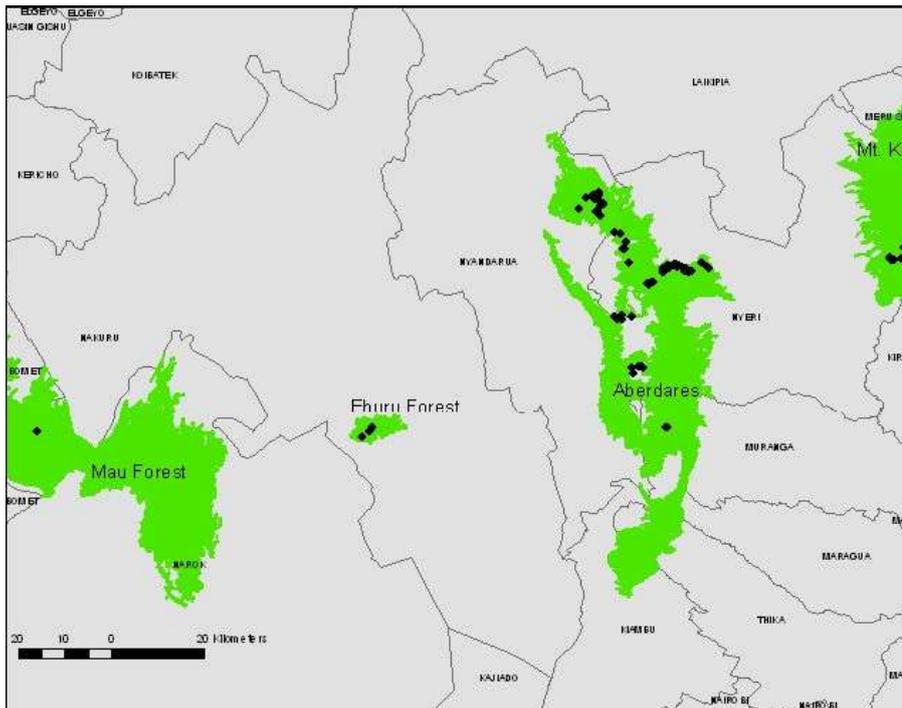


Figure 3: Current bongo ranges in Kenya (from right; Mt. Kenya, Aberdare, Eburu and Mau forests).

Population estimates of bongo in Kenya in the wild ranges are as follows:

Area	Population estimate
The Aberdares National Park and Reserve	100
Mt. Kenya National Park and Reserve	7
Eburru	9
Mau south west forest reserve	9
Mt. Londiani	Unknown
Cherangani	Unknown
Chepalungu	Locally extinct?
TOTAL	125

Threats to Bongos in Kenya

In the Aberdares, mountain bongo sightings along motorized tracks in the park and at the two game viewing lodges (Treetops and Ark) have declined drastically since the 1970s. An observed contraction of the bongo's range is perhaps one of the reasons for the decline. The density of trees around Treetops Lodge decreased by 98% between 1947 and 1993 (Waithaka, 1993). This has resulted in a huge change in vegetation structure. This may have made bongos move higher up to the primary or to less disturbed vegetation of the higher salient and even into undisturbed bamboo zone. Increased predation by introduced lions may have had a negative impact on bongo numbers and range (Musyoki, 1995). An observed increase in the number of lions in the salient coincided with a decline in the number of bongo. At first, the frequency of bongo visits to the Treetops and Ark Lodge waterhole decreased. But after 1975, bongos did not visit the Treetops waterhole whereas bongo last visited the Ark waterhole in 1989. Bongos were also frequently sighted by security patrol teams walking in the forests, but in the mid 1980s, reports of their sightings ceased. Trapping of bongo in the early 1900s may also have contributed to the decline. Within bongo ranges a series of pits were dug and a fence made of bamboo poles set up in between the pits to funnel animals in. The pits were concealed with bamboo leaves loosely held by feeble sticks and any animal stepping onto them would land in the pit. These pitfall systems were used for live capture, especially for zoo destined animals. To date the pits still lay agape in bamboo zone around sub headquarters and the southern Aberdares. At Karuiria and Kiandongoro areas, salt was used as bait at major salt licks where bongos were shot.

Threat	Threatened population(s)	Cause	Source
Predation	Breeding populations particularly the ones that co-exist with leopards, and hyaenas. Neonates are highly vulnerable to predation as females nearing parturition move to secluded areas away from the herd thereby making a trade off in group anti-predatory measures.	Increase in hyaena and/or leopard population.	Sillero-Zubiri, 1987.
Hunting (pot-hunting and professional hunting)	All populations	Dog-assisted hunting by local people for subsistence purposes. Though to a lesser extent sport hunting may have contributed to population decline.	Estes, 1991, Lam, 1997.
Habitat degradation and loss	All populations in the historic range of bongo. Habitat loss has resulted in a large reduction in the range of bongo.	Encroachment of bongo ranges. Heavy, sustained grazing by relatively high densities of domestic livestock resulting in	Estes, 1991 Waithaka, 1995.

Threat	Threatened population(s)	Cause	Source
		changes to the vegetation communities and erosion	
Diseases	Those populations in areas where there is a diffuse wildlife/livestock interface.	<ul style="list-style-type: none"> Rinderpest: The disease is believed to be responsible for the decline of bongo population in Mau Theileria: Out of 18 bongos repatriated from USA, 5 died of the disease. 	Estes, 1991. Davies 1992 http://www.animalorphangekenya.org Hunt <i>per comm</i>
Live capture	All population especially in Aberdares and Mt. Kenya where plenty of pitfall traps still lay agape up to date.	Licensed capture of bongo for zoos.	Personal observation, Ronald, 1964 Hunt <i>per comm</i>
Plant toxicity: Poisoning by 'Setyot' vines <i>Mimulopsis solsmii</i>	All population	Periodic toxicity of <i>Mimulopsis solsmii</i> that is reported to be lethal in the 1st–2nd year of the plant cycle. Though this is contentious.	Davis, 1993.

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Vision

Workshop participants were each asked to provide a theme or idea that they would like captured in a 50-100 year vision or *desired future state*, for mountain bongos in Kenya. A small working group synthesised these ideas and, with some amendments, the wider group agreed the following:

A **50-100 year vision** for mountain bongo in Kenya.

We envisage viable, free-ranging and genetically representative populations of mountain bongo, thriving across intact historic mountain ecosystem ranges, cherished by the Kenyan people and the global community.

Population size targets

Recognising:

- the lack of information on historic levels of bongo in Kenya and their interconnectedness
- the remaining uncertainty around current bongo numbers and location, particularly in west Mau and Londiani
- the difficulty of measuring current and potential carrying capacity

Accepting:

- the predicted rate of population growth in Kenya (1 million people a year)
- the need for economic stability for Kenya
- the impossibility of wide-scale human displacement from some areas

and Understanding:

- that the targets agreed are working targets
- that the targets are below recommended thresholds for long-term demographic and genetic viability
- that short-term viability of some if not all sub-populations, may rely on management of Kenyan stocks as an interconnected meta-population
- that incorporation of in-country and international captive populations into the meta-population could add to overall viability
- that not only the numbers of animals but their genetic qualities, must be take into account with regard to management.

The following working targets were agreed for bongo populations in Kenya over the next 50 years:

Region	Working Targets for Pop. Size	Region	Working Targets for Pop. Size
Aberdares	300	Londiani	20
Mt. Kenya	250	Chepalungu	20
Mau	100	Cherangani	20
Eburu	20	Mt. Elgon	20
Total for Kenya			730

Background

Securing a sufficient number of animals in the wild is a key component of species recovery. However, determining what constitutes a “sufficient number” can be complicated. Further, for a shy, forest mammal like the mountain bongo, monitoring numbers accurately to determine whether targets have been reached presents an even greater challenge. Despite these difficulties, numerical targets can play an important role in sustaining momentum and evaluating progress within a recovery programme.

It is important to note here that although numbers are the focus of this section, the quality of animals making up those numbers is also a key consideration, particularly in regard to their genetic make-up.

Discussions at the workshop aimed to reach consensus on what would constitute achievable population size targets for bongo over the next 50 years a) for Kenya as a whole and b) in each bongo sub-population.

Some rules of thumb suggested in the literature for setting targets are as follows:

N=100s – Short-term Demographic Viability (e.g. Schaffer, 1987)

All populations are subject to random variation in birth and death rate, and in sex-ratio. The smaller a population becomes, the greater the impact of these random processes on population growth and stability. In very small populations (e.g. 10s – 100s) the effect can be sufficient, on its own, to cause extinction.

N=500 – Short-term Genetic Viability (Franklin, 1980)

In small, closed populations inbreeding is likely to occur and with it, inbreeding depression. This generally manifests as a reduction in survival and/or reproductive rates and an increase in expression of rare genetic disorders. Inbreeding depression can be more severe where inbreeding accumulates quickly. A rule of thumb advocated by domestic breeders and adopted by conservation geneticists is to keep the rate of inbreeding below 1% per generation. This requires a genetically effective size (N_e) of 50 individuals. The genetically effective population size refers to the size of an “idealised” population that loses gene diversity through drift (or chance) at the same rate as the study population. Wild populations differ significantly from the characteristics of an idealised population and are thought to have an effective size of around 10% of the census size. Keeping the rate of inbreeding down below the 1% threshold then, is likely to require around 500 individuals.

N=5000 – Long-term Genetic Viability (Franklin, 1980)

Long-term genetic viability refers to a population’s evolutionary potential. That is, the potential for adapting to future environmental change. Genetic variation provides this potential. Small populations lose gene diversity quickly through drift (chance). In closed populations, gene diversity can be gained only through new mutations, which are relatively rare events. As a population grows, the rate at which gene diversity is lost through drift draws closer to the rate at which it is gained through mutation. Though debate continues, scientists generally converge on an effective size of 500 for this mutation-drift balance. Assuming as we did above, an effective to actual size ratio of

10%, a total wild population size of around 5000 individuals should ensure that genetic diversity, and therefore adaptive potential, is not in decline.

N=1377 – 5800 – Long-term Demographic Viability (Brook et al 2006; Traill et al 2007; Reed et al 2003).

Long-term demographic viability requires that a population can withstand both year-to-year environmental variation and also extreme environmental events (catastrophes) such as disease outbreaks and climate shifts. The numbers needed will depend on the scale and frequency of these environmental changes as well as the biology of the taxon.

N > 5800 – Ecological Functionality, Sustained Harvest etc. (Sanderson, 2006)

Other considerations may factor in setting target population sizes, such as the taxon's function in the ecosystem. Maintaining this function across a taxon's range (or former range) may require larger population sizes and densities than those required for population viability alone.

There are several potential approaches to assessing where bongo should sit within this range, and a number of pieces of additional information which could usefully inform decisions. These include:

Historical population levels in Kenya: returning numbers to a size that pre-dates current human-induced threats often presents a useful starting point for discussion. However there is scant information on previous numbers other than a 1975 estimate by Kingdon of 500 animals in the Aberdares. In addition, some sites such as Eburu have undergone extensive ecosystem changes in recent decades rendering historic levels impossible to achieve.

Potential carrying capacity: of existing occupied sites and of those from which bongo have become recently extinct could provide a more realistic estimate of what may be possible in the short to medium-term. Bongo Surveillance Project estimates of potential carrying capacity were as follows: Aberdares-600, Eburu-40, Mau-300, Mount Kenya-600. Additional recently vacated sites are considered to include: Cherangani (degraded), Londiani, Chepalungu, and Mount Elgon (disputed). No estimates of carrying capacity are available for these.

Theoretically possible growth rates: population models (Veasey, unpublished) suggest that if threats are removed and populations allowed to resume growth rates within the range observed in captive populations (7% per annum), bongo numbers could reach 3000 in 50 years. These calculations suggest that protection and habitat availability rather than bongo biology will be the constraining factors in recovery.

Further information requirements: to aid the development of numerical targets, more information is required regarding:

- the amount of suitable habitat across the former range of mountain bongos
- how much suitable habitat is required to support an individual bongo
- how observations by Lyndon Estes and others - that human disturbance can exclude bongo from otherwise suitable habitat – should be factored into carrying capacity assessments

- current wild census numbers for bongo across current and potential sites – to date resources have been insufficient to carry out exhaustive, systematic surveys of current and potential sites.

Agreed working targets

Despite information gaps, consensus was reached on the following working targets for bongo in Kenya over the next 50 years (see below). The targets take into account the realities of expected human population growth (a doubling of the current 40 million, to 80 million people, by 2050) and other inevitable consequences of continued economic growth.

Table 5: Working Population Size Targets for Bongo in Kenya over the next fifty years

Region	Current BSP Estimate	Working Pop. Size Targets
Aberdares	50	300
Mt. Kenya	15	250
Mau	30	100
Eburu	8	20
Londiani	-	20
Chepalungu	-	20
Cherangani	-	20
Mt. Elgon	-	20
Total for Kenya	103	730

Implications of Target Numbers

Assuming target population sizes are reached, different management approaches could have different consequences for population viability. Three scenarios are considered.

Scenario 1: proposed targets for Kenya are reached and populations continue to be managed as isolated units.

This would leave populations at Eburu, Londiani, Chepalungu, Cherangani and Mount Elgon at around 20 animals each and therefore vulnerable to short-term demographic stochasticity and inbreeding depression.

Populations at Mau, Mount Kenya and the Aberdares would be expected to have some resilience to demographic stochasticity but would remain vulnerable to inbreeding depression.

Scenario 2: proposed targets for Kenya are reached and populations are managed as a meta-population through strategic exchanges between populations.

If practically achievable this scenario would see the sub-populations drawn together demographically and genetically to form, in functional terms, a single unit of 730 individuals. A population of this size would be expected to show resilience to short-term demographic and genetic effects.

Scenario 3: proposed targets for Kenya are reached and the meta-population includes in-country and international captive populations.

With approximately 500 individuals in captive populations this would bring the meta-population total to around 1230 individuals, which starts to approach the lower end of the range for long-term demographic security. The inclusion of captive populations can confer some advantages in the area of genetic retention. Well-managed captive populations can retain genetic diversity more efficiently than wild ones of the same size because of the ability in captivity to manage pairings more intensively. At typical levels of genetic performance (Wild $Ne/N = 0.1$; Captive $Ne/N=0.3$) scenario 3 could result in an effective population size of approximately 223, which is more than required to keep inbreeding below detrimental levels and approaches half of the effective population size required for long-term genetic security.

Computer-based population modelling tools can be useful in examining population viability and optimal management scenarios in more detail.

Recommended actions

Scenario 3 was recommended by the Target Population Size working group and agreed in plenary, Recommended actions for moving towards this, including the inclusive management of global mountain bongo stocks as a meta-population and the integration of the European and North American managed programmes (EEP and SSP) into the national implementation framework for bongo conservation, are provided elsewhere in this document (see Small Population Issues and Implementation Framework).

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Security

Overarching goal: to secure, immediately, remaining wild populations from further poaching and disturbance.

Urgency ranking = 1

Importance ranking = 1

Background

Enhancing security is considered by stakeholders to be both the most urgent, and the most important, of all current bongo conservation issues. Poaching is active in bongo-inhabited areas and this poses a clear and present threat to remaining wild populations. Targeted protection is needed urgently. There is inadequate manpower, vehicles, and surveillance machinery at KWS for monitoring and protecting bongo habitat and the combined resources of the BSP do not meet the shortfall at present.

Forest adjacent communities are a vital source of intelligence on poaching and other illegal activities. At present, slow response times by authorities, lack of awareness of and access to hot-line numbers, and fear of reprisals (in some cases those providing reports have themselves become the accused), continue to hamper the mobilisation of this important resource.

- Goal 1.** To increase the number of well-staffed and well-equipped security teams.
- Goal 2.** To establish an Intensive Protection Zone (IPZ) at each remaining bongo site
- Goal 3a.** To increase awareness of KWS hotline numbers and set up new contacts and networks where needed (toll-free numbers).
- Goal 3b.** To encourage the community to use hotline numbers to report illegal activity through reward systems.
- Goal 3c.** To improve information sharing between stakeholders.

Goal	Recommended Actions	Responsibility	Time-line
1&2	<p>Establish an Intensive Protection Zone (IPZ) at each remaining bongo site, to be staffed by a permanent security team of specialist rangers. This will involve increasing the operations of the Bongo Surveillance Project (BSP) and existing community/KWS forces in the Aberdares, Mt Kenya, and Eburu, and extending them to west Mau and Londiani.</p> <p>IPZ forces will be actively engaged in anti-poaching field operations, to include daily patrols of boundaries and the interiors of each IPZ, de-snaring operations and enforcement via arrests of offenders.</p> <p>Training should be provided for both KWS rangers and community scouts for work in bongo areas, where this is needed.</p>	KWS, BSP, Community Forces, MKT	<p>IPZ in place within 6 months.</p> <p>Teams operational in 6-12 months</p>
3	<ul style="list-style-type: none"> • Gather existing hotline numbers to ensure they are working, and avail them to the communities on a wider scale through existing outreach programmes. 	KWS, BSP, WHWF, MKT, senior warden	6 months

	<ul style="list-style-type: none"> • Contact network providers of toll-free numbers used in reporting illegal activity by community members. Provide tie-ins with providers for collaboration, in the form of advertising /publicity. • Establish a reward system for reports leading to arrest and successful prosecution. 	of each national park.	
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Human Activities

Overarching goal: to control legal activities, and to stop illegal activities, that destroy bongo habitat.

Urgency ranking = 4

Importance ranking = 2

Background

[“Human activities” in this context are activities carried out by those living beyond forest-adjacent communities and that will therefore require solutions over-and-above those community awareness and support programmes advocated elsewhere in this document].

Uncontrolled human activities – both illegal and legal, continue to result in loss of habitat for bongo. Activities include livestock incursions, tourism infrastructure development, forest fires, forest resource extraction (e.g. water and timber) and geothermal energy production. All of these demands are expected to increase as the population of Kenya expands.

Kenya has increasing energy requirements and ways must be found to reconcile conservation objectives with the need to build economic security for the country. Of particular importance to bongo conservation is the current exploration of geothermal energy in Eburu Forest, the location and extent of which has been difficult to ascertain. This could have adverse effects on bongo habitat and immediate safeguards are needed. One of the biggest concerns is the conduct of infrastructure contractors, some of whom have, in the past, taken bush meat indiscriminately. Security must be tightened at Eburu during construction, which is due to start in 2010. A tree nursery has been established by Kengen to assist forest rehabilitation after the disturbance.

Tourism infrastructure within national parks is expected to increase to broaden the income base of KWS and KFS. It is important to ensure that the required Environmental Impact Assessments (EIAs) attach sufficient importance to the protection of critical bongo habitat. Of current importance to bongo is the proposed Mount Kenya development, a management plan for which is in the final stages of development.

Action to protect habitat against human activities needs to be well-targeted through zonation and demarcation of critical bongo habitat. To inform this, comprehensive mapping of existing and potential bongo habitats is needed, alongside mapping of the locations where damaging human activities are evident or planned. Some of this work has been done by the BSP but more detail is needed and the information must be widely distributed within government organisations responsible for controlling activities in these areas.

Goal 1. To control legal and to stop illegal activities that destroy bongo habitat.

Goal	Recommended Actions	Responsibility	Time-line
1	Stop illegal activities in bongo ecosystems.	KWS, KFS	Ongoing
	Stop illegal harvesting of wood products	KFS	1 year
	Control/regulate consumptive utilisation of bongo habitats (e.g. grazing, cultivation) as per site-specific plans.	KFS	1 year
	Zone and demarcate controlled utilization areas.	KFS	1 year
	Review existing ecosystem management plans to incorporate protection for critical bongo habitats.	KWS, KFS	3 years
	Establish guidelines for undertaking comprehensive mapping of current and potential bongo habitats.	NBMC	6 months
	Undertake comprehensive mapping of current and potential bongo habitat.	NBMC	2 years
	Continuously monitor and survey bongo and their habitats.	BSP	Ongoing

Small Population Issues

Overarching goal: to use science-based methodologies and all available resources to address the vulnerability of small, isolated bongo populations.

Urgency ranking = 3

Importance ranking = 3

Background

Small isolated populations have an increased risk of decline and extinction due to demographic events (fluctuations in sex ratio, birth and death rates, environmental variation and random catastrophic events) and genetic influences (inbreeding depression, reduced genetic diversity and consequent reduced ability to adapt to change at the population level). All remaining wild bongo populations are isolated and assumed to fall below levels required for long term survival without growth.

Captive management programmes within and outside Kenya offer a potentially valuable source of animals for supplementing wild populations. However, this will require careful management. Failure to manage captive breeding appropriately from a genetic and demographic perspective, and failure to select appropriate target animals and recipient populations for reintroduction, translocation or supplementation, could harm aspirations to conserve gene diversity and population viability in wild populations, in the longer-term.

The degree of genetic differentiation between remaining wild populations is unknown; as a result their relative importance from a conservation genetics perspective is also unknown. There are currently information gaps relating to the pedigree of the current Nanyuki herd. Genetic profiling is required, of all bongo populations, both wild and captive, to clarify relatedness, diversity, priority and disease susceptibility.

Lack of information about the number and location of remaining wild populations will decrease the effectiveness of conservation activities aimed at reducing their vulnerability. Methodologies for counting forest mammals and for estimating carrying capacity are currently imperfect due to the challenging nature of the environment. Bongo Surveillance Programme (BSP) data are currently the most robust nationwide population estimates available for bongo. Figures are based on a combination of advice from expert trackers, camera trap observations and DNA analyses of faecal samples. However, the accuracy of these estimates is not known and lack of resources has so far precluded more extensive, systematic studies. Methodologies should continue to be refined and population estimates validated, though this must not delay action.

Goal 1a. To identify small population-related conservation and research needs over the next five years, construct budgets and identify funding sources within eight months.

Goal 1b. To secure funds to implement the conservation/research action plan within two years.

- Goal 2a.** To genetically profile 50% of all remaining bongo, both wild and captive (based on prevailing population estimates), within 6 months.
- Goal 2b.** To develop a strategy which best secures genetically viable populations of mountain bongo which are as representative as possible of historic populations, utilising best practice and all available data, within 1 year.
- Goal 3a.** To provide more accurate estimates of wild populations within six months (using the profiling data to assist).
- Goal 3b.** To develop a strategy which best secures demographically stable populations of mountain bongo, being mindful of genetic considerations and utilising best practice and all available data, within one year.
- Goal 4a.** To achieve best practice in the management of all captive bongo populations – in-country and international - in support of bongo in Kenya.
- Goal 4b.** To ensure best practice in all reintroduction and translocation activities in support of bongo conservation in Kenya.
- Goal 5.** To develop “habitat suitability” criteria for bongo, and to conduct a thorough ecological assessment of potential sites based on these criteria, to inform future reintroduction and translocation initiatives.

Goal	Recommended Action	Responsibility	Time-line
1	Identify research needed (see also under genetic and demographic requirements) over the next five years to support conservation of bongo in the wild.	KWS Senior Research Scientist, Mountain Area (James Mathenge) and BSP Senior Scientist (Adam Mwange).	8 months
	Secure funds to implement research needs.	KWS, BSP	2 years
2	Collect samples representative of at least 50% of all mountain bongo worldwide and have these independently analysed with the explicit remit of developing an evidence-based, global metapopulation management plan for mountain bongo.	<u>Sample analysis:</u> Paul Reillo and American Museum, University of Uppsala, Dr Muya. <u>Collection of data in-situ and transfer of samples to research sites:</u> BSP <u>Determination of other logistical details and responsibilities:</u> BTF/NBMC	6 months
3	Collect accurate demographic, ecological and distribution data from bongo in the wild through localised studies.	KWS Senior Research Scientist, Mountain Area (James Mathenge) and BSP Senior Scientist (Adam Mwange).	6 months
	Develop a strategy which best secures demographically stable populations of mountain bongo in the wild, using best practice and all available data.	KWS	1 year
4	Draft a comprehensive management plan for the MKWC release project detailing:	MKWC	6 months

	<ul style="list-style-type: none"> • how the captive population will be managed to support release • how release will be carried out • how post-release monitoring will occur 		
	Draft a meta-population plan for all captive (in-country and international) and wild populations, documenting intended genetic and demographic management, disease risk management and reintroduction strategies.	NBMC/BTF with EEP, SSP, MKWC	9 months
	Request the review and, ultimately, the endorsement of the work described above by a neutral, independent, expert review panel.	BTF/NBMC	Within 1 year
	<p>Convene an independently facilitated workshop to achieve consensus within the Bongo Task Force on the captive management and reintroduction-related issues described, in particular:</p> <ul style="list-style-type: none"> • how best to manage the Nanyuki herd towards the goal of conserving genetic diversity within Kenya; • how best to incorporate in-country, international and wild populations into a global meta-population supporting long-term conservation goals, including strategies for genetic, demographic and disease risk management; • how best to manage current and future reintroduction and translocation efforts. <p>This workshop would be informed by the draft documents prepared (see above), by the peer review of those documents, and by the results of proposed genetic analyses (see below).</p>	BTF/NBMC	Within 1 year
	Apply best practice captive management (demographic, genetic, husbandry, disease risk management) to all in-country and international bongo populations.	EEP, SSP, MKWC	Ongoing once above plans in place.
	Apply best practice in reintroduction and translocation through close adherence to the IUCN Guidelines for Reintroduction.	KWS, NBMC	Ongoing once above plans in place.
5	Instigate a process for developing “habitat suitability” criteria for bongo, and conducting a thorough ecological assessment of potential sites based on these criteria, to inform future reintroduction initiatives.	BTF/NBMC	1 year

Communities

Overarching goal: to optimise the participation in bongo conservation, of communities living adjacent to bongo habitat.

Urgency ranking = 2

Importance ranking = 4

Background

A major challenge for bongo conservation today is that forest adjacent communities continue to rely on forests and forest products for their livelihoods. For many, adjacent forests are the only sources of fuel, pasture, construction materials and even food. Additionally, many are unaware of the negative impact that their actions have on bongo.

Prevailing poverty levels in forest adjacent communities combined with limited sources and high costs of farmed protein such as beef and goat, cause dependence on bush meat such as bongo, bushbuck and other wild ungulates. Further, limited alternative livelihoods in local communities leads to continual encroachment of bongo habitat and opportunistic poaching.

Community programmes are already underway in forest adjacent communities. For example, the BSP currently supports 9 school wildlife clubs for specific education on saving the environment for the endangered bongo, promoting alternatives for water storage, fuels, higher yielding crops, tree planting and alternative forms of protein. Each Club has 40 pupils and the outreach is estimated at 500-1000 people in each school area.

Though direct evidence is difficult to gather, the experience of the BSP and of other agencies working in these communities supports the assumption that raising awareness of the plight of bongo, and of alternative livelihoods, can be beneficial in deterring poaching and ultimately encourage wildlife conservation. Direct feedback from communities has also been positive. However, more of this work is needed.

Valuable themes for alternative livelihood programmes include: use of alternative cooking fuels that do not rely on the forest, such as solar power, sawdust and cow dung; appropriate energy saving technologies; alternative methods of water harvesting; alternative, and swift methods of producing timber outside the forest.

Forest adjacent communities are also an essential source of intelligence for enforcement and anti-corruption programmes. These are covered, respectively, in the sections on Security and on Law, Judiciary and Corruption.

- Goal 1.** To increase food security by providing alternative means of cultivation (e.g. sack gardening) and alternative sources of protein (e.g. fish farming, poultry, rabbit farming).
- Goal 2.** To educate local communities about the consequences of bush meat consumption, such as the risk of disease, the value of wildlife, and the legal implications of poaching threatened species.

Goal 3. To diversify livelihood support activities at the community level, that is, promotion of nature-based income-generating activities.

Goal 4. To ensure that communities living adjacent to mountain bongo habitat are involved in bongo conservation through education, awareness and livelihood improvement.

Goal	Recommended Action	Responsibility	Time-line
1	Build community self-sufficiency in alternative protein sources: <ul style="list-style-type: none"> • identify bush meat hotspots in bongo habitat areas; • identify/establish at least 2 community based organisations (CBOs) in each bongo habitat area; • identify NGOs and agencies working in the area and doing similar work e.g. Fisheries Dept, KWS, MKT, BSP, WHWF; • appraise CBOs to identify suitable projects and capacities/abilities; • draft suitable proposals for funding with all relevant stakeholders; • train CBO members where needed. 	KWS, KFS, MKT	3-5 years
2	Educate about the consequences of bush meat consumption: <ul style="list-style-type: none"> • identify NGOs and agencies providing environmental and wildlife education; • coordinate efforts to cover a wider area, eliminate duplication and specifically target poaching hotspots and bongo habitats. 	KWS, WHWF, MKT	2-5 years
3	Incorporate alternative livelihood support activities into the actions above.	KWS, WHWF, MKT	2-5 years
4	Develop bongo information, education and communication materials.	KWS	4 months
	Create awareness through in-house and outreach programmes.	KWS	Ongoing
	Identify appropriate nature-based enterprises and promote: <ul style="list-style-type: none"> • alternative livelihoods in community areas with focus on high value options; • sources of cooking fuels that do not depend on forest products; • niche market-based farm forestry; • appropriate energy saving technology. 	KFS	1 year

Policy Harmonisation

Overarching goal: to ensure that all policy issues that threaten conservation of mountain bongos and their habitats are harmonised.

Urgency ranking = 5

Importance ranking = 5

Background

There are many areas of conflict in mandate and in sectoral implementation that have led to bongo habitat loss. A prime example is the dual gazettement of forests which brings into conflict the mandates of KWS and KFS.

Most bongos are found in forest reserves, the management of which falls under the auspices of KFS. Though the mandate of KFS is the conservation and sustainable management of forests and allied resources, its main role is in managing forest access to people, many of whom rely on forest resources as their main source of livelihood. KFS has no specific mandate to protect individual forest species – this responsibility lies with KWS. Integrating the species-specific needs of mountain bongos with broader forest use schemes is proving difficult as a result of this split responsibility between agencies.

The Forests (Participation in Sustainable Management) Rules, 2009, were gazetted to encourage private sector and forest community participation in forest management, directed towards garnering greater community support for forest conservation. In the new rules, forest-adjacent communities participate in forest management by forming Community Forest Associations (CFAs). These associations then work with KFS to develop Community Forest Management Plans and are then assigned forest user rights by entering into Community Forest Management Agreements with KFS. Formulation of Community Forest Management Plans (and forest management plans in general) is a critical point in terms of conserving bongos as influence by informed advocates at this point could help ensure that critical bongo habitat is zoned and managed appropriately.

A previous MOU between KWS and KFS aimed at policy harmonisation expired recently and was largely unsuccessful. A committee is reviewing the MOU before its re-establishment to find ways in which it can be more sensitive to conservation issues.

Other examples of policy conflict include Environmental Impact Assessments which may consider wildlife in general but do not specifically take account of endangered species.

Policy harmonisation at the national level would benefit from a dedicated “National Bongo Management Committee” (NBMC).

At ground level and at each site there is an urgent need for harmonisation of KWS and KFS policies. Across sites a universal “Code of Conduct” to help deter visits with dogs, rubbish dumping and other potentially damaging activities, would be a useful aid to changing behaviour in those areas.

Goal 1. To ensure that all policy issues that threaten conservation of bongos and their habitats are harmonised.

Goal 2. To encourage greater collaboration between government agencies and other stakeholders – that is, to encourage participatory management planning.

Goal	Recommended Action	Responsibility	Time-line
1	Establish a National Bongo Management Committee (NBMC)	BTF	3 months
	Harmonise KWS and KFS activities at bongo sites.	NBMC	6 months
	Develop and agree a set of rules or “Code of Conduct” for human behavior in critical bongo habitat.	NBMC	1 year
2	NGOs and other organisations, with Kenya Forest Working Group, to lobby for better management of forest areas.	KWS/KFWG	1 year
	Establish a liaison office/officer with help of KWS/KFS/Kenya Forest Working Group /Local NGOs.	KWS/KFS/KFWG	1 year
	Run two workshops to establish an MOU and identify a contact from each of the collaborators who can be responsible for recording and sharing information.	KWS/KFS/KFWG	1 year

Law, Judiciary and Corruption

Overarching goal: To enhance application of judicial influence and the rule of law to mountain bongo conservation.

Urgency ranking = 6

Importance ranking = 6

Background

As a result of an outdated Wildlife Act penalties for wildlife poaching are too lenient and do not act as a deterrent. Poachers have been observed to return to poaching just weeks after they are fined or given community service sentences. This is a threat to bongo.

A new Wildlife Act is awaiting parliamentary approval. This lists all nationally threatened species by name, threat status (e.g. Vulnerable, Endangered) and associated penalty. The Act is expected to enhance deterrence once in place.

Raising awareness within the judiciary, of poaching issues and its impact on species conservation, may encourage more punitive sentencing and is considered to have had some beneficial effects in the Mount Kenya region.

Rampant corruption and misappropriation at all levels of agencies and institutions is a major obstacle to the apprehension, prosecution and sentencing of poachers. Individuals and communities living along forest boundaries should be aware of the role of the Kenya Anti-Corruption Commission (KACC) and be encouraged to report inappropriate activities to it. Raising awareness of this could usefully be coupled to promotion of hot-line numbers for reporting other illegal activities (see Security)

Goal 1. To sensitise and engage judiciary on the critical status of the mountain bongo.

Goal 2. To encourage both individuals and community organisations living along the boundaries of the forest to report to KACC.

Goal	Recommended Action	Responsibility	Time-line
1	Collate informative statistics on poaching and its effect on the conservation of endangered species, for distribution to the judiciary community.	KWS, KWFG, KFS, MKT, BSP	1 year
	Tie this in with the workshops recommended in the section on Community, which are aimed at encouraging greater cooperation between government agencies		1 year
2	Use existing field coordinators (described under Community) as well as KWS personnel to sensitize the community on their rights and how they may report illegal activity in the areas they live in.	KWS, KWFG, KFS, MKT, BSP	6 months
	Distribute information (on KACC) when		

Goal	Recommended Action	Responsibility	Time-line
	distributing information on anti-poaching hot-line numbers (see under Security) and running community education visits (see under Community).		

Species Interaction

Overarching goal: to minimise the negative impacts of other species, on bongo.

Urgency ranking = 7

Importance ranking = 7

Background

Species other than humans are causing loss of bongo and associated habitat. Threats have included: frequent livestock incursion during drought periods; fencing of parks like the Aberdares, which causes a concentration of elephants and consequent habitat destruction; and predation by, for example lions, which were introduced to the Aberdares.

Though fencing is generally agreed to have had a positive conservation impact it can lead to management problems. For example, where elephants are confined to small areas they will significantly degrade habitat. The opening up of migratory corridors in the Aberdares and restoring connectivity in the Mau and Eburu may remove some of the pressure.

Where potential predators of bongo (e.g. lions, hyenas) are occurring at unnaturally high densities or in areas they would not naturally inhabit, measures will be needed to protect bongo. Lions that were introduced to the Aberdares because they were causing conflict elsewhere, are now sufficiently well controlled but this must continue. There should be no further translocations of predators to areas where they would not normally be found.

In considering remedial measures it is important to bear in mind the need to harmonise conservation strategies for all species involved. Management measures aimed at protecting bongo should not run contrary to conservation strategies for other species.

More information is needed about species interactions. A species-habitat interaction monitoring programme should be established under the responsibility of the KWS and involving universities.

Goal 1. To ensure that all species interactions negatively affecting bongo are minimised within five years.

Goal	Recommended Action	Responsibility	Time-line
1	Develop and implement a species-habitat interaction monitoring programme.	KWS	6 months
	Open up migratory corridors in Aberdares and restore habitat connectivity in Mau/Eburu.	KWS/KFS	5 years
	Continue management of lion numbers in Aberdares National Park	KWS	Ongoing
	Manage populations of mega herbivores and other predators actively in bongo areas.	KWS	Ongoing

Disease

Overarching goal: to optimise the assessment and management of disease risk to wild bongos.

Urgency ranking = 8

Importance ranking = 7

Background

Threats from existing as well as from unknown and emerging disease cannot be ruled out for bongo in Kenya, particularly where there is interaction with livestock. For example, rinderpest outbreaks have historically started in domestic livestock and impacted wild ungulate populations (Kenya is now declared rinderpest free). Anthrax is endemic in Kenya and affects all wild herbivores. Theileriosis or “corridor disease” and “East Coast Fever” are resident in buffalo and cattle and could spill over into other populations.

All bongo mortalities should be investigated through diagnostic necropsies. Mortality events in related species should be monitored and necropsies performed as necessary, and the bongo conservation programme should remain up to date on regional District Veterinary Officers (DVO) regular reporting of livestock diseases.

Bongos translocated from one area to another, or imported from outside Kenya, may arrive with diseases novel to the resident population or be exposed to unfamiliar diseases. In the event of importation or translocation and in accordance with IUCN guidelines, source and destination populations should be health-screened and appropriate risk assessment and management protocols set in place.

Imported mountain bongos have been shown to be immunologically naive and to succumb to indigenous disease with theileriosis being a recognised problem. Further work is needed on the impact of disease on animals imported from outside Kenya with the aim of significantly reducing the incidence of mortality in future repatriation events. Recent Kenyan licensing of a cattle vaccination strategy involving “infect and treat” could be an initial area of investigation for immunisation of mountain bongo.

Goal 1. To remain abreast of DVO reporting, investigate all bongo mortalities, performing diagnostic necropsies where possible, and investigate mortality events in related species.

Goal 2. To reduce mortality of any future bongo imports.

Goal 3. To carry out health screening of source and destination populations and perform risk assessments in accordance with IUCN Reintroduction Specialist Group guidelines.

Goal	Recommended Actions	Responsibility	Time-line
1	Remain up-to-date on regional DVO reports relating to livestock disease events.	KWS regional warden and KWS DVS	Immediate and continuous
	Rapidly respond and investigate all reported bongo mortalities and report observations to KWS Dept. Vet. Services.	Regional KWS ranger staff	Immediately and continuous.

	(Note: investigation should be same day or within 12 hours)		
	Perform diagnostic necropsies to the extent possible with respect to carcass condition. (Note: DVS staff is immediately mobilised and necropsy accomplished as soon as possible).	KWS DVS	Immediately and continuous.
	Investigate and necropsy mortality events in related species and range areas.	KWS DVS	Immediately and continuous.
2	Develop a response to Theileria infection of mountain bongo including test validation, vaccine methods, and treatment modalities.	KWS DVS, AZA or EAZA veterinarians responsible for the source population.	Before next importation.
3	Develop guidelines for relevant disease profiles, testing protocols and sample acquisition. Acquire samples and perform testing. Construct and perform risk analyses on results.	KWS DVS	Before any animal translocation.

Implementation Framework

The following implementation framework, developed by Charles Musyoki, based on working group recommendations, was endorsed by workshop participants at the end of day three.

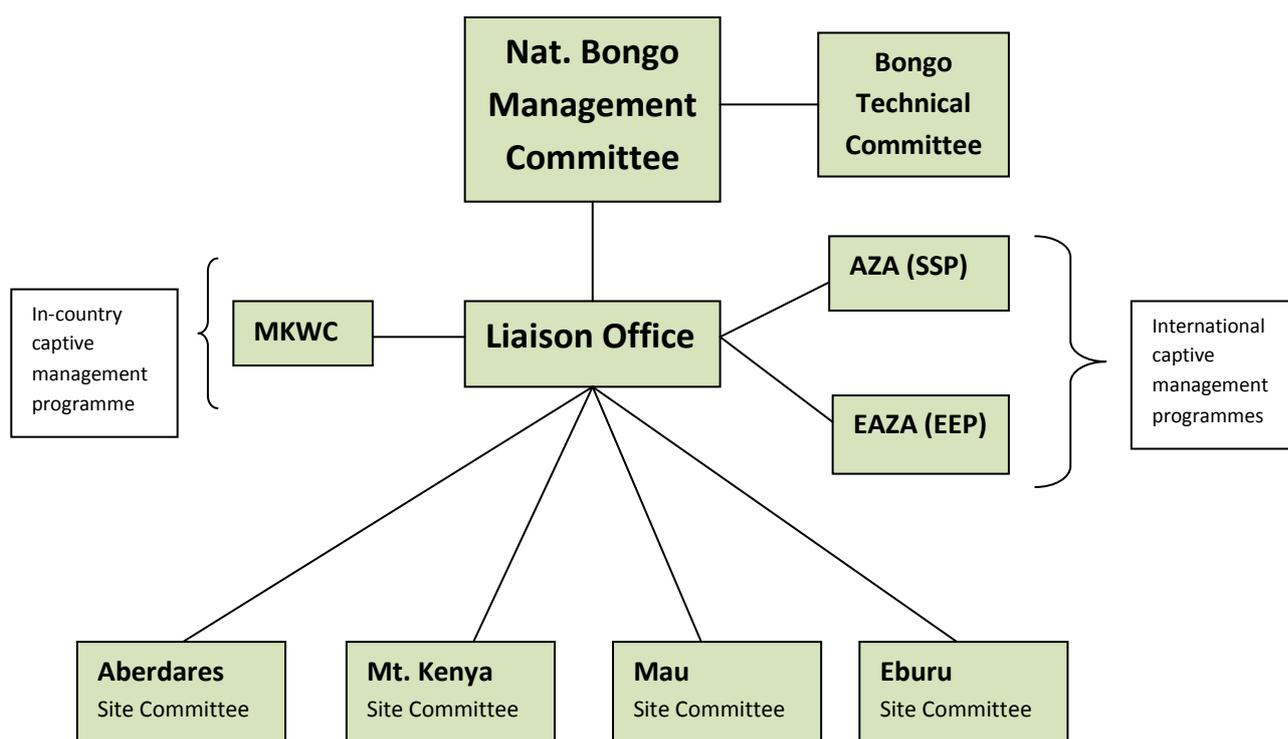
Responsibility

The Kenya Wildlife Service is the appropriate body to oversee implementation of the national strategy for bongo conservation in Kenya. Success will rely heavily on close collaboration with sister government agencies, local communities and other stakeholders, and on the knowledge, skills and resources of non-government organisations committed to bongo conservation.

Implementation framework

Based on an analysis of needs, an implementation framework was developed to facilitate delivery of the national strategy for bongo conservation in Kenya. The key elements of this framework are illustrated in Figure 4.

Figure 4: *Intended Implementation Framework for Delivery of the National Strategy for Bongo Conservation in Kenya.*



Details of this structure are as follows:

- 1) A National Bongo Management Committee will provide high-level oversight, monitoring and evaluation of strategy implementation. The Committee will be co-chaired by KWS and KFS to ensure a harmonised approach.

- 2) A National Bongo Conservation Liaison Office will be established to provide ongoing coordination and rapid response to emerging issues. The staffing of this office will be pivotal to the success of the programme and positions will be advertised nationally to ensure the best pool of candidates.
- 3) Site Committees will be established for Mount Kenya, Aberdares, Mau, Eburu, Cherangani and any other areas found to be supporting bongo. Each committee will comprise key local stakeholders to encourage harmonisation and coordination of policies and activities, particularly those of KWS and KFS.
- 4) A National Bongo Technical Committee will be appointed by the NBMC to provide advice as needed. The NBTC will take its remit directly from the NBMC and will report directly to it.
- 5) Local and international captive management programmes (EEP, SSP and the facility at Nanyuki) will be included in the framework as individual sites, each with its own management plan and committee. These programmes will be integrated into the broader framework through their representation on the NBMC and Technical Committee.
- 6) Once this framework is in place the existing Bongo Task Force will be disbanded and its members distributed amongst other elements of the framework.
- 7) Terms of reference will be established for each element of the framework.
- 8) The strategy and implementation framework will be considered complete following their endorsement by all stakeholders, inclusive of the community. Implementation will begin following endorsement by the KWS and KFS Boards.

Table 6. List of Recommended Actions (by Topic)

Note: Time-lines are measured from the document endorsement date.

TOPIC: SECURITY					
<p>Threat: Inadequate security resulting from lack of; funds, specialized teams, equipment, intelligence and oversight are a threat to bongos.</p> <p>Goal 1. To increase the number of well staffed & well equipped mobilization teams.</p> <p>Goal 2. To establish an Intensive Protection Zone (IPZ) for each remaining mountain bongo site.</p>					
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
<p>Establish an Intensive Protection Zone (IPZ) at each remaining bongo site, to be staffed by a permanent security team of specialist rangers This will involve increasing the operations of the Bongo Surveillance Project (BSP) and existing community/KWS forces in the Aberdares, Mt Kenya, and Eburu, and extending them to west Mau and Londiani.</p> <p>IPZ forces will be actively engaged in anti-poaching field operations, to include daily patrols of boundaries and the interiors of each IPZ, de-snaring operations and enforcement via arrests of offenders.</p>	KWS, BSP, MKT	<p>IPZ in place in 6 months</p> <p>Teams operational in 6 months - 1 year</p>	Notable reduction in poaching and more frequent sightings of bongo and animals comfortable within specific ranges	KWS, BSP, MKT	<p>3 teams of 6 community scouts & 12 extra KWS rangers.</p> <p>COSTS: Scouts training - 7,200,000 KWS training - 1,200,000 Field costs - 6 teams of community scouts - 54,000,000</p>
<p>Training should be provided for both KWS rangers and community scouts for work in bongo areas, where this is needed.</p>					<p>ESTIMATED COSTS: 62,400,000 (USD 780K)</p>
<p>Threat: Poor information feedback mechanism to supply information on illegal activity to authorities on poaching activity is a threat to bongos.</p> <p>Goal 3a. To increase awareness of KWS hotline numbers and set up new contacts and networks where needed e.g. toll free numbers.</p> <p>Goal 3b. To encourage the community to use of hotline numbers to report illegal activity (reward system).</p> <p>Goal 3c. To improve information sharing between stakeholders.</p>					

Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
Gather existing hotline numbers to ensure they are working, and avail them to the communities on a wider scale; encourage communities to report illegal activity	BSP / WHWF / MKT with the Senior Warden of each National Park / Reserve	6 months	Increasing responses on the hotlines, improved responses to calls by KWS and attached units, reduced illegal activity	BSP / WHWF / MKT with KWS and involving communities on forest boundaries.	Time, travel costs, printing (posters & flyers) TOTAL ESTIMATED COSTS: US\$ 2,500.00
Contact network providers on toll free numbers for use in reporting illegal activity by community members. Provide tie-in with providers for collaboration in the form of advertising / publicity	BSP / WHWF / MKT with the senior warden of each national park / reserve	Over time	Protected forests.	Safaricom / Zain etc.	
Establish reward system for reports leading to arrest and successful prosecution					

TOPIC: HUMAN ACTIVITIES

Threat: Uncontrolled illegal and legal human activities such as livestock incursions, infrastructure development, forest fires, forest resource extraction and geothermal production have led to loss of bongo habitats.

Goal 1. To control legal and stop illegal human activities that destroy bongo habitat.

Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
Stop illegal activities in bongo ecosystems	KWS,KFS	Ongoing	-	-	-
Stop illegal harvesting of wood products	KFS	1 year	-	KWS, CFAs, NEMA	-
Control/regulate consumptive utilisation of bongo habitats (e.g. grazing, cultivation) as per site-specific plans.	KFS	1 year	-	KWS, CFAs, on livestock, Provincial Administration	-
Zonation and demarcation of controlled utilization areas	KFS	1 year	-	KWS,BSP, CFAs	-
Review existing management plans to incorporate critical bongo habitats	KWS & KFS	3 years	-	Provincial Admin, KP & CFAs	-
Undertake comprehensive mapping of current and potential bongo habitat	NBMC	2 Years	-	KFS, KWS, BSP, Bongo Task Force, Private Land Owners	-
Continuous monitoring and surveillance	BSP	Ongoing	-	KWS, KFS, other	-

of bongo and the habitats				NGOs, CFAs	
TOPIC: SMALL POPULATION ISSUES					
<p>Threats: Insufficient finances to implement appropriate conservation and research activities increase the risks to small isolated populations. Insufficient research (including census data collection) decreases the effectiveness of conservation activities in securing small isolated populations.</p> <p>Goal: Research and Resources (small population-related):</p> <p>Goal 1a. To identify bongo conservation and research needs over the next five years, construct budgets and identify funding sources within eight months.</p> <p>Goal 1b. Secure funds to implement the conservation action plan within two years.</p>					
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
To identify research needs (see also under genetic and demographic goals etc) over the next five years to support the conservation of bongo in the wild, and secure funds to implement that within two years.	Senior Research Scientist Mountain Area, James Mathenge; KWS, BSP senior scientist Adam Mwange.	8 months for costed strategy, 24 months for secured funds.	Prioritised and costed research strategy developed, funds in place to support the top three priorities as a minimum. Prioritised on the basis of their expected impact on bongo conservation.	-	Wages already covered by BSP and KWS.
<p>Threats: Small isolated populations have an increased likelihood to suffer from genetic drift, inbreeding depression, and an impoverished ability to adapt to environmental change in the medium to long term. There is also a risk individuals may differentiate and become unrepresentative of their original wild meta-population.</p> <p>Genetic Goals:</p> <p>Goal 2a. To profile 50% of all remaining bongo, both wild and captive bongo based on prevailing population estimates within 6 months</p> <p>Goal 2b. To develop a strategy which best secures genetically viable populations of mountain bongo which are as representative as possible of historic mountain bongo populations utilising best practice and all available data within one year.</p>					
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
To collect samples representative of at least 50% of all bongo worldwide and have these independently analysed with the explicit remit of developing an evidence based, global metapopulation management plan for mountain bongo.	<u>Sample analysis:</u> Paul Reillo and American Museum, Univ. of Uppsala, Dr Muya. <u>Collection of</u>	6 months	Samples analysed and report on relatedness, inbreeding, MHC diversity and relative abundance of particular lineages produced.	Kenyan Universities (Dr Muya), Uppsala University, University of Wales Bob Lacy (CBSG), KWS, BSP, MKWC, EEP, SSP, ISB.	Covered by the American Museum.

	<u>data in-situ and transfer of samples to research sites:</u> BSP <u>Determination of other logistical details and responsibilities:</u> BTF/NBMC				
Threats: Small isolated populations have an increased risk of extinction due to fluctuations in sex ratio, age structure, reproduction, and random catastrophic events. Demographic Goals: Goal 3a. To provide more accurate estimates of wild populations within 6 months (using the profiling data to assist in population estimates). Goal 3b. To develop a strategy which best secures demographically stable populations of mountain bongo which whilst being mindful of genetic considerations, utilising best practice and all available data, within one year.					
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
Collect accurate demographic, ecological and distribution data from bongo in the wild through localised studies.	Senior Research Scientist Mountain Area James Mathenge KWS, BSP senior scientist Adam Mwange.	6 months	Accurate demographic data for use in population risk models and models for reintroductions.	Collaborators: KWS, BSP, KFS, Community (CBOs), Universities, EEP, SSP	3,000,000
Develop a strategy which best secures demographically stable populations of mountain bongo using best practice and all available data.	KWS	1 year	A strategy that ensures demographically (and genetically) stable populations of	KFS, BSP, EEP, SSP, Universities.	2,000,000

			mountain bongos in the wild.		
<p>Threats: Failure to appropriately manage captive breeding from a genetic and demographic perspective, and a failure to select appropriate target animals and recipient populations for reintroduction, translocation or supplementation could harm aspirations to conserve gene diversity and population viability in the longer term</p> <p>Captive Breeding Goals:</p> <p>Goal 4a. To achieve best practice in the management of all captive bongo populations in support of the conservation of bongo in Kenya.</p> <p>Goal 4b. To ensure best practice in all reintroduction and translocation activities in support of bongo conservation in Kenya.</p> <p>Goal 5. To develop “habitat suitability” criteria for bongo and to conduct a thorough ecological assessment of potential sites, based on these criteria, to inform future reintroduction efforts.</p>					
<i>Actions</i>	<i>Responsibility</i>	<i>Time-line</i>	<i>Measure</i>	<i>Collaborators</i>	<i>Costs and other resources</i>
<p>Draft a comprehensive management plan for the MKWC release project detailing:</p> <ul style="list-style-type: none"> • how the captive population will be managed to support release • how release will be carried out • how post-release monitoring will occur 	MKWC	6 months	-	-	-
<p>Draft a meta-population plan for all captive (in-country and international) and wild populations, documenting intended genetic and demographic management, disease risk management and reintroduction strategies.</p>	NBMC/BTF with EEP, SSP, MKWC	9 months	-	-	-
<p>Request the review and, ultimately, the endorsement of the work described above by a neutral, independent, expert review panel.</p>	BTF/NBMC	Within 1 year	-	-	-

<p>Convene an independently facilitated workshop to achieve consensus within the Bongo Task Force on the captive management and reintroduction-related issues described, in particular:</p> <ul style="list-style-type: none"> • how best to manage the Nanyuki herd towards the goal of conserving genetic diversity within Kenya; • how best to incorporate in-country, international and wild populations into a global meta-population supporting long-term conservation goals, including strategies for genetic, demographic and disease risk management; • how best to manage current and future reintroduction and translocation efforts. <p>This workshop would be informed by the draft documents prepared (see above), by the peer review of those documents, and by the results of proposed genetic analyses (see below).</p>	BTF/NBMC	Within 1 year	-	-	-
Apply best practice captive management (demographic, genetic, husbandry, disease risk management) to all in-country and international bongo	EEP, SSP, MKWC	Ongoing once above plans in place.	-	-	-

populations.					
Apply best practice in reintroduction and translocation through close adherence to the IUCN Guidelines for Reintroduction.	KWS, NBMC	Ongoing once above plans in place.	-	-	-
Instigate a process for developing “habitat suitability” criteria for bongo, and conducting a thorough ecological assessment of potential sites based on these criteria, to inform future reintroduction initiatives.	BTF/NBMC	1 year	-	-	-

TOPIC: COMMUNITIES

Threat: Prevailing poverty levels combined with limited sources and high cost of protein, cause dependence on bush meat.

Goal 1. To increase food security by providing alternative means of cultivation e.g. sack gardening, and alternative sources of protein e.g. fish, poultry, rabbit farming

Goal 2. To educate local community on consequences of bush meat consumption i.e. risk of diseases, value of wildlife and legal implications of poaching threatened species.

<i>Actions</i>	<i>Responsibility</i>	<i>Time-line</i>	<i>Measure</i>	<i>Collaborators</i>	<i>Costs and other resources</i>
Identify bush meat hotspots in the bongo habitat areas	KWS, KFS, MKT,	3-5 years	Communities living near bongo habitat are self-sufficient in alternative sources of proteins	KWS, KFS, CFAs, Fisheries Dpt, MKT, BSP, WHWF	Full time employee for entire period to coordinate project, motor bike, field personnel in each of the bongo habitat areas Estimated COSTS (over 3-5 years): Motorbike – 300,000 HR-Coordinator & Field Assistants – 6,000,000 Fuel, maintenance, insurance – 500,000 Fish ponds/poultry start-up – 1,000,000 TOTAL: 7,800,000 (USD97.5K)
Identify / establish at least 2 CBOs in each of the 3 bongo habitat areas					
Identify NGOs and agencies working in the area and doing similar work e.g. Fisheries Dpt, KWS, MKT, BSP, WHWF					
Appraise CBOs to identify suitable projects and capacities/abilities					
Draft suitable proposals with all relevant stakeholders for funding					
Train CBO members					
<i>Actions</i>	<i>Responsibility</i>	<i>Time-line</i>	<i>Measure</i>	<i>Collaborators</i>	<i>Costs and other resources</i>
Identify NGOs and agencies providing	KWS, WHWF,	2-5 years	Communities living in	KWS, MKT,	Dedicated project coordinator, Suzuki,

environmental and wildlife education	MKT		bushmeat hotspots are sensitized on risks and negative impact of bushmeat consumption	WHWF	generator, projector, HR – Coordinator, fuel, maintenance and insurance.
Coordinate efforts to work together to cover a wider area, eliminate duplication and specifically					Estimated COSTS: Suzuki – 1,500,000 Generator – 60,000 Projector – 250,000 Coordinator – 1,250,000
Target poaching hotspots and bongo habitats					TOTAL: 5,560,000 (USD 69,500)
<p>Threat: A major challenge for bongo conservation today is that adjacent communities continue to rely on forests and forest products for their livelihoods. For many, adjacent forests are the only sources of fuel, pasture, construction materials and even food. Additionally many are unaware of the negative impacts that their actions have on the bongos.</p> <p>Goal 3. To diversify livelihood support activities at the community level i.e. promotion of nature based income generating activities (actions and costs as for GOALS 1 & 2 above)</p> <p>Goal 4. Ensure that communities living adjacent to bongo habitats are involved in bongo conservation through education; awareness and livelihood improvement.</p>					
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
Develop bongo information, education and communication materials	KWS	4 months	-	KFS, NBMC, Bongo Task Force, NGOs, BSP, Private Land Owners, William Holden Education Centre	5 million
Create awareness through in house and outreach programmes	KWS	Ongoing	-	KFS, NBMC, BSP, Bongo Task Force, NGOs, Private Land Owners, William Holden Education Centre.	5 million per year
Identify nature based enterprises	KFS	1 year	-	KWS, CFAs, Ministry of Agriculture, Livestock, Energy, NGOs, ICIPE	5 million
Diversify and promote livelihoods in	KFS	1 year	-	KWS, CFAs,	20 million

community areas with focus on high value options				Ministry of Agriculture, Livestock, Energy, NGOs	
Promote sources of cooking fuels that do not depend on forest product	KFS	Ongoing	-	BSP, KWS, NGOs, Ministry of Energy, Environment, NEMA	10 million (5 years)
Promote niche market based farm forestry	KFS	Ongoing	-	KEFRI, CFAs, NGOs, ICRAF, ICIPE	10 million (5 years)
Promote appropriate energy saving technology	KFS	2 years	-	KWS, Ministry of Energy, Special Programmes, NGOs, BSP, CFAs	10 million

TOPIC: POLICY HARMONISATION

Threat: There are many areas of conflict in mandate and in sectoral implementation that have lead to bongo habitat loss. For example, most bongos are found in forest reserves (under KFS –Kenya Forest Service mandates) while the mandate to protect them falls under the Kenya Wildlife Service.

Goal 1. To ensure that all policy issues that threaten conservation of bongos and their habitats are harmonized.

Goal 2. To encourage greater collaboration between government agencies and other stakeholders i.e. encourage participatory management planning.

<i>Actions</i>	<i>Responsibility</i>	<i>Time-line</i>	<i>Measure</i>	<i>Collaborators</i>	<i>Costs and other resources</i>
NGOs and other organisations with Kenya Forest Working Group to lobby for better management of forest areas	KWS / KFWG	1 year	Better perceived co-ordination between agencies & stakeholders. Increased frequency of calls and feedback to and from the liason office / officer	KWS/KFWG/KFS/ MKT/BSP	2 Workshops for stakeholders in the year in order to produce an MoU / Use of an office and possibly an admin person from each of the collaborators to record and share info. Identify a (KWS) co-ordinator to gather info from the admin representatives and organise workshops etc. COSTS: 2 days for workshops

					TOTAL: US\$ 1,250.00
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
Establishment of a National Bongo Management Committee(NBMC)	Bongo Task Force	3 months	NBMC is established.	KWS, KFS, NMK, Universities, NGOs, NEMA	-
Establish a liaison office/officer with help of KWS/KFS/Kenya Forest Working Group /Local NGOs	<u>KWS, KFS, KFWG, local NGOs</u>	6 months	Liaison officer is in place.	-	-
Harmonize KWS and KFS activities at mountain bongo sites	NBMC	6 months	-	Bongo Task Force, KWS, KFS, CFAs	-
Develop set of rules for human behaviour and activities in critical bongo areas – Code of Conduct	NBMC	1 year	Code of Conduct is in place.	KFS,KWS,CFAs	-
Come up with guidelines for undertaking comprehensive mapping of current and potential bongo habitats	NBMC	6 months	Mapping guidelines are in place.	KFS, KWS, BSP, Bongo Task Force, Private land owners	-
TOPIC: LAW, JUDICIARY, CORRUPTION					
Threats: Lenient penalties as a result of an outdated wildlife act on wildlife poaching do not deter the activity and consequently are a threat to mountain bongo. Rampant corruption and misappropriation at all levels of agencies and institutions is a major threat to bongo.					
Goal 1. To sensitize and engage judiciary on the critical status of the bongo.					
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
Creation of informative statistics on poaching and its effects on the conservation of endangered species to be distributed to the judiciary community	KWS/KFWG/KFS /MKT/BSP	1 year	Positive responses from the judiciary translating to more punitive sentences and a better	KWS/KFWG/KFS/ MKT/BSP	Time (workshops), flyers, transport costs

Tie this in with the workshops recommended in No. 5 to produce documents to be distributed.			understanding of the poaching issues.		TOTAL ESTIMATED COSTS: USD 1,500.00
Threat: Rampant corruption and misappropriation at all levels of agencies and institutions is a major threat to bongo.					
Goal 2: To encourage both individuals and community organizations living along the boundaries of the forest to report to KACC					
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
Use existing field coordinators (cited in previous action) as well as KWS personnel to sensitize the community on their rights and how they may report illegal activity in the areas they live in	KWS/KFWG/KFS /MKT/BSP	6 months	Community report back to our field coordinators on reports of corruption and interest in their rights with regard to the forests.	KWS/KFWG/KFS/ MKT/BSP	Printing, travel.
Distribute the info when distributing info on hotline numbers (6) and running community education visits (2)					TOTAL ESTIMATED COSTS: USD1500
TOPIC: SPECIES INTERACTION					
Threat: Negative species interactions are causing loss of bongo habitat. For example, fencing causes increase in elephant population as well as the other wildlife species. Frequent livestock incursions during draught periods also causes loss of habitat.					
Goal 1. To ensure that all negative species interactions affecting bongo conservation are minimized within 5 years.					
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
Develop and implement species-habitat interaction monitoring programme	KWS	6 months	-	KFS, NGOs, BSP, NBMC, Universities, KEFRI, NMK	6 million
Open up migratory corridors in Aberdares and restore habitat connectivity in Mau/Eburu	KWS, KFS	5 years	-	Private Land Owners, Ministry of Land, Planning, Provincial Admin, NGOs, NEMA	
Maintain control of lions in Aberdares National Park	KWS	1 year	-	NGOs, Private Land Owners	2 million

Manage the population of mega herbivores and other predators actively	KWS	5 years	-	NGOs, Private Land Owners	20 million (5 years)
TOPIC: DISEASE					
<p>Threat: Threats from unknown and emerging disease cannot be ruled out for bongo in Kenya, particularly where bongo interact with livestock. Imported bongos have also been shown to be naive and to succumb to indigenous disease. Animals imported from external areas may arrive with diseases novel to the resident population or be exposed to unfamiliar diseases.</p> <p>Goal 1. To remain abreast of DVO reporting, investigate all bongo mortalities, performing diagnostic necropsies where possible, and investigate mortality events in related species.</p> <p>Goal 2. To reduce mortality of any future bongo imports.</p> <p>Goal 3. To carry out health screening of source and destination populations and perform risk assessments in accordance with reintroduction specialist group guidelines.</p>					
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
To remain up to date on regional District Veterinary Officer (DVO) reports relating to livestock disease events.	KWS regional warden and KWS DVS	Immediate and continuous	Availability of current information	Local DVO in relevant areas	Good relationship with DVO
<p>Rapidly respond and investigate all reported bongo mortalities and report observation to KWS Department of Veterinary Services (DVS).</p> <p>[Consequences of action and inaction: Loss of valuable information]</p> <p>Obstacles: Time, ranger availability, and rapidity of action]</p>	Regional KWS ranger staff	Start immediately and continuous. Investigation should be same day or within 12 hours.	All mortalities are investigated.	KWS veterinary staff to provide training to carcass handling and classification.	Staff, vehicles, general operating costs.
To perform complete diagnostic necropsies to the extent possible with respect to carcass condition.	KWS DVS	Immediately and continuous. DVS staff is immediately mobilized	All animals are necropsied and diagnosis achieved on all cases	University of Nairobi Veterinary Faculty, medical diagnostic facilities	DVS staff, vehicles, aircraft, necropsy kit, laboratory support, histopathology support

		and necropsy accomplished as soon as possible.			
To investigate and necropsy mortality events in related species and range areas.	KWS DVS	Immediately and continuous. DVS staff to determine if scoop and number of mortalities requires response.	Animals are necropsied and diagnosis achieved on all cases	University of Nairobi Veterinary Faculty, medical diagnostic facilities	DVS staff, vehicles, aircraft, necropsy kit, laboratory support, histopathology support
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
Develop a response to Theileria infection of bongo including test validation, vaccine methods, and treatment modalities.	KWS DVS, AZA or EAZA veterinarians responsible for source population	Before next importation	Appropriate answers and low mortality	University of Nairobi, Ministry of Livestock Development, ILRI and other animal health NGO, university and research labs	Resources: Many and varied. Start with current Ministry of Livestock Development Theileria Infection and Treatment Programme. Note: costs may be high – Theileria is a difficult disease.
Actions	Responsibility	Time-line	Measure	Collaborators	Costs and other resources
Develop guidelines of relevant diseases profiles, testing protocol and sample acquisition. Acquire samples and perform testing. Construct and perform risk analysis on results.	KWS-DVS	Before any animal translocation	Testing and risk analysis complete prior to translocation	Entire wildlife health community	Animal capture, sample collection, transportation, laboratory and risk analysis committee. Estimated costs: approximately 400-500 USD per animal (based on other examples)

Appendix 1: Working Group Reports

Visioning Group: Report

Mike Prettejohn, Tarsem Sembhi, Charles Musyoki, Jake Veasey, Tom de Maar, Nigel Carnelly

This working group was charged with crafting a vision for bongo in Kenya – that is, *a qualitative description of the desired future state*. The visioning process began by inviting all workshop participants to contribute one idea or theme that they would like to see captured in that vision. The group worked to incorporate as many of these as possible.

It was agreed that the vision should be long-term – at least 50-100 years if not longer.

On this basis and using the plenary contributions, the group developed the following statement:

Vision: We envisage viable, genetically representative populations of mountain bongo, free ranging across their intact historic mountain ecosystem ranges, cherished by the Kenyan people and the global community.

This was adopted unanimously by the wider group.

Population Targets Group: Report

Caroline Lees, Charles Musyoki, Adam Mwange, Mike Prettejohn

See section on *Vision and Targets* in report body.

Working Group 1: Small Population Issues and Disease

Jamie Ivy, Elena Hapicha, Thomas W. deMaar, Shadrack Muya, James Magena, Joseph G. Mbugua, Felix M. Mwangangi, Fredrick Nyimbuie, Jake Veasey

A total of six threats were identified by the group. The group rated the threats according to their urgency and importance. (*Represented by votes*)

Small population threats:

1. **Resources including finances:** Insufficient resource

- 9 votes for importance
- 9 votes for urgency

Statement: Insufficient finances to implement appropriate conservation and research activities increase the risks to small isolated populations.

2. **Demographic issues:** Population isolation, wild populations below critical mass, demographic instability, low numbers

- 6 votes for importance
- 8 votes for urgency

Statement: Small isolated populations have an increased risk of extinction due to fluctuations in sex ratio, age structure, reproduction, and random catastrophic events.

3. **Genetic issues:** Population isolation, genetic diversity, low numbers, reintroduction issues.

- 7 votes for importance
- 2 votes for urgency

Statement: Small isolated populations have an increased likelihood to suffer from genetic drift, inbreeding depression, an impoverished ability to adapt to change in the medium to long term. There is also a risk individuals may differentiate and become unrepresentative of the original metapopulation.

4. **Research:** Lack of knowledge

- 3 votes for importance
- 5 votes for urgency

Statement: Insufficient research decreases the effectiveness of conservation activities in securing small isolated populations.

5. **Captive management issues:** Reintroduction concerns, integrated captive management strategy, captive management challenges

- 2 votes for importance
- 3 votes for urgency

Statement: Failure to appropriately manage captive breeding from a genetic and demographic perspective, and a failure to select appropriate target animals and recipient populations for reintroduction, translocation or supplementation could harm aspirations to conserve gene diversity and population viability in the longer term.

6. **Non validated population estimation and carrying capacity methods**

Statement: Inaccurate over and under estimates of animal numbers and carrying capacities will distort population management processes and models. Habitat protection strategies cannot be properly allocated if animal numbers and relative locations are unknown.

Disease Threats

Strands: Lack of knowledge, emerging disease, exposure to livestock, reintroduction could spread disease to wild populations, risks to imported bongos from indigenous diseases

Statement: Threats from unknown and emerging disease cannot be ruled out for bongo in Kenya, particularly where bongo interact with livestock. Imported bongos have also been shown to be naive and succumb to indigenous disease. Animals imported from external areas may arrive with diseases novel to resident population.

Table: Small population and disease-related threats, information evaluation and goals.

Threat Statement				
1. Resource issues: Insufficient finances to implement appropriate conservation and research activities increase the risks to small isolated populations.				
Fact	Assumptions	Information gaps	Regional specificity	References
There are currently insufficient resources to implement a comprehensive effective conservation strategy for bongos in Kenya.	We may not ever have as much resources as we would like.	<ul style="list-style-type: none"> • Sources of additional funds and resources. • Budget figure for implementation of a bongo conservation strategy 		
Goals:				
<ul style="list-style-type: none"> • To identify bongo conservation and research needs over the next five years, construct budgets and identify funding sources and for funds within eight months. • Secure funds to implement the conservation action plan within two years. 				
Threat Statement				
2. Research issues (incorporating census data collection): Insufficient research decreases the effectiveness of conservation activities in securing small isolated populations.				
Fact	Assumptions	Information gaps	Regional specificity	References
<ul style="list-style-type: none"> • BSP population estimates are the most robust nationwide population estimates available for bongo. There is however insufficient data to judge how accurate these estimates are. The same is true for carrying capacity estimates. • Methodologies for counting forest mammals in similar environments are currently imperfect. • There is currently no articulated research strategy designed to assist in bongo conservation 	<ul style="list-style-type: none"> • The BSP population estimates are an approximation of the reality experienced on the ground. • Wild bongo could benefit from targeted research. 	We do not know how accurate these estimates are, or exactly how many bongo remain.		
Goals:				
<ul style="list-style-type: none"> • As above (for resources). 				

Threat Statement				
<p>3. Genetic issues: Small isolated populations have an increased likelihood to suffer from genetic drift, inbreeding depression, and an impoverished ability to adapt to environmental change in the medium to long term. There is also a risk individuals may differentiate and become unrepresentative of their original wild meta-population.</p>				
Fact	Assumptions	Information gaps	Regional specificity	References
<ul style="list-style-type: none"> • Small population sizes and inbreeding e.t.c. have been demonstrated to have a negative impact on conservation activities. • All captive bongos originate from the Aberdare herd. Both EEP and SSP populations have in the region of 30 founders. • No founders from the remaining three wild populations are currently represented in a captive population, or a national park. 	<p>All bongos in Kenya belong to the same evolutionary significant unit which differs from the lowland bongo.</p>	<ul style="list-style-type: none"> • The degree of genetic differentiation between the remaining populations is unknown; as a result the relative importance remaining populations from a conservation genetics perspective is also unknown. • The degree of divergence of the historic bongo populations. We don't know then the populations, including those currently without bongo became isolated 		
<p>Goals:</p> <ul style="list-style-type: none"> • To profile 50% of all remaining bongo, both wild and captive bongo based on prevailing population estimates within 6 months • To develop a strategy which best secures genetically viable populations of mountain bongo which are as representative as possible of historic mountain bongo populations utilising best practice and all available data within one year. 				
Threat Statement				
<p>4. Demographic issues: Small isolated populations have an increased risk of extinction due to fluctuations in sex ratio, age structure, reproduction, and random catastrophic events.</p>				
Fact	Assumptions	Information gaps	Regional specificity	References
<p>Only 27 bongos have been positively identified over a four year period across all four known extant wild populations.</p>	<p>All populations are currently isolated and assumed to fall below levels expected for long term survival without growth.</p>	<p>Demographic status of wild populations</p>		
<p>Goals:</p> <ul style="list-style-type: none"> • To provide more accurate estimates of wild populations within 6 months (using the profiling data to assist in population estimates). • To develop a strategy which best secures demographically stable populations of mountain bongo which whilst being mindful genetic 				

considerations utilising best practice and all available data within one year.

Threat Statement

5. Captive breeding: Failure to appropriately manage captive breeding from a genetic and demographic perspective, and a failure to select appropriate target animals and recipient populations for reintroduction, translocation or supplementation could harm aspirations to conserve gene diversity and population viability in the longer term

Fact	Assumptions	Information gaps	Regional specificity	References
<ul style="list-style-type: none"> All captive bongos originate from the Aberdare National Park. There are guidelines for reintroduction programmes 		<ul style="list-style-type: none"> The degree of genetic differentiation between the remaining wild populations is unknown; as a result the relative importance remaining populations from a conservation genetics perspective is also unknown. The degree of divergence of the historic bongo populations. We don't know then the populations, including those currently without bongo became isolated. There are currently information gaps relating to the pedigree of the current Nanyuki herd. Genetic profiling of all bongo populations both wild and captive, using more than one marker, to clarify relatedness, diversity, priority and disease susceptibility. There is currently insufficient information relating to the genetics of the Nanyuki herd to draw robust conclusions. 		

Goals:

- To achieve best practice in the management of all captive bongo populations in support of the conservation of bongo in Kenya.
- To ensure best practice in all reintroduction and translocation activities in support of bongo conservation in Kenya.

Threat Statement

1. Disease issues: threats from unknown and emerging disease cannot be ruled out for bongo in Kenya, particularly where bongo interact with livestock. Imported bongos have also been shown to be naive and to succumb to indigenous disease. Animals imported from external areas may arrive with diseases novel to resident population

Fact	Assumptions	Information gaps	Regional specificity	References
<ul style="list-style-type: none"> Rinderpest outbreak historically starts in domestic livestock and impacted wild hoof stock. Five of 18 imported bongos from the US died of theileriosis. There is a 'vaccination' programme for 	<p>3 additional repatriated animals may have succumbed to theileriosis, contact with livestock increases the risk of disease in wild bongo.</p>	<ul style="list-style-type: none"> Insufficient evidence relating to transmissible diseases from livestock to bongo, or independently of livestock to bongo. Risk assessment relating to transmission of diseases as a result of translocation of wild 		

<p>livestock in Kenya to cover east coast fever.</p> <ul style="list-style-type: none"> • Rinderpest is the most serious disease affecting wild herbivores, Kenya has been declared rinderpest free. • Anthrax is endemic in Kenya and affects all wild herbivores. • Theileriosis or corridor disease is resident buffalo and can spill over into other populations. 		<p>and captive population within Kenya.</p> <ul style="list-style-type: none"> • Is there a genetic component to sensitivity to theileriosis. • Details relating to vaccination need to be collected. • Theileriosis impact on wild bongo. Treatment or vaccination techniques against theileriosis for bongo. 		
<p>Goals:</p> <ul style="list-style-type: none"> • To remain abreast of DVO reporting, investigate all bongo mortalities, performing diagnostic necropsies where possible, and investigate mortality events in related species • To reduce mortality of any future bongo imports by 90% of the 2004 import. • To carry out health screening of source and destination populations and perform risk assessments in accordance with IUCN reintroduction specialist group guidelines. 				

Table: Actions generated by group 1 to reduce threats related to small population size (actions were required to be S-specific, M-measurable, A-achievable, R-relevant and T-timebound).

<p>Research and Resource Goals:</p> <ul style="list-style-type: none"> • To identify bongo conservation and research needs over the next five years, construct budgets and identify funding sources within eight months. • Secure funds to implement the conservation action plan within two years. 					
<i>Actions</i>	<i>Responsibility</i>	<i>Time-line</i>	<i>Measure</i>	<i>Collaborators</i>	<i>Resources</i>
<p>To identify research needs (see also under genetic and demographic goals etc) over the next five years to support the conservation of bongo in the wild, and secure funds to implement that within two years.</p>	<p>Senior Research Scientist Mountain Area, ?? Mathenge KWS, BSP senior scientist Adam Mwange.</p>	<p>8 months for costed strategy, 24 months for secured funds.</p>	<p>Prioritised and costed research strategy developed, funds in place to support the top three priorities as a minimum. Prioritised on the basis of their expected impact on</p>	<p>?</p>	<p>Wages already covered by BSP and KWS.</p>

			bongo conservation.		
COSTS: covered through existing wages					
Additional notes:					
<ul style="list-style-type: none"> • Consequences of action: strategic research in place to support more effective conservation efforts. • Consequences of inaction: lack of evidence based conservation efforts are likely to be sub-optimal in their effectiveness and potentially detrimental. • Obstacles: expertise of those responsible, time constraints. 					
Genetic Goals:					
<ul style="list-style-type: none"> • To profile 50% of all remaining bongo, both wild and captive bongo based on prevailing population estimates within 6 months • To develop a strategy which best secures genetically viable populations of mountain bongo which are as representative as possible of historic mountain bongo populations utilising best practice and all available data within one year. 					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources
To collect samples representative of at least 50% of all bongo worldwide and have these independently analysed with the explicit remit of developing an evidence based, global metapopulation management plan for mountain bongo.	Paul Reillo and American Museum, University of Uppsala, Dr Muya Specific responsibility of collection of data in-situ and transfer of samples to research sites: BSP	6 months	Samples analysed and report on relatedness, inbreeding, MHC diversity and relative abundance of particular lineages produced.	Kenyan Universities (Dr Muya), Uppsala University, University of Wales Bob Lacy (CBSG), KWS, BSP, MKWC, EEP, SSP, ISB.	Covered by the American Museum.
COSTS: To be covered by the American Museum.					
Additional notes:					
<ul style="list-style-type: none"> • Consequences of action: knowledge supports more effective conservation activities. • Consequences of inaction: decisions made without evidence are likely to be sub-optimal in their conservation effectiveness and potentially detrimental to conservation activities. • Obstacles: Collection of data, interpretation of data, time constraints. 					

Demographic Goals: <ul style="list-style-type: none"> To provide more accurate estimates of wild populations within 6 months. (using the profiling data to assist in population estimates). To develop a strategy which best secures demographically stable populations of mountain bongo which whilst being mindful genetic considerations utilising best practice and all available data within one year. 					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources
Collect accurate demographic, ecological and distribution data from bongo in the wild through localised studies.	Senior Research Scientist Mountain Area Mathenge KWS, BSP senior scientist Adam Mwange.	6 months	Accurate demographic data for use in population risk models and models for reintroductions.	Collaborators: KWS, BSP, KFS, Community (CBOS), Universities, EEP, SSP	3,000,000
Develop a strategy which best secures demographically stable populations of mountain bongo using best practice and all available data.	KWS	1 year	A strategy that ensures demographically (and genetically) stable populations of mountain bongos in the wild.	KFS, BSP, EEP, SSP, Universities.	2,000,000
COSTS:					Estimate: 5,000,000
Additional notes:					
<ul style="list-style-type: none"> ? 					
Captive Breeding Goals:					
<ul style="list-style-type: none"> To achieve best practice in the management of all captive bongo populations in support of the conservation of bongo in Kenya. To ensure best practice in all reintroduction and translocation activities in support of bongo conservation in Kenya. 					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources
To achieve consensus relating to the management of the current Nanyuki herd through the gathering of data (see genetic goals) and a subsequent independent peer review process in line with RSG	?	?	?	?	?

guidelines in order to determine the most effective strategy to conserve genetic diversity within Kenya.					
To achieve consensus relating to the current and future reintroduction activities.	?	?	?	?	?
Pursue above through an independently facilitated workshop	?	?	?	?	?
COSTS: ?					
Additional notes:					

Table: Actions generated by group 1 to reduce threats related to disease (actions were required to be S-specific, M-measurable, A-achievable, R-relevant and T-timebound).

Disease Goal 1:					
<ul style="list-style-type: none"> To remain abreast of DVO reporting, investigate all bongo mortalities, performing diagnostic necropsies where possible, and investigate mortality events in related species 					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources
Rapidly respond and investigate all reported bongo mortalities and report observation to KWS Department of Veterinary Services (DVS). [Consequences of action and inaction: Loss of valuable information Obstacles: Time, ranger availability, and rapidity of action]	Regional KWS ranger staff	Start immediately and continuous. Investigation should be same day or within 12 hours.	All mortalities are investigated.	KWS veterinary staff to provide training to carcass handling and classification.	Staff, vehicles, general operating costs.
To perform complete diagnostic necropsies to the extent possible with respect to carcass	KWS DVS	Immediately and	All animals are necropsied and diagnosis achieved on	University of Nairobi Veterinary	DVS staff, vehicles, aircraft, necropsy kit,

condition.		continuous. DVS staff is immediately mobilized and necropsy accomplished as soon as possible.	all cases	Faculty, medical diagnostic facilities	laboratory support, histopathology support
To investigate and necropsy mortality events in related species and range areas.	KWS DVS	Immediately and continuous. DVS staff to determine if scoop and number of mortalities requires response.	Animals are necropsied and diagnosis achieved on all cases	University of Nairobi Veterinary Faculty, medical diagnostic facilities	DVS staff, vehicles, aircraft, necropsy kit, laboratory support, histopathology support
To remain up to date on regional District Veterinary Officer (DVO) reports relating to livestock disease events.	KWS regional warden and KWS DVS	Immediate and continuous	Availability of current information	Local DVO in relevant areas	Good relationship with DVO
COSTS: Cost of scouting and reporting would be within normal operating budgets for regional KWS staff. Costs of KWS-DVS responding, transport, necropsy and laboratory support would need to be budgeted at current rates. Cost of communication with regional DVO office would be negligible.					
Additional notes:					
<ul style="list-style-type: none"> • Consequences of action and inaction: loss of valuable information • Obstacles: time, ranger availability, and rapidity of action] 					
Disease Goal 2:					
To reduce mortality of any future bongo imports by 90% of the 2004 import.					

Actions	Responsibility	Time-line	Measure	Collaborators	Resources
Develop a response to Theileria infection of bongo including test validation, vaccine methods, and treatment modalities.	KWS DVS, AZA or EAZA veterinarians responsible for source population	Before next importation	Appropriate answers and low mortality	University of Nairobi, Ministry of Livestock Development, ILRI and other animal health NGO, university and research laboratories	Resources: Many and varied. Start with current Ministry of Livestock Development Theileria Infection and Treatment Programme.
COSTS: May be high - Theileria is a difficult disease					
Additional notes:					
<ul style="list-style-type: none"> Consequences of inaction: no importation and/or dead bongo Obstacles: Theileria is a difficult disease 					
Disease Goal 3:					
To carry out health screening of source and destination populations and perform risk assessments in accordance with IUCN reintroduction specialist group guidelines.					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources
Develop guidelines of relevant diseases profiles, testing protocol and sample acquisition. Acquire samples and perform testing. Construct and perform risk analysis on results.	KWS-DVS	Before any animal translocation	Testing and risk analysis complete prior to translocation	Entire wildlife health community	Animal capture, sample collection, transportation, laboratory and risk analysis committee.
COSTS: Approximately 400-500 USD per animal (based on other examples)					
Additional notes:					
<ul style="list-style-type: none"> Consequences of action and inaction: Importation of serious disease to destination population and/or mortality of translocated animals from resident diseases. Obstacles: Acquisition of sufficient samples to demonstrate significant disease profile. (Maybe mitigated by testing related species.) 					

Working Group 2: Habitat

Team: John M. Githaiga, Nigel Carnelley, Francis Gakuye, Simon Gitan, Sylvia Ingati, Philip Ireri, Charlotte Keel, Bernard Kuloba, Caleb Manyala, Aggrey Maumo, Chris Muteti, Adam Mwangi,

The plenary mind-mapping exercise identified the following habitat-related threats to the sustained recovery of bongos in Kenya:

Lack of secure habitat, lack of information, insufficient collaboration between KWS and KFS, insufficient local community education and awareness, lack of alternative livelihoods for local communities, corruption, lack of harmonized policies between different sectors, inadequate knowledge, livestock, lack of funding, impact of tourism, climate change, water extraction, forest fires.

In addition, the group was asked to address the following threats relating to predators:

Impact of introduced predators, impact of un-naturally high densities of predators.

The group explored each issue thoroughly and developed a corresponding threat statement describing both its root cause and its impact on wild bongo. For each threat, the group evaluated the current state of knowledge - what is known, what is assumed and what extra information would be useful in threat management. Finally, the group set goals for threat mitigation and actions required to achieve those goals.

The threats to bongos were re-grouped into four broad issues:

1. **Policy issues:** there are many areas of conflict in mandate and sectoral implementation that led to bongo habitat loss for example most bongos are found in forest reserves (under KFS mandate). While the mandate to protect them is under KWS
2. **Human Activities:** uncontrolled illegal and legal activities such as livestock incursions, infrastructure development, forest fires, and forest resource extraction have led to loss of bongo habitats.
3. **Community issues:** a major challenge for bongo conservation today is that forest adjacent communities continue to rely on forests and forest products for their livelihoods. For many, adjacent forests are the only sources of fuel, pasture, construction materials and even food. Additionally many are unaware of the negative impact that their actions have on the bongo
4. **Species interaction:** negative interactions are causing loss of bongo habitat for example fencing causes increase in elephant population as well as other wildlife species. Frequent livestock incursion during drought periods also causes loss of habitat. Predation by lions which were introduced to habitats like the Aberdares.

Table: Habitat-related threats, information evaluation and goals.

Threat Statement				
<p>1. Policy Issues: There are many areas of conflict in mandate and in sectoral implementation that have lead to bongo habitat loss. For example, most bongos are found in forest reserves (under KFS –Kenya Forest Service mandates) while the mandate to protect them falls under the Kenya Wildlife Service.</p>				
Fact	Assumptions	Information Gaps	Regional Specificity	References
Dual gazettement will continue to affect the effective management of bongo habitats in Mt Kenya	Relevant authorities will continue safeguarding their interests.	Limited information is available	Mt Kenya ecosystem	KWS/KFS reports and gazette notices as well as annual reports
Production and exploration of geothermal power	-Kenya Power will continue to explore new areas for power -Demand for geothermal energy will continue to increase	Wildlife was considered in general with no specification to bongo and other endangered species in the EIA and EA reports of KENGEN.	Eburu forest 6 wells explored	Ministry of energy and KENGEN
Bongo habitats are classified as water catchment areas	Demand for water will continue to rise	EIA ,EA and baseline reports	Aberdare ,Mau, Mt Kenya	Ministry of water
Different activities by different agencies are taking place in Bongo habitat areas	The agencies will continue with their activities in the areas	Inadequate information exchange among agencies	All bongo habitat areas	BSP reports, KFS and KWS reports
Threat Statement				
<p>2. Species Interaction: Negative Species interactions are causing loss of bongo habitat. For example, fencing causes increase in elephant population as well as the other wildlife species. Frequent livestock incursions during draught periods also causes loss of habitat. Also, predation by lions which were introduced to habitat like Aberdares.</p>				
Fact	Assumptions	Information Gaps	Regional Specificity	References
Habitat is modified by elephants and other animal species	Elephant and other animal species populations will continue to increase	Lack of distribution maps for other species in relation to bongos	Aberdare and Mt Kenya	KWS,BSP, DRSSRS,UNEP
Lion populations persist	Predation on bongo will continue	Predator population not known especially for lions	Aberdare	KWS, BSP, LWF Predator projects.
Threat Statement				

3. Human activities: Uncontrolled illegal and legal human activities such as livestock incursions, infrastructure development, forest fires, forest resource extraction and geothermal production have led to loss of bongo habitats				
Fact	Assumptions	Information Gaps	Regional Specificity	References
Livestock incursions	Demand for pasture will continue to persist due to drought and overstocking	<ul style="list-style-type: none"> No data on stocking level and Carrying Capacity No data on levels of distribution of livestock 	all	Ministry of Livestock, Special Programmes, KWS,KFS, Provincial Administration and KEFRI
Tourism infrastructure expansion	KWS, KFS will continue to broaden their revenue base	Lack of specific ecosystem management plans	all	KWS, KFS, Provincial Admin, KEFRI
Bongo habitats identified as water sources	Demand for water abstraction facilities will increase	No baseline data on water abstraction levels, sites and river discharge.	Mt Kenya, Aberdare, Mau	WRMA, press reports
Forest fires	Forest fires will continue to recur and increase in frequencies	Inadequate information on models of occurrence, sources and intensity	all	KFS, KWS, WRMA, Regional Remote Sensing Centre
Extraction of wood and non wood products	Demand grows as population grows	inadequate information sharing by agencies	all	BSP reports, KWS,KFS reports and provincial administration
Threat Statement				
4. Community issues: A major challenge for bongo conservation today is that adjacent communities continue to rely on forests and forest products for their livelihoods. For many, adjacent forests are the only sources of fuel, pasture, construction materials and even food. Additionally many are unaware of the negative impacts that their actions have on the bongos.				
Fact	Assumptions	Information gaps	Regional specificity	References
Inadequate education and awareness on bongo conservation	The communities will continue to be unaware	Level of community awareness not known	all	BSP reports, KWS, KFS reports, WHWF
Inadequate livelihood sources and resources	-limited livelihood sources therefore communities will continue relying on forests	Livelihood mapping for some areas is lacking	all	Ministry of Special Programmes and planning, KWS and KFS, Min of Agriculture, Gender, Youth and Sports ,BSP and Provincial administration

Table: Actions generated by group 2 to reduce bongo habitat loss (actions were required to be S-specific, M-measurable, A-achievable, R-relevant and T-timebound).

Human Activities Goal: To control legal and stop illegal human activities that destroy bongo habitat					
<i>Actions</i>	<i>Responsibility</i>	<i>Time-line</i>	<i>Measure</i>	<i>Collaborators</i>	<i>Resources</i>
Stop illegal activities in bongo ecosystems	KWS,KFS	Ongoing	?	?	?
Stop illegal harvesting of wood products	KFS	1 year	?	KWS, CFAs, NEMA	?
Control/regulate grazing in bongo habitats as per site specific plans	KFS	1 year	?	KWS, CFAs, on livestock, Provincial Administration	?
Zonation and demarcation of controlled utilization areas	KFS	1 year	?	KWS,BSP, CFAs	?
Review existing management plans to incorporate critical bongo habitats	KWS & KFS	3 years	?	Provincial Admin, KP & CFAs	?
Undertake comprehensive mapping of current and potential bongo habitat	NBMC	2 Years	?	KFS, KWS, BSP, Bongo Task Force, Private Land Owners	?
Continuous monitoring and surveillance of bongo and the habitats	BSP	Ongoing	?	KWS, KFS, other NGOs, CFAs	?
COSTS:					
Policy Goal: To ensure that all policy issues that threaten conservation of bongos and their habitats are harmonized					
<i>Actions</i>	<i>Responsibility</i>	<i>Time-line</i>	<i>Measure</i>	<i>Collaborators</i>	<i>Resources</i>
Establishment of a National Bongo Conservation Coordination Committee(BCCC) (subsequently referred to as a National Bongo Management Committee – NBMC)	Bongo Task Force	3 months	?	KWS, KFS, NMK, Universities, NGOs, NEMA	?

Harmonize KWS and KFS activities at bongo sites	NBMC	6 months	?	Bongo Task Force, KWS, KFS, CFAs	?
Develop set of rules for human behavior and activities in critical bongo areas – Code of Conduct	NBMC	1 year	?	KFS,KWS,CFAs	?
Come up with guidelines for undertaking comprehensive mapping of current and potential bongo habitats	NBMC	6 months	?	KFS, KWS, BSP, Bongo Task Force, Private land owners	?
COSTS?					
Community Issues Goal: Ensure that communities living adjacent to bongo habitats are involved in bongo conservation through education; awareness and livelihood improvement.					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources
Develop bongo information, education and communication materials	KWS	4 months	?	KFS, BCCC, Bongo Task Force, NGOs, BSP, Private Land Owners, William Holden Education Centre	5 million
Create awareness through in house and outreach programmes	KWS	Ongoing	?	KFS, BCCC, BSP, Bongo Task Force, NGOs, Private Land Owners, William Holden Education Centre.	5 million per year

Identify nature based enterprises	KFS	1 year	?	KWS, CFAs, Ministry of Agriculture, Livestock, Energy, NGOs, ICIPE	5 million
Diversify and promote livelihoods in community areas with focus on high value options	KFS	1 year	?	KWS, CFAs, Ministry of Agriculture, Livestock, Energy, NGOs	20 million
Promote sources of cooking fuels that do not depend on forest product	KFS	Ongoing	?	BSP, KWS, NGOs, Ministry of Energy, Environment, NEMA	10 million (5 years)
Promote niche market based farm forestry	KFS	Ongoing	?	KEFRI, CFAs, NGOs, ICRAF, ICIPE	10 million (5 years)
Promote appropriate energy saving technology	KFS	2 years	?	KWS, Ministry of Energy, Special Programmes, NGOs, BSP, CFAs	10 million
COSTS?:					
Species Interaction Goal: To ensure that all negative species interactions affecting bongo conservation are minimized within 5 years					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources

Develop and implement species-habitat interaction monitoring programme	KWS	6 months	?	KFS, NGOs, BSP, BCCC, Universities, KEFRI, NMK	6 million
Open up migratory corridors in Aberdares and restore habitat connectivity in Mau/Eburu	KWS, KFS	5 years	?	Private Land Owners, Ministry of Land, Planning, Provincial Admin, NGOs, NEMA	
Remove the remaining lions from Aberdares National Park	KWS	1 year	?	NGOs, Private Land Owners	2 million
Manage the population of mega herbivores and other predators actively	KWS	5 years	?	NGOs, Private Land Owners	20 million (5 years)

Working Group 3: Poaching

Donald Bunge, Robert M. Chira, Simon Kisotu, David McConnell, Solomon Mureithi, Esther Mwangi, Michael Ngángá, Mike Prettejohn, Ron Surratt, Susie Weeks.

The plenary mind-mapping exercise identified the following poaching-related threats to the sustained recovery of bongos in Kenya:

Lack of collaboration between KWS and KFS, insufficient local community education and awareness, lack of alternative livelihoods for local communities, corruption, lack of harmonized policies between different sectors (particularly in relation to livestock), inadequate knowledge, lack of funding, inadequate judicial response to poaching.

The group explored each issue thoroughly and developed a corresponding threat statement describing both its root cause and its impact on wild bongo. For each threat, the group evaluated the current state of knowledge - what is known, what is assumed and what extra information would be useful in threat management. Finally, the group set goals for threat mitigation and actions required to achieve those goals. See tables below for details.

Table. Poaching-related threats, information evaluation and goals.

THREAT STATEMENT;				
1. Prevailing poverty levels combined with limited sources and high cost of protein, cause dependence on bush meat.				
Facts	Assumptions	Information gaps	Regional specificity	Sources
Poaching is active in areas where impoverished people have settled at the forest perimeters.	Poverty is not likely to be curbed in the near future. Poaching for bush meat is ongoing in the Mau	The volume of bush meat is not known Proportion of bush meat taken for subsistence versus that taken for trade is not known.	Eburu, Mt. Kenya, Aberdares, Mau.	Sightings of snares, hunting dogs, traps, etc by Michael Nganga; Solomon Mureithi; Donald Bunge; Susie Weeks & Mike Prettejohn.
The population of Kenya is increasing by 1 million annually.				?
The cost of bush meat in the markets is cheaper than legally sold beef, goat etc.				Susie Weeks, Born Free Foundation

GOALS				
<ol style="list-style-type: none"> 1. Increase food security by providing alternative means of cultivation e.g. sack gardening, and alternative sources of protein e.g. fish, poultry, rabbit farming. 2. Educate the local community about the consequences of bush meat consumption i.e. risk of disease, the value of wildlife and the legal implications of poaching threatened species? 				
THREAT STATEMENT;				
2. Limited alternative livelihoods in local communities where bongo exist has led to encroachment of bongo habitat and poaching				
Facts	Assumptions	Information gaps	Regional specifically	Sources
Idleness, unemployment and lack of education are rampant among members of communities where poaching is present.	Alternative sources of livelihood would reduce dependence on forests	Definitive evidence that alternative livelihood programmes can reduce forest incursions and exploitation.	Kieni East, Laikipia, Meru	Observations by Donald Bunge – MKWC
GOALS:				
Diversification of livelihood support activities at the community level e.g. promotion of nature-based income generating activities				
THREAT STATEMENT;				
3. Community awareness and education where bongos exist can be beneficial in deterring poaching and ultimately encourage conservation of bongo, however more of this is needed				
Facts	Assumptions	Information Gaps	Regional Specificity	Sources
The benefits of education have been observed by several organisations working in the area.	Increased education will positively benefit wildlife conservation in the region in the long-term?	Data on the real impact of education (this is difficult to gather).	Aberdares, Mount Kenya, Eburu	MKT, BSP Education Project & WHWF
Education/awareness-related? feedback from communities to all agencies cited on the right has been positive.				MKT, BSP Education Project & WHWF
GOALS				
Coordinate and measure? efforts among awareness and education organizations – KWS, BSP, MKT, WHWF, Nature Kenya, etc.				
THREAT STATEMENT;				
4. Inadequate security resulting from lack of; funds, specialized teams, equipment, intelligence and oversight are a threat to bongo				
Facts	Assumptions	Information Gaps	Regional Specifically	References
Inadequate equipment, manpower for monitoring bongo habitat at KWS e.g. vehicles, surveillance machinery	Adequate funds to finance manpower, equipment would enhance security in bongo habitat		Mt. Kenya (why only here?)	Donald Bunge – info from KWS rangers

GOALS				
<ol style="list-style-type: none"> 1. To increase the number of well staffed mobilized teams (well equipped) 2. Establish a national bongo conservation programme - Establish IPZs (intensive Protection Zones) 				
THREAT STATEMENT;				
5. Un-harmonized policies between agencies are a limitation in addressing threats to bongo				
Facts	Assumptions	Information Gaps	Regional Specificity	References
Lack of collaboration between KWS and KFS is often witnessed by organisations in the area.	Agency goals are different		Aberdares, Mount Kenya	BSP, MKT, WHWF
GOALS				
To encourage greater collaboration between government agencies and other stakeholders i.e. encourage participatory management planning				
THREAT STATEMENT;				
6. Poor information feedback mechanism to supply information on illegal activity to authorities on poaching activity is a threat to bongo				
Facts	Assumptions	Information Gaps	Regional Specifically	References
<p>Hotline numbers provided to communities have elicited responses on poaching activity from the community</p> <p>Response time from agencies has been delayed in some cases</p> <p>Fear of reporting poachers has hampered the response</p>	If adequate feedback mechanisms are put in place, security for bongos will improve		Mt. Kenya	Michael Ng'ang'a – WHWF
GOALS				
<ol style="list-style-type: none"> 1. To increase awareness of KWS hotline numbers and set up new contacts and networks where needed e.g. toll free numbers 2. To encourage the community to use of hotline numbers to report illegal activity (reward system) 3. To improve information sharing between stakeholders 				
THREAT STATEMENT;				
7. Lenient penalties as a result of an outdated wildlife act on wildlife poaching do not deter the activity and consequently are a threat to bongo				
Facts	Assumptions	Information Gaps	Regional Specificity	References
We have seen poachers acquitted or return to poaching weeks after they are fined or given community service sentences.	<p>Some of this may be addressed in the new Wildlife Act.</p> <p>The judicial committee on the whole are not well informed about conservation and wildlife</p>	After arrests are made there is rarely a feedback from the courts etc	Mount Kenya, Aberdares	BSP, MKT, WHWF

GOALS				
1. Lobby for the passing of the new wildlife act and lobby for more punitive sentences on poaching				
2. Sensitize and engage judiciary on the critical status of the bongo				
THREAT STATEMENT;				
8. Rampant corruption and misappropriation at all levels of agencies and institutions is a major threat to bongo				
Facts	Assumptions	Information Gaps	Regional Specifically	References
People charged with poaching offences have been released citing "lack of evidence" under suspicious circumstances Prosecution of poaching crimes is not always followed through	Most of the people in the system have been compromised – police, judiciary, etc Some KWS /KFS personnel carrying out poaching		Mt. Kenya, Aberdares	Michael Ng'ang'a - WHWF; BSP; Susie Weeks - MKT
GOALS				
1. Encourage both individuals and community organizations living along the boundaries of the forest to report to KACC				

Table: Actions generated by group 3 to eradicate poaching as a threat to bongo (actions were required to be S-specific, M-measurable, A-achievable, R-relevant and T-timebound).

GOAL 1: To increase food security by providing alternative means of cultivation e.g. sack gardening, and alternative sources of protein e.g. fish, poultry, rabbit farming					
<i>Actions</i>	<i>Responsibility</i>	<i>Time-line</i>	<i>Measure</i>	<i>Collaborators</i>	<i>Resources</i>
Identify bush meat hotspots in the bongo habitat areas	KWS, KFS, MKT,	3-5 years	Communities living near bongo habitat are self-sufficient in alternative sources of proteins	KWS, KFS, CFAs, Fisheries Dpt, MKT, BSP, WHWF	Full time employee for entire period to coordinate project, motor bike, field personnel in each of the bongo habitat areas
Identify / establish at least 2 CBOs in each of the 3 bongo habitat areas					
Identify NGOs and agencies working in the area and doing similar work e.g. Fisheries Dpt, KWS, MKT, BSP, WHWF					
Appraise CBOs to identify suitable projects and capacities/abilities					
Draft suitable proposals with all relevant stakeholders for funding					
Train CBO members					
COSTS (over 3-5 years?): Motorbike – 300,000 HR-Coordinator & Field Assistants – 6,000,000 Fuel, maintenance, insurance – 500,000 Fish ponds/poultry start-up – 1,000,000 <p style="text-align: right;">TOTAL: 7,800,000 (USD97.5K)</p>					
GOAL 2: To educate local community on consequences of bush meat consumption i.e. risk of diseases, value of wildlife and legal implications of poaching threatened species.					
<i>Actions</i>	<i>Responsibility</i>	<i>Time-line</i>	<i>Measure</i>	<i>Collaborators</i>	<i>Resources</i>
Identify NGOs and agencies providing environmental and wildlife education	KWS, WHWF, MKT	2-5 years	Communities living in bushmeat hotspots are sensitized on risks and negative impact of bushmeat consumption	KWS, MKT, WHWF	Dedicated project coordinator, Suzuki, generator, projector, HR – Coordinator, fuel, maintenance and insurance.
Coordinate efforts to work together to cover a wider area, eliminate duplication and specifically					

Target poaching hotspots and bongo habitats					
COSTS: Suzuki – 1,500,000 Generator – 60,000 Projector – 250,000 Coordinator – 1,250,000 <p style="text-align: right;">TOTAL: 5,560,000 (USD 69,500)</p>					
GOAL 3: To diversify livelihood support activities at the community level i.e. promotion of nature based income generating activities (actions and costs as for GOALS 1 & 2)					
GOAL 4: To increase the number of well staffed & well equipped mobilization teams					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources
Establish a permanent security team/force for each bongo population in conjunction with KWS, the community and other organizations	KWS, BSP, MKT	Teams operational in 6 months - 1 year	Notable reduction in poaching and more frequent sightings of bongo and animals comfortable within specific ranges	KWS, BSP, MKT	3 teams of 6 community scouts & 12 extra KWS rangers
Train both KWS rangers and community scouts for bongo areas					
COSTS: Scouts training - 7,200,000 KWS training - 1,200,000 Field costs - 6 teams of community scouts - 54,000,000 <p style="text-align: right;">TOTAL: 62,400,000 (USD 780K)</p>					
GOAL 5: To encourage greater collaboration between government agencies and other stakeholders i.e. encourage participatory management planning					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources
NGOs and other organisations with Kenya Forest Working Group to lobby for better management of forest areas	KWS / KFWG	1 year	Better perceived co-ordination between agencies & stakeholders. Increased frequency of calls and feedback to and from the liaison office / officer	KWS/KFWG/KFS/ MKT/BSP	2 Workshops for stakeholders in the year in order to produce an MoU / Use of an office and possibly an admin person from each of the collaborators to record and share info. Identify a (KWS) co-ordinator to gather

					info from the admin representatives and organise workshops etc.
Establish a liaison office/officer with help of KWS/KFS/Kenya Forest Working Group /Local NGOs	<u>KWS, KFS, KFWG, local NGOs</u>				
COSTS: 2 days for workshops (?)					
TOTAL: US\$ 1,250.00					
GOALS 6, 7, 8: To increase awareness of KWS hotline numbers and set up new contacts and networks where needed e.g. toll free numbers; To encourage the community to use of hotline numbers to report illegal activity (reward system); To improve information sharing between stakeholders					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources
Gather existing hotline numbers to ensure they are working, and avail them to the communities on a wider scale; encourage communities to report illegal activity	BSP / WH / MKT with the Senior Warden of each National Park / Reserve	6 months	Increasing responses on the hotlines, improved responses to calls by KWS and attached units, reduced illegal activity over time	BSP / WH / MKT with KWS and involving the communities on the boundaries of protected forests. Safaricom / Zain etc.	Time, travel costs, printing (posters & flyers)
Contact network providers on toll free numbers for use in reporting illegal activity by community members. Provide tie-in with providers for collaboration in the form of advertising / publicity					
Establish reward system for reports leading to arrest and successful prosecution					
COSTS: Time, travel costs, printing (posters & flyers)					
TOTAL COSTS: US\$ 2,500.00					
GOAL 9: To sensitize and engage judiciary on the critical status of the bongo					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources
Creation of informative statistics on poaching and its effects on the conservation of endangered species to be distributed to the judiciary community	KWS/KFWG/KFS /MKT/BSP	?	Positive responses from the judiciary translating to more punitive sentences and a better	KWS/KFWG/KFS/ MKT/BSP	Time (workshops), flyers, transport costs

Tie this in with the workshops recommended in No. 5 to produce documents to be distributed			understanding of the poaching issues.		
TOTAL COSTS: USD 1,500.00					
GOAL 10: To encourage both individuals and community organizations living along the boundaries of the forest to report to KACC?					
Actions	Responsibility	Time-line	Measure	Collaborators	Resources
Use field coordinators (cited in Action 1.) as well as personnel to sensitize the community on their rights and how they may report illegal activity in the areas they live in	KWS/KFWG/KFS /MKT/BSP	6 months	Community report back to our field co-ordinators on reports of corruption and interest in their rights with regard to the forests.	KWS/KFWG/KFS/ MKT/BSP	Printing, travel
Distribute the info when distributing info on hotline numbers (6) and running community education visits (2)					
TOTAL COSTS: USD1500					

Release Project Group

Tom De Maar, Jamie Ivy, Charles Musyoki, Ron Suratt, Jake Veasey,.

A proposed reintroduction to Mount Kenya from a captive facility in Kenya has created divisions within the KWS-constituted Bongo Task Force which currently monitors bongo conservation activities in Kenya. A small group was convened to explore the differences and to attempt to reach some agreement on what needs to be done.

[1993-94 – KWS bongo surveys in the Aberdares - bongos were seen and bongo sites mapped – estimated population size 86. Bongo signs also seen in Mt. Kenya].

Chronology of the captive breeding programme and proposed reintroduction to Mount Kenya:

1999 – A submission to the AZA Taxon Advisory Group paper by Paul Reillo suggested that bongo were extinct in the wild everywhere but the Aberdares.

[Clarification: KWS work in 1995-96 in collaboration with an M.Sc. student estimated about 86 individuals remaining in the Aberdares from signs].

AZA formed the Bongo SSP, a cooperative programme to manage and conserve a select and typically threatened or endangered ex-situ species population, in 1999.

2001 – The Bongo Repatriation Advisory Group (BRAG) was formed. Members were Ron Surratt, Paul Reillo, Mark Davis and Don Hunt. Repatriation discussions began with an aim of moving animals in 2 years.

2002-2004 - A huge fund-raising effort for the repatriation was mobilised.

2004 – Animals were shipped to Nanyuki, Kenya. This coincided with first sighting of bongo in the Aberdares for 5 years (captured on camera).

2005 – The Rare Species Conservation Fund (RSCF) and United Nations Development Program (UNDP) provided funding to the Bongo Surveillance Project (an initiative started in 2003 when the warden of the Aberdares National Park asked Mike Prettejohn to survey the area for bongo which had not been seen there by tourists for several years) .

2004 – The four-person advisory group (BRAG) which had led the repatriation effort split due to disagreement on a) whether or not more animals should be sent from the SSP and b) whether or not six generations of acclimatisation would be required before animals at Nanyuki could be released to the wild.

2005- Two members of the original advisory team (Don Hunt and Ron Surratt) continued their focus on captive management and release. Paul Reillo focused on BSP work.

2005-2007 – Eleven imported animals lost in total. Major diagnosis was focused on theileriosis: in 5 animals theileria was confirmed and in 3, it was suspected. It should be noted that theileria is a difficult disease and attempts had been made to resolve it but these had been curtailed unexpectedly.

2007 – The Bongo Taskforce was established. This is a KWS constituted committee of stakeholders. A release was planned for 2010 and meetings were held with KWS.

2008 – Bongo were found on Mt. Kenya. The first Task Force Meeting was held and the release discussed and agreed on the basis that it would be worthwhile for bongo conservation.

2008 – A KWS Board paper was prepared. The Board gave in principle endorsement for the proposed release on the basis that it would be an experiment. The paper specified 10 animals.

2009 - Planning for release continued and acclimatisation of animals began.

2009 – Another Task Force meeting was held to discuss the release and other conservation issues. Some members were missing but communicated reservations about the release by email.

The concerns included a range of issues including genetics and disease.(that) and disease (potential disease in captive animals being transmitted to the wild and the possible naivety of proposed release animals compromising their survival). These concerns were communicated to representatives of the Nanyuki programme. Preparations continued for release.

2010 – A road was constructed, crates and transmitters purchased.

March 2010 – The reintroduction was suspended by the Task Force pending a stakeholder meeting aimed at resolving outstanding issues.

July 2010 – A Task Force meeting was held prior o which efforts were made to capture the views of all members, whether they could attend the meeting or not. The issue of the release essentially split the Task Force 50:50. Experts (Jamie Ivy, Lyndon Estes and Paul Reillo) were approached to bring some clarity to the difficult issues. As a result of this meeting the Task Force had agreed:

- the need to address genetic issues by further analysis of wild and captive animals.
- that some Nanyuki animals would be released, but to fenced sanctuaries, to prevent mixing with wild stocks.

Concerns raised about the current release proposal:

- 1) For the period 2002-2005 a thorough examination of all bongo files in the archives of KWS and relevant Kenyan Government departments showed no correspondence on the repatriation project.
- 2) There is no comprehensive plan describing the proposed reintroduction programme – it is important to have a document that clearly describes, for example:
 - how the captive population will be managed
 - how release will be carried out
 - how post-release monitoring will occur
- 3) Current repatriation plans were predicated on the historic assumption that bongo has become extinct on Mount Kenya – the plans have not been reviewed in light of the finding that animals are still there and in unknown numbers.
- 4) Genetic selection of release animals may not be optimal in the light of animals still occupying that area. There is a risk that prematurely releasing significant numbers of animals of globally well-represented lines could compromise the wild genetic profile over the long-term.
- 5) That release efforts may distract from other bongo recovery issues like security.
- 6) Released animals will not be secure from poaching – it is not clear whether extra anti-poaching effort will be part of release project planning.

Concerns raised about the suspension of the current release proposal:

- 1) Publicity surrounding the repatriation effort has driven a lot of the current awareness of the plight of bongo and the need for conservation action. If the release doesn't go ahead there could be a loss of momentum.
- 2) AZA zoos may withdraw funding for repatriation events if current situation doesn't move forward.
- 3) The proposed genetic studies will not necessarily result in consensus on genetic management. Such studies are rarely conclusive in the way suggested - there is always more information to be sought and different perspectives – pursuing this could significantly delay forward movement.
- 4) The repatriation effort is being seen as a threat where it should be seen as an opportunity.
- 5) Lack of security is not a good reason to delay release – poaching will never stop so animals should be released to reduce the impact on numbers.
- 6) Publicity surrounding the release may lead to extra funding for security from the Kenyan authorities. This opportunity will be lost if the release does not happen.

[It was noted that KWS recognises the potential value of international herds and would like to see further repatriation events in future. It was also noted that, according to the Kenyan Constitution, no-one owns wildlife in Kenya – it belongs to all Kenyans].

The following goals were agreed, the achievement of which should go some way to resolving the issues raised:

- 1) Application of best practice captive management (demographic, genetic, husbandry, disease risk management) for all in-country and international bongo populations, to include a documented captive management plan for each.
- 2) Application of best practice in reintroduction through close adherence to the IUCN Guidelines for Reintroduction.
- 3) Development of a comprehensive management plan for the release project detailing:
 - how the captive population will be managed to support release
 - how release will be carried out
 - how post-release monitoring will occur
- 4) A six month deadline on the gathering of additional genetic information so that a decision can be made about the proposed reintroduction in a timely fashion.
- 5) A coherent meta-population plan for all captive and wild populations, covering genetic and demographic management, disease risk management and reintroduction.
- 6) Review and endorsement of the work and documents above by a suitable neutral, independent agency or expert body.[Bob Lacy (CBSG) was recommended for the genetic component.]
- 7) A thorough ecological assessment of suitable sites for bongo to inform future reintroduction initiatives. Criteria for suitability should be developed and factored into long-term planning.

Prioritisation Exercise

Recorded by Caroline Lees, Charlotte Keel, Mike Prettejohn.

Goals from the working groups were brought to plenary and prioritised by all participants in terms of their urgency and importance to mountain bongo conservation. Prioritisation was done by assigning 12 dots to each participant – 6 orange and six black. Participants were then invited to place their dots against the goals they felt were most urgent (orange dots) and most important (black dots). Participants were allowed to assign multiple dots to any one goal. The prioritisation was done in two phases – once on day 2 with 10 dots each and once on day 3 with 2 dots each. This second exercise was carried out to allow inclusion of an additional goal (for captive breeding) which was not initially available. The results are shown below.

Further consolidation of goals was carried out post-workshop to take into account the overlap between working group outputs. Urgency and Importance scores travelled with those goals that were moved, to create a final list of ranked topics. These are shown in Table X.

Table 1: Workshop goals listed in order of total points scored for both urgency and importance.

Goal	Points (dots) Accumulated		
	Urgency	Importance	Total
Security: To increase security by increasing the number of well staffed, properly equipped, mobilised teams and by creating a bongo conservation programme comprising, <u>for each population</u> : an Intensive Protection Zone (IPZ) and a permanent security force.	25	50	75
Human Activities: To control legal activities and to stop illegal human activities that destroy habitat, through: <ul style="list-style-type: none"> a. zoning and demarcating controlled utilisation areas so that they do not interfere with bongo habitat b. stopping illegal activities in bongo habitat and in the whole ecosystem c. curtailing any further development of infrastructure in critical bongo habitats d. during construction, ensuring there is adequate wildlife and forest security personnel to prevent any removal of flora and fauna 	22	26	48
Policy Harmonisation: To ensure that all policy issues that threaten conservation of bongos and their habitat are harmonised within 1 year, by: <ul style="list-style-type: none"> a. establishing a national bongo conservation coordination committee b. comprehensive mapping of existing and potential bongo habitat c. development of protocols to guide bongo conservation (6 months) 	15	14	29
Resources and Research: to identify bongo conservation and research needs over the next five years, construct budgets and identify funding sources and for funds within eight months. Secure funds to implement the conservation action plan within two years.	7	13	20
Captive Breeding: To achieve best practice in the management of all captive bongo populations and in all reintroduction and translocation activities, in support of mountain bongo conservation	14	4	18

Goal	Points (dots) Accumulated		
	Urgency	Importance	Total
in Kenya.			
Community Awareness: to coordinate efforts among awareness and education organisations, i.e. KWS, BSP, MKT, WHWF.	13	3	16
Limited Alternative Livelihoods: Support activities aimed at diversification of livelihoods, at the community level, through promotion of nature-based income generating activities.	2	11	13
Genetic: To profile 50% of all remaining bongo, both wild and captive, based on prevailing population estimates within 6 months. To develop a strategy which best secures genetically viable populations of mountain bongo which are as representative as possible of historic mountain bongo populations utilising best practice and all available data within one year.	6	5	11
Demographic: To provide more accurate estimates of wild populations within 6 months (using the profiling data to assist in population estimates). To develop a strategy which best secures demographically stable populations of mountain bongo which whilst being mindful genetic considerations utilising best practice and all available data within one year.	5	6	11
Community Issues: to ensure that communities living adjacent to bongo habitat are involved in bongo conservation through education awareness creation and livelihood improvement. Also, to identify livelihood options compatible with prospective communities adjacent to bongo habitat.	8	0	8
Information Feedback Mechanisms: Improve information feedback systems by: <ul style="list-style-type: none"> a. To increase awareness of KWS hot-line numbers and set up new numbers and networks where needed b. To encourage the community to use hot-line numbers to report poaching activity (e.g. using toll free and reward systems) c. To improve information sharing between stakeholders 	3	5	8
Prevailing poverty levels: to improve food security and protein sources, including: <ul style="list-style-type: none"> a. fish farm b. poultry-rabbit c. sack garden to sensitise communities about the consequences of bush meat consumption: <ul style="list-style-type: none"> a. diseases b. value of wildlife c. legal implications 	7	0	7
Greater Inter-agency Cooperation: To encourage greater cooperation between government agencies and other stakeholders, including: <ul style="list-style-type: none"> a. finalise the new wildlife act b. encourage participatory management planning 	4	0	4
Lenient Penalties: to encourage the completion of the new Wildlife Act, to lobby for more punitive sentences and to sensitise and engage the judiciary to the critical status of the bongo.	1	3	4
Corruption: to encourage both individuals and community-based organisations on the boundaries of the forest to report corruption to the police and KACC.	2	1	3

Goal	Points (dots) Accumulated		
	Urgency	Importance	Total
Species Interaction: to ensure that all native species interactions affecting bongo conservation are minimised within 5 years: <ol style="list-style-type: none"> development of a species/habitat interaction monitoring programme opening up migratory corridors in fenced areas to ease pressure from mega-herbivores such as elephants and buffalos (habitat modifiers) 	1	0	1
Disease: a) To remain abreast of DVO reporting, investigate all bongo mortalities, performing diagnostic necropsies where possible, and investigate mortality events in related species. b) To reduce mortality of any future bongo imports by 90% of the 2004 import. To carry out health screening of source and destination populations and perform risk assessments in accordance with IUCN reintroduction specialist group guidelines.	0	0	0

Table 2: Goals ranked by Urgency (left-hand column) and by Importance (right-hand column)

	Ranked by Urgency	Ranked by Importance
1	Security	Security
2	Human Activities	Human Activities
3	Policy Harmonisation	Policy Harmonisation
4	Captive Breeding	Resources and Research
5	Community Awareness	Limited Alternative Livelihoods
6	Resources and Research	Demographic
7	Community Issues	Genetic
8	Prevailing poverty levels	Captive Breeding
9	Genetic	Community Awareness Lenient Penalties
10	Demographic	Corruption
11	Greater Inter-agency Cooperation	Community Issues Prevailing poverty levels Greater Inter-agency Cooperation Species Interaction Disease
12	Information Feedback Mechanisms	
13	Corruption	
14	Limited Alternative Livelihoods	
15	Lenient Penalties	
16	Species Interaction	
17	Disease	

Table 3: Post-workshop consolidation of goals into eight broad topics, and the resulting order of priority.

	Ranked, Consolidated Issues
1	Security Security, Information Feedback Mechanisms (Total =75)
2	Human Activities (Total = 48)
3	Small Population Issues Captive Breeding, Resources and Research, Genetic, Demographic (Total = 46)
4	Communities Community Awareness, Community Issues, Prevailing Poverty Levels, Limited Alternative Livelihoods (Total = 40)
5	Policy Harmonisation Policy Harmonisation, Greater Inter-agency Cooperation (Total = 29)
6	Law, Judiciary, Corruption Lenient Penalties, Corruption (Total = 7)
7	Species Interaction (Total = 1)
8	Disease (Total = 0)

C. Lees Sept.2010

Appendix 2: Workshop Participants

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Appendix 3: Acronyms and Abbreviations

BSP - Bongo Surveillance Project
BTF – Bongo Task Force
CBO – Community Based Organisation
CFAs - Community Forest Associations
DRSRS - Department of Resource Surveys and Remote Sensing
DVO - District Veterinary Officer
EA - Environmental Audit
EAZA – European Association of Zoos and Aquariums
EEP – European Endangered species Programme
EIA - Environmental Impact Assessment
EPMAG – EAZA Population Management Advisory Group
IBF - International Bongo Foundation
ICIPE - International Centre for Insect Physiology and Ecology
ICRAF - International Centre for Research in Agroforestry
ILRI - International Livestock Research Institute
IPZ - Intensive Protection Zone
ISB – International Studbook
KACC - Kenya Anti-Corruption Commission
KBC - Kenya Broadcasting Corporation
KEFRI - Kenya Forestry Research Institute
KENGEN- Kenya Electricity Generating Company Limited
KFS - Kenya Forest Service
KWS - Kenya Wildlife Service
KWS - DVS = Kenya Wildlife Service, Department of Veterinary Services
LWF - Laikipia Wildlife Forum
MKT - Mount Kenya Trust
MKWC - Mount Kenya Wildlife Conservancy
NBMC – National Bongo Management Committee
NEMA - National Environment Management Authority
NMK - National Museums of Kenya
SSP – Species Survival Programme
UNEP - United Nations Environment Programme
WHWF - William Holden Wildlife Foundation
WRMA - Water Resource Management Authority
WSP - Woburn Safari Park

