O V E R V I E W

Year-end report January – December 2012

Cheetah Conservation and Human Impact in Kenya

Action for Cheetahs in Kenya (ACK) mission: *To promote the conservation of cheetahs through research, awareness and community participation in Kenya.*

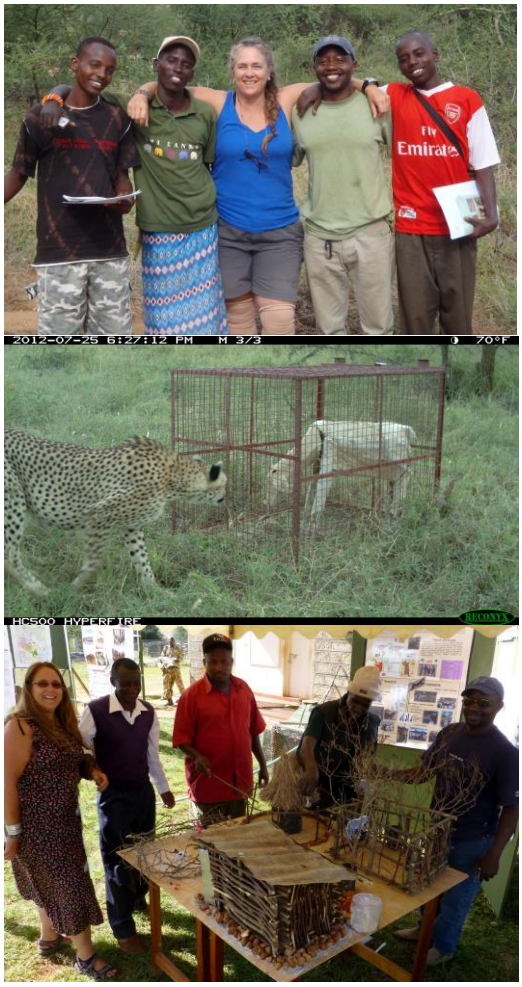
SUMMARY

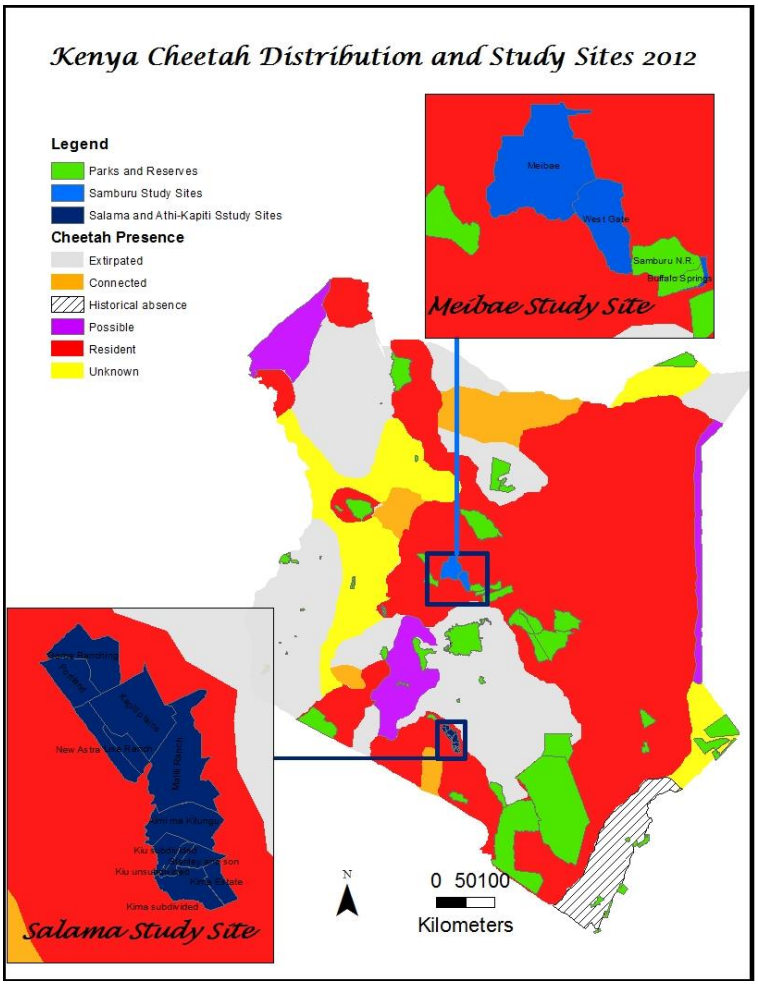
The cheetah (*Acinonyx jubatus*) is classified as Vulnerable (Durant, Marker et al. 2008). Results from ACK national surveys show that Kenya holds 1200-1400 cheetahs with over 75% residing on land outside protected areas. Cheetahs have been extirpated from 25% of their historic Kenyan range since 1990 (KWS 2010). The goal of this project is to promote cheetah population sustainability in Kenya through coexistence with people. The objectives are to: 1) Identify factors affecting cheetah livestock predation and mitigate conflict; 2) Understand cheetah habitat selection and 3) Influence public and administrative changes to positively affect cheetah conservation and management protocols.

ACK works closely with local wildlife authorities and land holders to develop policies and programmes which support wildlife conservation and human livelihoods for the long-term development of sustainable human and wildlife zones. The project receives technical and financial support from the Cheetah Conservation Fund (CCF) and works in affiliation with the Kenya Wildlife Service (KWS). ACK administrative functions are incorporated through *Carnivores, Livelihoods and Landscapes (CaLL)*, a Kenya non-profit organization. ACK is focused in two regions (Salama and Samburu) that are identified as a high priority in the National Cheetah and Wild Dog Strategic Plan (Anonymous 2007) and we follow methods recommended by the Global Cheetah Master Plan.

Research in 2012 focused on three themes : 1) Analysis of monitoring and cheetah movement data from 2007 – 2011 collected in the Salama region; 2) Analysis of the relationship between cheetah and human influences throughout Kenya and 3) Clarifying goals and data collection methods for habitat monitoring in the Meibae region of the Samburu District. Camera trapping, game counts, faecal collection and conflict investigation methods were used at both study sites to improve our understanding of cheetah adaptations to land-use changes. Students worked with technical and academic advisors to develop protocols for camera trapping and scat collection. Game count data from 2012 will be analysed at the completion of the project in 2013. Partnerships with the Athi-Kapiti Cheetah Project and the Mara-Meru Cheetah Project were clarified and collaborative work began. Results from our combined studies identify factors influencing cheetah habitat selection and issues affecting livestock predation to allow ACK and KWS to conduct seminars and training for community members and wildlife managers. This information assists in problem-animal control measures to prevent the killing of cheetahs and promotes ecological awareness through community education and school programmes.

Photos: (Top) *Samburu staff, (Center) Camera trap captures cheetah investigating robotic goat, (Bottom)Salama staff.*
Map: *Includes two study sites and the Athi-Kapiti region which was used for camera and faecal studies conducted in 2012.*





2012 ACCOMPLISHMENTS (SUMMARY)

The list of accomplishments from January – December 2012 includes:

RESEARCH
Research is the backbone of ACK work in Kenya – results are shared with wildlife authorities, local administration and conservancies, international partners, local partners and the community.

Photos*: Volunteer, Maxime Lapidaire, assists Cosmas Wambua with night game count (photo by Reinier van Esch).*

- Six cheetah scouts collect data in the Salama and Meibae Study sites as a part of cheetah monitoring, game monitoring, and conflict mitigation. In Salama our data spans over a seven year period during drastic land use change. In Meibae, our data follows five years of monitoring by the conservancy through the Northern Rangelands Trust, but is focused on cheetah preferred prey and potential conflict aspects.
    - 27 reported conflicts investigated in Salama with only one being verified as a cheetah conflict;
    - 13 bomas built with help of Salama scouts, more than 40 other owners received advice;
    - 13 predator mortalities – all due to road accidents – were documented in Salama and seven documented fatalities in Meibae – five to road accident and two unknown – no cheetah mortalities in 2012 in our study areas;
    - In Salama, 23lost livestock were reported of which seven cases were from theft and 15 cases were lost in the field. Three of the stolen livestock were returned and five of the lost livestock searches resulted in recovery.
    - An average of eight adult cheetahs are seen monthly in the Salama area, 14 cheetahs documented by the Athi-Kapiti project and as many as 22 cheetahs have been recorded in the Meibae Conservancy.
- Game Counts
    - 100 days of walking patrols and 10 walking transects conducted by each of the three scouts in Salama;
    - 80 driving transects completed by ACK senior scientist and assistants in Salama;
    - 180 days of walking patrols conducted by three scouts in Meibae – transects to begin in January 2013
- Student projects (all in Salama)
    - Camera traps set for 12 weeks with six baits rotated weekly at two study locations. Cheetahs captured at live goat and robotic goat baits.
    - Faecal collection resulted in 220 scats collected for hair analysis. Although 20 scats were collected for hormone analysis, freezer failure caused samples to be destroyed.
    - Detection dog training utilized a dog who developed severe arthritis to locate cheetah scat – this training will start again with a new dog in 2013.

CAPACITY BUILDING

It is the goal of ACK to build skills and empower future conservation leaders. We strive to partner with experts who can assist in bringing the knowledge, skills and resources to Kenya to determine policies in research, conservation and environmental management.

***Photo**: Chris Lentaam – front row fourth from left with colleagues from 14 countries at the Human-Wildlife Conflict Collaboration seminar in Kenya, March 2012.*

- Two new scouts were hired at the Meibae research site in March and training was completed in July;
- Chris Lentaam from the Meibae site received Human-Wildlife Conflict training in March;

- Salama staff were trained by Kenya Wildlife Service to participate in the national monitoring project (MIST);
- ACK developed a partnership with the short-term cheetah project in the Athi-Kapiti ranches to assist with training and consistency of data collected;
- ACK developed a partnership with Mara-Meru cheetah project to improve cheetah monitoring nationwide and support the pilot for behavioural studies of cheetahs inside protected areas;
- ACK director and Senior Scientist attended three conferences/special events in the US, gave presentations at 12 zoos, visited five national parks and traveled through 23 states for fundraising between August and October.

COMMUNITY

Education programmes instil a conservation ethic and reduce misconceptions about cheetahs and other predators. ACK works with community groups and schools to provide activities in environmental caretaking and wildlife protection.

Photo: *Wildlife Hero Award presented to Mrs. Mwau Mololo by Mary Wykstra at a community baraza in Kalule area of the Salama study area.*

- Development in the Salama study site is occurring at unsustainable rates now that fencing has been placed around the 5000 acres being developed as a part of Kenya's Vision 2030. Local and international communities rallied to help bring water to and protect animals from dying against the chain link fence. Measures are in place to assure areas surrounding the city are sustainable – but it will work only if the measures are enforced;
- ACK presented 12 "Conservation Hero" Awards to herders and farmers who made improvements in livestock husbandry to protect livestock and to promote living in harmony with wildlife;
- ACK hosted the Kalamazoo Christian High School in a project on water quality at the Kiima-Kiu Secondary school to launch a mission abroad programme for the US high school students;
- ACK hosted five international interns/volunteers, two local interns and three students (one local and two international) working with us in 2012. An additional three volunteers work with ACK in the US.

RESEARCH

Salama

ACK addressed the need to work within the community in Salama since first hiring our Community Liaison Officer (Lumumba Mutiso) in 2005. In that year, we collared a problem cheetah and learned of the adaptations that cheetahs make to living in landscapes undergoing rapid changes of increased settlement and land use changes. ACK Director (Mary Wykstra) wrote an article telling the story of ACK's beginnings in the Salama area. Read the article in *Yale University Sage Magazine* (April 2012 – http://sagemagazine.org/fading-spots-a-mothers-story/).

Photo: *ACK's first cheetah scout (2006), now Community Liaison officer, Lumumba Mutiso. Once an angry victim of human-wildlife conflict – he is now a voice for conservation.*

The article raised the interest of the National Public Radio (NPR) leading to a broadcast on *The Story* that aired on 20 June 2012 (20 June 2012: http://thestory.org/archive/the_story_62012_new.mp3/view).

Photo: *Cheetah Scout, Pius Wamunyu, prepares to investigate a conflict.*

The need for additional on-the-ground communication sparked the hiring of two additional scouts in 2008. Data collected from the scouts as well as their link to the community is essential not only for the science, but to encourage conservation by communities in the region. Although data collection is a large part of the scout's work, they also spend a considerable amount of time networking with the community to address questions and to link people with answers, not only on wildlife and environment, but also on strengthening farming practices and sustainable business management.

Conflict with local people, particularly over livestock depredation, is a major cause of the global decline of large carnivores (Ogada, Woodroffe et al. 2003), thus understanding issues affecting livestock depredation greatly assists with conflict mitigation. Conflict incidents are confirmed using immediate verification interviews conducted by cheetah scouts. Interviews from 2005 – 2006 gave us a base of information on circumstances of livestock losses and enabled us to form a network of communication to reduce the likelihood of livestock loss. In 2007 – 2008, conflict interviews enabled us to compare movements of a perceived problem cheetah through comparing radio telemetry data with reported livestock losses. In 2009 – 2011, we were able to document changes in livestock loss patterns during area subdivision (*Figure 1*). Interviews evaluate the circumstances of the livestock loss by investigating herd size, livestock husbandry, and level of protection against loss to carnivores. Additional random household interviews were conducted in 2009 to compare conflict and attitudes between farmers with and without conflicts. The Salama model is used in training community scouts in the Samburu site and information can be compared to conduct conflict mitigation programmes in new areas.

In 2012, there was only one cheetah conflict within the boundaries of our Salama study area. All other reported losses were attributed to hyena, leopard or jackal. While the other predator species are not the focus of our research, we have implemented programmes in loss prevention and tolerance for their presence as a part of a healthy ecosystem. Throughout the entirety of our monitoring project (2005 – 2012), there are only eight cases out of 248 where a predator attack happened at the same location where a previous loss occurred. Sheep and goats were most frequently killed, accounting for 96% of the losses reported (*Figure 2*). These numbers are less than half of the reported losses that occurred in 2011.

Out of 27 reported conflicts in 2012, the majority of conflicts happened between midnight and 0600 (78%, n=21). An additional 19% (n=5) occurred between 0600 and 1000 in the morning hours. Only 3% (n=1) occurred in the afternoon between 1400 and 1800. Our mitigation efforts focused on losses during the night, while still maintaining close contact with herders during the day and alerting them of areas where cheetahs had been sighted. The scouts assisted in making 13 boma improvements, providing advice and labour to the farmer. Scouts also designed materials for community meetings (baraza) and networking opportunities to show community members the means for improving night-time livestock protection.

Figure 1: *Conflict recorded and events that may have influenced the level of conflict*

Year	Total Conflicts Reported	Cheetah Evidence	Area Event
2007	37	12	Completed radio tracking and focused scout effort on conflict evaluation – only one scout
2008	19	12	Most of effort on training new scouts in patrol and transect monitoring, developed new forms and goals– new scouts started in May with three month training.
2009	36	12	Three scouts conducting full time work, land settlement in Aimi and Malili increased
2010	32	10	Settlement continued, large plot of land purchased by the government in Malili along the western boundary of the study area
2011	52	1	Malili town development – increase in subsistence settlement. 52% (n=27) of reported losses due to hyena, An additional 25% (n=13) of losses lacked sufficient evidence to determine predator, but loss occurred at night in or near boma.
2012	27	1	ICT center fenced – game dispersed, and ACK focus on boma improvements and education about loss prevention.

Photos (above): *Cattle sheep and goat conflict investigation includes taking evidence photos, conducting interviews and discussing mitigation measures to prevent future conflict. If injured or problem wildlife is suspected ACK officers will call KWS immediately. (Below) Field officer Jimmy Muli conducts interview and consultation with livestock owner.*

Figure 2: *Livestock conflicts recorded in 2012*

Species	Killed	Injured	%
Cow	1	2	3%
Goats	13	0	44%
Sheep	15	2	52%

Cheetah scouts document wildlife mortalities for reporting to KWS. Mortalities recorded by ACK must be confirmed and documented by our staff (not hearsay). The figures reported here do not include other animals that were documented by the Athi-Kapiti Cheetah Project or those between the study boundary and Nairobi. Other reports of wildlife deaths along the fence of the

Konza ICT fence are discussed later in this report. It is of great concern that a substantial number of predators are hit by vehicles along this stretch of the Mombasa-Nairobi highway. Wildlife mortalities documented in 2012 included predators and game species (Figure 3).

Figure 3: *Wildlife mortality documentation within the Salama study area*

Species	Number	Form of death
Hyena	8	Road kill
Serval cat	2	Road kill
Jackal	2	Road kill
Genet	1	Road kill
Zebra	3	Road kill (2), Hit ICT Fence (1)
Buffalo	1	Broken leg
Kongoni	2	Hit ICT Fence

Photo: (Above) *Serval hit by car on Mombosa Highway – high speeds after highway reconstruction and increased settlement result in fatalities to many more animals that we see. The only ones recorded by the scouts are the ones that we can verify. (Below) Snare along ICT fence.*

Only one case of a poached animal was documented by ACK staff via remains near the ICT fence on the Malili ranch. The Athi-Kapiti cheetah project reported several other animals killed along the fence boundaries, but no photo or GPS was taken. With most farms having been subdivided and the internal fences taken down, poaching evidence declined in 2011. Very few snares were found in the study area prior to the ICT fence. With more than 40 km of new fence around the proposed 5000 acre ICT city, the poachers have severely impacted wildlife by chasing them into the fence with dogs and by cutting holes in the fence to set snares.

ACK has monitored wildlife changes since 2008. The third set of game counts commenced in June 2012. Senior research staff conducted driving transects on the Kima, Stanley, Aimi and Malili ranches along similar routes as those used in 2008 – 2011. Some routes needed to be changed due to fencing after the land subdivision. The scouts conducted walking transects that cover areas where ACK vehicles can no longer pass due to road and settlement changes. These counts will continue through 2013 to compare with counts from previous years and will allow us to conduct a trend evaluation of prey structure over a six year time frame. With both the game counts and the predator conflict interviews, we are documenting the effects of land-use change and development on the biodiversity as well as the economic impact of land fragmentation during the stages of development in the Salama community. Using the Master's thesis study conducted by Cosmas Wambua, we will now be able to see the changes in habitat usage. Using a dynamic model developed by Mary Wykstra in her master's studies, we can confirm the value of the intact scrub ecosystem and the effects of fragmentation on prey and predator during dissolution of their habitat.

Athi-Kapiti Cheetah Project Partnership

The Athi-Kapiti Cheetah Project (AKCP) was initiated in 2010 in the Kajiado district to monitor the population of cheetahs in the ranches of the Athi-Kapiti region. We were made aware of the efforts of the project in 2009, but became involved with it when Michael Mbithi was appointed the coordinator for the project. We assist them in monitoring of the cheetah and habitat by sharing ACK data collection forms and by conducting training seminars for their staff. Three cheetah field scouts were hired from within the community around the ranches in the AKCP study area. ACK field scout training included using GPS, compass, and camera as well as training in predator track ID, predator scat ID, and mammal ID. Data consistent with the Salama project enables comparative analysis of the status of cheetahs across the adjoining study sites. The first training was conducted in September 2011, with follow up in January 2012, and walking transect distance sampling training in April 2012. As a part of student faecal and camera trap projects, additional driving transect counts were conducted by ACK staff in the Athi-Kapiti ranches between June and August.

Photos: (Above) *Training seminar with Athi-Kapiti Cheetah Scouts. (Below) Billboard for the new Konza Technical City (ICT)*

Development in the Malili Ranch

Between 2006 and 2007, two share-holder commercial ranches (Aimi and Malili) in the Salama study area were converted from share-holder commercial ranching to parcelled subsistence farming on individual plots of 7 to 10 acres. The 22,000 acre ranch known as Malili was parcelled out during this subdivision. In 2009, a portion of the land was purchased by the government for the construction of a technology-based city dubbed "Africa's Silicon Savannah" as a part of Kenya's "Vision: 2030". The government began the process of fencing the 5000-acre piece of land where the proposed Konza City will sit. The fencing was finalized in the first quarter of 2012. Many animals were fenced inside the property without adequate exit or access to water. Animals were congregating along the fence on the inside and walking along it looking for an opening, but turning back to the secure section of the property before finding the opening. The situation worsened as days went by and the animals, especially Kongoni (hartebeest), started dying of thirst. In February 2012, the KWS senior scientist responsible for the area invited ACK, the Athi-Kapiti Cheetah Project and the KWS Senior Warden to a meeting at the KWS Konza outpost to chart the way forward regarding the animals trapped in the fenced in area. A joint decision was made that water be provided to

the animals as soon as possible. Lisa Ranch, Friends of the Nairobi National Park and Kapiti Estate donated water, troughs and boozers to transport water to the chosen locations until KWS funds could be procured and a long-term solution could be identified. Over 800 animals were trapped inside the fence with only two 200 meter openings at one side of the property. Several herds of kongoni, wildebeest, zebra and gazelle also paced the outside trying to find a means of getting into the past grazing area and became targets for local poachers.

Photos: *KWS worked with their local partners to monitor and find both immediate and long-term solutions to the struggling wildlife that were trapped inside the fence. Water delivery was initiated by Michael Mbithi.*

As vehicles drove along the roads at either side of the property, it caused panic to the animals on both the outside and the inside. Since the animals were not used to the fence, many of them were running into the chain-link, breaking their necks (dying) and damaging the fence. There were also noticeable signs of increased poaching - blood and stomach contents were visible but no carcass. Through links on social media, ACK made contact with several groups of people who are active in addressing animal rights issues. Empty water bottles were hung along the fence in areas where high mortalities were occurring as we worked in collaboration with KWS and AKCP to develop the idea and to gather volunteers both locally and from the Nairobi vicinity. Support came locally though donation of the 65,000 bottles and internationally through donations to cover transport and allow school children to participate in saving wildlife. Volunteers came mostly from Nairobi and over a six week period over 28km of fence-line supported a continuous string of bottles- moving, reflecting and making sound to alert the panicked animals of the barrier. Poaching decreased because of our activity around the fence-line. ACK staff used the opportunity to discuss the issue with newly settled farmers to increase their sensitivity to the issues and encourage them to contact KWS at any signs of poaching.

In March the relief of rain provided ample water for the trapped animals, but hampered the plans to drive the herds out of the fenced area. The authorities in charge of the site wanted to close the fence, so our only choice was to drive the animals out no matter the weather. KWS organized people and helicopters to assist their capture team and we successfully drove over 800 animals out the two 500 meter openings on the southern end of the property. Unfortunately, in addition to about 50 animals remaining inside, within a week of the completion of the fence, poachers cut several openings into the fence allowing over 200 animals back into the same grim circumstance. Larger herds of cattle were also let in by neighbouring farmers who wanted access to the un-used grazing area inside the park. Although KWS, ACK and ACKP became more active in controlling the activities of the poachers, there are still occasional signs of poaching activity. By September, over 500 animals were back inside the fence, but the large openings from the cattle herders gave more freedom and the bottles on the fence helped funnel the wild animals through the best exit points.

Photos: *Warthogs were among the species protected when the bottles were hung along the fence by volunteers and students. Bottles were removed when they weathered and began to fall because the animals had gotten used to the fence and openings were made that allowed animals to pass. The KWS helicopter and over 50 volunteers drove over 800 animals out from the property in April 2012.*

The weather was taking its toll on the strings holding the bottles and our agreement with the government authorities was that we would assure the clean-up and maintenance of the bottles. In December, we tried to organize the same groups of people to remove the bottles but the timing was not right for active participation. Instead we offered the bottles to a local family – a grandmother who supports three orphan grandchildren through gathering plastic from the highway for recycling. The family cleared 15km of fence-line in three consecutive days and five ACK staff with four volunteers cleared 12 km of fence in one day. All of the bottles were taken to the family and will be used to pay school fees for the children.

The future of the animals in and around the ICT fence is still questionable. Along two sides of the fence the land is completely divided into seven acre plots. Settlement and development have been rapid. Most of the wildebeest and zebra have migrated south, but will return again next year to find movement in the area challenging. Those kongoni and gazelle grazing inside the fence now will be again driven out into the community once further development begins for the technical city. The ranches in the Athi-Kapiti ecosystem are now the last sanctuary for the game that once ranged across the Malili and Aimi ranches. Although in theory, wildlife corridors are meant to remain intact along the fence-line, it will be difficult to police these activities in the long-term.

Meibae Conservancy

Located in the Samburu district, the Meibae Conservancy presents a different scenario from the Salama site. Meibae is managed through a board of directors representing five clans of the Samburu tribe. The Conservancy is a member of the Northern Rangelands Trust (NRT) which is an organization set up to assist communities in land and wildlife management and community tourism development. Each conservancy belonging to the trust is aided in security and governance through training and are closely linked to the Kenya Wildlife Service. Rangers collect data on the key species identified by NRT during their security patrols and they also provide security to the people. ACK has been active in the Samburu region since 2010, with concentrated monitoring in the Meibae Conservancy since 2011.To date, our work in Meibae has been information gathering on the status and threats to cheetahs in the region to compliment the work conducted by the conservancy rangers. Materials developed in Salama and those already used in the Meibae Conservancy were used to develop data forms and methodology for the cheetah scouts. In our initial proposal (2009), the research objective was to radio collar cheetahs in collaboration with a Save the Elephant tracking project to evaluate cheetah movements in relation to other threatened and endangered species. Permission for collaring was granted by KWS and the appropriate county councils. Funding was granted for the collar deployment. However, collaring the cheetahs was not completed due to difficulty in trapping the cheetahs. After several failed trapping attempts in 2010 (mainly due to non-target animals being caught in the traps), the project stepped back to further monitor cheetah movements using on-the-ground staff; at the same time, the camera trap project (discussed later in this document) was developed in Salama for testing alternative cheetah baiting methodology (see student project below). Collars purchased from Savannah Design in Nairobi are being held for adding new technology once we are able to identify the best means of cheetah capture.

Photo: *Cheetah Scout Chris Lentaam investigating a conflict with Meibae Community Ranger.*

Chris Lentaam is our Head Cheetah Field Officer in the Meibae Conservancy. All data collected by Chris in early 2011 used the existing Northern Rangelands Trust patrol forms and were copied for ACK use. Chris worked with Cosmas and the Salama ACK team to further develop data collection in Meibae that is consistent in method and content for comparing cheetah and prey status in the two study sites. New monitoring forms were developed near the end of the 2011 to improve ACK data collection to target cheetah prey and competition by including additional species to those already being documented. Chris then worked with the Meibae Conservancy to identify two additional Cheetah Field Officers in 2012 – Soulh Lemarte and Moses Kinyosi. Chris was sponsored by the Cleveland Zoological Society to attend human-wildlife conflict training in May 2012, and he continues to work with the Meibae rangers on conflict issues being addressed in the area.

After hiring new scouts, ACK evaluated the area of coverage for each person within the 1200 square kilometre conservancy in relation to on-going NRT monitoring. The areas are quite large for one person to cover alone, so we designated blocks and assigned times for each person to work alone or with other Meibae rangers and times for them to work with each other. Chris worked closely with each scout in the first three months (May through July). Greater independence was given to the new scouts in August

through October. All data was reviewed in November when we looked at the area of coverage and designated walking transects for each scout to compliment the on-going patrols.

Our three cheetah scouts monitor the Masse, Lpus, Mpassion, Lantare, Barsalinga, and Silango blocks of the southern section of the conservancy covering about 850 square kilometers of the conservancy. Species monitored include large mammals that may not be prey for the cheetah as Meibae Rangers are often on patrol with ACK staff. By mapping all of the data points collected since training was completed, the distribution of wildlife in the conservancy can be seen (Figure 4). Now that baseline data on cheetah and prey presence has been mapped, we have set monitoring goals and we are ready to deliver the information to the community through education, awareness and community conservation projects. Cheetah presence in 2012 is constant with Northern Rangelands Trust data from 2008, showing that cheetahs remain active in the same areas where they were recorded four years previous.

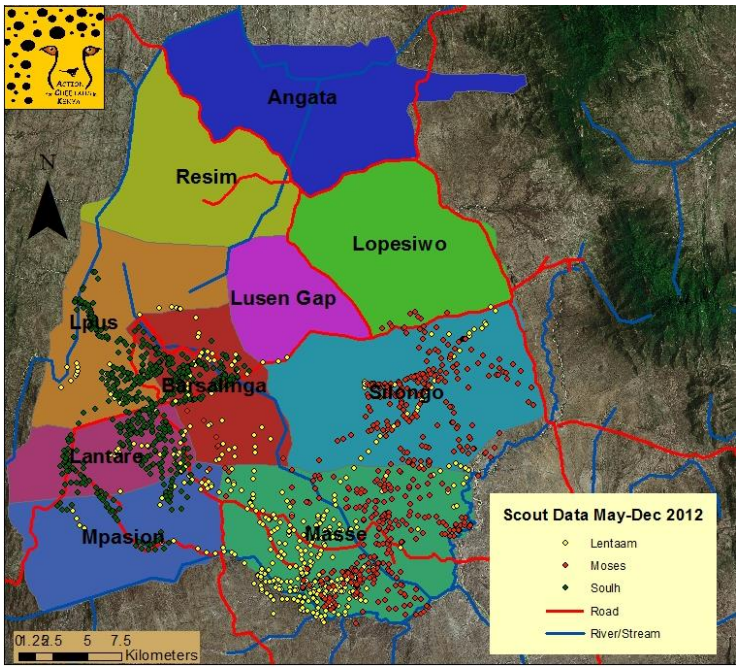


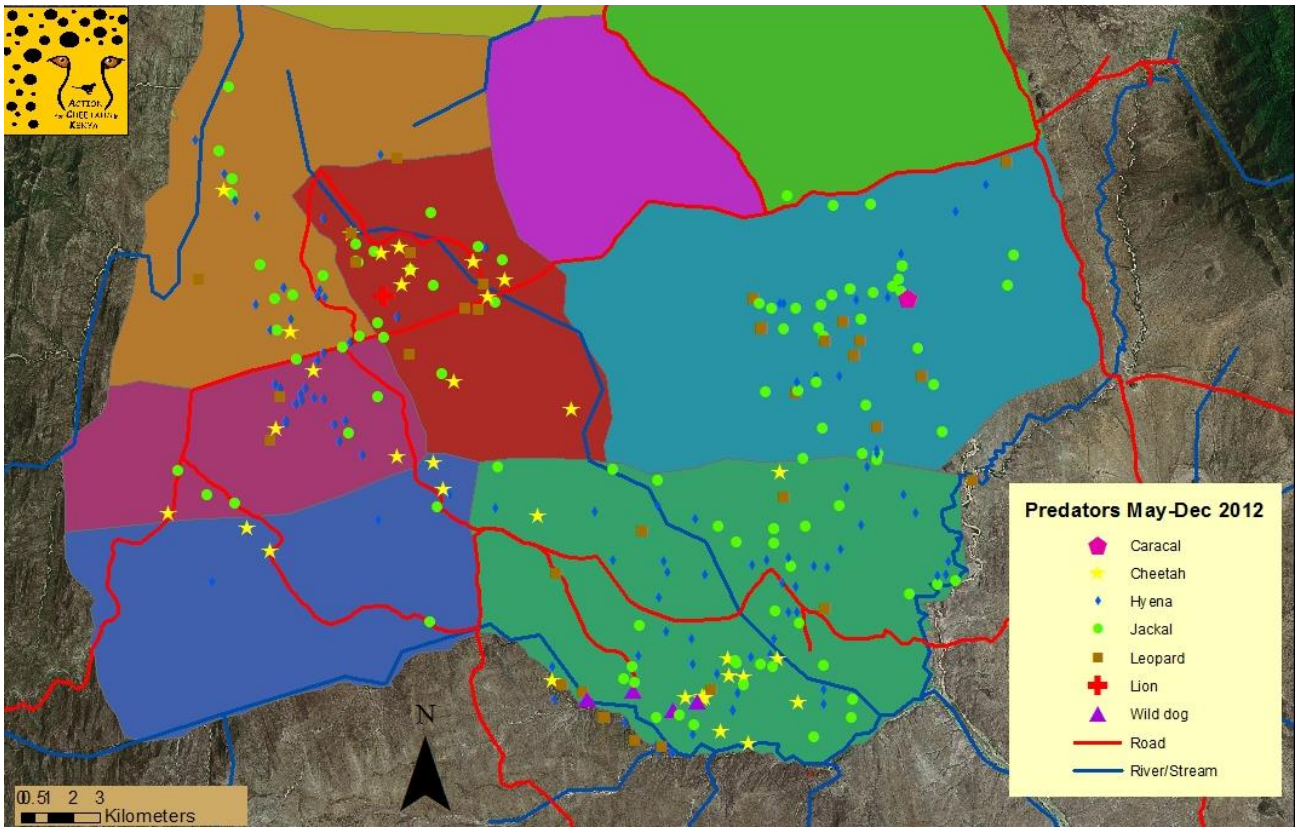
Figure 4: *ACK scout data collected across six blocks. Monitoring includes large mammals as well as any smaller game species (i.e. dikdik, hare, guinea fowl, etc.) that could be considered as cheetah prey base.*

Cheetah numbers in the Meibae conservancy range from six to 22 adults/sub-adults average per month since 2011 based on NRT and ACK patrol reports. This includes one group of six cheetah reported in 2011 and a group of eight cheetah reported in 2012 (multiple reports) and a group of 11 cheetahs reported in 2012 by two sources. General social groupings verified by ACK scouts are lone cheetahs (Total: three to six cheetahs), one group of two (two cheetahs), two groups of three (six cheetahs). There have been no reported cheetah killing and estimated cheetah numbers are similar to our estimates made in the 2006 National Survey. At the time of the national survey, we estimated the Samburu district supported about 250 of the (+/-) 1400 cheetahs estimated in all of Kenya.

Unlike our Salama study site, the Meibae cheetah population appears to have great stability. Cheetah presence can be mapped in comparison to the presence of other predators (Figure 5) and in the presence of other prey species. Caracal (1) and wild dog (4) evidence (spoor) were the least common predators verified through sightings and tracks. Jackal was the most common predator sighting (80) and their spoor was seen on 22 occasions. Hyena spoor (95) and sightings (7) were also high. Cheetahs were seen on four

occasions (three of the sightings were the same mother with five cubs) and their spoor was found on 30 occasions in groups of two or single tracks.

Figure 5: *Cheetah and other predator sightings in the ACK monitored areas of the Meibae Conservancy July – December 2013.*



The presence of prey within the size range determined to be cheetah preferred prey is distributed across the entire conservancy. Further analysis through walking transects and use of DISTANCE analysis in 2013 will produce results that can classify the quantity variations of the cheetah prey base. Combined with scat analysis to determine the prey consumption we will be able to correlate cheetah movement with monthly changes in prey distribution and abundance.

The presence of rangers and scouts provides security in the area, not only for the wildlife but for the people as well. Training and integration of the Cheetah Field Officers (scouts) has been done over a one year period to allow them to become known and trusted within the community and among the conservancy rangers. The cheetah scouts enhance the current Meibae conservation efforts through livestock loss prevention, attending community meetings and cheetah specific data collection. Community programmes will address carnivore concerns and assist in livestock loss prevention and increased predator tolerance in the coming year. Discussions with the conservancy and other conservation partners will evaluate the needs and gaps in conservation efforts so ACK can assure our efforts will maintain the current status of cheetahs in the region. A meeting with stakeholders will be held in January 2013 hosted by the Conservancy and ACK.

Cubs and Injured Cheetahs

It is a well-known fact that as few as five percent of cubs born in the wild will survive to adulthood (Caro 1994; Marker, Dickman et al. 2003; Durant, Bashir et al. 2007). Within protected areas (National Parks, Reserves and Conservancies) in Kenya there is little documentation of the frequency of cub mortality and its causes. However, an increasing number of cubs are being confiscated through animal trade dealers. Members of KWS, CCF and the National Cheetah and Wild Dog Strategic Plan teams have collected and compiled information relating to trade through Kenya for this market. During our National Survey (2004 – 2007) we were often approached by individuals offering to collect cubs. This trade is illegal and unsustainable, and heightened awareness through international lobbying efforts will create greater capacity within Kenya to investigate and enforce laws against it.

Where mothers with cubs are killed illegally or by natural causes (death or predation), all attempts must be taken to keep the cubs in the wild. Unpublished studies show that cubs that are orphaned over the age of six months can successfully remain in the wild, or can be taken to rehab facilities and eventually be taken back into the wild (personal correspondence in South Africa, Botswana, Tanzania, Kenya and Namibia). Cubs taken into rehabilitation facilities with their wild mother (in the case of injury) and released with their mother have also been documented to survive. Orphaned cubs under the age of six months that have been hand-raised have been released into sanctuary facilities with little success, but no completely wild release has been documented to be successful. Facilities that have been studying the feasibility of cub rehabilitation are established in cheetah care and are well funded prior to rehabilitation attempts.

Photos: *(Top) Cheetah cub confiscated from illegal pet trade in Somalia. (Middle) Serval cub held by herder intending to lure and kill mother. (Bottom) Cheetah cub held by someone just wanting to "touch" it.*

ACK frequently receives reports of cubs handled by people in the communities where we work. Our staff first confirms the circumstances, then makes every attempt to educate people on the need to leave cubs alone and with their mother. If members of the community are hostile or refuse to release cubs in their possession, it is our policy to contact KWS for assistance. The following cases were documented in 2012:

- March (Athi-Kapiti) and May (Samburu) – Scouts convinced herders found with cubs to replace them and the mother returned to collect and move them.
- July – A Salama scout received word that a cheetah had killed goats in a neighboring community, and after being tracked by herders, three of four cubs were killed. The scout discovered that area residents were holding one cub with hope that its cries would attract the mother so they could kill her. It was found that the cub

was serval and that no goats had been killed, but the residents feared that their livestock were threatened. KWS was called to assist with the community threats and to advise on the condition of the cub. It was extremely cold and although it was likely that the mother would return for her cub, the weakness of the cub gave fear that it would not survive if the mother did not return. The cub was taken to the KWS orphanage but did not survive.

- December - Samburu scouts were alerted that a man found cheetah cubs and that other members of the community wanted to visit and touch them. The first scout found the man holding a cub after the mother left to hunt. The scouts alerted the community members of the risks to the health of the cubs and that disturbance would cause the mother to abandon the cubs. Scouts visited the den site several times to check on the cubs. Shortly after the mother moved the four cubs, she was seen with all four following behind her into the neighboring Conservancy.

At this point, Action for Cheetahs in Kenya has no jurisdiction or facilities to keep, hold or house cheetah or any other baby animals. The Nairobi Orphanage is experienced in raising cubs with an equal amount of success to that of any other baby animal facility. Our policy is to adhere to the authority of KWS whenever a cheetah cub is reported to us. The Orphanage, however, is overstocked with orphaned carnivores and has been placing some of their animals into other facilities across Kenya. Our US partner, Project Survival, has proposed to construct and manage a cheetah care center dedicated to the long-term care of orphans that cannot be housed in the current KWS facility. This "Cheetah Center" has received endorsement from KWS to proceed with plans and fundraising for a facility on the Soysambu Conservancy. A growing number of orphan carnivores are being confiscated from private hands or illegal trade. Most of these orphans are in poor condition or are too young for rehabilitation into the wild. The proposed Cheetah Center would assist KWS in the care of these cheetahs while promoting the efforts of KWS, the Soysambu Conservancy and ACK in sustainable conservation of wildlife in their natural habitat. Cheetahs at the center would become ambassadors for their wild counterparts through education of students, communities and visitors. Once established, the center will provide financial support for field work and will work collaboratively with other partners in cheetah conservation efforts.

As with cubs, decisions on injured cheetah treatment are also a tricky subject. It is the protocol of KWS to treat any threatened or endangered species whenever feasible. An injured cheetah in Samburu had been limping for some time and reports that he was extremely thin resulted in a decision to administer antibiotics in a somewhat tricky way. Knowing that the cheetah would be extremely hungry and that it would consume certain portions of prey, we coated a portion of the cheetahs favourite meat with antibiotics, dropped the meat and observed to assure no other predators came for the kill. Reports came in for another month as the cheetah recovered, until he moved from the Samburu Reserve. Six months later Julius Le saw him hunting without a limp.

Photo: *Injured cheetah consumes meat laced with antibiotics.*

CAPACITY BUILDING

ACK accepts volunteers and students on attachment for internships and thesis projects. In 2012 three students conducted projects for their master's thesis. Two students were from the US and one from Kenya. Each student worked with faculty advisors at their individual institution to develop their proposal and was affiliated with KWS under Ministry research authorization to conduct their research in affiliation with ACK.

Photo: *Master candidates Morgan Maly, Nelson Owange and Erica Hermsen with research assistant Salim Mandela (second from left)*

Camera Trapping

Photo: *Erica Hermsen and Salim Mandela exchanged camera and bait stations weekly for the camera trap study.*

Cheetahs in Kenya are in danger of extinction due to habitat loss, conflict with humans and loss of genetic diversity. In order to create and implement sufficient conservation measures focused on this animal, characteristics such as home range, demographics, and population vitality must be understood. Capturing live cheetahs for biomedical sampling and radio-collaring is the most common and reliable method for obtaining this information. Over the last decade, ACK attempted to trap cheetahs in the permitted areas of Kenya for this purpose but had little success. Human interference with live bait and the capture of other opportunistic predators was the greatest disturbance at trapping sites. In order to increase the success rate of capturing cheetahs, alternative baiting methods are needed.

Erica Hermsen conducted her Master's project to investigate an alternative attractant to live bait and specific lures that would attract only cheetahs to traps. Bait stations with camera-traps were set up in the Salama and Athi-Kapiti ecosystems to assess the effectiveness of a variety of scents, sounds, and visual lures in attracting cheetahs.

Bait station sites and methodology were identified during a pilot study conducted in July 2011 during Erica's internship through Antioch University New England. In May 2012 she conducted pilot studies at the San Diego Zoo and Leo Zoological Conservation Center to determine bait items. Between June and August 2012 Erica conducted her field work in the Salama and Athi-Kapiti study sites.

Each bait station was equipped with four camera-traps secured to trees surrounding a 6ft (1.8m) radial plot representative of the length of an actual box trap, thus characterized as the "Trap Zone". One of each of the following bait types was placed at the center of the Trap Zone: commercially available perfume,

home-made perfume, soiled cheetah bedding, *FoxPro Black Jack predator decoy*, home-made robotic goat, and a live goat. The predator decoy, robotic goat, and live goat were each housed in a metal cage to reduce theft. The predator decoy is a battery powered unit that twitches a wire with a "rabbit" on the end of it to imitate a dying animal. The robotic goat is the skeleton of a Christmas lawn reindeer fitted with goat skin. The robot moves its head and neck up and down to simulate a grazing goat. The bait stations were left for seven nights and checked 3 times each week to download pictures, change batteries for the robotic goat, feed the live goat, and ensure camera function. Bait types were rotated among the six different bait station sites every seven days for 12 weeks.

Each time a cheetah was photographed within the *Trap Zone*, the occurrence was defined as a "*Successful Trap Event*". If the same individual cheetah(s) is photographed at a bait station on more than one night, each consecutive visit from the first was defined as a "*Repeat Trap Event*". If other animals were photographed within the *Trap Zone*, the incident was labelled as *"Failed Trap Event"*. Only animals that were considered heavy enough to engage the trigger plate in a box trap (>.5lb/267g) were counted as a *Failed Trap Event.* The species and number of animals counted in a *Failed Trap Event* were recorded to determine which bait items significantly attract cheetahs while having the least likelihood to attract competitive predators and achieve the greatest success in luring cheetah to trap sites in community areas. The bait which produced the greatest number of *Successful Trap Events* will be used in subsequent cheetah capture for radio collar deployment in both the Salama and Samburu study areas. Due to costs and stress of unintended captures it is essential that future trapping attempts have the greatest likelihood of trapping cheetahs.

Photos: *Cheetah pilot study in zoos gave evidence that predator decoy may strike interest as potential bait, but only the robotic goat proved tempting to the wild cheetahs.*

Preliminary results show that the robotic goat holds the most promise as a potential cheetah lure. Below are some of the preliminary results:

- A total of 305 animals across 25 different species were photographed in 12 weeks of testing;
- Cheetahs were photographed on two occasions in the Athi-Kapiti area, but none were photographed in the Salama area. Tracks of cheetahs were seen and faecal material was collected less than 1km from several of the bait stations in both sites;
- More hyenas were photographed in the Athi-Kapiti area (23) than in Salama (9)
- A more diverse number of species were photographed in Salama (25) than Athi-Kapiti (17);
- The soiled cheetah bedding attracted the most non-target species;

- The live goat lured in the highest number of predators;
- The decoy and commercial perfume lured the same number of hyena (3) and jackal (7);
- The robotic goat attracted the least diverse group of non-target species and the lowest number of non-target species.

ACK will continue monitoring cheetah population and identifying threats to cheetah survival through camera trap methods. Erica's final thesis and publications will be released once they are completed in 2013.

Faecal Collection

Research affiliation with KWS for Morgan Maly and Nelson Owange was approved and they began their field work in June 2012. Prior to the start of field collection, a detection dog was trained at KK Security in Nairobi. Unfortunately the dog became lame from arthritis in his hip, and was not able to be used during the student programme.

Photos: *(above) Students Nelson Owange and Morgan Maly develop collection protocol and train cheetah scouts. (Below)Volunteer Reinier van Esch trains detection dog Floris at KK Security canine facility in Nairobi.*

Morgan was a first year Master's student in North Carolina State University and Nelson was in his second year with the University of Nairobi. Morgan's research proposed to evaluate hormone levels in cheetahs in the Salama and Athi-Kapiti study sites to compare stress levels of cheetah in high human density and small scale farming areas in Salama with that of low human density commercial/private ranches in Athi-Kapiti. Nelson's research proposed to evaluate the differences in prey consumption in the two sites by faecal hair analysis and comparisons to game density, distribution, and abundance.

During the student field work, the cheetah scouts in Salama and Athi-Kapiti assisted in identifying common cheetah usage areas, and these areas were searched regularly. Security personnel on Kima ranch in Salama also assisted in finding faecal samples. Within two months the team successfully found 147 samples, but only 12 samples were fresh enough for hormone analysis. These were split for hair analysis, stored in ethanol for DNA, and frozen for hormone analysis. In early October it was discovered that the freezer was moved for cleaning and the plug was not in contact for power. The 12 hormone samples became mouldy and will not be useable for hormone analysis. The freezer was cleaned and prepared for new samples with instructions to all staff to check the light on the freezer daily. DNA and hair analysis will still be done on the samples, but we needed to begin collection for hormone analysis again.

ACK staff and volunteers continued to collect faeces after the students returned to the classroom. An additional 90 faecal samples were collected including nine fresh enough for hormone. The new samples were dried before being frozen to reduce the possibility of sample loss should power

issues occur again. Professors for both Nelson and Morgan advised that DNA analysis would be needed to determine first, if the scats collected are actually cheetah, and second, to identify the individual cheetah for the hormone analysis. While we are seeking the additional funding needed to conduct the DNA work, Morgan is completing her coursework. Nelson, however, having completed all of his coursework needed to be reassigned by the university to allow him to complete his thesis work in the required timeframe for University of Nairobi qualifications. ACK is seeking an alternative student to complete the hair analysis once funds for DNA evaluation can be made available.

In many cases, it is difficult to isolate adequate quantities of genetic material for DNA in dry faecal samples, thus the hair analysis project will also be testing the accuracy of identifying the cheetah as the species depositing the sample through hair identification only. DNA analysis is an expensive process, thus the ability to verify the sample as coming from cheetah is vital in future dietary studies. Continued dog detection training will contribute greatly to the effectiveness of field exercises and will be the first assurance that collected faecal materials came from the cheetahs.

KWS MIST Training in Salama

KWS hosted community rangers in a training seminar in Machakos. The participants were taught about using GPS units and field observations to collect data on different species of mammals, birds, reptiles and insects. The MIST monitoring project is a national data-base being used by all KWS rangers. Our region is one of the first to include field officers from partner projects. Jimmy Muli and Pius Wamunyu were selected from ACK to participate. Because our staff used GPS for cheetah monitoring, they ended up assisting with the training. Jimmy and Pius represented us well, and I have since been asked if they could assist in training other KWS field rangers in this area. We always share our data with KWS for the species that we monitor in relation to the cheetah, but we will now undertake two patrols monthly for each field officer, specifically dedicated to collecting MIST data.

***Photos**: (Above) ACK staff participated in MIST training with KWS and community rangers. (Below) Chris Lentaam and other attendees supported by the Cleveland Zoological Society saying "Thank you!"*

Human Wildlife Conflict Training

The Cleveland Zoo offered to support one of our staff for a 5-day seminar held at the Ol Pejeta ranch in Laikipia. The seminar was conducted by the Human-Wildlife Conflict Collaboration to build capacity for participants in developing a conflict management plan and identify

the types of conflicts in the conservation field. Chris Lentaam was selected from our Meibae study site to participate in the seminar. After completion of the seminar he was asked to give a presentation to the Maibae rangers and to assist ACK in developing a conflict management plan for the area. His skills are useful as we develop our conflict data collection goals and mitigation methods in the Meibae region. In 2013 he will give a training seminar for the Salama and Samburu staff.

KWS Carnivore Meeting

Each year, KWS organizes a gathering of carnivore researchers to present their activities and significant achievements. This is an opportunity for carnivore researchers across Kenya to understand new methods and technology as well as to see what mitigation efforts are successfully securing a future for Kenya's predators. This year international participants presented on carnivore studies in Ethiopia, Uganda and Tanzania to aid in KWS efforts to increase cross boundary collaborations. It was our pleasure to present four aspects of our work before this group in July 2012. Our staff and students presented on recent achievements and on-going projects.

Presenter	Presentation Subject	Summary
Mary Wykstra	Overall ACK Collaborations	Partnerships with students, organizations, universities, KWS and research facilities aid in the growth of ACK to assure the future of cheetahs in Kenya
Cosmas Wambua	Wildlife Monitoring and Conflict Issues	Results of monitoring showing the impact of habitat loss in the Salama site due to settlement and development of the ICT center at Konza and the effectiveness of community tolerance for wildlife in the Meibae Conservancy.
Salim Mandela	Cheetah Bait Studies	Presented goals, method and early results of Erica Hermsen's study
Morgan Maly	Cheetah Faecal Hormone Studies	Presented challenges of scat collection for studies needing fresh scat and need of project expansion
Nelson Owange	Cheetah Prey from Faecal Analysis	Presented objectives and methods of faecal study and early achievements

Mara-Meru Partnership

I first met Elena Chelysheva in Namibia in 2000 when we worked together to develop the Cheetah Conservation Fund education center. Several years later (2002), Elena and I were both in Kenya conducting cheetah research when she worked with KWS in the Masai Mara. After Elena left Kenya, she completed her doctorate in cheetah social behaviour and reproduction looking at reproductive success of females housed in groups at successful breeding facilities in several countries. Because she saw similar behaviours in cheetahs in the Masai Mara while she was working there with KWS, she has now returned to Kenya to test some of her theories on female coalitions and mother-cub bonding. We assisted Elena with connections and site evaluations for the Mara and Meru area, and endorsed her proposal to research these two key areas. Elena's behavioural research is different from any of ACK's previous work and we

look forward to collaboration in evaluation of the social adaptations that cheetahs make when faced with land-use changes and conflict for resources.

Dr. Elena Chelysheva is not only an expert in cheetah behaviour and social structure, but she is also a talented artist. While she submits grants to fund her work and supervises implementation of research in the Masai Mara and Meru, she also supports her project through her fabulous paintings.

***Photos**: Senior Warden Eunice Kiarie addresses a baraza in Aimi. KWS Ranger Mercy Ndunge accompanies ACK to visit predator proof boma constructed by Conservation Hero Mr John D. Mwangange.*

Community Baraza (community meetings)

ACK held several community baraza in 2012 in the Salama study site. The local chief from the area of the baraza was the one to introduce ACK. A representative from KWS also attended each baraza and spoke about wildlife issues to the attendees. Our ACK presentation included a summary of our work in the area, a discussion of the role of ACK with wildlife management (KWS) and a request that people contact us for predator conflict issues and questions. We saluted the herders, livestock owners and land owners who have assisted us, and gave a "Conservation Hero" award for the "most improved herder", "improved livestock breed" and "improved boma". Following the baraza, the recipients were heartily congratulated by the other attendees and discussions with the cheetah scouts have been geared to how others can be awarded the certificates. Our goal with the awards is to create pride in improved protection against all predator losses through non-lethal means.

Secondary School Water Project

In July, we were privileged to host a great group of students from my alma-mater… Kalamazoo Christian High School (KCHS). The students (12) and three chaperones travelled from Kalamazoo to conduct a school project on water quality with the Kiima-Kiu Anglican Inland Church (AIC) Secondary School. On their first day in the country, the students visited the KWS orphanage in Nairobi to receive a talk from the community department on the challenges of wildlife management. The students also participated in driving and walking game counts and patrol exercises, and each evening, we held a discussion about the different aspects of conservation. Thirty AIC students from Form 2 and 3 were selected to work with the

KCHS students. Microscopes, slides, and chloroform test kits were supplied by KCHS to assist in evaluating the water that is consumed by the families.

As a new school, students had never experienced the opportunity to look through a microscope, and they were shocked at what was swimming in the drinking water. Amoeba was found in one commonly used source. All water tested positive for bacteria, except the bottled water that was used as a control. At the end of the week, the US and Kenyan students played a friendly game of football (soccer) that included the headmaster (school principal) and me. And of course, the Kenyans won the game – with the head-master being the first to score a goal.

***Photo**: Students in groups learning to work with a microscope.*

KCHS will continue to work with ACK to further develop school science projects with the next trip being planned for 2014. Our focus is on the link between the environment and our own health. Throughout the 2013 school year, ACK will continue to work with the Kiima-Kiu AIC Secondary School to plan for the next visit.

Volunteers

As always we are grateful to all of the volunteers and students who assist in making ACK programmes informative for conservation and accepted within the community. Peter Barber spent several months assisting with all of ACK operations. His support for our work is invaluable. We had two interns from the Netherlands – Reinier VanEsch spent four months assisting with data collection and entry, and training of the faecal detection dog. Reinier also worked with Cosmas, Steve Dyke from KCHS and the teachers from AIC to plan the agenda, meals and camp arrangements for the group project. Maxime Lapidaire spent a month with us to complete her internship with Cat Haven. She developed education materials showing Cat Haven/Project Survival and Cheetah Friends Europe support of in-situ cheetah conservation efforts. Maxime also assisted with game counts, feacal collection and camera trap set-up. Anne-Sophie Blanc visited our project for a week in April to discuss her future cheetah and wildlife research work in Kenya. Anne-Sophie is applying to PhD programmes in Switzerland and developing a thesis proposal to evaluate the roles of religion and culture in conservation ethics.

The three master's students – Erica Hermsen, Nelson Owange and Morgan Maly were permitted to conduct their studies in collaboration with ACK. All three were in the field from June through August. The summary of their work is found in earlier sections of this report. Salim Mandela was hired by Erica as a research assistant for the camera trapping project. His assistance with other ACK field work included game counts and faecal sample collection. Deanna Russell spent nearly seven months working with us as a general research assistant. Deanna developed our 2013 scout data forms and report forms and tested them while Cosmas and I were in the US. She assisted in faecal sample collection for Nelson and Morgan and with camera checks with Mandela and Erica. Deanna participated in every game count between June and December and her presence in Salama is greatly missed.

***Photo**: Erica and Deanna downloading camera trap photos*

Both Deanna and Erica have asked to continue working with ACK. Erica is now the Volunteer and Outreach Coordinator, taking over from Liz Larsen. Deanna is interested in continued field assistance in faecal collection and working with ACK to carry out the next national cheetah survey. Liz Larsen remained the Volunteer Coordinator through October. Her assistance for the past eleven years in communication with incoming volunteers and students, and development of our volunteer programme is greatly appreciated. Cindy Wheeler from Art Spot Design is the web designer responsible for launching our new web design in 2011. Cindy has continued to develop the site, but has asked that we seek out a new developer as her design business has grown and her focus is in design not development.

In the last two years, we have used the services of Harriet Ogada in setting up our accounting into a QuickBook programme. She recommended the auditing firm of Orwa Accountancy for auditing and we have now worked with Caleb Orwa since mid-2011. Thank you to Caleb and Harriet for making this process easier for me – your patience is greatly appreciated.

PROJECT BENEFITS

Action for Cheetahs in Kenya is guided by the KWS National Strategic Plan for Cheetahs and Wild dogs, and works in affiliation with local and international partners to achieve goals in cheetah conservation and sustainable livelihoods for people. ACK is a member of Carnivores, Livelihoods and Landscapes (CaLL), a programme which links carnivore research throughout Kenya and provides the framework for activities in research, community and international goals. Effective livestock management techniques promote ecological awareness and participatory conflict mitigation. Our understanding of cheetah movements and their sustainability in settled areas, pastoral communities and tourism-based areas links poverty alleviation programmes to improve livestock husbandry through disease prevention (cattle dip project, herder information), improved habitat (tree planting), reduced game poaching (snare removal), and the promotion of sustainable income generation (bee keeping and handcrafts). ACK will continue to lead efforts in cheetah conservation through fostering partnerships which will improve knowledge and management policies.

Involvement of local authorities and inclusion of local employees improves community relations and conservation attitudes that are key factors for long-term success. Field staff are hired from within the community to assist with data collection and public presentations. Staff members are trained in research methodology, conflict mitigation and community mobilization, thus empowering a conservation ethic for the future of wildlife in Kenya. ACK also builds capacity in Kenya through the use of detection dogs for faecal collection. The dog project will improve our efficiency in scat collection at our current field sites and will be used for range-wide cheetah monitoring. The faecal analysis project will build capacity through the training of ACK and KWS staff in partnership with the Cheetah Conservation Fund and the Smithsonian Conservation Biology Institute. ACK projects promote conservation awareness locally and

internationally through presentations, development of educational materials and policy recommendations for conservation management. ACK conducts wildlife video presentations, encourages sustainable farming practices through programs and seminars, and links communities to services for livestock and land productivity improvements.

PLANNED ACTIVITIES – 2013

The following goals will be achieved for the two primary study areas by ACK staff in 2013. Links with the Mara and Meru and Athi-Kapiti area researchers will allow comparisons to cheetahs in other regions of Kenya, and will enable pilot projects to be used to launch into a national survey (2014-2016).

Goal 1: **Identify factors affecting cheetah livestock predation and mitigate conflict.**

a. Prey Distribution and Abundance:

- Monthly walking and driving transects in the Salama area will end in July 2013. Prey distribution will be mapped and the density and abundance will be calculated with DISTANCE software. These counts will be compared to past publications and on-going studies to evaluate trends of prey populations over time in the Salama area
- Transects in the Samburu area will follow methods developed in Salama . Data analysed in 2013 will set the baseline for the area and for trend analysis in the Samburu ecosystem. Prey selection is determined through faecal hair analysis and will provide insights into the adaptations of the cheetah to human settlement as well as the level of domestic stock consumed by the cheetahs.

b. Human Settlement Pattern:

- Use satellite images to map changes in land-use, natural resources and settlement areas in the Salama and Samburu study sites.

c. *Evaluate Livestock Depredation:*

- Confirm conflict incident reports via immediate verification and interviews by ACK Field Officers (scouts) to evaluate the circumstances of the livestock loss by investigating herd size, livestock husbandry, and level of protection against loss to carnivores.
- Conduct follow-up interviews with 250 farmers/herders to evaluate effectiveness of ACK mitigation efforts.

Goal 2) **To understand cheetah health and habitat selection**

a. *Monitor cheetah presence and movements through observation:*

- ACK field officers collect sighting and track information through personal observations and follow-up on reported sightings;
- Transect camera trapping along ten transects in each study area to verify cheetah and other predator presence.

b. *Determine habitat use of cheetahs in relation to vegetation and prey*:

- Use satellite images to overlay vegetation and prey distribution with cheetah sightings, spoor and scat data;
- Train and utilize scat detection dog in addition to staff searches for scat samples.

c. Use scat analysis to understand cheetah adaptations to land-use changes

- Collect cheetah scat from Salama, Athi-Kapiti, and Samburu study sites;
- Evaluate scat to positively determine cheetah prey selection and frequency of domestic stock in cheetah diet;
- Use glucocorticoid analysis to evaluate cheetah stress indicators in different land use categories;
- Compare DNA from scats to evaluate relationships of different cheetahs in the regions.

Goal 3**: Influence public and administrative changes to positively affect cheetah conservation and management protocols.**

a. Conduct community programs to disseminate findings, promote conservation awareness, and improve livestock management techniques:

- Monthly Community meetings (baraza) to promote improved livestock management and share conflict mitigation ideas with KWS and local administration;
- Present community members with "Conservation Hero" certificates.

b. *Raise environmental awareness through partnerships and internal education programmes for communities and schools*:

- Hire two education officers to develop school and community programmes including effectiveness monitoring;
- Develop teacher resources and student activity books;
- Disseminate posters and awareness materials developed in 2012;
- ACK participates in the Conservation Measures Partnership (CMP) to provide focus on issues of environment and social responsibility and allow us to measure our effectiveness in achieving our goals;
- Continue to develop projects in bee keeping, livestock management, community crafts and natural resource management as they are a strong aspect of ACK work within the ecosystem.

d. *Establish cheetah conservation protocol and the policy in collaboration with KWS and local stakeholders*:

- Provides quarterly updates to KWS and we present our research findings at an annual Carnivore Action Forum meeting.
- Submit updates to the National and Regional Wild Dog and Cheetah Strategic Plans to assist in the framework of cheetah conservation.
- Produce printed materials and digital submissions through our web site to improve awareness of activities and findings;
- Use past data (2004-2012) to produce scientific publications.

BUDGET

Income: 2012 financial supporters include private donations, Cheetah Conservation Fund, Cheetah Friends Europe, Utah Zoological Society and Utah's Hogle Zoo, Cleveland Zoological Society and Metroparks Zoo, Kansas City Zoo, Cincinnati Zoo Angel Fund, St. Louis Zoo Field Conservation Grants, AAZK Bowling for Rhinos, Disney Worldwide Conservation Fund Fresno Chaffee Zoo, Columbus Zoo, Oregon Zoo, Project Survival - Cat Haven, Animal Ark, Binder Park Zoo, Eco-Sys Action, and Classic Escapes. Additional income is received from craft sales, speaking stipends, volunteer fees and rent sharing.

Current affiliated organizations include the Kenya Wildlife Service, University of Nairobi, African Wildlife Foundation, Cheetah Conservation Fund, Mara-Meru Cheetah Project, Ewaso Lions Project, Smithsonian Conservation Biology Institute and Northern Rangelands Trust.

STAFF

PI. Mary Wykstra, MEM, ACK Director

Since 2001, Mary has managed ACK, leading research and community development activities and acting as liaison to ACK partners. She holds a Master's of Environmental Management (2011) from Yale University, focusing on range-wide cheetah management planning and population dynamics. Mary's authorization is through the Kenya Ministry of Science and Technology in affiliation with the Kenya Wildlife Service (KWS) and Cheetah Conservation Fund (CCF).

Cosmas Wambua, M.Sc., ACK Research Scientist

Cosmas has been the ACK research scientist since 2002. His experience in ecological monitoring began with KWS in 2001. He holds an MSc (2008) from Addis Abba University in Ecological and Systematic Zoology.. Cosmas maintains the ACK database, develops research methods and supervises staff/students for consistency in data collection.

Erica Hermsen, M.Sc. – ACK Outreach and Volunteer Coordinator

Erica conducted research for her Master's thesis with ACK in 2012. After completing her field work, she continued to assist ACK through redesigning materials for volunteers and student affiliations. Erica is volunteering her time to assist ACK in website management, outreach and crowdsourcing.

Deanna Russell – ACK Research Assistant

Deanna holds a BSc in Wildlife Sciences (2011) from SUNY College of Environmental Science and Forestry (ESF). She has experience in wildlife monitoring, camera trapping and scat analysis in the US, South Africa and Kenya on a variety of carnivores. She interned with ACK in 2012 and will lead the search for fresh scats using fecal detection dog methodology.

Lumumba Mutiso – Community Field Officer, Salama

Lumumba coordinates ACK community activities and field data collection in the Salama area. Lumumba is a small-scale farmer who was born and raised in the Kiu/Salama area. In 2008 Lumumba attended training courses in Namibia in Integrated Livestock and Wildlife Management and in Cheetah Conservation Biology.

Chris Simon Lentaam, ACK Community Field Officer, Samburu

Lentaam coordinates ACK activities in the Samburu region. He completed his secondary education at Marsabit Boys School in northern Kenya through a bursary from the Northern Rangelands Trust. He volunteered as a part-time ranger and radio operator for the Meibae Conservancy and participated in training for community work and ranger operations. Chris is interested in pursuing a career in conservation and business. He participated in Human-Wildlife Conflict mitigation training in 2012.

Pius Wamunyu, Jimmy Muli – Community Cheetah Scouts and Field Assistants (Salama)

Soulh Lemuntere and Moses Kinosi – Community Scouts and Field Assistants (Meibae)

Ken Ochieng– Housekeeping

SCIENTIFIC ADVISORS

Adrienne Crosier, PhD, Smithsonian Conservation Biology Institute
Anne Schmidt-Küntzel, PhD, Cheetah Conservation Fund
Laurie Marker, D. Phil, Cheetah Conservation Fund
Martin Mulama, Ol Pejeta Conservancy
Mordecai Ogada, PhD, Laikipia Wildlife Forum
Prof. Nick Oguge, University of Nairobi
Samuel Andanje, PhD, Kenya Wildlife Service
Prof William Ogara, University of Nairobi

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