2010 Progress Report

Reporting Period
JANUARY THROUGH DECEMBER 2010

By
Dr. Laurie Marker
Executive Director
Cheetah Conservation Fund
P.O. Box 1755
Otjiwarongo
Phone: 067 306225
Fax: 067 306247
Email: cheetah@iway.na

Page

Table of Contents

TABLE CONTENTS

FIGURE CONTENTS

I. EXECUTIVE SUMMARY

In its 20th anniversary year, the Cheetah Conservation Fund (CCF) remains a global leader in advocating the long-term survival of the Cheetah. CCF strives to work with all stakeholders to achieve best practices in conservation and management of the world's cheetahs. Our approach to the problem -- pioneering the integration of scientific research with ecosystem conservation efforts and an array of education programs and other public outreach activities -- serves as a model for organisations and facilities around the world. Yet, CCF stands out by virtue of its geographic proximity to the largest population of cheetahs in the world.

One of many landmark events this year occurred when Dr. Laurie Marker, CCF's Executive Director, was able to confirm the presence of cheetah in Angola –a country ravaged by 27 years of civil war, during a three-day rapid survey conducted in Iona National Park. The park, located in southwest Angola bordering Namibia, is perfect cheetah habitat with thousands of hectares of open savannah and a growing prey base including springbok and oryx. On Dr. Marker's last day in the park, the team was investigating scat found in one of several playtrees by a dry river bed when two adult male cheetahs ran out. After this successful mission, CCF hopes to develop a programme to census cheetah populations in the country and to help community, government and non-government organizations to develop a plan to educate Angolans in the area about cheetahs and the role of a predator in a healthy ecosystem.

Back in Namibia, CCF's ambassador Chewbaaka made history when his genetic samples were taken to represent the cheetah in the Genome 10K project. This historic project, of which CCF USA's Chairman, Dr. Steven O'Brien, is a participant, will map the DNA of 10,000 vertebrates.

The success of CCF's cheetah re-wilding research continued with its fourth cheetah re-introduction. Four captive females were soft-released in CCF's 4,000-hectare enclosure on Bellebenno farm, which, with abundant prey species, serves as a "training ground" for orphaned cheetahs that show good potential for release. After three months of successful hunting, the females were re-captured in preparation for their final release in Erindi Game Reserve in January 2011. . The goal is to release the cheetahs that learn to hunt into safe large reserves/protected areas. With the prior successes of this protocol, CCF has created a release model that other countries can follow and is working with both Zambia and India for future re-introductions.

One of CCF's flagship programmes, the Livestock Guarding Dogs, continued to thrive. This year, thanks to frozen sperm donations from the United States, CCF conducted its first successful artificial insemination. An Anatolian female gave birth to three live puppies in early August. In addition, as part of CCF's efforts to expand its breeding programme, the Kangal bloodlines have grown thanks to the donation of three puppies as well as semen from three males.

Cheetah censusing methods are explored at CCF through the utilisation of non-invasive techniques such as camera traps and satellite collars. In addition, two scat-detection dogs assist with the systematic collection of cheetah scat for DNA analysis at the Applied Biosystems Genetics Laboratory, which will facilitate estimating animal densities. Both dogs are being trained with the assistance of renowned Australian dog trainer Steve Austin and have successfully found cheetah scat at playtrees and on CCF roads. Austin is also training two Springer Spaniels in Australia to be donated to CCF in 2011.

CCF actively works to preserve indigenous species and biodiversity on its land. In the black rhino reserve, a new project to match spoor with individual rhinos was started in August. It is hoped that in the future rhinos can be identified from spoor measurements alone.

For the third consecutive year, and thanks to a generous grant from the Howard G. Buffett Foundation, CCF hosted three international courses for wildlife managers and conservation biologists from 10 cheetah-range countries. The courses included field trips, which not only served as an opportunity to take farmers' training on the road, but offered course participants the opportunity to practice human-wildlife conflict questionnaire techniques, as well as ecological techniques of rapid surveys. Also, for the first time, conservation biology participants were able to perform a DNA extraction as part of a practical in CCF's genetics laboratory.

CCF's Bushblok once again attracted world attention when it helped earn CCF's Executive Director the Tyler Prize for Environmental Achievement, considered by many the Nobel Prize of conservation. CCF's Bush Project, one of the largest habitat restoration efforts in Africa, must increase its bush-harvesting capacity significantly to meet demand for Bushblok and other products.

Marker also was honoured for a second time as a finalist for the Indianapolis Prize and with The Explorers Club's Lowell Thomas Award, which recognises those dedicated to the advancement of scientific research to preserve and explore the world and its species.

Around the world, CCF's 20th anniversary celebrations ranged from the annual Celebration of Speed and Elegance in Namibia to Dr. Marker's tours involving 42 cities and four countries, and CCF USA's Run for the Cheetah events in three US cities. The tireless work by CCF's staff, volunteers and international partners, along with concerted efforts to expand media awareness, not only helped raise much-needed funding but exceeded the year's financial expectations.

Although the last 20 years have produced outstanding achievements for CCF, the pressures are great on the large predators, and the cheetah is especially vulnerable. The key to its survival is people from all walks of life understanding not only the plight of the cheetah but the threats posed to the environment in which the cheetah and other threatened species exist. CCF is fortunate to have collaborations with many partners, government, NGOs, and private entities. We thank all, and especially CCF boards of directors and trustees from around the world for their guidance and support.

However, the needs remain many. We must continue to learn everything we can about the cheetah and to educate people; especially today's young learners, who in 20 years' time will be running farms, working for government departments and managing businesses–the future caretakers of the world's resources. As we prepare CCF for the next 20 years we must never lose sight of the fact that conservation is never "done" and that we will succeed only with the support of those who are highly receptive to ideas and opinions.

II. ORGANISATIONAL STRUCTURE

The Cheetah Conservation Fund is an international organisation with registered not-for-profit organisations in Namibia, the United States, Canada, United Kingdom, and Japan, and with partner fundraising organisations in the Netherlands, Italy, France and Germany.

CCF's International Research and Education Centre in Namibia is the primary base for all CCF's global activities. In 1991 CCF became a Namibian Voluntary Trust and in 2002 registered as a not-for-profit Namibian Section 21 Company. CCF's Namibian Board of Directors is comprised of leaders in the local community, business and agricultural sectors. Additionally, there is an International Scientific Board of Advisors that assists in planning and advising on research projects. CCF's Executive Director, Dr. Laurie Marker, is assisted in the management and operations of CCF by a core professional staff, and aided by short-term volunteers and students who assist with daily operations and data collection.

The Centre includes: the farms Elandsvreugde, Osonanga, Boskop (Khayam's Kopje), Cheetah View, Bellebenno, Janhelpman and Bynadar, totalling 46,000 hectares. CCF's Centre is located in prime cheetah habitat and a wildlife-friendly area, with neighbouring farmers who believe in conservation ethics. This ensures a large prey population, which is important for the cheetah population and models for the farmers that they can live harmoniously with cheetah.

CCF is an active member of the Waterberg Conservancy, which buttresses up to CCF's property and encompasses over 175,000 hectares of private farmland surrounding the Waterberg Plateau Park - a national game park dedicated to rare and endangered species. The Conservancy's farmers cooperatively manage the land's wildlife for long-term sustainability, which in turn provides habitat and prey base for the cheetah.

This year CCF received a grant from WWF Netherlands' Uriot Legacy for funds to expand and consolidate CCF's landholdings and thus to secure a larger, more secure buffer area within the Greater Waterberg Complex.

III. RESEARCH

During 2010, CCF continued working towards achieving its research objectives and strengthening collaborative efforts. Research continued on over-all health, genetics, as well as censuses, re-introduction of cheetahs and ecosystem research. In January, CCF hired a research veterinarian, Dr. Anaïs Herbert, from France to assist with all aspects of animal health and to coordinate CCF clinical research for one year. In July, CCF hired ecologist Katherine Forsythe to assist with the ecology department.

A. Population Dynamics

Between 1 January and 31 December 2010, CCF performed 111 exams on 67 (29M, 38F) captive and 16 (9M, 7F) wild cheetah. Of the 16 wild cheetah exams, ten (6M, 4F) were orphaned cubs, five (2M, 3F) will be released early 2011, and 1M was released.

Also during this period, 12 wild orphan cheetahs were collected and brought to CCF for care (Table 1); AJU 1591, an orphaned female (approx. 3 months old) confiscated by the Khorixas Ministry of Environment and Tourism (MET); three orphaned males (AJU 1592, 1593, 1594) roughly 10 to 12 months old, and two females AJU 1595 & 1596, approximately 16 months old, from Mount Etjo Game Ranch, south of Otjiwarongo (female 1596 sustained serious injury from a suspected gin trap resulting in the amputation of her outer rear right toe); four orphaned cubs (AJU 1600F, 1601M, 1602M, 1603F) from Okakarara, approx 3-4 weeks old; and two orphaned 6-month-old cubs (AJU 1607M, 1608F) from Kalkfeld.

Table 1. AJU, sex, date of arrival and age of new orphaned cheetahs at CCF 2010.

AJU	Sex	Date of Arrival	Comment
1591	F	11-Feb-10	Approx. 3 months old - Rohini Talalla - mother unknown
1592	M	14-Mar-10	10-12 months old - Crosby - mother unknown
1593	M	14-Mar-10	10-12 months old - Geno - mother unknown
1594	M	14-Mar-10	10-12 months old - Chuck - mother unknown
1595	F	19-Mar-10	Approx. 16 months old – mother unknown
1596	F	19-Mar-10	Approx. 16 months old – mother unknown
1600	F	01-Sep-10	3-4 weeks old - Senay - mother chased off
1601	M	01-Sep-10	3-4 weeks old - Peter - mother chased off
1602	M	01-Sep-10	3-4 weeks old - Kay Jay - mother chased off
1603	F	01-Sep-10	3-4 weeks old - Tiger Lily - mother chased off
1607	M	25-Nov-10	6-months old - mother abandoned
1608	F	25-Nov-10	6-months old - mother abandoned

Releases

By the end of 2010, CCF released six (2M, 4F) cheetahs (see
Table 2) with another five (2M, 3F) planned to be released in early 2011.

A radio-collared male cheetah, AJU 1599M, was found in the back yard of a residential house in Swakopmund. CCF was called by MET to remove the cheetah from the SPCA dog kennels and to try to determine the origin of the cheetah and owners of the radio collar. CCF contacted members of the Large Carnivore Management Association of Namibia (LCMAN) for information. N/a'an ku se had released this cheetah north of NamibRand Nature Reserve four months prior to its appearance in Swakopmund with a coalition mate; the coalition mate was never found. After a thorough examination and collection at CCF, N/a'an ku se collected and released AJU 1599M again in early September.

Captive females AJU 1243, 1348, 1349, & 1351 were released into CCF's Bellebenno Game Camp in September for CCF's fourth re-introduction research project. For full details please see Re-introduction Section.

CCF resident male AJU 1543M was captured twice for collar placement, once in mid-September and again in December. In August, AJU 1543M's coalition mate, AJU 1542M, who was wearing a satellite collar, was found dead from unknown circumstances. In mid-September, the CCF research team captured AJU 1543M and placed AJU 1542's satellite collar on him and then released him. In December, AJU 1543 was re-caught and a VHF collar replaced the satellite collar. He was again released.

In October CCF received a call from the Waterberg South area to collect three cheetahs, suspected predating on livestock, a mother (1606F) and her approximately 16-month-old male cubs, AJU 1604M and 1605M. Upon examination CCF staff discovered AJU 1606F had a broken upper canine with pulp cavity exposure, requiring dental work. Dr. Profitt in Otjiwarongo removed the broken canine along with an abscess that had formed over the root. She was anaesthetised two weeks later, to check the healing progress.

To gather more valuable information on female movement, a satellite collar will be placed on AJU 1606F before release. CCF is currently awaiting a release mechanism for the satellite from SirTrack in New Zealand that will allow the collar to detach from AJU 1606 after a predetermined amount of time. The mother and her two sub-adult male cubs, along with sub-adult females AJU 1595 & 1596 are scheduled to be released early January 2011.

Table 2. Details of the release of the six cheetahs released by CCF in 2010.

AJU	Sex	Date of Release	Comment
1599	M	20-Aug-10	N/a'an ku se released cheetah north of NamibRand Nature Reserve
1243	F	01-Sep-10	Chanel - Bellebenno Game Camp Release
1348	F	01-Sep-10	Hershey - Bellebenno Game Camp Release
1349	F	01-Sep-10	Nestle - Bellebenno Game Camp Release
1351	F	01-Sep-10	Toblerone - Bellebenno Game Camp Release
1543	M	18-Sep-10	Satellite collar placed, released on Elandsvreugde
1543	M	21-Dec-10	Satellite collar removed, VHF collar placed, released on Elandsvreugde

1. CCF Cheetah Sanctuary Captive Cheetahs

As of 31 December 2010, CCF has 62 (27M, 36F) captive cheetahs. Figure 1 shows the ages of most of the cheetahs residing at CCF during this period and their age when they first came to CCF.

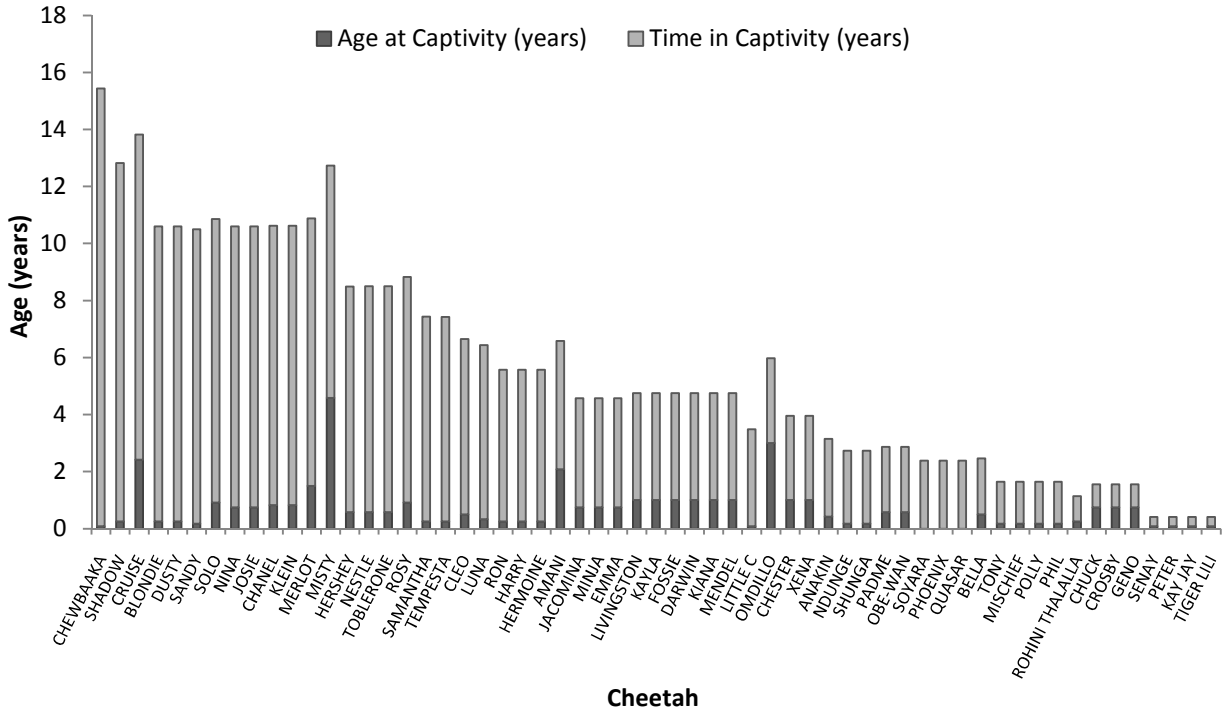


Figure 1. Ages of cheetahs currently held at CCF and the age at which they came into captivity.

Six males (AJU 1580, 1581, 1583, 1592, 1593, & 1594) are scheduled for transfer to Naua Naua Game Lodge, south of Etosha National Park, in early 2011. CCF has placed other cheetahs at this facility in the past. Four females (AJU1243, 1348, 1349 & 1351) participating in CCF's re-introduction programme are scheduled for transfer to Erindi Private Game Reserve also in early 2011.

2. Medical Exams of CCF Captive Cheetahs

All cheetahs handled by CCF, both captive and wild, are assessed using standard protocols for overall health as well as, in the case of males, reproductive fitness in the form of semen collection, assessment and, where possible, banking in the Genome Resource Bank (GRB).

Between 1 January and 31 December 2010, CCF performed 111 exams on 67 (29M, 38F) captive and wild cheetahs. Of those, 48 (19M, 29F) were annual captive exams, 16 (9M, 7F) were wild cheetah exams, sperm was banked from 11 male cheetahs both captive and wild, five (2M, 2F) were dental exams, seven (7F) health re-evaluation/sutures, six (1M, 4F) research/collar placement exams, 13 herpes treatment exams on captive male AJU 1245, seven (1M, 1F) eye exams, three (1M, 1F) kidney failure exams, five (2M, 3F) necropsies, and one (1F) nasal exam (see Table 3).

Table 3. Details of multiple exams performed on cheetahs in 2010.

AJU	Sex	Date of Exam	Comment
1203	F	03-Jan-10	Eye exam - ointment applied, sutured closed
1203	F	08-Jan-10	Eye exam - ointment applied, sutured closed
1245	M	08-Jan-10	Herpes Treatment - cryotherapy - biopsies taken
1203	F	12-Jan-10	Eye exam - ointment applied, sutured closed
1340	F	15-Jan-10	Nasal exam - bloody nose caused by infection
1245	M	15-Jan-10	Herpes treatment- cleaned & bandaged
1203	F	19-Jan-10	Eye exam - ointment applied, sutured closed
1245	M	21-Jan-10	Herpes treatment - ciloxan dripped on cleaned wounds & bandaged
1203	F	25-Jan-10	Eye exam - healing, not re-sutured
1245	M	26-Jan-10	Herpes treatment- cleaned & bandaged
1245	M	01-Feb-10	Herpes treatment - ciloxan dripped on cleaned wounds & bandaged
1245	M	06-Feb-10	Herpes treatment - ciloxan dripped on cleaned wounds & bandaged
1245	M	10-Feb-10	Herpes treatment - ciloxan dripped on cleaned wounds & bandaged
1245	M	15-Feb-10	Herpes treatment - wounds cleaned, meat tenderizer applied to affected areas, no bandages
1245	M	26-Feb-10	Herpes treatment - wounds cleaned, meat tenderizer applied to affected areas, no bandages
1548	M	26-Mar-10	Eye exam - bilateral nasal discharge, ulcer detected in L eye, L eye flushed with LRS, ointment applied and sutured closed
1548	M	01-Apr-10	Eye exam - Flush L eye with saline - ciloxan and gentamycin applied - sutured closed, re-examine during annual exam
1595	F	09-Jul-10	Release evaluation - overall condition healthy
1596	F	09-Jul-10	Release evaluation - overall condition healthy, foot healing well after amputation in March 2010
1598	F	04-Aug-10	Sutured wound on front L leg for captive animal from Daktari Farm
1245	M	27-Aug-10	Herpes treatment - cryotherapy - legs bandaged
1245	M	03-Sep-10	Herpes treatment - cryotherapy - legs bandaged

1245	M	09-Sep-10	Herpes treatment - cryotherapy
1245	M	02-Oct-10	Herpes treatment - cryotherapy
1243	F	27-Dec-10	Release evaluation – new collar placed – overall condition healthy
1348	F	27-Dec-10	Release evaluation – overall condition healthy
1349	F	27-Dec-10	Release evaluation – overall condition healthy
1351	F	27-Dec-10	Release evaluation – overall condition healthy

Annual Physicals

Between the 5th and 15th of April, annual physical examinations were conducted on 42 of CCF's 57 resident cheetahs; the rest will be worked on later in the year. Dr. Carlos Sanchez, Associate Veterinarian from the Smithsonian Institution's National Zoo, and his vet technician, Colleen Clabbers, along with veterinarian in training, Dr. Diana Wells from Argentina, CCF volunteer veterinarian from Canada, Lynda Ross, in collaboration with CCF research veterinarian Dr Anaïs Herbert, vet nurses Cheri Morkel and Rosie Glazier, and volunteers, worked together to anaesthetise each cat and do a complete health check-up. CCF performed more work ups on five more of CCF's captive cheetahs for the June International Course in Cheetah Conservation Biology.

The check-ups included: weighing, eyes and teeth exam, taking blood and semen, performing endoscopies on selected animals, and administrating vaccinations. A total of six anaesthetic combinations were successfully tested on these cheetahs. All the cheetahs were in general good health. However, a therapeutic castration had to be performed on AJU 1180 because he was diagnosed with a testicular cancer, while removal of a benign vaginal fibropapilloma was performed on AJU 1441. During these annuals, a pilot study was conducted to assess the nutritional status of cheetahs in cooperation with Dr. Jason Williams, nutritionist from the Indianapolis Zoo. For this, blood samples were taken from 10 males and 9 females.

Health Issues – Gastritis

In captive facilities, cheetahs suffer from gastritis, an inflammation of the stomach caused by spiral bacteria. Although CCF's cats have a very low incidence of gastritis, CCF has participated in a gastritis study for the past ten years. Stress is implicated as one of the possible causes of this disease.

The long-term research into the causes, levels and effects of gastritis in cheetahs, already in its tenth year, included the annual collections from CCF's cheetahs in April, in collaboration with Dr. Linda Munson and Dr. Karen Terio (University of California, Davis), and Dr. Scott Citino from the White Oak Conservation Center. Dr Karen Terio and her assistant Stacy Schultz helped collect the samples. Ten CCF cheetahs were endoscoped to monitor presence or absence of gastritis. CCF's cheetahs continue to be in excellent health, thus providing a baseline for the study. Endoscopies were also performed on the five wild-caught cheetahs recently arrived at CCF. Dr. Carlos Sanchez performed endoscopies on a selected group of resident cheetahs and trained CCF's veterinarian, Dr. Anaïs Herbert to perform the procedure.

Along with the endoscopies, fourteen days of faecal samples were collected on these 10 cheetahs between March and May. The samples have been processed and shipped to the United States to evaluate cortisol levels in collaboration with Dr. Karen Terio.

3. Dental Work, Surgeries and General Health

Between 1 January and 31 December 2010, 13 of CCF's captive cheetahs (5M, 8F) required veterinary attention. CCF's veterinarian, Dr. Anaïs Herbert, performed or requested external assistance for 32 exams. Two males, AJU 1238 & 1539, and two females, AJU 1351 & 1606, were sent to Otjiwarongo for dental work with Dr. Profitt (see Table 4).

Table 4.Details of dental exams performed in 2010.

AJU	Sex	Date of Exam	Comment
1238	M	16-Feb-10	Root Canal on upper right canine with Dr. Profitt
1351	F	26-Jul-10	Palatine erosion hole infected - Root canal with Dr. Profitt
1539	M	08-Sep-10	Root canal on upper left canine with Dr. Profitt
1606	F	04-Nov-10	Removal of upper left canine with Dr. Profitt
1606	F	19-Nov-10	Follow up on tooth removal - healed faster than expected

One female, AJU 1203, was sent to Dr. Axel Hartmann for an initial eye exam. Male AJU 1548 was also treated for an irritated eye. Captive female AJU 1340 was treated in January for a nasal infection. In addition, Dr. Anaïs Herbert cleaned and sutured a wound on a captive female AJU 1598 from neighbouring Daktari farm, as Dr. Hartmann and the state vet were unavailable.

Male AJU 1245 was anaesthetised 13 times during the year for confirmed herpes virus treatment on his front and rear left legs. Several anti-biograms were performed and treatment was adapted to treat the multiple secondary bacterial infections. His legs were bandaged to prevent licking, and he was anaesthetised to change these bandages once a week for a month. Cryotherapy was also performed on his skin lesions every week for a month. His lesions have significantly improved and no longer show signs of infection.

Captive cheetahs AJU-1238M, 1203F, 1548M, 1596F, and 1340F have recovered completely from their medical conditions.

In addition to the exams in Table 3 or interventions, the CCF veterinary staff monitored several other cheetah health issues including:

- Leia (AJU 1042F), a 14-year-old captive female cheetah struggling with chronic renal failure since July 2009, was euthanised in February (Table 6) after her condition declined significantly and no longer responded to treatment.
- Chewbaaka (AJU 981M), CCF's 15-year-old ambassador male cheetah, showed signs of renal failure in early May; he was anesthetised for fluid treatment and to obtain renal blood values, from which early chronic renal failure was confirmed. Since his treatment with beta-blockers and administering of regular subcutaneous fluids his condition has improved (Table 5).
- Klein (AJU 1545M) showed signs of kidney failure in October, confirmed by the blood values obtained by the lab.
- Cruise (AJU 1180M) showed signs of testicular cancer in March; both testes were removed in April and testicular cancer confirmed by the pathologist. He continues to be in overall good health.

- Kiana (AJU 1245F) is still on treatment for a heart murmur and is not showing clinical symptoms of the disease.
- In March/April six of CCF's captive cheetahs, AJU 1475, AJU 1474, AJU 1549, AJU 1548, AJU 1473 and AJU 1532 showed signs of a respiratory tract infection. Each cat was successfully treated with antibiotics and has shown no sign of recurring infection.

Table 5. Details of health checks/renal failure exams of two cheetahs in 2010.

AJU	Sex	Date of Exam	Comment
1042	F	01-Feb-10	Body condition very poor, lost 10kg, not eating, kidneys not functioning fully, keep in clinic for saline treatment for 5-7days
981	M	07-Apr-10	2L IV fluids, 5L SQ fluids admin. L kidney hard - urine sample 1.018, protein +
981	M	04-Sep-10	2L IV fluids, 4L SQ fluids admin. Blood samples taken - show improvement with current drug therapy

4. Deaths, Euthanasia, and Necropsies

In 2010, CCF conducted five necropsies on both captive and wild cheetahs (see Table 6). Female AJU 1042F and AJU 1151M were euthanised due to non-response to kidney failure treatment. AJU 1507F was found killed in NamibRand Nature Reserve last year (possibly killed and partially eaten by a spotted hyena) necropsy samples were taken in July 2010. AJU 1597F died from internal injuries incurred during a fall approximately 35 meters into a cement ditch at NamWater Company. AJU 1542M, one of CCF's radio-collared cheetahs, was found dead on Little Serengeti, however this cheetah was too badly decomposed to determine cause of death.

Table 6. Details of the five cheetah necropsies performed in 2010.

AJU	Sex	Date of Death	Comment
1042	F	07-Feb-10	Euthanasia - Kidney Failure
1507	F	01-Jun-10	Possibly killed by spotted hyena - brain, eyes, rib, skin samples taken
1151	M	17-Jul-10	Naua Naua Lodge cheetah - Euthanasia - Kidney Failure
1597	F	04-Aug-10	Wild cheetah, fell 35 metres into cement ditch, death caused by internal injuries
1542	M	Aug-10	Cause of death unknown - possible snake bite

In April, CCF received a call from a farmer near Windhoek requesting us to pick up a dead wild cheetah (AJU 1609). Upon examination of the male cheetah, sample slides indicated that the cause of death was anthrax, although the state laboratory results proved negative. Following the state veterinarian's guidelines, the body was burned and buried.

B. Health and Reproduction

1. Clinical Research: Student Intern Projects

CCF accepts veterinary student interns and volunteers each year to assist in conducting clinical research and assist staff in long-term projects. Three veterinary student interns worked with CCF veterinary staff and have completed or are in the process of completing projects.

Student intern projects all took place June - August and included three veterinary student interns who have completed or are in the process of completing their projects.

For the second year, wild and captive cheetah scat has been collected. An analysis has been performed on wild cheetah scat to determine parasite load and assess their overall health. A veterinary student from Cornell University and a pre-vet student intern examined the parasitological load of CCF's captive cheetahs during different seasons. The students analysed cheetah scat to determine parasite load and whether de-worming was needed. Results from this study found that parasite prevalence and abundance was highly variable and there was no significant correlation between parasite load and age, sex, density of cheetahs in enclosure or time since last anti-parasitic treatment. The study also found that treatment with anti-parasitic treatments fenbendazole or pyrantel pamoate was effective in decreasing parasite load. Recommendations on how to lessen parasite transmission and an anti-parasitic treatment schedule were made from the results of this project.

A veterinary student from the National Veterinary School of Toulouse in France studied the parasite prevalence and the parasite load of CCF livestock and wildlife species present at the waterholes on CCF property. The study compared the parasite loads of livestock to that found in the wildlife samples to determine if an overlap of livestock and wildlife has an influence on the parasite load of each species. Results were variable but indicated that there was no universal effect of livestock and wildlife overlap at waterholes on parasite prevalence or abundance.

2. Genome Resource Bank

Since 2002, a total of 290 semen collections have been added to the CCF Genome Resource Bank (GRB). Between 01 January and 31 December of 2010, eleven semen collections were banked into the CCF GRB. The CCF GRB now contains a total of 301 cryo-preserved sperm samples from captive and wild cheetahs in Namibia, representing 91 individual cheetahs.

CCF continues to bank sperm, serum, plasma, white and red blood cells as well as hair and skin samples on all cheetahs worked up. Additionally, a scat sample collection from wild cheetahs in Namibia and neighbouring countries is kept at CCF and increases continually. Since 1991 blood samples were obtained from over 900 individual cheetahs. Blood samples are used for veterinary and genetic purposes, with backups stored at both CCF Namibia and the Laboratory of Genomic Diversity at the National Institutes of Health. With the creation of CCF's genetics laboratory, most samples will be held at CCF. Currently the GRB holds the world's largest wild cheetah database.

3. Applied Biosystems Genetic Conservation Laboratory

The Applied Biosystems Genetic Conservation Laboratory was set up starting end of 2008 by Dr. Anne Schmidt-Küntzel for the Cheetah Conservation Fund thanks to the generous support of Applied Biosystems and the Ohrstrom Foundation. The laboratory's main aim is to contribute to the ongoing research and conservation of cheetahs, working together with the ecology and biomedical departments in CCF's cross-disciplinary mode of operation. The scat detection dog programme is part of the cross-disciplinary approach and was put into place in order to provide the necessary samples to the various

genetics projects. Carolyn Whitesell joined CCF this year in order to take on the training of the dogs. The main genetics projects are related to cheetah population structure, census, determination of relatedness, and assignment of individual ID to non-invasive samples such as scat. Projects related to other species are performed with outside funding and so far are limited to collaborative projects.

Genetic projects

In the beginning of 2010, CCF geneticist Dr. Anne Schmidt-Küntzel and CCF staff member and genetics PhD candidate, Fabiano Ezekiel, spent three months as visiting scientists at Dr. Stephen O'Brien's Laboratory of Genomic Diversity (LGD), at the National Cancer Institute in Frederick, Maryland in the U.S. During that time they extracted about 100 samples and assessed the quality of close to 200 cheetah samples, including CCF samples that had been sent to the US before the establishment of the CCF genetics laboratory, and cheetah samples from other cheetah-range countries. Three multiplexes were optimised (a multiplex allows work on several markers simultaneously), thereby allowing researchers to obtain results of multiple markers at the same time for a cost similar to that of individual markers. At the end of the year Dr. Schmidt-Küntzel returned to LGD and finished the experiment, bringing back to CCF a large amount of data to be included in various CCF projects, including Fabiano's PhD project.

In Dr. Schmidt-Küntzel's absence in the beginning of the year, CCF genetics laboratory technician Tusnelde Mwaningange extracted DNA from over 100 blood samples stored at CCF for the year 2009 and the second half of 2008 and assessed their quality. In addition, she conducted laboratory work to optimise a multiplex of four markers to specifically differentiate two wild male cheetahs AJU 1542 and AJU 1543 (the "wild boys") that are part of a long-term biomedical study that began in July 2008. Long-term German volunteer, Veronika Brinschwitz, was trained on genetic techniques and helped with the optimization of the Wild Boys project. The wild boys' scat is collected daily, to allow for long-term monitoring of their stress and testosterone levels, diet, and parasite load; over 500 samples are currently available.

Unfortunately Tusnelde Mwaningange left CCF in August to follow her husband into the southern part of Namibia. In September Christine Kamukwanyama joined the genetics laboratory as laboratory technician and was trained in scat and blood DNA extraction. She just finished her undergraduate degree at UNam and is a very promising young Namibian professional; her main project is to obtain genetic IDs of the past two years of wild boy samples, Christine will enrol as a master's student at UNam in 2011. Kristin Meyer joined CCF in August 2010 to contribute her experience in the pharmaceutical industry to help manage the genetics laboratory in Dr. Schmidt-Küntzel's absence; her generous help is highly appreciated. Both Christine and Kristin have been working very hard to keep the laboratory running smoothly and are continuing to learn the techniques of the genetics laboratory.

Dr. O'Brien visited CCF in September and gave a lecture to genetics students at the University of Namibia (UNam) as well as to our CCF staff. As a part of his on-going genetic research, he participates in a project called Genome10 K, a project to map the DNA of 10,000 vertebrates. Among other endangered species to be sequenced, the cheetah has been selected, and genetic samples from CCF's famous ambassador, Chewbaaka, will be used for the sequencing.

As part of his doctorate research, Ezekiel Fabiano continued to foster relationships with other countries throughout the cheetah's range to secure samples for CCF's cheetah genetic diversity study. Over the last 12 months we were able to secure samples from a number of countries including Angola, Algeria, Botswana, South Africa, and from other previously under -sampled regions of Namibia. Fabiano has

extracted over 80 of these samples, which are currently being genotyped at CCF's genetics lab in Namibia. Of these, 31 samples run with a multiplex of four markers, 64% amplified with at least 2 and 23% with none. This success rate falls within the range usually expected when working with non-invasive samples, as these are poor quality samples. Fabiano spent three months at the end of the year at the Pontificia Universidade Catolica do Rio Grande do Sul, Brazil, where he assisted teaching a module on ecological methodology to second -year biology undergraduates. During this time he continued literature review for his PhD, had his second committee meeting, and learned different population genetics analytical programs (e.g. lamarc, Arlequin), working with some additional mitochondrial segments. He continues carrying out these trials in Namibia.

As part of the International Courses in Cheetah Conservation Biology, 22 international students participated in an eight-hour conservation genetics class and were trained in sample collection and labelling; as part of the practical training the students performed a DNA extraction in the genetics laboratory.

Collaborative genetics projects

In the scope of an ongoing collaboration on carnivore diversity with Prof. Eduardo Eizirik, Dr. Schmidt-Küntzel performed preliminary data analysis for a grant report; the final results of the laboratory work performed in Brazil are expected any time. Future laboratory work will be performed at the CCF laboratory as soon as outside funding for this study becomes available.

CCF's Applied Biosystems Genetic Conservation Laboratory is part of a collaborative effort between WWF, the Namibian Ministry of Environment and Tourism, Oregon State University. DNA was extracted from 49 buffalo blood samples in 2009 and is being analysed by Dr. Clint Epps at the Department of Fisheries and Wildlife of Oregon State University.

Genetics work on white rhinoceros, performed in collaboration with Master's student Abigail Guerier from Ongava Wildlife Reserve's Research Centre, was completed this year, and a pedigree for the rhinos was finalised thanks to the genetic information. The results will be part of Abigail's Master's thesis, and a manuscript is currently in preparation. A project on black rhinoceros will begin with Ongava Research Centre in the near future.

As part of a collaborative project with Dr. Gregory Barsh's genetics laboratory at Stanford, CCF collected genetic samples of spot and background areas from cheetah skin, in order to better understand the molecular mechanisms underlying the formation of spots. The results have been very interesting and confirmed the involvement of pigmentation genes as well as keratin genes, keratin being responsible for structure and thus explaining the fact that cheetah spots are softer than the light background colour. A manuscript is currently in preparation.

A project in the planning stage is the evaluation of genetic diversity of the lion prides in Ongava and Erindi reserve in collaboration with both Research teams. Samples are currently being collected, and analysis will start in 2011.

4. Detection Dogs

Carolyn Whitesell arrived in May 2010 and with the help of handler Katherine Forsythe has continued training the scat sniffing dogs Finn and Isha to find cheetah scat in the field. The dogs are also being

trained to differentiate cheetah samples from other carnivore samples that are brought to the genetics lab; they alert the handlers to the cheetah scat by sitting next to it without touching the sample itself. Finn and Isha have both made much progress in their obedience during this year and are now sitting next to the scat waiting for the handler to give them their reward, for extended periods of time if needed, and they are pointing to the exact location on command (which is a very useful command since scat can be hard to see in the tall grass and the thick bush). The dogs are also in the process of being trained to alert the handlers to cheetah scat by barking; while in the past Isha was told off for barking, it only took her a couple of intensive training sessions to learn that when her handler asks her to "speak" she gets a reward for barking. Finn is a little more hesitant to break the rules he learned as a puppy. Finn works exclusively off leash and Isha is continuously improving her off -leash obedience and will soon be working off leash too.

Out in the field, both dogs have successfully found cheetah scat at cheetah playtrees and on CCF roads. Those scat samples will be used in a cheetah census.

Renowned Australian dog trainer Steve Austin visited CCF in early September to mentor Carolyn Whitesell and help guide CCF's Scat Sniffer Dog Program. CCF and Steve Austin continue to collaborate, and he is currently training two Springer Spaniels which he will donate to CCF's program.

In November, Dr. Marker and Carolyn Whitesell attended a meeting in South Africa on using detection dogs in conservation. A main focus for the meeting was determining a proper survey method using scat detection dogs so that results could be comparable between studies. The meeting also addressed regions in Southern Africa where dogs could be used for surveys studying cheetahs and wild dogs. CCF hopes to collaborate with Endangered Wildlife Trust to create a Southern African Detection Dog Association to ensure that certain accreditation standards are met for detection dogs working in the Southern Africa region.

C. Large Carnivore Research and Ecology

1. Cheetah Census

Camera Trapping Census

Range-wide population estimates for cheetahs are critical for their conservation, but they are particularly difficult to study since cheetahs are highly secretive with widespread home ranges. For the fifth year, CCF continues its census research using non-invasive photographic captures via camera traps. CCF's objective is to replicate camera trap surveys for establishing technique reliability and to conduct surveys in other parts of the country to acquire further knowledge of the species abundance.

CCF's cheetah census involves fifteen camera trap stations (Figure 2), with two Bushnell or Reconyx cameras located at each station. In total, the cameras take approximately 3195 photos of animals each week. Since the start of the census in June 2010, ten of the camera trap stations have captured 7335 images of cheetah. From those images, 11 different individual cheetahs have been identified, including one cheetah with four cubs and another cheetah with three cubs. The camera trap stations with the most cheetah activity are located near the Big Field on Elandsvreugde Farm and on Bellebenno Farm. However, cheetahs have also been photographed on Osonanga, Bynadar, and Boskop Farms. The

cameras have also captured 2143 photos of leopards and occasional photos of other carnivores such as brown hyena, caracal and serval.

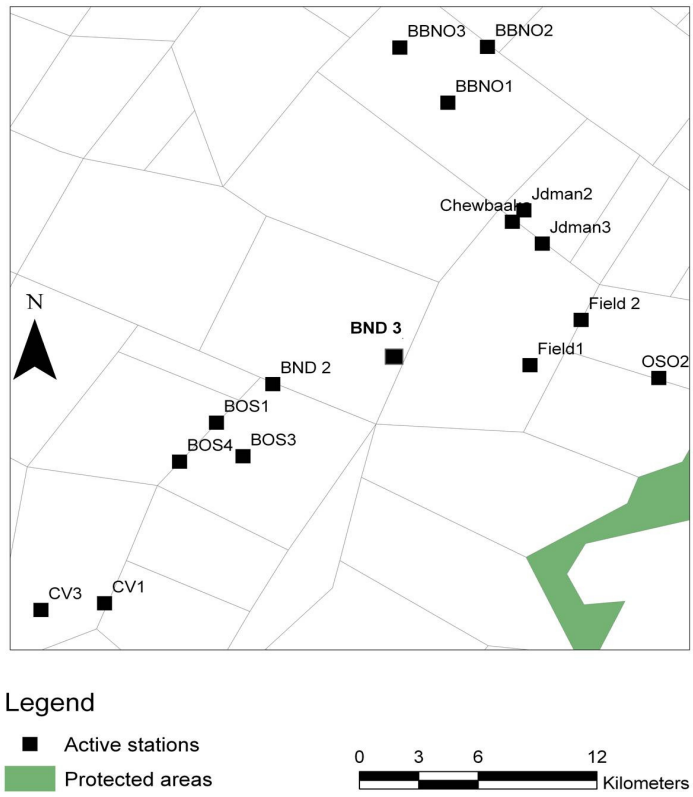


Figure 2. Camera trap placements across CCF and neighbouring farms for the 2010 camera trap census.

Figure 3. Camera trap poto of two male cheetah at BBNO1 at Bellebenno.

"Wild Boys"

Over the past few years, the home range and territory of a coalition of two male cheetahs, the "Wild Boys" (Sam and Hi-Fi, AJU 1533 and AJU 1542, respectively), have been anecdotally known to include CCF property and neighbouring properties to the northeast. Sam was fitted with a VHF radio collar in March 2008, and Hi-Fi was fitted with a GPS-recording satellite collar (also with VHF capability) in August 2009. Since collaring, CCF staff and volunteers have recorded VHF signals, GPS data points from the satellite, and visual sightings of these animals in order to better understand their ranging patterns, diet, and general activity.

In June 2010, Hi-Fi's satellite collar stopped working, however, VHF signals and regular sightings of the two cats continued. In mid-August, after 10 or 12 days of no signals or sightings from Sam, he was found dead. Hi-Fi was recaptured in September. A replacement satellite collar was installed and he was released. In December, Hi-Fi was again recaptured and the satellite collar replaced with a VHF collar.

The loss of Sam raises the question of how Hi-Fi will respond in terms of his ranging patterns and efforts or ability to defend the territory established with his coalition partner. A new project has been designed to explore and monitor possible outcomes, by analyzing the available historical data to more fully understand the ranging and behaviour patterns of the Sam/Hi-Fi coalition and to monitor future activity going forward without Sam. Important insights on cheetah societal dynamics following dissolution of a sibling coalition may be gained from this work.

2. Release and Re-introduction

CCF has conducted research on re-introductions and is currently conducting its fourth project. Due to the extent of land under livestock production and the habituated cheetah's need for large uninhabited areas, there is not a lot of suitable habitat for release.

It's very important to closely monitor the behaviours of the individual cats to ensure their health and adaptation to their new environment.

In the past years, CCF has conducted research on several cheetah releases that includes:

- 2004: Captive-raised females (AJU 1355 and AJU 1354) were released into Bellebenno game camp. After six weeks they moved out of the game camp and caused CCF's neighbour problems near small stock. The two females were returned to captivity.
- 2006: Single captive female (AJU 1268) and four cubs were released in Bellebenno. They began hunting and were self-sufficient after 3 months and were released into the 50,000 -ha Erindi Game Reserve.
- 2009: Seven previously captive-held cheetahs (Five males: AJU 1347, AJU 1326, AJU 1327, AJU 1347 and AJU 1350 and two wild females: AJU 1506 and AJU 1507) were released at NamibRand.

The NamibRand Re-introduction

The five males (AJU 1326, 1327, 1347, 1350, and 1353) collared and released into the NamibRand Nature Reserve (NRNR) in 2008 were monitored via the satellite collar fitted to one of the five up until May 2010. At this time the collar sent its final report and shut down with its batteries exhausted. Local

NRNR staff continued monitoring on an ad-hoc basis and reported that the group left the reserve a few weeks later. They have since been seen on farmland to the East of the reserve and appear to be continuing to thrive.

The female cheetah (AJU-1506) that was fitted with a satellite collar in 2009 and also released into NRNR has been monitored on a weekly basis throughout 2010 with GPS points being generated on a twice-daily schedule. The map below (Figure 4) shows her movements during this time.

The large blue dot represents the first point of 2010, while she was still within the reserve boundaries (purple line), and the large green dot is the last point of the year. The small red dots and white line show the extent of her movements throughout the year. As can be seen, she is living almost exclusively on farmland in a fairly mountainous area. Towards the end of 2010 the two farms labelled as "Neuhof Noord" and "Neuhof Reserve" were combined into a single area under the latter title, and the new owner, Swen Bachran, has been cooperating with CCF and the NRNR with regards to cheetah monitoring.

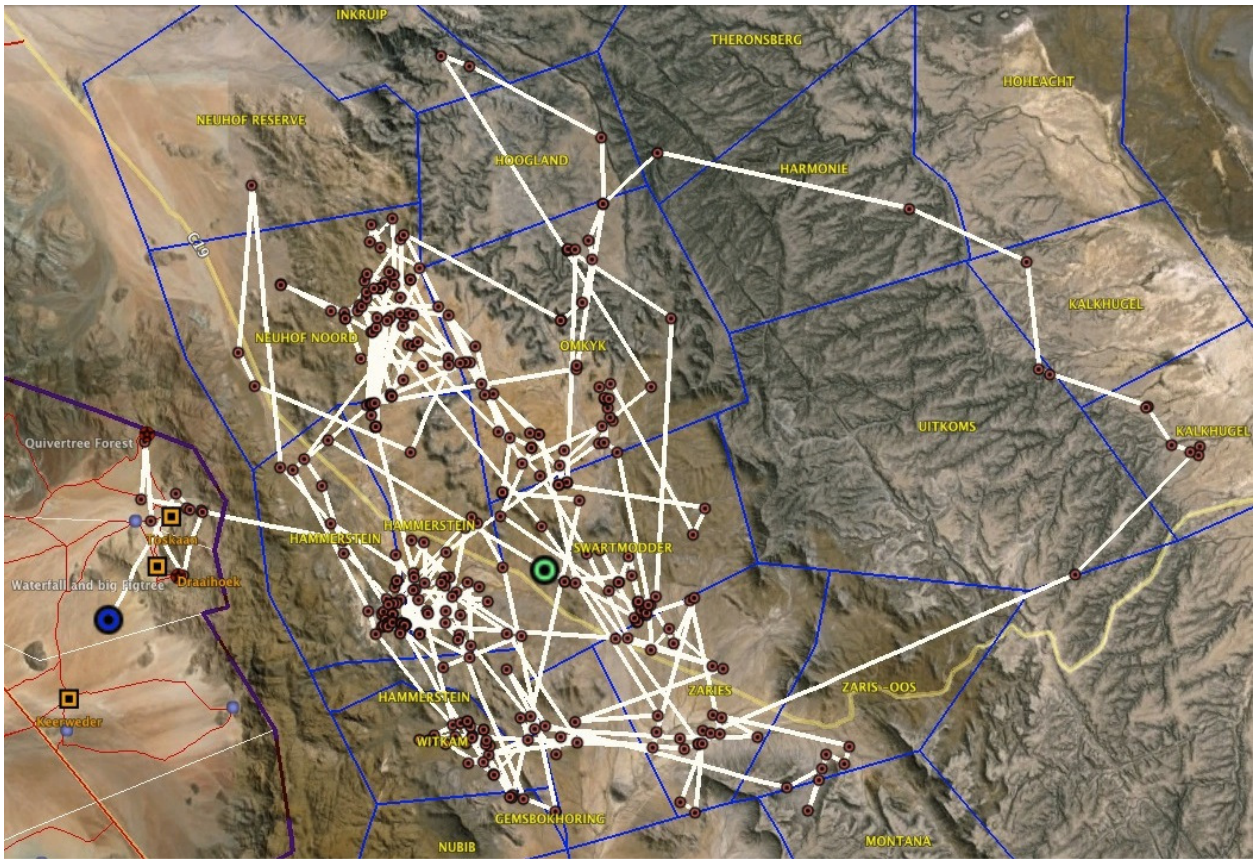


Figure 4. Movements in 2010 for the female (AJU 1506) relased in NRNR in 2009. Points are recorded via sateltie collar fixes twice daily.

At the end of 2010 it has been reported that the female has been seen with two young cubs, which is consistent with recently observed movements that show her repeatedly returning to the same exact location. This is the third litter to be observed with this female.

Releasing captive cheetahs back into the wild has had many challenges. However, the NamibRand re-introduction has been a success as there are now cheetahs living in an area where they had been exterminated.

Bellebenno Game Camp "Training Ground" Re-introduction Project

On 1 September 2010, four female cheetahs (AJU1243, 1348, 1349 & 1351) were released into the 4,000-ha Bellebenno game camp as a part of CCF's goal to establish a "training ground" in which to prepare previously captive cats for life in the wild. Based on earlier successes CCF has had with releasing cheetah, the decision was made to use the camp as a means of gathering information on the behaviour of the cats as well as feeding ecology, habitat preference and survival techniques/strategies. The cheetahs were observed daily using an intensive monitoring program, which was gradually reduced as the cheetah achieved more independence. CCF staff followed the cheetah closely throughout the day and sometimes during the night. Some data on the cats' movements and hunting activity is presented below.

On average the cats move 3.81km (±2.39 SD) a day. There is little difference between the distances moved from week to week for the first eight weeks (Figure 5); thereafter they were followed less intensively and so movement could not be calculated as reliably. The cheetahs moved the greatest distance from 0600-0900 in the morning and 1800-2100 in the evening (Figure 6). They move on average 1.15 km (± 0.89SD) overnight between when they are left in the evening and found again in the morning.

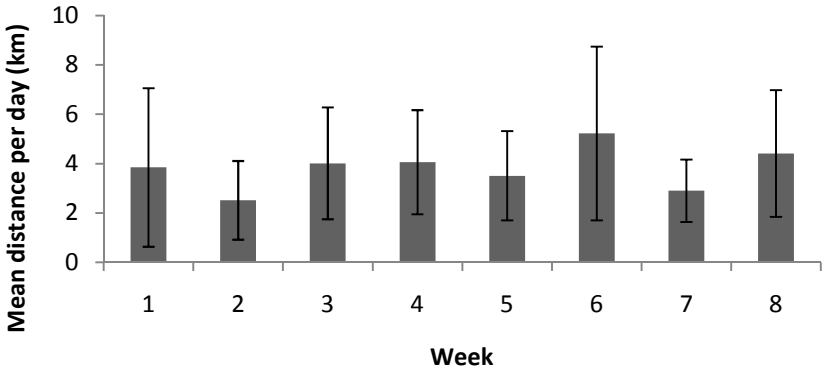


Figure 5. Mean distance moved per day (km) +/- standard deviation for weeks 1-8.

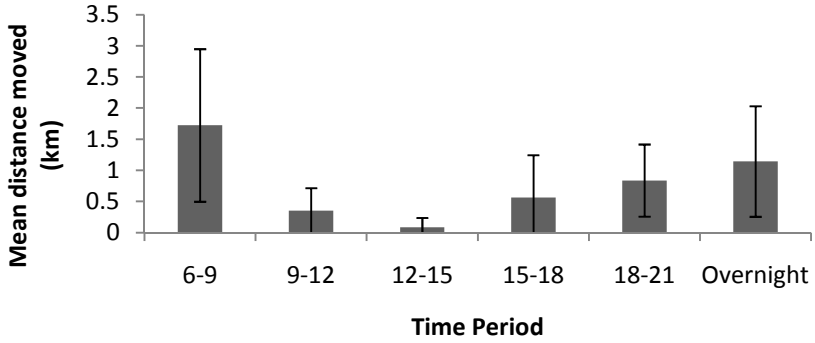


Figure 6. Mean distance moved (km) +/- standard deviation per time period for the first 8 week.

During the first four weeks the cheetahs have covered much of the Bellebenno game camp (Figure 7). During week one, they moved from the Cheetah Pens (release site) towards Erik se Pos and the western corner of the camp. During week two they moved around Erik se Pos to the open areas in the south of the camp near the Black Gates. In week three they concentrated in the open areas in the southern corner of Bellebenno and ventured along the Frans Indongo fence line as well as the J Diekman fence line. In week four they travelled north-east further along the J Diekman fence line right up to the north-eastern corner of the camp.

During the second four weeks the females concentrated mainly along the south-eastern side of the camp (Figure 8). During week five they mainly moved in the open areas around and south of Sukkel Dam. In week six the cats moved in similar areas to week five; however they did venture into the eastern corner of the Bellebenno camp as well. During week seven the females concentrated mainly in the areas south and east of Sukkel Dam, and in week eight they ventured into the northern corner of Bellebenno as well as spending time near all four waterholes.

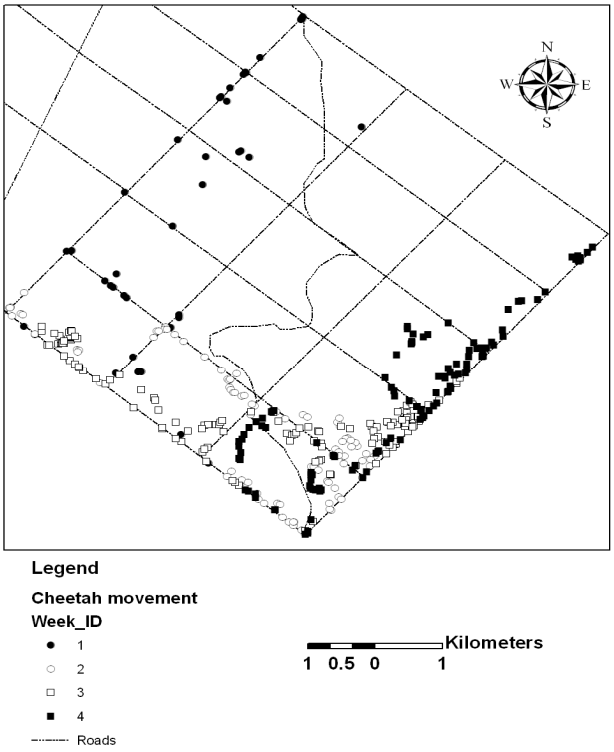


Figure 7. Movement patterns of the four females during the first four weeks of the release

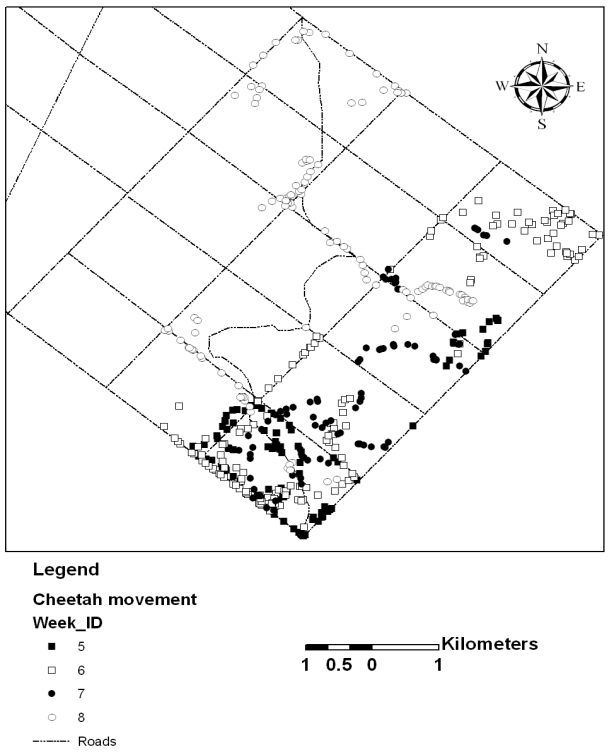


Figure 8. Movement patterns of the four females during weeks 5-8.

After release, the cheetahs were fed twice on two consecutive days before they began to hunt. After that initial feeding, they achieved their first kill after only 9 days of freedom. Since then, they were not fed again and out of 150 hunting attempts, 63 kills were made over 118 days (Figure 9). Initially, only one of the females (AJU1243) was observed to be actively hunting but after their 20th day of release, the others also made kills of their own. Since then, the four have worked as a group to catch the majority of their prey.

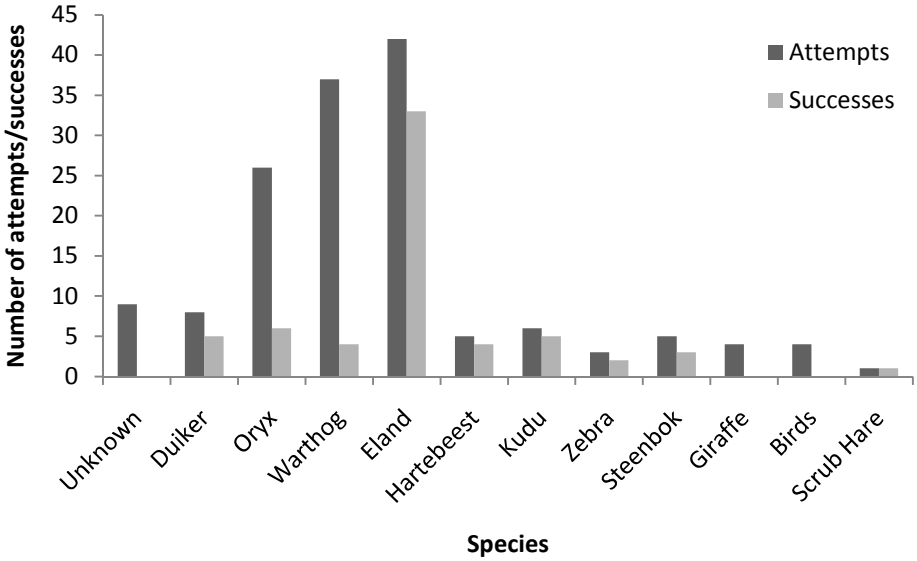


Figure 9. Number of attempted and successful hunts and species for the four females.

Their main prey base consisted of eland, which in most cases were calves and occasionally sub-adult animals. They had a very high success rate with eland calves, with 35 successes out of the 42 hunts that staff witnessed. Other species were hunted much less frequently but also with high percentage rates for attempts versus successes. It should also be taken into consideration that many of the hunting attempts on warthog were witnessed to be insincere and may have been a result of the cheetah displaying play behaviour as opposed to seriously attempting to hunting. Their overall hunting success rate was 42%.

Data also was analysed to determine their preferred vegetation type, especially during hunts. Interestingly, it was determined that open areas of vegetation had the highest numbers of attempts but with the least successes (81 attempts vs. 27 successes). In closed and denser vegetation, they would hunt less frequently but with a higher success rate. In closed, 39 attempts vs. 20 successes and in dense, 30 attempts vs. 16 successes (Figure 10).

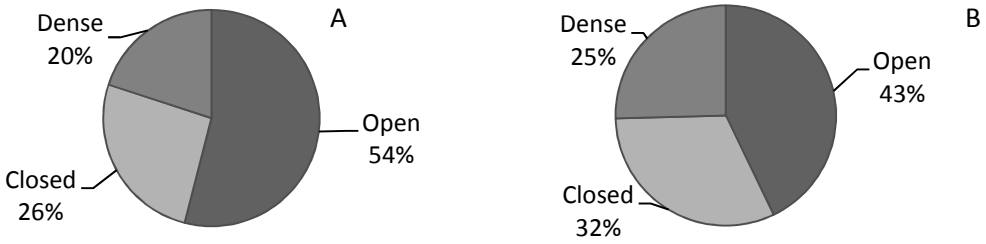


Figure 10. Vegetation type (open, closed or dense) where (A) attempted hunts were made, and (B) where successful hunts were made.

The four cheetahs were returned to captivity in late December to await transfer to Erindi Private Game Reserve to be released in early January 2011. CCF hopes to continue to use this training method to release many more cheetahs that have been held in captivity as well as use it as a basis for which other organizations and countries can implement their own cheetah reintroductions and releases.

3. Collaborative Behavioural Studies

PhD student Thomas Quirke visited CCF for 6 weeks during the second half of 2010. He is conducting research on the behaviour of captive cheetahs from a range of zoological institutions and breeding centres worldwide. He aims to develop novel forms of enrichment for cheetahs in captivity and promote natural behaviour while reducing stereotypical behaviour.

Whilst at CCF he collected behavioural data on many of CCFs captive cheetah as well as high speed videos of cheetahs during enrichment practice of the cheetah run.

Tom helped design and is now collaborating with CCF on a project looking at pre- and post -release behaviour of the four-female coalition released into Bellebenno camp. This study will allow clear comparisons of cheetah behaviour under captive and wild conditions. This will allow us to gauge the success of the release also by providing precise information on the activity budgets of the four females. This data not only will be useful for zoological institutions by allowing them to directly compare behaviour in captivity vs. wild and the adequacy of certain captive environments in promoting normal cheetah behaviour, but it also will provide information for institutions looking to release captive cats into the wild.

4. Angola Field Trip

CCF's long -term goal is to ensure the survival of the species across its range. As such, the organisation has been interested in working with Angolan conservationists to establish the status of the species there. Through visitors to its centre in Otjiwarongo, particularly that by Mr. Alvaro Batista who urged CCF to visit Angola, Dr. Marker was able to travel there for a five-day trip to Angola in March, of which three days were a rapid ecological survey in Iona National Park and surroundings.

The Mission's main objectives were to create networks with Angolan conservation and business institutions; to obtain information on the distribution and relative abundance of their potential prey base; and to perform a general rapid ecological survey in the Iona National Park to confirm the presence of cheetah and other carnivores in the park.

Iona National Park, located in the Namibe province, is an arid area in the extreme southwest of the country known as one of the former ranges of the cheetah; however, due to Angola's three-decade civil war, the cheetah's status in the country has been unknown. The 1.6 million-hectare park was proclaimed a reserve on 2 October 1937.

Accompanied by Mr. Batista, Dr. Marker carried out the three-day survey. The survey route is outlined in Figure 11. Although the vehicle was mostly in motion, GPS locations, video and pictures were taken throughout. Information on the presence of a species was based either on direct contact, animal tracks or the presence of faeces. Particular attention was paid to landform and substrate, vegetation (species whenever possible and percentage of occurrence), water availability (categorised as man-made, natural, river, permanent or seasonal), wildlife (species and abundance estimate), livestock (small, medium, large, abundance estimate) and human activity (settlements).

Visual detection of two adult cheetahs fleeing from a playtree was confirmed during this time, suggesting that the area is a prime habitat for the species. Although visual sightings were only confirmed on this occasion, cheetah presence was confirmed at three additional sectors where hotspot areas known to be playtrees were found.

This survey produced significant information for the development of a conservation strategy for cheetahs in Angola, as the three main targets were achieved:

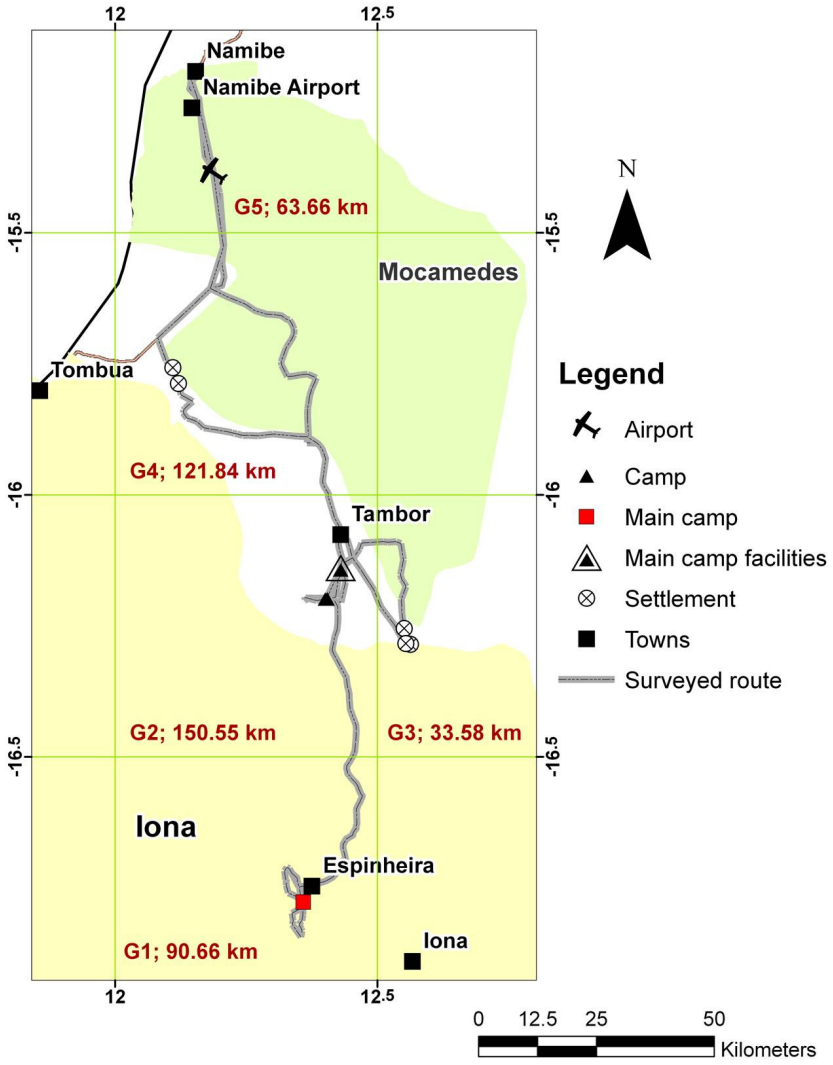


Figure 11. Survey Route in Iona National park in the Namibe Provence, Angola.

First, meetings were held with different entities in the country ranging from biologists to business people, including biologists Mr. Pedro Vaz Pinto (Universidade Catolica de Angola) and Miguel Morais (Public University UAN), US Ambassador Dan Mozena, Mr. Francisco da Cruz (US Angola Chamber), and Mr. Roland Goetz, Warden of Kissama National Park. However, meetings with the Minister of Environment and other government representatives did not materialise.

Second, the survey provided a broad view of the biodiversity and different ecosystems present in the park. The diversity of ungulates observed --especially in terms of size (medium to large) and species-- suggests that the park harbours a resident population of unknown size. Cheetahs are known to have a diverse prey base but prefer medium -size animals (e.g., 36 kg), particularly springbok. This biodiversity reflects the myriad of ecosystems present in the park. Nevertheless, and similar to the giant sable, this cheetah population more likely has also suffered reduction in size relative to historical sizes, questioning its long-term viability. As such, further studies are necessary to understand the biology and ecology of this population.

The third and last target of the survey was to corroborate Mr. Batista's previous cheetah sighting reports, which was the main motive for the trip. This was achieved with the two cheetahs sighted as well as scat found on multiple scent-marking trees. This scat was collected for dietary and genetic analysis. Unlike cheetahs, the presence of other carnivores in the park was confirmed only through indirect means (e.g., interviews, scat, and prints). This is thought to be related to differences in carnivore behaviour (i.e., activity patterns).

In conclusion, the survey provided CCF and other carnivore-related conservation institutions with valuable information about carnivores in the Iona National Park. Overall, results indicate a possible resident population of cheetahs in the park and provide an indication of what needs to be considered in terms of logistics and planning for potential future studies (e.g., terrain).

CCF recommends that future and longer surveys are conducted to collate more basic information about the species' biology and ecology in the park. The use of occupancy modelling is recommended as it can simultaneously address a number of different scientific/research questions (Mackenzie et al. 2002, 2006).

This visit was endorsed by the Kissama Foundation (http://www.kissama.org), which has the mandate to support the development of the National Parks of Angola since peace came to the country in 2002. As a result of meetings in Angola's capital, Luanda, CCF hopes to develop collaborations with Kissama, as well as universities and relevant government officials. The goal is to develop a program using CCF's proven methods for censusing cheetah populations and assisting with community, government and non-governmental organizations in education awareness of cheetahs and bio-diversity to show the benefits of a predator's role in a healthy ecosystem and ecotourism.

5. Zambia Field Trip

The cheetah population in Zambia is estimated at approximately 100 individuals due to increase human populations. Today, Zambia is interested in reintroducing some carnivore species into their former range, including the cheetah. Cheetah Conservation Fund has been asked by the World Wildlife Fund for Nature (WWF) to assist with the reintroduction of cheetah into the Bangweulu Wetlands area in the northeast area of the country. As a potential reintroduction site, Dr. Laurie Marker participated in a rapid survey of the area from the 13th through the 15th of Dec 2010. The survey was conducted by a team of professionals including Ian Stevenson, African Parks Director for the Bangweulu Wetlands project; Dr. Matt Becker, CEO of the Zambian Carnivore Programme; and Rhoda N. Kachali, wildlife ecologist from Zambia Wildlife Authority (ZAWA).

The team concluded that re-introduction of the cheetah into Bangweulu Wetlands is feasible; it recommended that managing the small population using scientific planning and management and the established principles of conservation biology were necessary and possible. In addition, it was considered that the cheetah would provide significant prominence to the national conservation efforts. After the survey was conducted, Drs. Marker and Becker met with ZAWA Senior Ecologist, Mr. Chuma Simukonda in Lusaka. The meeting was followed by a complete report by CCF to ZAWA.

Rapid Survey and Habitat Assessment for Cheetah Reintroduction

The rapid survey assessed various factors within the Bangweulu landscapes, including habitat, prey base, other carnivores and local communities. Future analysis will include site-specific recommendations for

reintroducing the cheetah in terms of development of a holding area for soft release, radio-telemetry monitoring and the long-term strategy, commitment and likely costs involved in the successful establishment of a viable cheetah population. Figure 12 shows the route taken during the rapid survey.

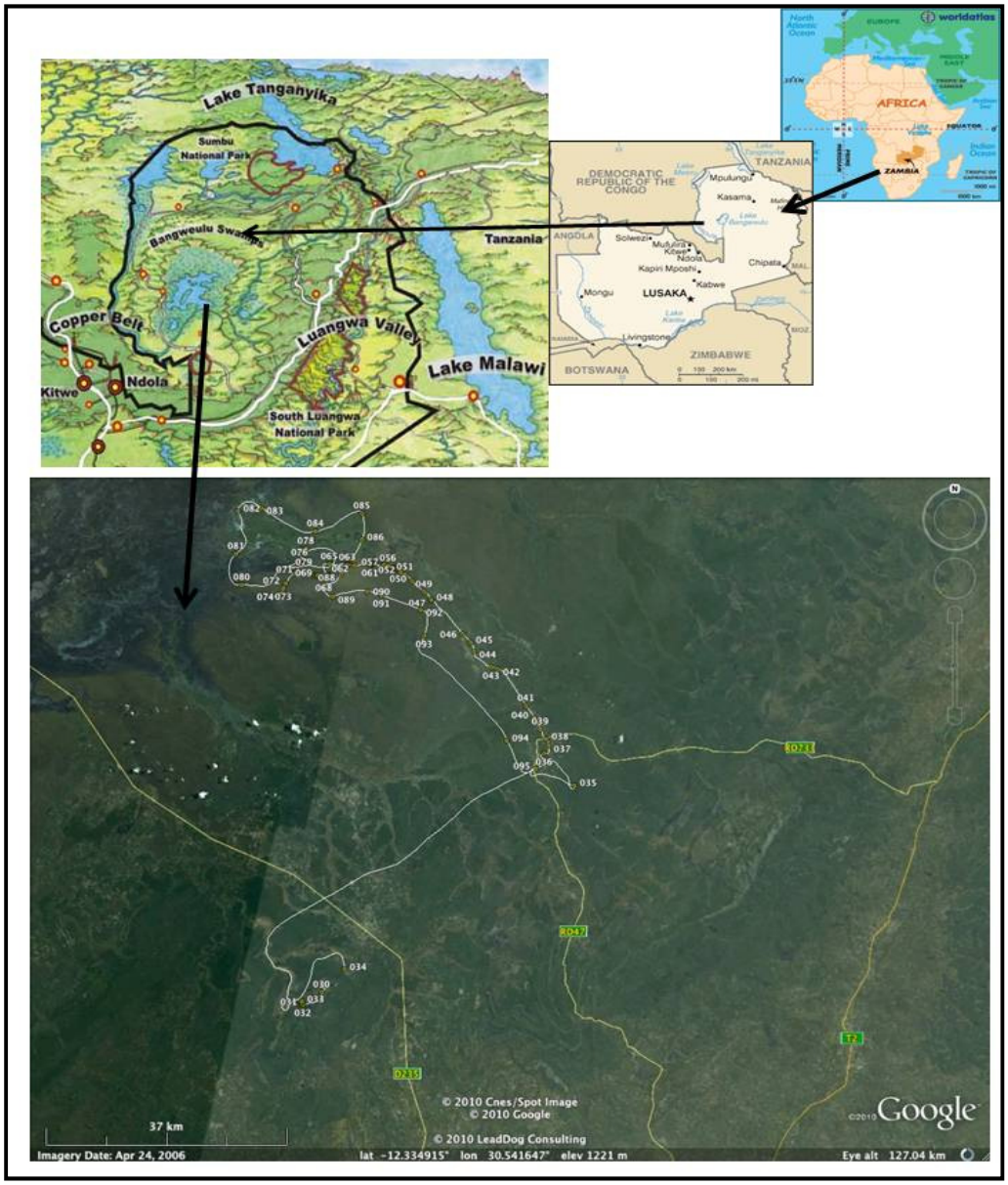


Figure 12: Location and details of a rapid survey in the Bangweulu wetland ecosystem, Zambia

.

Re-introduction potential and maintaining long-term viable breeding population

CCF has also been asked to make recommendations for a successful re-introduction and to lead the team of experts involved with sourcing animals, translocation, rehabilitation and monitoring, including training of Zambian counterparts.

The founder population for the Bangweulu Wetlands would be derived from wild free-ranging populations of cheetah in one of the closest breeding populations available (acknowledging that wild

cheetah populations in Zambia should not be sourced for reintroductions as the status of cheetah populations in areas of Zambia where they are known to occur is not well documented).

As the cheetah subspecies are the same between Zambia and Namibia, the experts agree that Namibian cheetah should be sourced for reintroduction into Zambia.

The CCF team used the population viability analysis program Vortex to model the viability of maintaining a reintroduced population and determine the necessary level of supplementation needed to retain a 90% genetic diversity from the original diversity after 20 years. Baseline parameters were drawn mostly from long-term research conducted by CCF and looked at the feasibility of supplementation (e.g. export permit, logistics). CCF has suggested supplementing a minimum of 16 cheetahs over a period of four years and subsequently 8 individuals every other year.

D. Ecosystem Research

As 70% of the country's game inhabits farmlands, assessment of the Namibian farmland ecosystem for long-term habitat viability for the cheetah and its prey is part of CCF's primary, ongoing research.

1. Weather Monitoring

During the past rainy season, rain gauges were checked regularly around the farms. In addition, daily high and low temperature readings are collected.

So far in 2010 we have had 482 mm of rain, which is slightly less than the previous years' total of 527 mm. Before the onset of rain in November this year, a number of natural dams went dry.

2. Feeding ecology studies

A long-term study on feeding ecology of cheetah continues, using scat and hair analysis to identify the prey that cheetahs feed on. Past CCF research has shown that cheetahs prefer game to livestock; thus the project provides key information for use in human-wildlife conflict management. This year university interns worked on washing scat, burning hair slides and identifying the hair found in the scat.

In the latter half of 2010 a CCF intern, Sanne Kreijtz of Van Hall Larenstein University in the Netherlands, re-analysed and combined all previously indentified hair samples from scat from 1993 to 2010. This analysis included a much larger sample size than any other study on the diet of the free-ranging Namibian cheetah. The results indicated that the cheetahs take wild game much more frequently than livestock (7.3% of samples contained livestock, 87.3 % contained game species), which is similar to findings from previous studies. This is despite the fact that up to two-thirds of available prey is made up of domestic livestock. There was no difference between the percentages of livestock eaten on game or livestock farms (6.25% vs. 7.94%), indicating that even when livestock is available, cheetahs continue to mainly feed on game species.

Kudu and eland were found in more scat samples than any other species, 34% and 32% respectively (Figure 13). When converting this to the number of individual animals taken, accounting for different animal size and digestibility, then the species with highest numbers taken were of warthog and scrub hare.

CCF will continue to collect scat samples from trapped animals as well as from the field in order to add to this growing database.

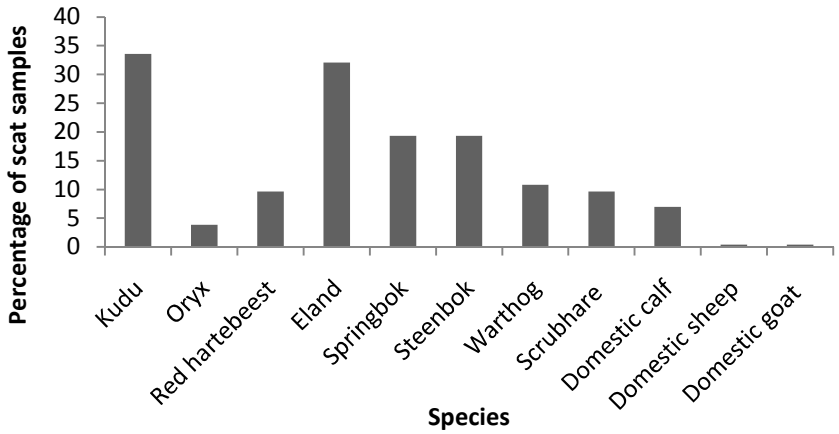


Figure 13. Percentage of cheetah scat samples with different prey species present.

3. Game Monitoring and Prey Habitat Preferences

CCF's long-term wildlife monitoring programme continues. The research conducted on CCF farms is designed to understand patterns and trends of game density, movements, demographics and habitat utilisation.

Earthwatch volunteers assist with this research. The monthly monitoring involves visual road counts, categorizing vegetations, densities, and distributions of game species. This information is correlated with data collected on rainfall and temperature.

4. CCF Circuit Counts A & B

Since 1996, CCF has been conducting a 55km road strip count transect on farm Elandsvreugde to investigate game distribution in relation to habitat type and trends in density.

During the year, a total of 44 game counts were conducted on circuits A & B. Of these, 25 were conducted between January and June, and the remaining 19 in the second half of 2010.

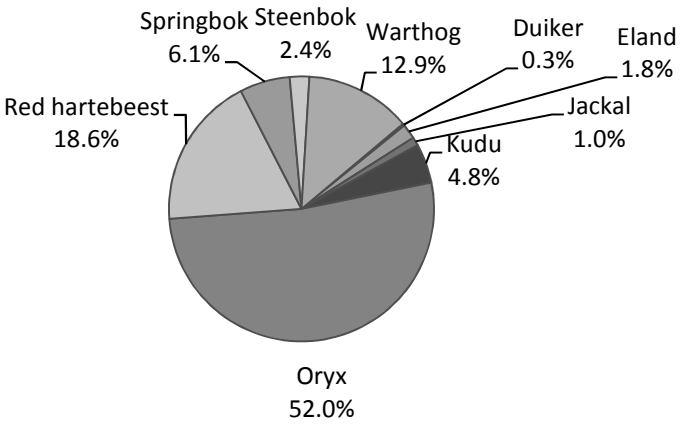


Figure 14. Game distribution on the CCF circuit counts during 2010.

Oryx encounters in 2010 were highest, followed by the red hartebeest and warthog (Figure 14). Trend of game encounters were almost similar to the previous 2009 period. Game sightings were mostly common on circuit B with 81.6% of the actually total number of observations. Both cheetah and leopard sightings were prominent on the circuit counts in comparison to the previous reporting periods. Cheetah sightings were confirmed on five occasions in May, July and December and comprised a female with four sub-adult cubs, a single male and a coalition of two males. Two leopard sightings were also confirmed in July and December. Game sightings were confirmed to have declined in this reporting period, a trend similar to the 2009 period (Table 7).

Table 7. Number of game observed on the CCF circuits A & B in 2010 (presented as average individuals between counts. Asterisks denotes indicator species of most commonly sighted game).

Common name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Aardvark	0	0	0	0.8	0	0	0	0	0	1.0	0	0
Aardwolf	0	1.0	1.3	0.3	0.3	0	0.2	0	0	0	0	0.8
African wild cat	0	0	0	0	0.3	0	0	0	0	0	0	0.8
Bat eared fox	0	3.5	0	0	0.3	0	0	0	0	0.3	0	0
Caracal	0	0	0	0	0	0	0	0	0	0	0	0.3
Cheetah	0	0	0	0	0.3	0	0.4	0	0	0	0	0.5
Duiker	0	0	0	0.5	0.3	0	0.6	0.5	0.3	0	0.5	0.3
*** Eland**	2.0	0	0	0	3.0	0	6.2	4.8	2.0	0.3	0.8	0.5
Giraffe	0	0	0	0	0	0	0	0	0	0.3	0	0
Guinea fowl	1.3	0	0	0	5.0	0.7	1.6	5.8	0	0	21.8	12.5
*** Jackal**	1.0	0.5	0.8	1.5	2.5	1.3	0.8	1.0	1.0	0	1.5	0.5
Kori bustard	0	3.5	0.3	0.3	0	0	0	1.3	0.8	1.3	2.5	1.5
*** Kudu**	1.0	1.5	1.5	5.5	5.5	3.7	3.6	6.3	5.0	4.3	14.5	4.0
Leopard	0	0	0	0	0	0	0.2	0	0	0	0	0.3
*** Oryx**	54.7	145.0	77.0	42.5	20.8	31.7	19.6	35.0	50.0	57.3	71.0	85.8
Ostrich	0	0	0	0	0.3	0	0	0.5	0.3	0	0.3	0.8
Porcupine	2.0	0.5	0.8	0	1.3	0	0.6	0.3	0	2.0	0	1.0
*** Red hartebeest**	4.7	107.0	9.8	15.0	10.5	0	8.4	1.8	1.5	0	27.8	76.5
*** Springbok**	4.0	14.5	7.5	10.5	0.8	1.0	0.8	1.5	4.0	8.3	25.0	1.8
*** Steenbok**	1.0	0	0.8	0	0.5	1.7	1.0	4.3	7.0	5.7	5.5	1.3
*** Warthog**	10.3	17.5	7.0	9.3	8.0	7.7	3.2	13.0	14.5	2.7	50.0	16.0

Game density

A total of 21 species were observed during the circuit counts and comprised small, medium and large ungulate, game birds and local predators (Table 8). Density estimates were calculated using the variable and fixed strip methods. Evaluations of these estimates against actual population densities were not performed; however a synergy between these techniques, local knowledge and long -term data was incorporated in the final decisions.

Fixed strip estimates (Figure 15 A&B) showed an overall decline of the seven common species from 427.29 ind/1000 ha to 272.12 ind/1000 ha in the 2009 and 2010 years, respectively. Estimates derived from the distance methods were higher in all species than the strip counts. As such the results were found to be more reliable especially the springbok which has a known population size.

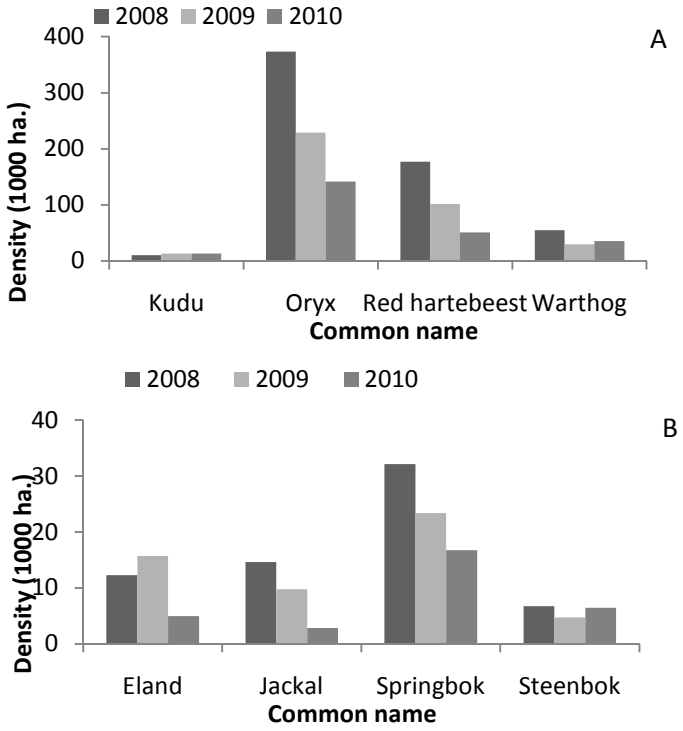


Figure 15 A&B. Density estimates (animals per 1000ha) of common wildlife species observed on farm Elandsvreugde for the reporting period 2008 – 2010 circuit counts.

Table 8. Density estimates (animals per1,000 ha) of the most common wildlife species observed on CCF's circuits A & B in 2010.

	Variable Strip Method			Fixed Strip Method		
	Circuit A	**Circuit B**	**Mean**	**Circuit A**	**Circuit B**	**Mean**
Aardvark	35.0	13.0	24.0	0.3	0.5	0.4
Aardwolf	33.4	15.6	24.5	0.1	1.4	0.8
African wild cat	0	16.6	8.3	0	1.0	0.5

Bat eared fox	0	19.5	9.7	0	1.0	0.5
Caracal	33.4	0	16.7	0.1	0.5	0.3
Cheetah	33.4	15.9	24.7	0.1	0.5	0.3
Duiker	35.0	13.0	24.0	0.8	0.7	0.7
Eland	89.5	58.7	74.1	2.8	6.9	4.9
Giraffe	0	12.0	6.0	0	0.1	0.1
Guinea fowl	148.4	134.6	141.5	5.7	17.2	11.5
Jackal	48.5	18.8	33.6	2.7	3.0	2.8
Kori bustard	48.8	22.6	35.7	1.0	3.4	2.2
Kudu	222.9	56.7	139.8	16.0	10.5	13.2
Leopard	0	12.0	6.0	0	0.2	0.1
Oryx	554.4	1039.3	796.9	43.8	231.4	137.6
Ostrich	3.2	17.9	10.6	0.3	0.7	0.5
Porcupine	63.7	21.1	42.4	1.3	2.2	1.7
Red hartebeest	188.7	420.6	304.6	8.2	89.7	49.0
Springbok	47.8	153.6	100.7	0.6	31.5	16.0
Steenbok	76.3	42.1	59.2	4.9	7.9	6.4
Warthog	229.7	240.5	235.1	15.3	53.5	34.4

5. Bellebenno 12-hour Waterhole Counts

To assist in developing a management plan for the 3,650-ha game-fenced Bellebenno camp, CCF started monthly 12-hour waterhole counts in 2008. Earthwatch volunteers and other CCF volunteers assist with these ongoing counts, which involve sitting in a hide at Bellebenno's four waterholes and counting all the animals that come to the waterhole. Information such as species, age, sex and condition are recorded on standardised sheets, as well as whether the animal utilised the waterhole or the salt lick placed at the site. These counts are designed to help us understand patterns and trends in game numbers, such as survival rates in juveniles and sub-adults, and recruitment from one age class to the next. The counts take place from 6 a.m. to 6 p.m., with two to three counters in each hide.

Animals Counted

During 2010, 10 waterhole counts have been performed. From these 10 waterhole counts a total of 8432 animals were counted from 37 different species. Warthogs, guinea fowl and oryx were the most common species sighted. The average number of warthogs counted in 2010 was 387, which was higher than the previous two years (Figure 16A). Kudu also showed an increase from previous years with an average of 17 being counted this year (Figure 16B). Oryx showed a similar number of animals to previous years with 91 animals being counted (Figure 16C). A similar average number of red hartebeest were counted this year than last, three, which was lower than 2008 (Figure 16D). The average number of Eland counted was 59, which is also higher than the past two years (Figure 16E).

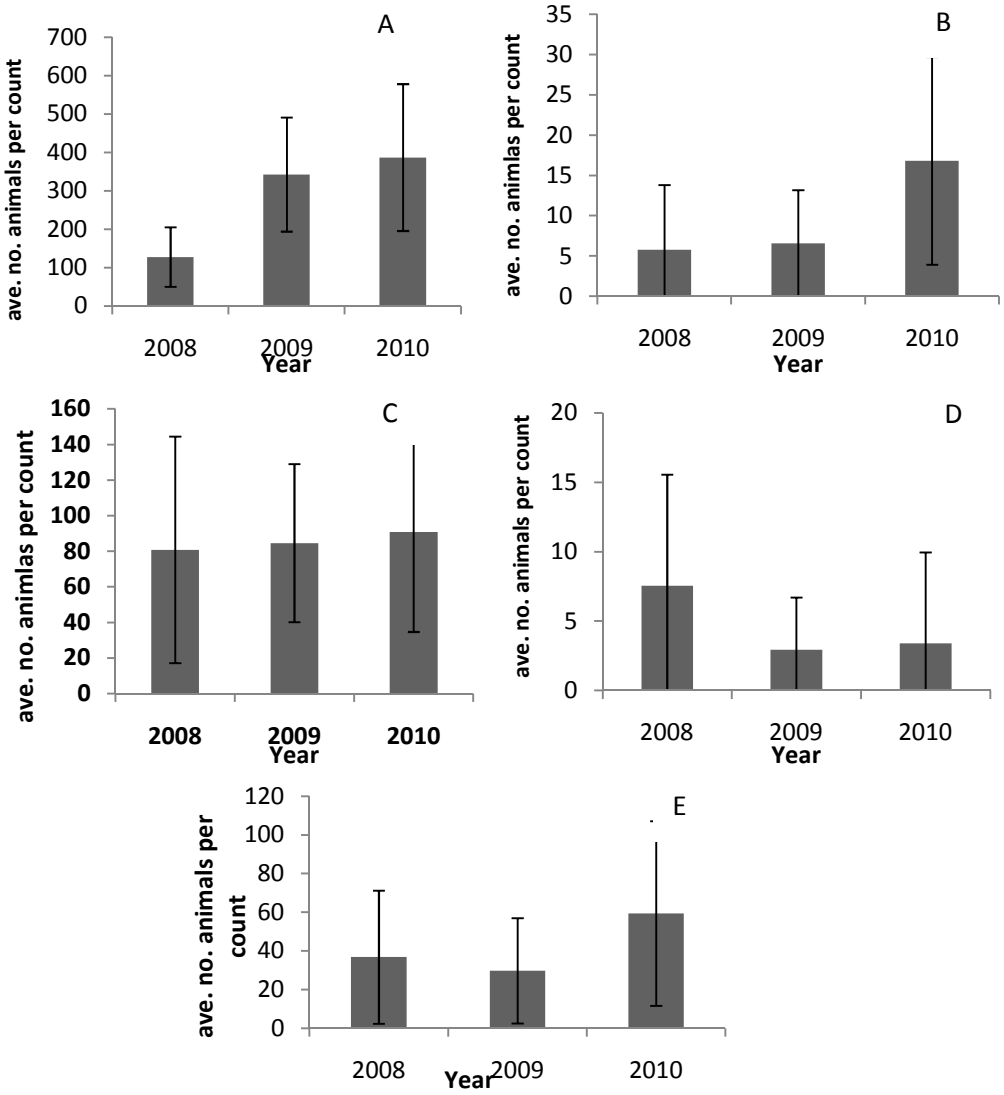


Figure 16. Average number of animals counter per waterhole in 2008, 2009 and 2010 +/- Standard Deviation for A) warthog, B) kudu, C) oryx, D) red hartebeest and E) eland.

Animal Densities and Rainfall

Densities of the five main game species (warthog, oryx, eland, kudu and red hartebeest) and monthly rainfall are shown in Figure 17. Warthogs consistently show the highest densities over the years, followed by oryx and eland. Red hartebeest and kudu have consistently been at very low densities since the start of the counts.

Looking at the data from over the years, we can see that there is a clear correlation between rainfall and density of animals counted (Figure 17). When rainfall is high, the numbers of game counted are low. This is most likely due to the availability of water elsewhere other than waterholes and so low counts are the results of animals not using waterhole rather than actual changes in population numbers.

In the past year warthog density estimates range from 5 to 296 animals per 1000 ha, oryx from 1 to 93 animals per 1000 ha, eland from 5 to 81 animals per 1000 ha, red hartebeest from 0 to 10 animals per

1000 ha and kudu from 0 to 21 animals per 1000 ha. It must be kept in mind, however, that the high rainfalls in March and November led to only small numbers of animals counted, so density estimates and mean number of animals counted have a large range and are possibly on average lower than the actual densities in Bellebenno.

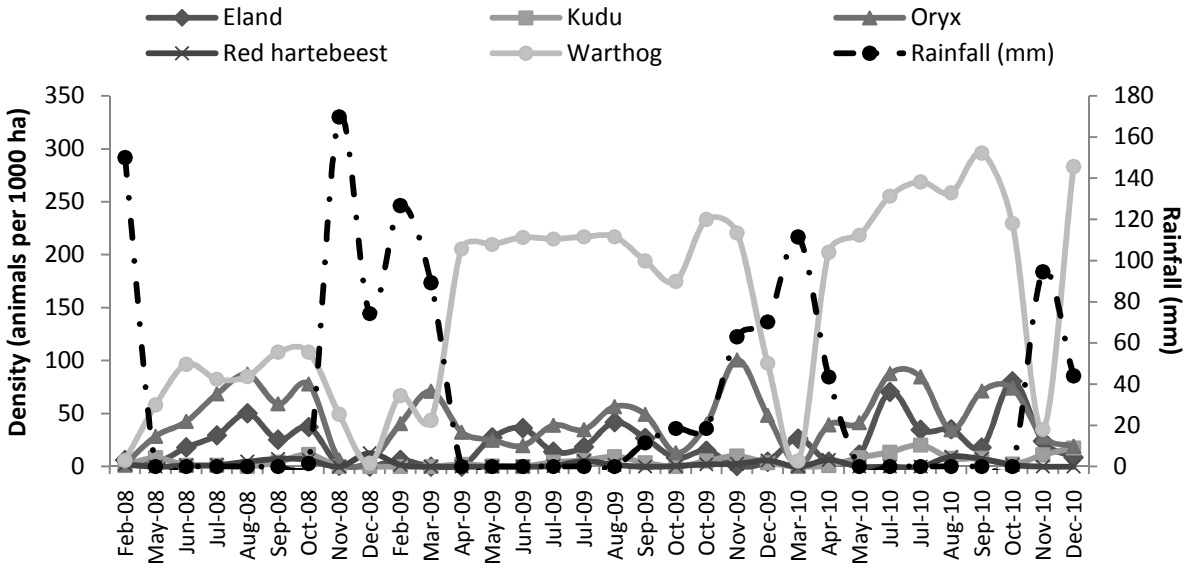


Figure 17. Densities (animals/1000ha) for main 5 game species and average monthly rainfall for 2010.

Population Trends over the Years

Warthog seems to be showing a population increase since the start of the waterhole counts, from a mean number of around 100 animals counted per count to over 250. Oryx numbers seem more stable but tend to fluctuate from one half of the year to the other. Eland numbers also seem to be quite stable over the years, fluctuation around 30 animals per count. Kudu and Red Hartebeest are both at low densities and show considerable variation, through no obvious decline or increase is evident.

6. CCF Big Field Counts

CCF's big field, known also the "little Serengeti", is a formerly cultivated land of 1492ha. The field, one of the largest open uncultivated areas in the north central farmlands, attracts a high number of free-ranging game. This area provides an ideal case study to monitor ecological successional trends. Apart from being a high prey density area for cheetahs and leopards, this area has huge potential for ecotourism. For this reason, CCF has been conducting monthly counts since 2004. During 2010, a total of 37 replicate counts were conducted on the CCF big field during the year, with the assistance of Earthwatch volunteers, students, and CCF staff with 19 occurring in the first half of the year (Jan – Jun), and 18 in the second half (Jul – Dec). All data from these surveys were entered into the main database and preliminary results on trends were produced. For another consecutive year the density of common wildlife on the big field showed a decrease by 46% during 2010 in comparison to 2009 (Figure 18). Declines were significant amongst the oryx (53%, X^2 = 32.45, df = 2, p<0.00), red hartebeest (50%, X^2 =11.45, df = 1, p< 0.00) and eland (100%, X^2 = 6.02, df = 1, p< 0.00). The warthog was the only species that showed a slight increase during the current period under review.

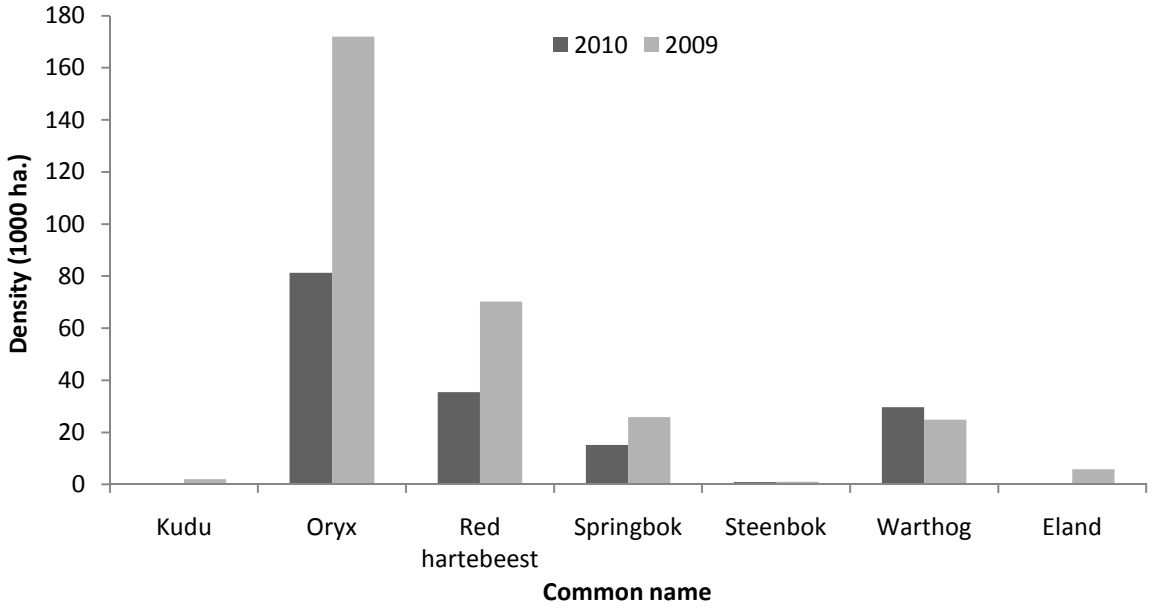


Figure 18. Comparisons of annual density for common wildlife observed on the CCF big field counts 2009 and 2010.

Analysis done on the CCF big field game counts revealed that the Oryx, red hartebeest and warthog were the most common animals, which is consistent with the 2009 counts (Figure 18). Non-frequent species observed included the eland and steenbok, whereas no eland were recorded in 2010. The highest number of springbok was recorded during November with a density of 29 ± 16.6 individuals. Game densities were highest during the Jan – June period and declined by 53% during Jul – Dec. The mean density per 1000 ha of individuals counted was highest between January and April, the hot and wet season (217 ±77.8 ind/1000 ha), and declined between May and August, the dry and cold season (111 ± 53.0 ind/1000 ha) (*Figure 19*, Table 9). This trend was consistent with the 2009 results during the same period.

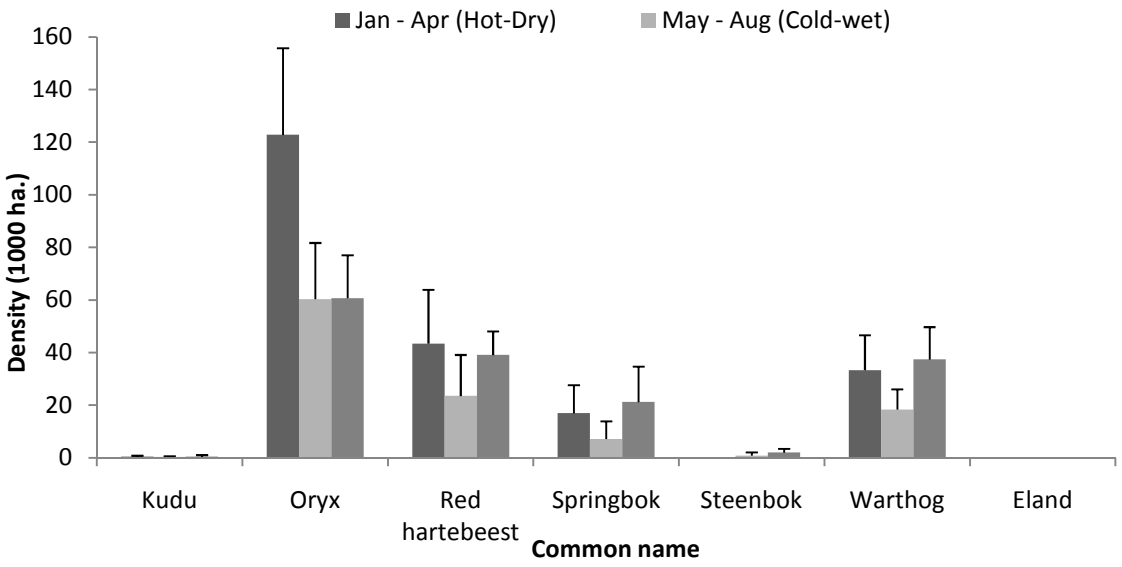


Figure 19. Comparisons of game density according to season in 2010.

Table 9. Density (1000 ha) of common game species found on the CCF big field in 2010.

Common species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kudu			1.6	0.2	0.2	0.9		0.2	1.1		0.5	0.2
			±	±	±	±		±	±		±	±
			1.2	0.4	0.4	0.4		0.4	1.2		0.9	0.4
Oryx	173.2	94.7	127.6	95.8	77.5	90.0	28.2	45.6	25.0	39.3	37.8	140.8
	±	±	±	±	±	±	±	±	±	±	±	±
	17.1	40.2	55.2	19.1	31.3	8.3	16.4	29.6	12.3	9.5	16.7	26.8
Red hartebeest	38.0	49.6	59.2	27.0	46.5	33.1	13.2	1.6	7.8	7.2	20.3	121.3
	±	±	±	±	±	±	±	±	±	±	±	±
	34.6	13.5	25.4	8.4	23.9	20.1	16.7	1.6	13.4	8.9	10.8	2.7
Springbok	12.1	16.4	22.3	17.2	4.9	12.7	7.6	3.6	21.5	28.4	29.3	5.8
	±	±	±	±	±	±	±	±	±	±	±	±
	11.0	22.0	7.6	1.9	5.1	9.2	7.6	5.2	16.4	18.0	15.6	3.8
Steenbok					1.1	0.5	1.3	0.7	1.8	1.8	4.0	0.5
					±	±	±	±	±	±	±	±
					2.2	0.4	1.5	0.8	2.9	1.2	0.8	0.9
Warthog	37.8	29.2	40.4	25.9	29.0	18.8	10.1	15.6	46.9	44.9	29.3	28.6
	±	±	±	±	±	±	±	±	±	±	±	±
	19.0	9.9	17.8	6.8	14.9	10.0	0.8	5.1	15.7	6.0	13.9	13.6

7. Annual Waterhole Count and CCF Strip Count

Annually, for the past 16 years, CCF and Waterberg Conservancy have conducted waterhole counts. In addition, CCF conducts road strip counts after the waterhole counts in order to look at the variation between these counting methods. During August 2010, 18 replicate strip counts (x3 per farm) were conducted on CCF farms Bellebenno, Bynadaar, Elandsvreugde, Boskop, Cheetah View and Osonanga.

Annual Waterhole Count

A 12-hr new moon waterhole count was conducted in the Waterberg Conservancy on 10 August 2010. The annual Waterberg Conservancy waterhole count provides population and density estimates and trends of various game species on the Waterberg Conservancy farms. The count also provides information on group sizes and population demographics and is vital for long-term monitoring. Through continued regular monitoring of wildlife populations utilising the Conservancy lands, more effective conservation of game species will be possible. Data from the counts is used to determine which species and sexes should be hunted to sustain a healthy population, as well as to highlight those that need to be conserved. Regular monitoring of key indicator species gives an indication as to the health of the ecosystem in general, signalling problems as they emerge and while they are still manageable.

This year 29 waterholes were counted across 11 farms within the Waterberg Conservancy. The observers consisted of CCF staff and volunteers, volunteers from the Otjiwarongo Arts Centre and 4H Otjiwarongo in addition to farm staff.

A total of 5963 individual animals representing 32 species (24 mammals, 8 birds) were recorded, with warthog, guinea fowl, kudu, oryx and francolins being the most common species. The actual numbers counted, the extrapolated totals (taking into account the proportion of counted waterholes vs. available waterholes on each farm) and the densities for the five main game species (warthog, kudu, oryx, eland and red hartebeest) across the Conservancy are shown in Table 10. For all species a drinking frequency of once per day was assumed (a=1), additionally a frequency of a=5 was also used for oryx, eland and red hartebeest as there is limited data available on the drinking frequency of these species.

Table 10. Actual Numbers counted, extrapolated totals and densities (animals per 1000 ha) of the five main game species across the Waterberg Conservancy 2010.

Species	Actual No. Counted	Extrapolated Total	Density (per 1000 ha)
Warthog (a=1)	1929	5920	93.7
Kudu (a=1)	947	2906	46.0
Oryx (a=1 – a=5)	430	1320-6598	20.9-104.4
Eland (a=1 – a=5)	128	393-1964	6.2-31.1
Red Hartebeest (a=1 – a=5)	151	463-2317	7.3-36.7

The change in densities of the five main game species, in combination with rainfall, is shown in Figure 20. During the past 16 years we can see some trends appearing in the populations of main game species. Red hartebeest have increased in numbers since 1995 but still remain at relatively low densities. Kudu numbers have fluctuated since 1995, but appear to be increasing since 2008. The density of eland, although higher than 1995-2001, is still quite variable. Warthog densities appear to be on a steady increase, as do oryx.

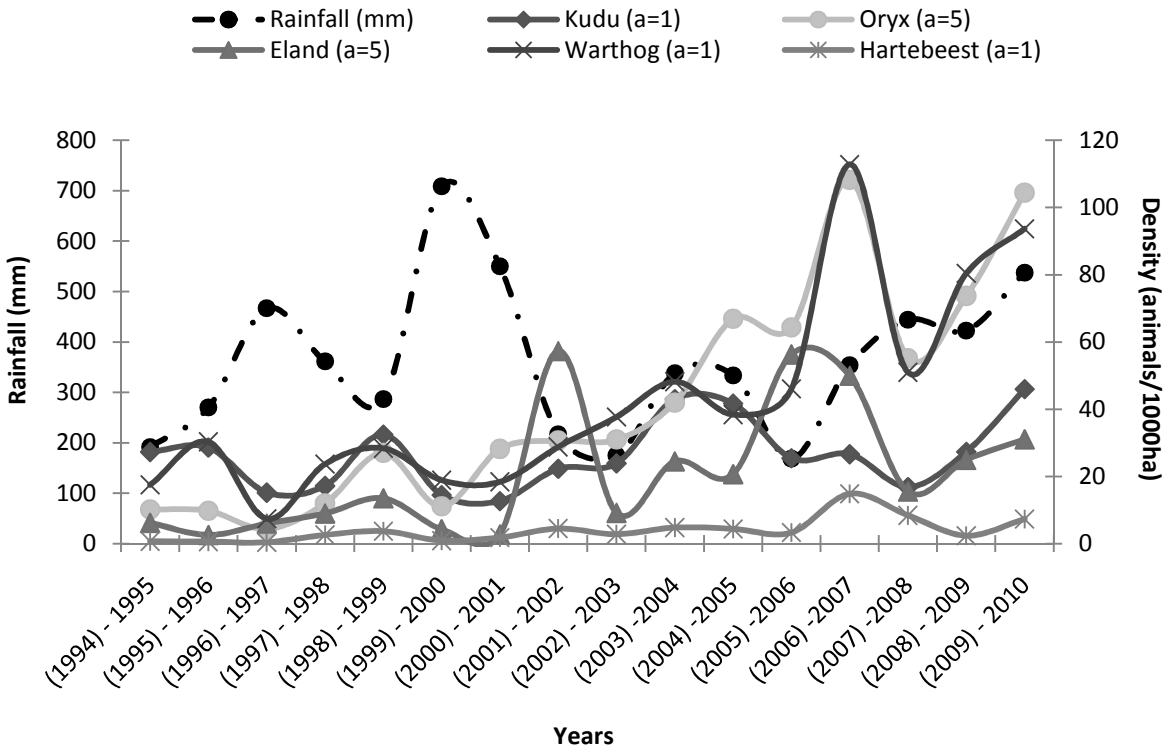


Figure 20. Density estimates (animals per 1000ha) for the five main game species across the Waterberg Conservancy 1995-2010.

CCF Strip Counts

Strip counts were performed on six of CCF farms concurrently, for three consecutive days in August 2010. All game animals seen on these transects were counted as the perpendicular distance from the car recorded.

Over the three days, a total of 1412 animal were counted from 23 species. The most common species were guinea fowl and oryx. Highest numbers of game were recorded on Osonanga, followed by Elandsvreugde, Bellebenno and Boskop. Figure 21 illustrates the distribution of actual numbers of game counted in each farm. The main species counted on Osonanga were guinea fowl (47%) and red hartebeest (21%). The main species counted on Elandsvreugde and Bellebenno were oryx (35% and 30%) and warthog (28% and 17%). For Boskop the main species sighted were guinea fowl and warthog (32% and 14%), for Bynadaar, guinea fowl and kudu (35% and 27%) and for Cheetah View, kudu and warthog (24% and 16%).

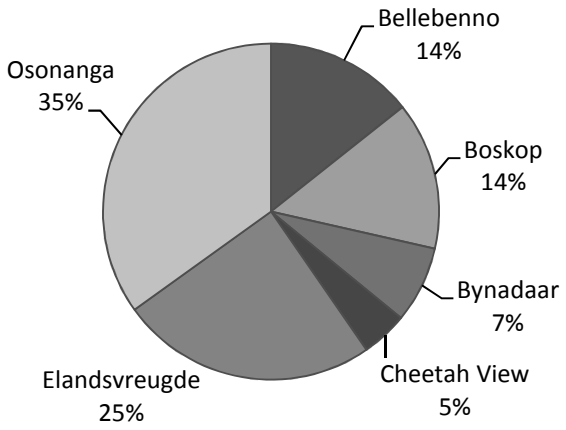


Figure 21. Distribution of actual numbers of game counted across CCF farms during strip counts 2010.

Density of common game species were determined by using a *fixed* width and *variable* width approach. The *fixed* width was calculated from measuring visibility distance for human subjects along each of the transects. The recorded strip widths were then averaged to estimate total area surveyed, which was used to calculate density. The *variable* width was calculated using the perpendicular sighting distances recorded for each animal. This allows us to calculate an estimated strip width and the probability of detecting an animal within a strip area to then estimate the density. Table 11 shows the estimated densities for the five main game species across CCF farms for both forms of estimation.

Table 11. Density estimates (animals per 1000 ha) of main game species on CCF farms from 2010 Strip counts using a fixed width or variable width approach.

Farm	Oryx	Kudu	Warthog	Eland	Red Hartebeest
Bellebenno					
Fixed width	112.9	5.6	65.9	9.4	9.4
Variable width	122.7	0	141.1	18.2	18.2
Bynadaar					
Fixed width	25.6	39.8	2.8	0	0
Variable width	51.9	81.3	2.5	0	0
Cheetah View					
Fixed width	21.5	60.3	26.8	0	0
Variable width	3.5	12.3	16.38	0	0
Boskop					
Fixed width	13.6	59.1	63.6	0	47.7
Variable width	2.9	61.5	129.7	0	21.8
Osonanga					
Fixed width	35.4	13.1	26.2	0	137.6
Variable width	127.3	31.0	91.2	0	153.0
Elandsvreugde					
Fixed width	59.5	11.1	47.9	0.5	22.7
Variable width	51.8	14.0	54.1	5.6	25.6
CCF Farms combined					
Fixed width	44.7	31.5	38.9	1.6	36.2
Variable width	60.0	33.3	72.5	4.0	36.4

Comparison between Strip Counts and Waterhole Counts on CCF Farms

The different density estimates, animals per 1000 ha, for waterhole counts, as well as strip counts using fixed width, or strip counts using variable width for all CCF farms combined are shown in Figure 22. It is clear from looking at these results that there is agreement between the different methods of estimation. Although there is a lot of variation with all of these methods, there is no significant difference between the density estimates for each species for either of the strip counts using fixed or variable widths or the waterhole counts ($F_{2,75}$ = 0.852, P = 0.45). This precision gives us greater confidence in these density estimates, however, taking into account the high level of variation, using multiple methods to estimate density is still recommended.

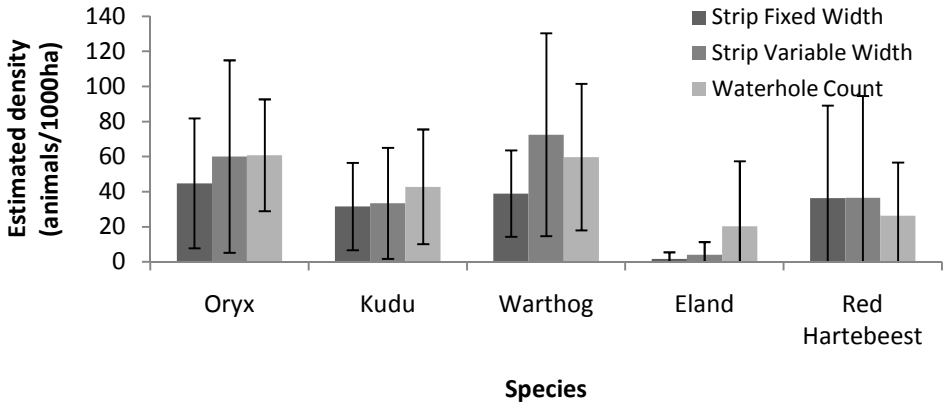


Figure 22. Estimated densities (animals per 1000ha) for CCF farms 2010 from waterhole counts and strip counts (both fixed and variable width approaches). Estimates are averaged over the six CCF farms counted +/- SD.

8. Wild Game Hunted on CCF Property

CCF hunts several wild game species for consumptive purposes, including oryx, kudu, red hartebeest, and warthog. Table 12 below displays the number of wild game species removed for consumptive use over a four-year period.

Table 12. Wild game hunted by CCF staff for consumptive use.

	2007	2008	2009	2010
Oryx	33	45	45	82
Male	28	43	39	76
Female	5	2	6	6
Kudu	0	4	5	41
Male	0	4	5	14
Female	0	0	0	27
Hartebeest	0	5	12	35
Male	0	5	10	31
Female	0	0	2	4

Warthog	1	8	2	22
Male	1	8	2	22
Female	0	0	0	0
Total	**34**	**62**	**64**	**180**

9. Fixed Point Photography

To monitor long-term vegetation changes over time, CCF takes fixed-point photography photos. This has been conducted since 1997. During the last year, fixed-point photography was taken during the hot and wet (Sept – Dec) and dry and cold (May – Aug) seasons at 11 locations at Elandsvreugde and Osonanga. Pictures are taken using a digital camera.

10. Bush Encroachment and Biodiversity

Research continued around CCF's bush project. While bush encroachment is considered a major problem in Namibia, it also has potential as a renewable resource for alternative energy, especially in rural areas, and to alleviate electricity shortages projected to affect Namibia in the near future.

During August - October, Suzanna Rostro, a student from the Simón Bolívar University in Venezuela, conducted a bird and camera trap survey in areas of restored habitat. The aim of the project was to evaluate the response of the local biodiversity towards bush thinning operations on a short-, medium- and long -term basis. GIS methods were used to design the study area, which comprised 140 hectares of restored and non -restored habitat. In each site, sample points were located at least 100 meters apart in a square pattern. Bird surveys were conducted at randomised locations using seven to 9 nine points in the morning and afternoon periods. Surveys were repeated over five to eight times (depending on sampling variance) on different days. In addition a camera trap survey was conducted per treatment site and was rotated within the study site on a ten day interval. Cameras were active for a period of three months. Analysis of the results is underway with preliminary results showing visitations in restored habitat especially by cheetah and leopard.

11. Swing Gates

In preparation for the re-introduction of cheetah into Bellebenno, CCF's research into swing gates continued this year. CCF's goal with swing gates is to keep the re-introduced cheetahs inside the 4,000-ha game-fenced Bellebenno game farm. In addition, CCF will continue to promote the swing gates concept as a reliable and cost -effective tool to protect game-fenced farmland structures from damage due to burrowing/digging animals by excluding predators from an enclosure whilst allowing the free-range movement of smaller mammals. This is a unique predator-friendly management plan that could potentially help to reduce unnecessary radical actions (shooting, trapping, poisoning, etc.) and save the farmers on costly preventative measures such as electrical fencing, jackal proofing, etc.

In the first half of the year, swing gates were repaired and assessed as well as repairs made to holes in the fence line. New swing gates were installed in place of larger, continually used holes. All the swing gates were cleared of surrounding overgrown material to create a "game path" leading to/from all swing gates, on both sides of the fence, providing the animals with a path of least resistance. In March all the gates were opened and existing holes filled in and/or blocked to enable the animals to get used to these

"game paths". The use of brush and thorn branches to block "undesirable" paths proves to be a good method of plugging washed out areas. In April all gates were closed and monitoring began.

During May, June and July, spoor checks of gates were carried out every five days to establish which species were using the swing gates. Camera traps were set in place to record which animals were using gates. The most common animals that were using the swing gates were Warthog, Porcupine and jackal. Spoor checks will continue during the wet season to establish if different species use the gates seasonally.

From July, the fence line was checked daily for any new or reopened holes. The number and location of these holes was recorded. So far the results have shown a substantial decrease in the number of new or reopened holes since the beginning of the study (-50%, Figure 23). The lowest number of holes produced was in October. In November and December there was a slight increase in the number of holes. This increase may potentially be due to the start of rain in November, which softens up some substrate types, making digging holes easier. The average number of holes produced daily decreased from 20 in July to 10 in December. Interestingly the number of holes produced tends to increase around the time of the full moon. The location of these holes will later also be correlated with substrate and vegetation type and compared between wet and dry seasons.

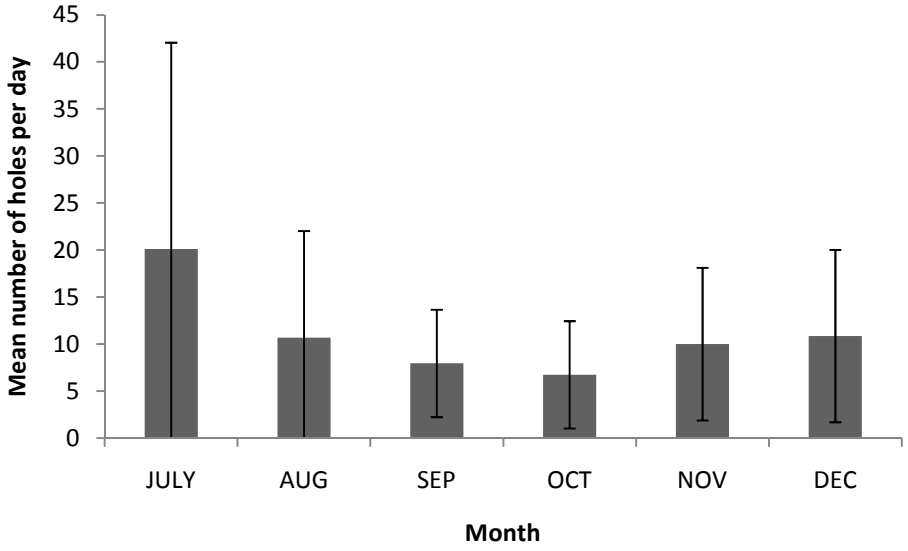


Figure 23. The mean number of new or reopened holes producedalong the fencline per day, +/- standard deviation.

12. Non-target Camera Trap Photos

Late in 2010, intern Marjolein van Dieren of Van Hall Larenstein University in the Netherlands, joined CCF and is helping ecology staff investigate the use of non-target camera trapping photos to estimate game species richness and density. Remote camera traps have been used to investigate a wide diversity of research questions ranging from ecological to behaviour studies. However, their use for estimating density from non-target species has been limited. CCF staff are using a new approach that models the underlying process of contact between animals and cameras to investigate abundance indexes. The

model provides a factor that linearly scales trapping rate with density, depending on two key biological variables (average animal group size and day range) and two characteristics of the camera sensor (distance and angle within which it detects animals)**.** Its primary assumptions are that cameras are independent, the population is demographically and geographically closed during the sampling period, and the sampling follows a systematic approach.

Camera trap studies on rare carnivores often do not follow a random or systematic sampling approach. However, these stations can be considered random sampling sites for other wildlife species. This study's primary goal is to establish the monitoring value of these non-target datasets. Therefore, we will test, evaluate and refine Rowcliffe's density estimator for non-target species. Obtained estimates will be compared to those obtained from other count-based estimates (i.e., waterhole and strip counts). We also will assess to what extent camera traps detect all species known in the area using rarefaction curves. Findings from the study are relevant for monitoring purposes as non-target datasets are by-products for any camera trap based survey.

13. Bellebenno Giraffe Project

The second half of 2010 has seen a revamp of the Bellebenno Giraffe Project. In 2003, all the giraffe in Bellebenno were identified and research into their feeding ecology carried out. The feeding ecology research was repeated again in 2004, 2005 and 2006.

In the second half of 2010, the Bellebenno Giraffe Identification Book was updated to include new giraffes as well as to identify which giraffes had escaped from the Bellebenno camp. For each individual, photos of the left and right side were compiled and individual spot patterns or markings identified. At the end of 2010, 33 giraffes were identified in Bellebenno: 10 adult males, nine adult females, seven sub-adult males, four sub-adult females and three male calves. Nine other giraffe that have either escaped from Bellebenno or are living on other CCF farms have also been identified.

In October and November research into the feeding ecology of the giraffes in Bellebenno was carried out. Individual giraffes were followed for 15 -minute focal observations whilst feeding, to establish which species of trees they were eating, how much time was spent eating per tree and the distance moved between trees. As well as these focal observations, the locations of giraffes as well as the identity of individuals in groups were recorded to establish how they are using the Bellebenno camp as well as to define any social groups or social networks. We hope to continue this research into 2011.

14. GIS Conference

The Cheetah Conservation Fund applied in March 2010 to present at the Wildlife Society Annual Conference with a poster on recent research. This poster covered results from cheetah habitat selection data collected at CCF by master's student Jacob Harris, lead ecologist Matti Nghikembua, Dr. Laurie Marker, and numerous volunteers in 2009. The Wildlife Society and Jenness Enterprises accepted the poster to be presented in the "GIS in Wildlife" poster session. This year's conference was held in Snowbird, Utah. The conference spanned a period of five days in early October 2010 with each day filled by numerous sessions ranging in topic from wildlife management to policy and conservation. Within these seminars, multiple researchers from all over the world presented their findings either by poster or PowerPoint slideshow. Jacob presented CCF's poster for the four-hour poster session. Throughout the poster session, hundreds of conference attendees had the opportunity to learn about the research we are doing at CCF. Jacob even met a few former CCF volunteers who were attending the conference as

well as a few South Africans who were aware of CCF's efforts. Overall the conference exposed CCF's research and goals to the greater scientific community and was a huge success.

15. CCF Rhino Reserve

Intensive monitoring continues in CCF's 14,640-ha rhino reserve, where five (3M,2F) south-western black rhinos (*Diceros Bicornis Bicornis*) reside. CCF is part of the Namibian Ministry of Environment and Tourism (MET)'s Black Rhino Custodian Programme. This programme fits perfectly with CCF's goals for our own land, which include the preservation of indigenous species and biodiversity, with a focus on endangered species such as the cheetah and the black rhinoceros.

CCF's monitoring programmes provide ongoing protection for these critically endangered animals. Regular radio-tracking surveys are conducted, and maps showing rhino movement are shared with MET on a monthly basis. In addition, 20 trail cameras are deployed across the reserve at key points that include waterholes, game trails and roads, and rhino dung middens. Their placement is determined by a number of factors, including data obtained from the radio-tracking, along with spoor and scat sighted by the monitoring teams. Cameras are regularly moved, as the rhinos themselves migrate across the reserve. Individuals can be identified in photographs by a number of features, including ear-notches, horn profiles, and skin folds. At this time we have over 2,300 positively identified photographs of our rhinos. Waterhole counts and night-time monitoring patrols are also conducted, while a number of additional, hi-tech monitoring methods are under investigation.

A new project to match spoor with individual rhinos was started in August. Tracks found in front of cameras are measured and matched with positively identified photographs. In the future it is hoped that it will be possible to identify rhinos from spoor measurements alone.

As part of our ongoing commitment to environmental education, all volunteers, and a number of Babson Guests have spent time with our rhino patrols and are taught about the rhino's 50 million-year history and the current problems they face from the multi-million-dollar illegal horn trade.

Figure 24. Recent photo of rhino R3M identified from camera trap at a dam.

E. Scientific Publications and Papers Presented

CCF staff continues to collaborate and publish in peer -reviewed journals and present at scientific conferences. The following are completed Master Thesis, papers that are accepted, submitted or are in preparation.

Theses

Richards, R. The potential for biomass certification to fuel landscape restoration in Namibia. MSc Thesis (2010). University of Maryland, USA.

Vercruijsse, L. Patch use as an indicator of habitat preference or competition for the cheetah (*Acinonyx jubatus*) in North-Central Namibia. MSc Thesis (2010). Wageningen University, Netherlands.

Book Chapter

Marker, L., Dickman, A. J., Mills, G. L. Macdonald, D.W., (2010). Cheetahs and ranchers in Namibia: a case study. In: Biology and Conservation of Wild Felids. Ed. Macdonald, D.W. and Loveridge, A. Oxford University Press. pp. 353 372.

Conference Proceedings

Passmore, B. R., Marker, L. How ancient methods of livestock management are helping to save cheetahs (*Acinonyx jubatus*) from extinction. Proceedings, Animal Behaviour Management Alliance (ABMA) 2010 Annual Conference. Pittsburgh.

Terrell,K. A., Wildt,D.E., Anthony, N. M., Bavister,B.D. Leibo,S.P., Penfold, L.M., Marker,L.L. and Crosier, A.E. Oxidative Metabolism Is Required for Sperm Motility and Viability in Felids, but May be Impaired in Cheetah (*Acinonyx jubatus*) Ejaculates. In: Cell Adhesion Dynamics in Reproduction session, poster and paper. 43rd Society for the Study of Reproduction 2010 conference in Milwaukee, WI.

Harris, J., Nghikembua, M., Tregenza, T., Marker, L. Interactions between bush encroachment and large carnivore habitat selection: a case study using GIS software to track GPS satellite collared cheetahs in Northern Namibia. (accepted for the special poster session GIS in Wildlife Ecology). Wildlife Society annual conference (2010).

Papers published

Terrell,K. A., Wildt,D.E., Anthony, N. M., Bavister,B.D. Leibo,S.P., Penfold, L.M., Marker,L.L. and Crosier, A.E. (2010) Evidence for Compromised Metabolic Function and Limited Glucose Uptake in Spermatozoa from the Teratospermic Domestic Cat (*Felis catus*) and Cheetah (*Acinonyx jubatus*). Biology of Reproduction 83 (5): 833-841

Stein, A.B. Stein, Fuller, T.K., Damery, D.T., Sievert, L. & Marker, L.L. Farm management and economic analyses of leopard conservation in north-central Namibia. Animal Conservation 13:4, 419-427. August 2010

Papers submitted

Marker, L., Forsythe, K., Dickman, A. Pilot Study of Conditioned Taste Aversion Trial on Wild-Caught Leopards (submitted).

Terrell, K. A., Wildt, D.E., Anthony, N. M., Bavister, B.D. Leibo, S.P., Penfold, L.M., Marker, L.L. and Crosier, A.E Glycolytic Enzyme Activity is Essential for Domestic Cat (Felis catus) and Cheetah (Acinonyx jubatus) Sperm Motility and Viability in a Sugar-Free Medium (submitted)

Mény, M., Schmidt-Küntzel, A., Marker, L. Diagnosis-based treatment of helminths in orphan captive cheetahs (Acinonyx jubatus) and a case study of coccidiosis in cubs. Journal of Wildlife Diseases. (submitted).

Johnson, S., Marker, L., Mengersen, K., Gordon, C.H., Melzheimer, J., Schmidt-Küntzel, A., Nghikembua, M., Henghali, J., Fabiano E., Gaiseb, B., Wachter, B., Viability of the free-ranging cheetah population in Namibia - an Object Oriented Bayesian Network Approach (submitted).

Stein, A., Fuller, T.K. Damery, D.T., Sievert, L., Marker, L.L. Farm management and economic analyses of leopard conservation in north-central Namibia (submitted).

Papers in preparation

Fabiano, E., Nghikembua, M. and Marker, L. Estimating cheetah abundance and density using remote camera trapping in north-central Namibia (in preparation).

Fabiano, E., Nghikembua, M. and Marker, L.L., Comparing cheetah density estimates determined using spoor frequency and radio telemetry, in Namibia (in preparation).

Fabiano, E.C., Nghikembua, M. T., Marker, L.L, A comparison of density estimates: Do non-target trial based camera trap datasets have any value? (in preparation).

Forysthe, K. and Marker L. Assessment of Swing Gates as a predator exclusion device. (in preparation).

Guerier, A., Crawford, S., Schmidt-Küntzel, A., Bishop, J. and Stratford, K. Parentage analysis in a free-ranging population of southern white rhinoceros: Genetic diversity, pedigrees and management. (in preparation).

Kaelin, C. et al. Genetics of Tabby patterns in domestic cat and in the cheetah. (in preparation)

Marker, L., Kreijtz, S. , Schmidt-Küntzel, A., and Forsythe, K. Diet of the free-ranging Namibian cheetah using prey hair from scat. (in preparation)

Quirke, T., Forsythe, K., Ramsey, R. and Marker, L. Comparative behaviour of a four female cheetah coalition pre and post release into a large game camp in Namibia. (in preparation)

Schmidt-Küntzel, A., Thomas, R., Faust, J., Forsythe, K., Marker, L. A formula-based rearing method for cheetah cubs. (in preparation)

Stein, A., Fuller, T., DeStefano, S., Marker, L. Leopard densities at a park and farmland boundary in north-central Namibia (in preparation).

Stein, A., Erckie, B., Fuller. T.K., Marker, L.L . Camera-trapping as a method for monitoring rhino populations within the Waterberg Plateau Park, Namibia (in preparation).

IV. CONSERVATION

Livestock loss to cheetahs is an economic and emotional issue. Farmers perceive cheetahs as having an excessive economic impact on their livestock and wild game industries. Many Namibian farmers have done little to alleviate their problems in a non-lethal manner through appropriate livestock and predator management. By addressing the farmer-predator conflict through a conservation management strategy that benefits both humans and cheetahs, CCF is ensuring the species' survival on Namibian farms and has raised greater awareness of better farm practices.

A. Livestock Guarding Dog Programme

1. Programme Overview

The Livestock Guarding Dog (LGD) programme at CCF is considered one of the most successful conservation projects in regards to human/predator challenges. As of December 2010, the programme comprised 158 live dogs (79M, 79F), 118 (57M, 61F) of which are working dogs and 40 (21M, 19F) are retired or pets.

Of the working dogs, 52 (21M, 31F) are on commercial farms, 21 (15M, 6F) are on communal farms, 27 (13M, 14F) are on emerging commercial farms and eight (3M, 5F) are on resettled farms. One male dog is working in Kenya and nine (4M, 5F) are working in South Africa. In 2010, 17 (7M, 10F) puppies were born alive from four litters produced by three of our breeding females.

The LGD programme plays a crucial part in CCF's mission of conserving the wild cheetah, and its continuing success is due to the efforts of dedicated CCF staff, including Gail Potgieter and Gephardt Nikanor.

Dog Health

In May, all CCF dogs were successfully treated for Sarcoptic mange. One of the breeding females, Studbook Number (SB#) 240, Tylee, was attacked by a warthog and received stitches. Male SB # 285, Amos, was hit by a car, his hip was dislocated and had to be set. Both dogs have fully recovered. The new male puppy SB # 431, Firat, had an umbilical hernia that was successfully surgically repaired.

2. Breeding and Puppy Placements

On 27 January 2010, the first puppy produced through artificial insemination was born to SB# 269, Uschi; the puppy was stillborn. In June, CCF conducted artificial insemination again on SB# 269, an Anatolian Shepherd, and SB# 414 a Kangal, utilising frozen sperm imported in 2009. SB# 269, Uschi, produced four puppies after insemination with Anatolian sperm; one puppy was stillborn. The other three puppies (all female) from this special litter will be used for breeding: SB # 407 will remain at CCF; SB # 404 was placed in Namibia as an intact pet dog; SB # 405 was placed with Cheetah Outreach in South Africa. Cazgir, SB # 414, did not become pregnant, despite two attempts with the imported Kangal sperm. Artificial insemination with frozen sperm is particularly challenging, as frozen semen has a very short lifespan.

Our half-breed Anatolian, SB # 287, Penda, gave birth to nine healthy puppies (5M, 4F) on 6 June 2010. A month earlier, she had been bitten by a puff adder and was under medical treatment. The puppies were born healthy and grew well under the care of CCF staff and volunteers. Tragically, one puppy fell out of the back of a farmer's truck on the way to his new home; he was lost, presumed dead. On 19 August 2010 SB # 240, Tylee an Anatolian, gave birth to 13 puppies; however eight puppies were stillborn. The surviving five (2M, 3F) puppies were healthy. Tylee, now seven years old, produced 58 puppies from six litters; in November she was spayed at the CCF clinic and retired from breeding and working. She now lives with CCF staff at the Boskop farm house.

CCF guard dogs continue to be in high demand, with 109 farmers in our applicant database. In line with CCF's goal to expand the guarding dog breeding programme, three puppies (1M, 2F) were imported to be used as breeding dogs in 2010. Aleya, SB # 424, was donated by Kristina Peez of Sivas Guardian Angels in Germany and was kindly brought to us by CCF USA Trustee, Polly Hix, in September. SB # 430 (female, Feliz) and SB # 431 (male, Firat) were donated by Anne Hupel of Bonnie Blue Flag in France. These puppies were accompanied from France to Namibia by CCF friend and member of the Leadership for Conservation in Africa (LCA), Patrick Couzinet. All three dogs have settled down well in the CCF goat kraal and have started their working careers; these young Kangals, with their diverse bloodlines, are an important addition to CCF's guarding dog breeding programme.

3. Farmer's Puppy Day - Training Programme

After CCF staff conducted preapproval visits to farms, at eight weeks of age the above-mentioned puppies were placed with 13 farmers. Puppies are given out after a day-long farmer training course held at the CCF research centre to educate the farmers about proper nutrition, medical needs and training methods. These puppy days took place on 7 August for the June litter and 23 October for the August litter. Following the course, puppies are adopted and farmers are encouraged to buy a bag of high - quality dog food at CCF's cost price.

4. Follow-Up on Prior Placements and Health Survey

Between January and March 2010, CCF conducted a country-wide survey of its Livestock Guarding Dogs during the annual visits, which involved 74 dogs and interviews with each dog's farmer or herder. If the farmer reports that the dog displays any unsatisfactory behaviour, the visiting CCF staff gives advice on

how best to correct these problems. Follow-up calls to farmers are made throughout the year, particularly when it is not possible to visit certain farms that are far from the CCF centre. The data collected on these and previous CCF visits are currently being analysed as part of Gail Potgieter's MSc thesis.

The June litter puppies were visited in September (at three months old) and at the end of November (at five to six months old) to ensure that the correct care and training is being provided at this crucial stage of their working lives. The August litter puppies were visited in November when the puppies reached 3 months of age. The puppies from both litters were reported to be working well and the farmers have followed the guidance provided by CCF satisfactorily.

During the visits, CCF provides vaccinations, de-worming tablets, veterinary supplies for minor injuries, topical anti-parasitic agents, and dog food for purchase. The medical supplies help ensure that the dog's health is a priority. The dog's working success has been correlated with good care. Unfortunately, not all farmers provide the proper care. Therefore, the follow up visits are critical and the removal of dogs that are not cared for is necessary.

Female dogs SB # 248 and SB # 339 had to be removed from the farms where they were working in January and December, respectively. In both cases, the owners believed that the dogs were too old to work, however the reason for the dogs not working was malnutrition. SB # 248 was brought back to the CCF centre and slowly regained her health under the care of staff and volunteers. She has since been re-homed as a working dog on a nearby farm; she is now in excellent condition and is working well. SB # 339 was removed in December and is currently being nursed back to good health. She will be re-homed to another farm once she has regained her condition.

Male dog SB # 255 was removed from the farm where he was working as it appeared that he had an injured hind leg and could no longer work. He was brought into the veterinary clinic in Otjiwarongo where an X-ray was taken, from which it appeared that the cause of the injury could be bone cancer. A bone biopsy has since been conducted at CCF to ensure a correct diagnosis. The sample was sent to the pathology lab; CCF is awaiting the results of the biopsy.

5. SCC on-going research

During the follow up visits between January and March, a health survey was conducted as part of the evaluation of the livestock guarding dog programme. During this health survey, an interview relative to tongue cancer (Squamous Cell Carcinoma, SCC) was conducted with the farmers, biological samples were collected, and the state of the tongue was assessed visually and documented with photographs. The photographs were evaluated independently by Dr. Anne Schmidt-Küntzel and research veterinarian Dr. Anaïs Herbert, and 62 dogs were selected for the SCC survey. Preliminary analysis based on the visual evaluation of the photographs shows that the SCC incidence is likely higher than previously suspected, and the number of affected dogs could be as high as or even higher than 30%.

From January to December 2010, Dr. Anais Herbert performed 40 tongue biopsies on CCF dogs and during farm visits. From January to April, seven tongue biopsies were performed on CCF dogs. In August 2010, biopsies were performed on 8 (4M, 4F) Anatolians in southern Namibia. In December 2010, biopsies were performed on 19 (13 M, 6F) Anatolians and 6 (5M, 1 F) mongrel working dogs.

CCF is currently waiting for the tongue biopsy results from the pathology laboratory to confirm the results and determine the accuracy of photographic examination compared to biopsy -based examination; we are hoping to be able to use photographic evaluation in the future as this would reduce cost and facilitate logistics. The remaining biopsies of the SCC survey will be performed by Dr. Anne Schmidt-Küntzel and Dr. Anna Haw. The data will then be analysed to assess efficacy of photographic assessment, prevalence of SCC in Namibia, repartition, and hopefully give indications regarding risk factors. Another aspect of the tongue cancer project is the establishment of a DNA bank for future genetic studies related to SCC; therefore, blood was collected during the health survey and from all puppies that were bred during this year.

B. CCF Farm and Livestock Model

CCF's farm provides the opportunity to practice and experiment with optimum methods of livestock and non-lethal farm management practices, especially acting as a showcase model of success. CCF's cattle, goat and sheep herds continue to increase and selected herds have been used during various farmer training programmes. Table 13 provides an over-view of CCF's livestock. CCF also rents grazing land to three other farmers for their cattle (500 head total).

Table 13. CCF Livestock. 1/1/2010 – 31/12/2010

	1-Jan-2010	Born	Purchased	Sold	Died	Slaughtered /CCF use	Stolen	31-December-2010
Cattle	491	111	49	191	3	0	21	436
Boer Goats	135	90	0	63	34		0	128
Dairy Goats	18	20	0	0	4	0	0	34
Damara Sheep	87	56	1	49	12	8	0	75
Donkeys	0	0	302	0	0	267	0	35
Horses	0	0	81	0	0	81	0	0

CCF farm staff were active in fence repairs and basic farm maintenance. Work continues on fire breaks and road maintenance.

Theft and poaching continue to be a problem on all of CCF land, partly because of the size of the land and bush encroachment, especially at Janhelpman, that runs on less than 30% of its potential carrying capacity. Due to the encroachment, many of the existing roads cannot be used without damaging the vehicles, and huge areas can not be reached at all, making regular patrols difficult. CCF is developing plans to counter these threats so as to be implemented as soon as possible.

Water levels were critically low at the end of the dry season, but some rain received late in the year saved the situation. Prior to the rainy season, water was being transported to some areas to provide enough water for game.

1. Cattle

Under the direction of CCF's Farms Manager Johan Britz and CCF's Assistant Farms Manager Bessie Simons, CCF actively manages a large cattle herd under model conditions. By December 2010, CCF had 436 cattle. Total cattle production for the year includes 111 calves born, three dead, 191 cattle sold, while none were slaughtered for own consumption. Twenty-one cattle were stolen from CCF property this year in a large region-wide livestock poaching. CCF staff has worked closely with the authorities on this.

2. Small Stock

Goats and sheep are an essential part of CCF's livestock guarding dog programme. The puppies must be raised amongst the goats and sheep so that they will form a close bond with the livestock. Armas, CCF's small stock herder, farm management staff and the animal health team carry out proper management to maintain the general health and welfare of the animals. In addition, the small stock herd was used for demonstrations during various farmer-training programmes in 2006 to 2009.

As of December 2010, the small stock herd was in good body condition due to ample veldt available. However, the animals experienced a few weeks' drought. Nutritional supplementation, especially during the dry season, accompanied by an efficient health programme and cleanliness in the kraal, has allowed CCF to maintain a healthy herd. CCF continues to work towards developing model circumstances for successful management.

3. Boer Goats

The goat herd numbers stood at 135 as of the beginning of January 2010 and at 128 as of 31 December 2010. The highest herd number recorded was in June 2010, when the herd reached 224 goats following the kidding season. Out of 61 does that were mated from middle of August to end of September in 2009, 58 gave birth, for a kidding rate of 95%. Seventeen gave birth to a single kid, 41 gave birth to twins. There were no triplet births recorded for Boer goats in 2010. In total, 90 kids were born in 2010, with only five losses: four were premature births, and one died of fever a few days after birth. CCF controls the herd size by selling or slaughtering unproductive animals such as castrated males and old or inferior does that need to be replaced. Thirty-four goats died, of which 17 were kids. The majority of kids died due to drought; some died from poisonous-plant toxicity; some from disease; and some due to internal and external parasites. A minority of goats died of unknown cause. A total of 63 goats were sold in 2010.

4. Dairy Goats

The dairy goat herd stood at 20 as of 1 January 2010. Five half dairy goats that were born from cross-breeding four Saanen does with a Boer goat buck gave birth in February to nine kids. Three of them gave birth to twins and two gave birth to singles. The dairy goat does are managed in such a way that when half of them are being bred, the other half is lactating to keep a continuous production of milk. In Mid 2010, another seven does were bred, all pure dairy goats; six of them are Saanen and one is French Alpine. They finished kidding in October 2010 and produced a total of 11 kids: 10 female and one male. Three goats gave birth to twins, one gave birth to triplets and two gave birth to singles. As of 31

December 2010, there are 34 dairy goats. Four dairy goats died in 2010. Twenty-four out of 34 are female (13 young does: 11 adult does) and 10 are male (4 bucks: 6 wethers).

5. Damara Sheep

The sheep herd has increased from 87 in January 2010 to 135 in June 2010 and was reduced to 75 as of 31 December 2010. Fifty-eight sheep were mated from mid -August to late September 2009 and finished lambing by 30 March 2010. Out of the 58 ewes mated, 54 gave birth to a total of 56 lambs, and only four did not conceive, for a conception rate of 93%. As with the Boer goats, the herd size of the Damara sheep is controlled by replacing old ewes and wethers by selling and culling. Forty sheep were sold in 2010, 8 culled and 12 died due to diseases, consuming poisonous bush or for unknown reasons.

6. Small Stock Vaccinations and De-worming

The adult goats and sheep and kids were vaccinated with Glanvac 3 (for the control of caseous lymphadenitis and the prevention of enterotoxaemia and tetanus), Pasteurella (for the control of *Pasteurella* infections), and Orf vaccine on 25 March 2010. On 26 April 2010 the kids received their boosters for Glanvac 3 and Pasteurella.

All the goats and sheep were de-wormed on 13 May 2010: Oral Albendazole (Valbazen Ultra) for the sheep and meat goats; and oral Fenbendazole (Panacur) for the dairy goats.

The breeding female Boer goats were vaccinated against Chlamydia (Enzootic abortion) on 2 August 2010. The annual Rabies vaccines were administered to all the small stock in the kraal, including the Glanvac 3 boosters given on 20 August 2010.

On 14 September 2010 all the small stock were de-wormed with Fenbendazole (Panacur) and Macrocyclic lactones (Dectomax).

The three eldest dairy goat kids, born in September 2010, were vaccinated against Orf on 28 December 2010, however all the kids (11 total) contracted Orf and were treated during December.

7. Hay Production

About 2,000 bales of hay were produced in 2010, which is about a third of CCF's growing needs for horses, goats, dairy goats, sheep and cattle. Hay production will restart in 2011.

V. EDUCATION

Public education and the development of an active grassroots constituency are integral components of CCF's overall cheetah conservation programme. CCF educates farmers, students, educators, public-policy makers and the public on the value of sustainable practices in conservation, as well as on the importance and value of predators for a healthy ecosystem. Public education and the development of national pride in the cheetah are critical to its survival.

In support of CCF's community-based educational and farmer training programmes, the Solvay Okorusu Flourspar Mine Community Trust donated two Nissan bakkies (trucks) to CCF, while the Dutch Zoo Conservation Fund donated funds toward the purchase of a trailer, tyres and petrol. With the addition of these vehicles, CCF's educators and trainers will be able to travel to local communities and work with the farmers, as well as place and monitor livestock guarding dogs.

CCF continues to host school groups of all ages at the recently renovated Lightfoot Camp. Plans to develop a high-end tourism tented camp at CCF were temporarily put on hold due to the continuing challenges in the global and local economy.

A. International Training

CCF uses the results of its scientific research as the foundation for a variety of conservation and education projects that integrate human needs with cheetah management. This three-pronged strategy includes long-term studies to understand and monitor the factors affecting the cheetah's survival. Results are used to develop conservation policies and programmes to sustain cheetah populations and to work with local, national and international communities to raise awareness, educate and build capacity. With the cheetah populations dwindling through most other range countries, the cheetah's survival depends on educated people using proven methods to reverse this trend. Many such methods have been developed, promoted, or adopted in the last 20 years by CCF in Namibia. There was a clear need to share this information and provide training for wildlife conservation professionals.

With this is mind, CCF, in cooperation with the Howard G. Buffett Foundation, committed to running a number of international conservation courses over a three-year period. The courses bring together conservation managers, scientists and community extension officers from cheetah range countries around the world to promote a unified and systematic approach to cheetah conservation including research, monitoring and wildlife-conflict mitigation measures.

Between January and June, CCF conducted its fourth and fifth international training courses on Integrated Livestock, Wildlife and Predator Management and its fourth on Conservation Biology.

1. International Training Course on Integrated Livestock, Wildlife, and Predator Management

In February 2010 and March 2010, CCF held its fourth and fifth international training courses on Integrated Livestock, Wildlife and Predator Management. A total of 38 participants from Namibia, Botswana, Ethiopia, Iran, Kenya, Mozambique, and Zambia spent two weeks immersed in lectures and hands-on activities related to integrated management systems and mitigation techniques for dealing with human-wildlife conflict situations. A training field trip was conducted at a re-settled farm, Queen Sophia, where course participants learned about questionnaire techniques and community -based needs assessments around livestock and predator management.

Overall, the 2010 Integrated Courses were a success, judging from feedback received. Participants enjoyed themselves immensely and returned home with a great deal of resources to support their work and share with others.

2. International Course in Conservation Biology

The fourth international course in Conservation Biology was held from 3 June until 1 July for 20 international wildlife professionals from four continents and 11 countries. Participants learned about CCF's programmes and conservation initiatives within Namibia. The training received by course participants—who came from countries including Iran, Zambia, Botswana, the United States, Ethiopia, Niger, Namibia, Brazil, Zimbabwe, and Kenya—focused on capacity building to conserve cheetahs and their ecosystems.

Lectures and exercises included theory-based talks and field practice on integrated and holistic rangeland management, techniques for estimating and monitoring cheetah populations, cheetah biology, health and genetics, conducting rapid surveys, and the role of conservancies in achieving conservation goals. Modules were conducted in cooperation with CCF staff and lecturers from the Polytechnic of Namibia, World Wildlife Fund, the Otjiwarongo Veterinary Clinic, AGRA, and other businesses and organizations. For many of the students, the course provided their first introduction to these topics and techniques.

To put theory into practice, participants visited the Ehirovipuka and Grootberg Conservancies near Etosha National Park. During this time, participants surveyed local farmers on human-wildlife conflict issues, conducted predator identification workshops, and assessed the region for sustainable land use. The course concluded with a ceremony and dinner at the CCF Centre, which was attended by several ambassadors from participants' home countries.

Survey Results from International Training Courses

Surveys were conducted by the course participants during each of the courses with the goal of assessing the nature and extent of predator-livestock conflict within a communal farming setup. Areas targeted were the western communal areas Kunene region and the Queen Sophia resettlement project in the Otjizondupa region. The survey teams were made up of participants from the Integrated Livestock, Wildlife and Predator Management Course, the International Conservation Biology Course and CCF staff and interns.

Prior to the main surveys, predator identification trials using livestock and predator track models and identification sheets were administered amongst the respondents. In addition Peace Corp volunteers at CCF provided awareness regarding reproductive health and HIV/AIDS awareness workshop to the participants. In the Ehirovipuka conservancy 45 community members from the Otjomitjira and Otjokavare participated in the predator identification.

In the Otjomitjira Conservancy within the Kunene region, of the 21 residents who participated in the survey, 66.67% (n = 14 ind.) were able to identify all predator species using the identification sheets provided. A minimum of five species were correctly identified. Species such as the cheetah and African wild dog were identified correctly by all respondents (Figure 25). Correctly identified frequencies for other predators included 95% lion, 95% leopard, 90% brown hyena, 90% jackal and 86% spotted hyena. The highest rate of incorrect species identification was for the caracal and African wild cat. Inconsistent misidentifications also were observed in a few cases, especially with the a) brown hyena being mistaken for a jackal or caracal, b) the leopard as a lion and the c) lion as a spotted hyena.

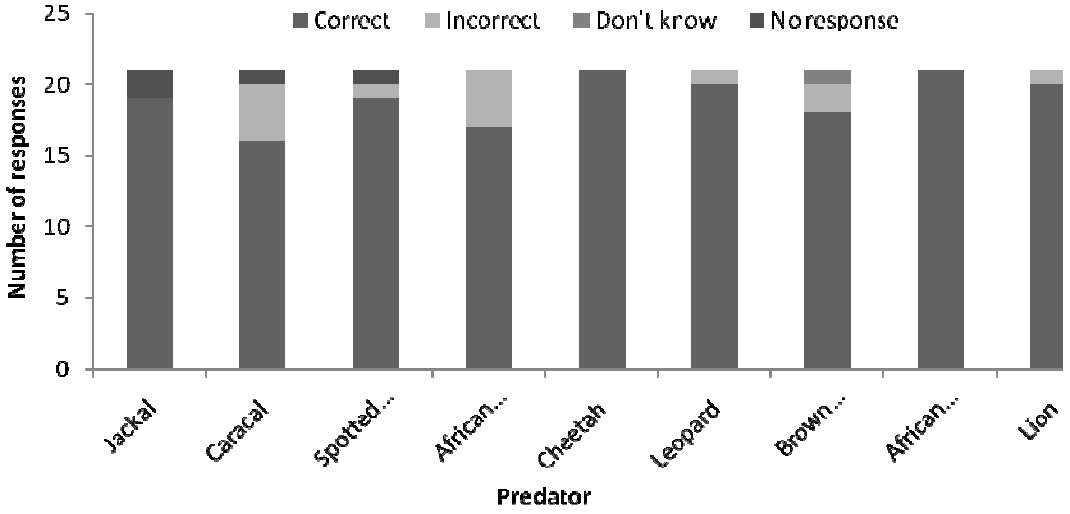


Figure 25. Number of correctly identified responses per predator species in Otjomitjira.

In the Otjokavare Conservancy, of the 24 residents who participated in the survey,62% (n=15 ind.) correctly identified all predator species. The least number of predators identified were four individuals by one participant. Correctly identified species according to highest frequencies were 100% lion, 95% jackal and 95% African wild dog (Figure 26). Incorrect species identifications were highest for the cheetah, leopard, spotted hyena and brown hyena. At least 19 respondents were able to identify cheetah from leopard; however, five individuals consistently misidentified these two species. Inconsistent misidentifications were also observed in the following cases: a) jackal was mistaken for a spotted hyena, b) caracal for a brown hyena, c) African wild cat and spotted hyena as a jackal, d) brown hyena as an African wild dog, and e) African wild cat as a brown hyena.

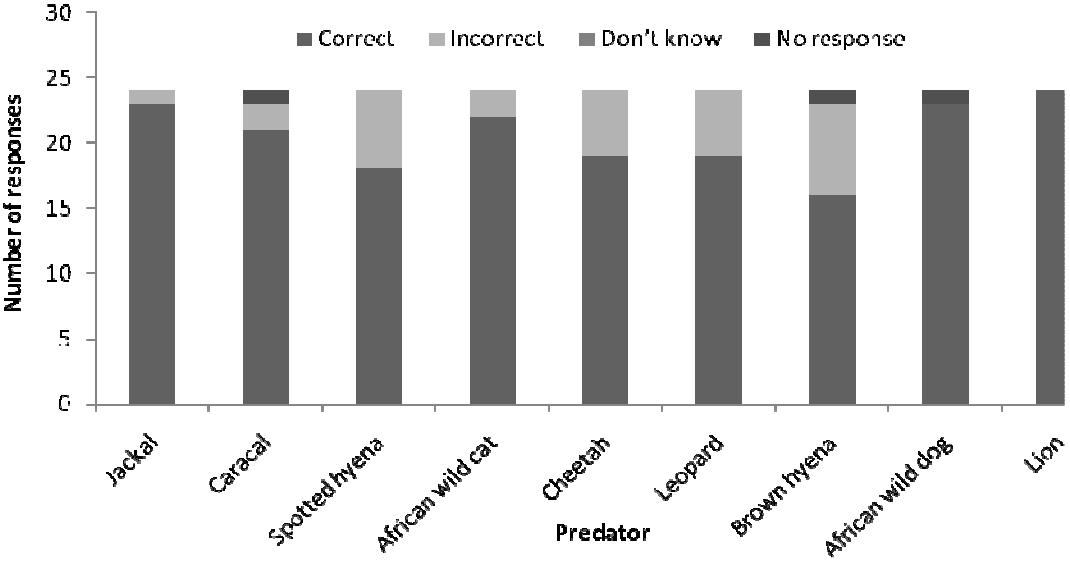


Figure 26. Number of correctly identified responses per predator species in Otjokavare.

The presence of wildlife was confirmed by all respondents and each one of them had a different perspective regarding the probability of encounters. Of the 18 game species of which questions were asked as to their frequency of sighting, respondents felt that most wildlife occurred on a very common basis. However, aardvark and porcupine were considered to be rare, African wild dog very rare and blue wildebeest rare to very rare. Of the nine predator species scored, the baboon, cheetah, jackal, caracal, and hyena were perceived as being very common. The leopard was scored to be very rare and very common in some cases, whereas lions were rare. Only two respondents confirmed the presence of the African wild dog, which was perceived to be very rare by one respondent and very common by another respondent.

Highest ranked problematic predators in ascending order were the hyena, jackal, cheetah and leopard. Least-problematic ranked predators included the caracal, small spotted genet, African wild dog and African wild cat.

Livestock predation was confirmed by all respondents with cattle losses mainly due to hyena and lion. Goat losses were caused by jackal, cheetah, baboon and leopard. Sheep predators were mainly cheetah, leopard and jackal (Figure 27).

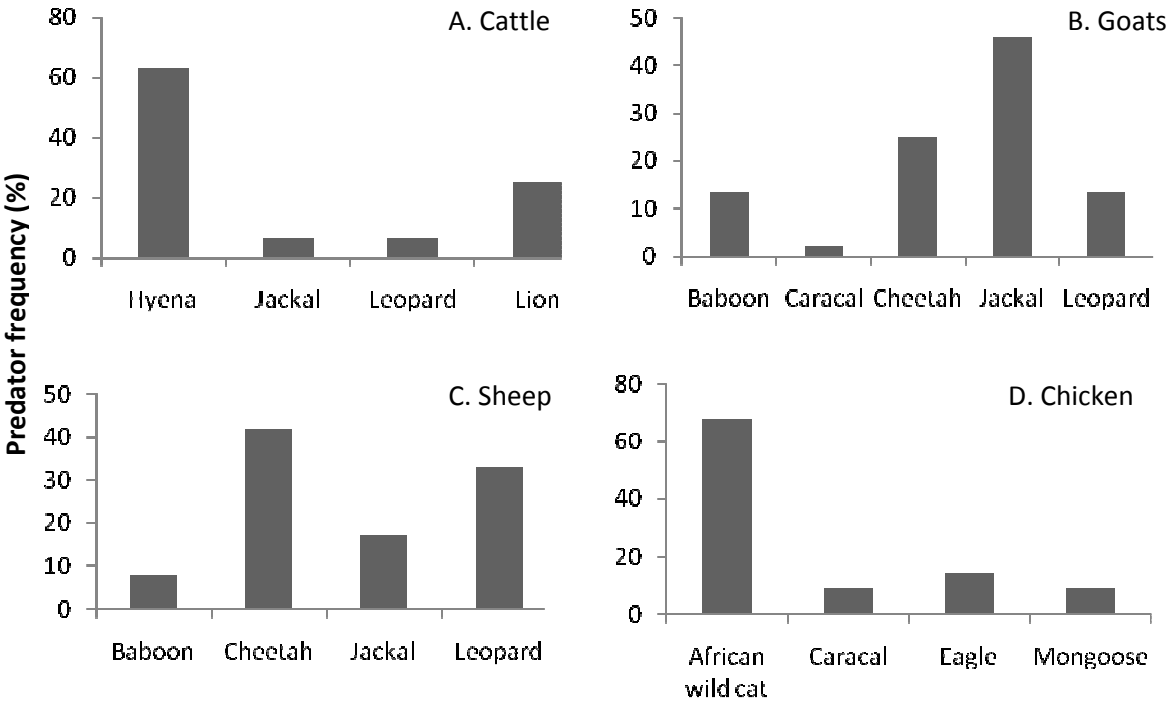


Figure 27.Predation of livestock by different predators in the Ehirovipuka conservancy for differnt types of livestock (A-D)

Despite a high predation risk, seven livestock owners did not use any form of protection (Figure 28). Herders were kept by only a few [i.e., cattle = 24% (n=5), goats = 50% (n=9), and sheep 31% (n=4)]. In addition, livestock guarding dogs were used by only 43% (n=9) of respondents. Dogs used to protect livestock were primarily small and medium -sized and were confirmed to live with livestock at all times. Predation amongst cattle was significantly high in the absence of a herder. In contrast, respondents who

had confirmed using herders had high goat and sheep predation. Similarly, livestock loss in herds under the protection of guarding dogs was slightly higher in goats than with sheep, and showed to be significantly less with for sheep. Given the results obtained, livestock protection methods employed by the respondents raised a contentious issue, i.e., how effective are their herders and guarding dogs in preventing losses.

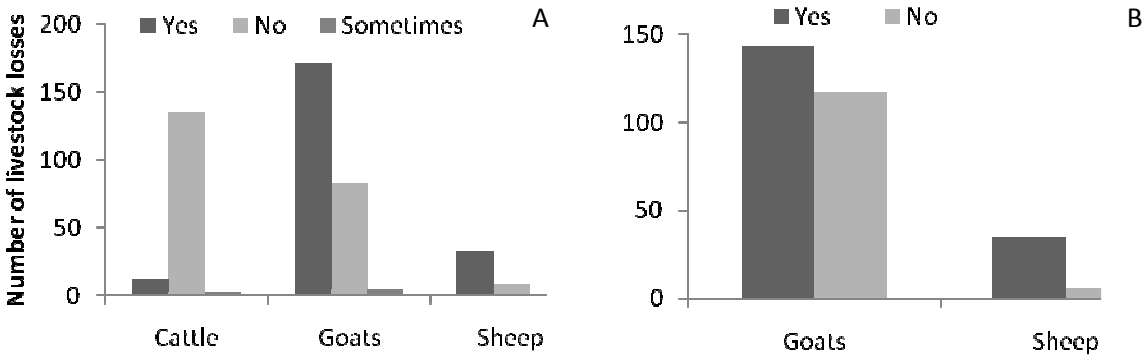


Figure 28. Livestock losses and presence of herders (A) and livestock guarding dogs (B).

Livestock losses were experienced during the entire day, starting off during the early morning and reaching a peak during the night. Losses were highest in the veld and near water, with confirmation by 75% and 18% of respondents, respectively. All annual seasons had incidences of livestock losses. A peak was experienced between January and April, although the other months were almost similar.
In the event of losses, 71% of respondents confirmed reporting to the conservancy and 5% didn't take any action. About 20% of respondents had confirmed taking lethal action such as gin trapping, using dogs to hunt the predator and shooting. Five respondents indicated removing a total of five baboons, four lions, two caracals, 12 jackals and one hyena. The conservancy was regarded as being supportive of its members by 89.47% of the 19 valid responses.

Queen Sophia Resettlement project

Queen Sofia settlement is situated approximately 60 km north of Otjiwarongo, 80km east of Outjo and 40km west of Otavi. The number of residents is estimated to range between 500 - 1000 individuals with 50 different farming units. Livestock kept include cattle, goats, sheep, horses, donkeys and chicken, all of which are an important source of people's livelihood. Families were resettled in this area ± 10 years ago as part of the government's effort to provide farming opportunities to previously disadvantaged citizens. Twenty -five respondents from different farming units were interviewed.

Wildlife presence was confirmed by all respondents and comprised both mammal carnivore and herbivore species, and raptors were also frequently sighted. Since the establishment of the project, game species were believed to have increased. A total of seven game species were sighted with varied frequencies (Figure 29). Results showed that the most common species were steenbok, duiker and warthog, which occurred on a *very common* basis. The kudu, oryx, and eland were *common*. The most common predators according to the sighting frequency were the jackal, which occurred on a *very common* basis. Other predator species such as the caracal was *common*; the cheetah and leopard were *very rare*; whereas the brown hyena and spotted hyena were *very rare* to *absent* (Figure 30). No lions

were present, and there were not enough responses to score the frequency of occurrence of the African wild cat.

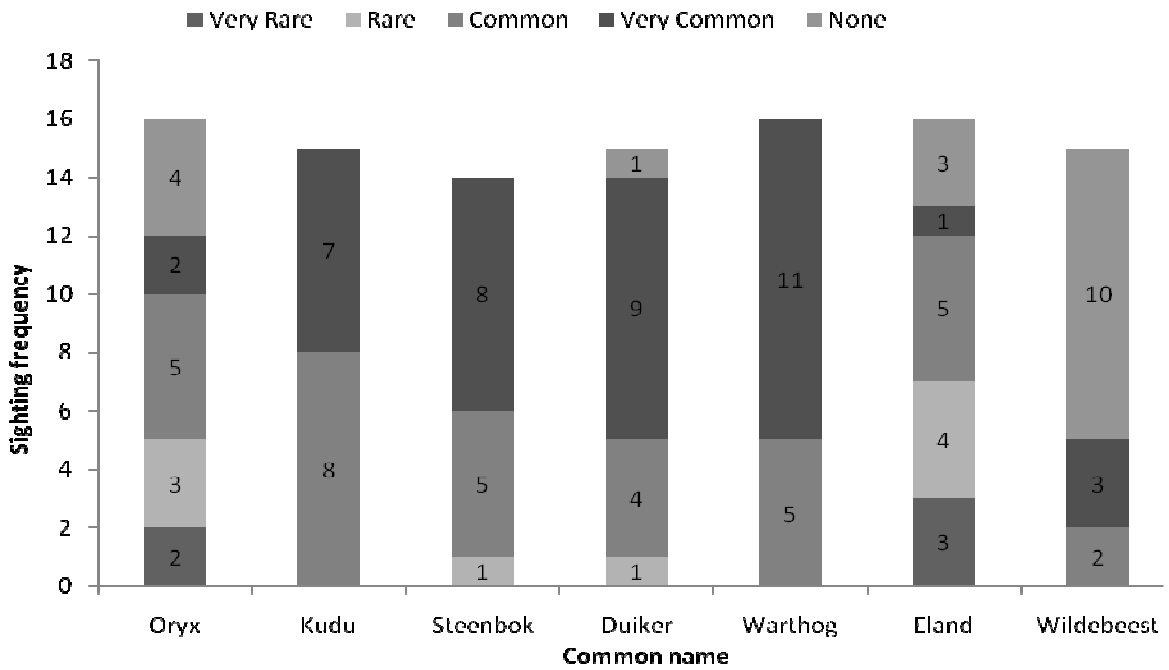


Figure 29. Sighting frequency of common game species in Queen Sophia resettlement, 2010. Categories: Very rare = once a year, Rare = twice a year, Common = monthly, Very common = Weekly.

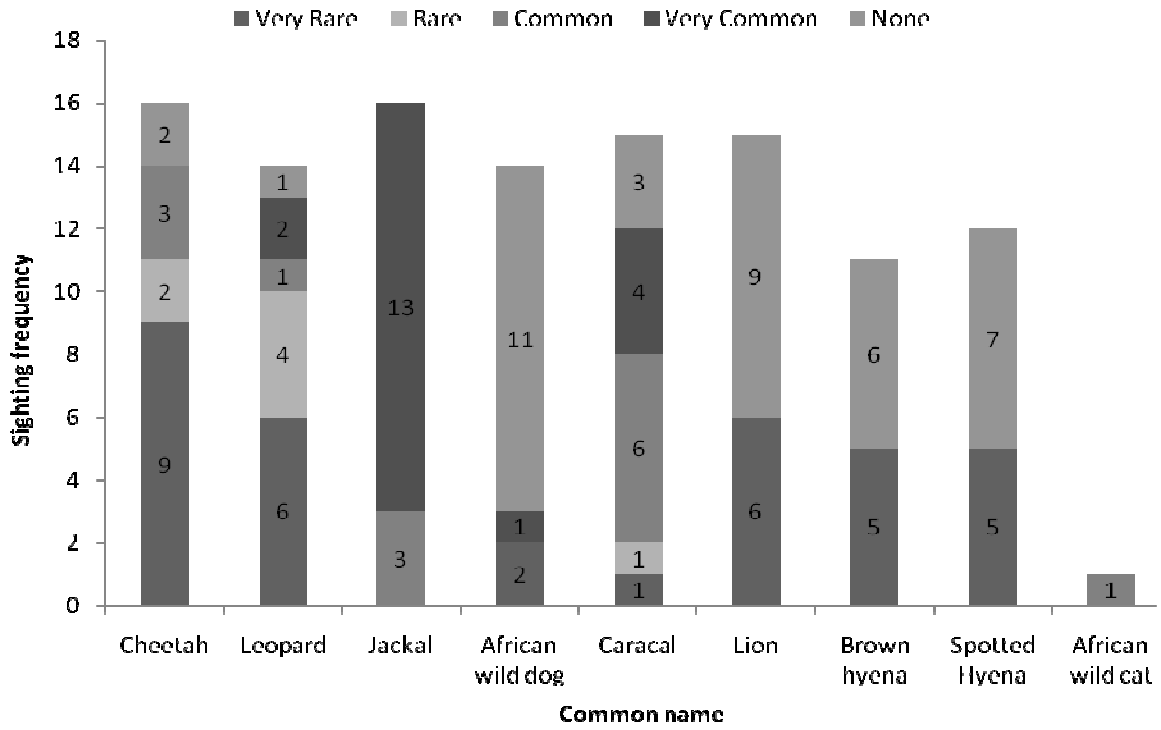


Figure 30. Sighting frequency of common predator species in Queen Sophia resettlement, 2010. Categories: Very rare = once a year, Rare = twice a year, Common = monthly, Very common = Weekly.

Livestock losses were experienced amongst all livestock types. About 73% of losses were due to predators. However, other factors such as theft and disease were responsible for 18% and 9% of the losses, respectively. The highest fatalities were experienced amongst goats and chickens (Figure 31). The goats were mainly killed by jackal and caracal. Chicken were killed by African wild cat and genet, whereas cattle, especially calves, were killed by cheetah and leopard. There was no difference in the frequency of predation incidences during the day and night. Losses were experienced mostly while livestock were grazing in the veld and within 5 km of the main homesteads.

Despite livestock losses being experienced, 68% of respondents did not use herders to protect their livestock, and only 47% of respondents had livestock guarding dogs.

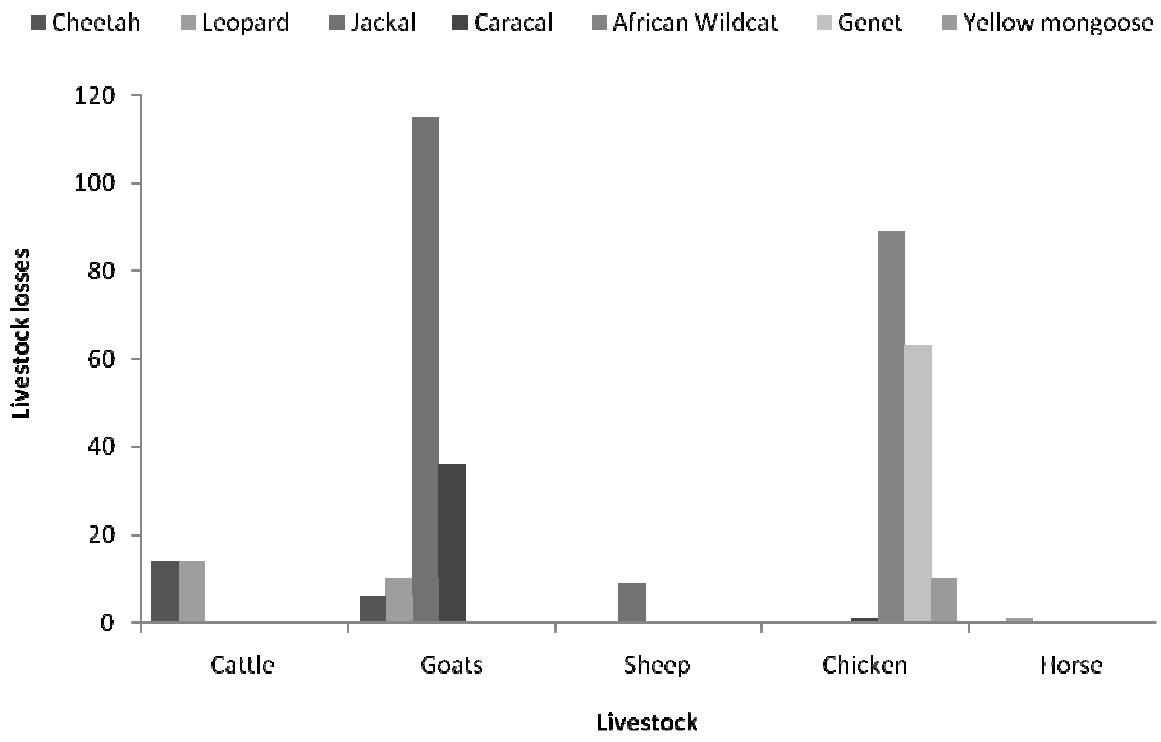


Figure 31. Livestock losses by the different types of predators.

Predators were perceived to be valuable by the majority of respondents from Ehirovipuka and Queen Sophia, despite the fact that livestock losses were experienced. In addition, respondents also were supportive of the conservancy program. In view of these findings it is recommended that the resident farmers should engage in techniques including the use herders, guarding dogs, keeping their livestock in the kraals at night and reinforcing their kraals. More awareness should be promoted in order for the people to appreciate the value of wildlife, livestock management and the conservancy concept, and long -term studies are required to quantify threats and enable timely responses towards predation.

3. Farmers' Training

During the field trip for the International Cheetah Conservation Biology Course, three farming communities comprising 57 people from two conservancies were visited and engaged in an interactive learning exercise with CCF staff, based on the CCF model for farmers' training courses imparted at the CCF Centre.

The first exercise was to determine their knowledge of the predators in Namibia using pictures of eight different predator species. In the Ehirovipuka conservancy, 45 people from two different communities participated in the identification exercise and 29 identified all of the predators correctly. Only five of them incorrectly identified the cheetah as a leopard and vice versa. The other most commonly confused predators were the caracal and African wild cat and the spotted and brown hyenas. In the #Khoadi //Hoas conservancy, of the 12 people from one community who participated in the exercise, 6 identified all of the predators correctly. Only two people identified the cheetah as a leopard.

Another exercise was conducted with these communities to teach the people how to identify the predator that killed livestock by investigating the signs around and on the kill. The people were separated into groups that were shown four model goat kills and asked to find out what killed the goats. Several of the older members of the communities had excellent knowledge of the signs to look for at a kill and could easily identify the culprit predator. These elders were asked to explain how they knew the answer and thus taught the other men and women in their group.

At the end of the exercise, the groups were given two important messages about livestock protection. A similarity was drawn between people in cities protecting their possessions from thieves and farmers needing to protect their livestock from predators. The second message made it clear that predators are opportunistic by nature and could start killing vulnerable young livestock that are left without the protection of a herder and/or a livestock guarding dog. The communities agreed with these two principles and thanked the CCF team for coming to their conservancies to present the demonstrations.

B. Future Conservationists of Africa

1. Primary through High School

CCF organises outreach programmes for youth throughout Namibia that focuses on 5th through 12th grade classes and environmental and conservation clubs and are designed mainly for groups accommodated at CCF's tented Camp Lightfoot and wilderness camp. Groups usually spend three days and two nights with CCF. All participants are exposed to CCF's research and conservation efforts by presentations and to the Namibian farmland ecosystem through the nature trail and a game drive through CCF's Little Serengeti. Team-building activities are designed to highlight the importance of team efforts in conservation. Role-play and drama are also included in the programme and include scenarios of livestock and predator management.

In February CCF staff returned to six schools visited in 2009 and met with approximately 1,500 students to follow up on questionnaires given to them as a December holidays' assignment. The surveys, which aimed at teaching the students to ask questions about cheetahs and livestock management in the farms where they live, were collected and are being analysed.

The number of Namibian school groups visiting the Cheetah Conservation Fund has been increasing rapidly over the last two years. CCF has moved from 370 school children and 19 visiting groups in 2009 to 833 school children from 27 regional schools in 2010. The increased interest in CCF over the past year can be attributed to the increased environmental education subjects in school curriculums. CCF qualifies to host this niche market comfortably with the diverse activities, applied research and continued monitoring work done on the property. Teachers themselves have caught on to the value of field trips to CCF as this develops and broadens the important aspect of schoolchildren's views on environmental and conservation education.

CCF is also actively involved in community outreach programmes for its environmental education project. Throughout 2010 a total of 22 schools in the Erongo and Kunene regions were visited and a total of 2030 pupils attended the CCF field educator courses.

In June, during the International Cheetah Conservation Biology Course, participants were taught how to do school assembly programmes by imparting a course to 1,000 students at one school in the #Khoadi //Hoas Conservancy.

2. Higher Education and In-Service Training

CCF is committed to empowering Namibians to take over the conservation and protection of their wildlife. Toward this goal, for many years CCF has fostered Namibian college students' interest in wildlife conservation. CCF offers six-month in-service training programs for Nature Conservation and Agriculture students from the Polytechnic of Namibia. The students conduct research projects, with the goal of completing a research paper at the conclusion of their internships. Several former interns have gone on to work at conservation organizations or in the government's Ministry of the Environment.

Ngundjii Tjizera was our student for the first 6 months of this year.

CCF's student from 2009 Joeseph Jonas, was hired to work with CCF's small stock and livestock guarding dogs.

C. Other Collaboration with Educational Institutions

The Cheetah Conservation Fund was instrumental in bringing together the Namibian Environmental Educators Network (NEEN) group. This group, comprising 84 primary and secondary school teachers from all over Namibia, came together at CCF for networking, discussions and experiences they face in the shortcomings that present itself in the field of environmental education. Presentations and formal discussions were conducted by various Namibian University lecturers and staff from the Namibian Ministry of Environment and Tourism (MET).

For the fourth year, 24 teachers enrolled in continuing education through Miami University of Ohio participated in Earth Expeditions projects at CCF. The program, for teachers across the US, involves training in using learning-cantered techniques focusing on the cheetah and its Namibian ecosystem. The course included teaching presentations on Namibian wildlife and cultures by participating teachers from the United States, a trip to Etosha National Park, hands-on activities, as well as a variety of individual

and group projects. Participants also spent time with CCF Farm Manager Johan Britz learning more about what it means to be a predator-friendly farmer.

CCF was visited by three university groups to participate in our Environmental Educational Course. The students all formed part of an Environmental Restoration and Learning programme hosted by their respective institutions. At CCF they all participated in various lectures and field classes that ranged from predator identification and their role in the ecosystem, the biology of the cheetah, the ecology of the cheetah, land management practices and presentations offered by the CCF geneticist and resident vet.

D. Community Outreach

CCF continued to visit farmers' associations as part of its outreach and education programme. Outreach and education are essential to creating positive attitudes towards predators on farmland. During these interactions, the CCF staff form important relationships with farmers from different regions in Namibia.

In March 2010, CCF was invited to attend two meetings held by emerging farmers' associations from Kunene and Oshikoto. The purpose of these meetings was for the farmers to discuss their training needs in their regions and to communicate with organisations such as CCF that provide this training. During these meetings, CCF extended support to the emerging farmers and offered to provide training courses on livestock and farm management.

CCF has actively involved communities from the Kunene region in conducting surveys and training during the international courses. The resettled emerging farmers at Queen Sofia farm were surveyed during the Integrated Livestock and Wildlife Management course in February. During the Conservation Biology course in June, more Kunene region farmers west of Etosha were surveyed and trained by course participants and CCF staff (See section on International courses for details of survey results).

In August 2010, CCF attended a commercial farmers' association meeting in the Outjo district. During the meeting, 14 farmers provided data on their game numbers, rainfall, livestock management and predator problems to CCF. The results of these surveys indicated that some farmers have few or no losses, whilst others in the same area experience high losses. These differences were explained by the intensity of livestock management and the use of herders and guarding dogs that were employed by farmers with no livestock losses.

Through these activities, CCF has emphasised its concern about the welfare of farmers that live with cheetahs and are willing to help them conserve these predators on their land. Furthermore, CCF remains a centre for advice and help for all farmers in Namibia. Farmers that suspect livestock losses to cheetahs and other predators contact CCF to enquire about the Livestock Guarding Dog Programme and other methods of livestock management.

In addition to visiting specific groups of farmers, CCF also attended four agricultural shows in Gobabis, Grootfontein, Okakarara, Outjo and Windhoek. The displays at the shows were both interesting and educational, with 51 groups of people (mostly children, with only six adult -only groups) and an average group size of 2.4 playing the 'name the carnivore' game. The average score was 8.5 out of 12 animals correct and 1.6 out of 4 paw prints correct (only 27 groups played the spoor game, due to the difficulty level).

After playing the game, the participants were engaged in a discussion on the size, behaviour and general distribution of the carnivores. The 12 carnivores used were: lion, leopard, cheetah, wild dog, caracal, black-backed jackal, spotted hyena, brown hyena, serval, bat-eared fox, aardwolf and African wild cat. The most common incorrectly identified animals were the aardwolf, brown hyena and serval. The most common correctly identified animals were the lion and black-backed jackal. The most commonly confused group of animals were the hyenas and the aardwolf, with the leopard and cheetah only occasionally being confused.

The agricultural shows also provide an opportunity to speak to farmers about predators and ways to live with them in harmony. The CCF staff collaborated with Frances Magaldi, a PhD student from the UK, who used the agricultural shows as an opportunity to conduct a pilot survey on farmer-predator conflict in Namibia. She intends to use her findings to further refine her survey and return next year to conduct a full study, the results of which will be shared with CCF.

The combination of interactive games, educational videos, posters and information for children, teachers and farmers was a very effective tool for creating awareness about cheetahs in Namibia. In addition, the books "Cheetah Survival on Namibian Farmlands" and "Integrated Livestock and Predator Management" were given to farmers who showed interest. The educational material was accompanied by a kill identification demonstration using a fibreglass goat and the kill identification page handout. This will help farmers identify the predator that is causing their livestock losses and adapt their livestock management accordingly.

In addition to addressing the livestock farming community, CCF continues its active involvement with the game farming and hunting community. To reach game farmers that use trophy hunting as a form of income, CCF joined the Namibian Professional Hunters' Association (NAPHA) road show in July. The road show comprised six meetings held in different parts of the country, with a total of 57 farmers attending. During these meetings, the CCF representative discussed the management of predators on game farms. The opinions and needs of the farmers are very important for CCF to develop solutions with organisations such as NAPHA. In November, CCF attended the NAPHA Annual General meeting as part of our continued involvement with the trophy hunting industry.

E. CCF Staff Education

Research Assistant Ezekiel Fabiano started his PhD in March 2009 with a scholarship from the Wildlife Conservation Network and from Dr. Eduardo Eizirik at Pontificia Universidade Catolica do Rio Grande do Sul, Brazil.

Masters Degree student Gail Potgieter from Nelson Mandela Metropolitan University joined CCF in early 2009 to conduct her Masters project on Human-Wildlife Conflict. Gail's project focuses specifically on CCF's Livestock Guarding Dog Programme. To date, Gail is in the process of analyzing data from farmers dating back to 1999 and writing her thesis.

Education Officer Gabriel Angala is studying Environmental Economics through the Institute of Bankers.

F. Volunteers and Interns

Volunteers are the backbone of CCF and vital in daily operations. CCF has worked with Earthwatch since 1996 with initially up to six volunteers monthly and since the beginning of 2010 four volunteers participating monthly for a two-week period. Between January and December 2010, CCF hosted 12 Earthwatch teams totalling 43 volunteers.

In addition to Earthwatch, a further 63 volunteers visited CCF in 2010. Among these were 30 international working-guest volunteers and 28 national and international student interns training in veterinary or animal husbandry from partner university programs including the IE3 Global Internships Oregon University System, and Michigan State University Zoology Department, from the USA, and the Wildlife Management in-/ ex-situ Dept. Animal Management from Van Hall Larenstein, Netherlands. In addition, several interns came from France, UK and the United States. Other volunteers included one Peace Corp and one volunteer from the German Development Service (DED). CCF capitalises on professional specialities and interests of all volunteers, which adds to the volunteer experience.

As part of CCF's volunteer outreach efforts, long-time CCF volunteer Dorothy Scanlan launched the first newsletter for CCF Alumni, "Cheetah Champs," in March, with a second issue published in August, reaching approximately 750 past volunteers.

G. Global Management Planning/Policy Involvement

CCF assists in international programme development and adapts model programmes developed in Namibia for use in other countries, distributing its materials and information throughout Africa and the rest of the world.

1. International Cheetah Studbook

The International Studbook questionnaire returns from 2010 year-end are being processed and will be analysed in early 2011. CCF is working to update out-dated files from institutes that have had little contact with the International Cheetah Studbook before finalising the 2009 International Cheetah Studbook in early 2011.

2. International Meetings

In March, Drs. Laurie Marker and Bruce Brewer attended the Iranian Cheetah Strategic Planning Meeting in Switzerland with a small group of cat specialists and Iranian officials. The group reviewed the past 10 years' work and planned the next 10 in order to help the small Iranian cheetah population survive into the future. CCF has trained over 25 Iranian conservation scientists and is committed to continue its help.

In June, CCF staff member Ezekiel Fabiano attended the Mozambique National Action Planning Workshop for cheetah and wild dog. The workshop was promoted by the Regional Cheetah and Wild Dog co-ordinator and the Mozambique Ministry of Tourism. During this trip, Fabiano was able to meet with the National Directors for Tourism and Agriculture and discuss how CCF could be of assistance during the implementation of their national action plan.

Dr. Bruce Brewer and Dr. Marker travelled to South Africa to meet with CCF major sponsor, Howard Buffett at his farm to update him on the success of the International Courses.

In August, Dr. Marker travelled to Tanzania to attend the Leadership for Conservation (LCA) in Africa 2010 Council Meeting. As a Namibian representative for the LCA, she was sponsored to attend the workshop by Howard Buffett. Marker presented on the Cheetah Regional Strategies and how LCA could become involved. LCA chose cheetah projects for Angola, Zambia and Mozambique and suggested that they potentially could help with sponsorship in these countries.

In September, Dr. Marker joined international cat specialists in South Africa to evaluate the progress of the South China Tiger Rewilding and Reintroduction Project undertaken by Save China's Tigers (SCT), and to assess its role in conserving the South China tiger in the wild. In addition to Dr. Marker, the workshop included Dr. Peter Crawshaw of Centro Nacional de Pesquisa e Conservacão de Mamiferos Carnivoros, Cenap/ICMBIO, Dr. Gary Koehler, Dr. Jim Sanderson of Small Wild Cat Conservation Foundation, Dr. Nobuyuki Yamaguchi of Department of Biological and Environmental Sciences of Qatar University, and Dr. David Smith of Minnesota University, Chinese government scientists as well as representatives of SCT. Results of the workshop detailed the progress to date on the South China Tiger Rewilding Project and provided guidance in the way forward in tiger conservation.

Also in September, CCF's Education Officer Ignatius Davids was one of the Namibian Environmental Educators Network (NEEN) delegates to the annual Environmental Educators Association of Southern Africa (EEASA) conference in Zambia.

3. Association and Conservancy Relationships

Large Carnivore Management Association (LCMAN)

CCF continues to collaborate with other researchers, farmers, NGOs and the government to pave the way for conserving large carnivores in Namibia. This group of experts and stakeholders has come together under the banner of the Large Carnivore Management Association of Namibia (LCMAN). CCF functions as the secretariat to LCMAN.

Since the inception of LCMAN, there has been a drive to provide the Ministry of Environment and Tourism (MET) with expert advice and guidance during policymaking procedures. In 2010, CCF representatives attended five LCMAN general meetings and two special meetings focused on specific aspects of carnivore research and management. Dr. Laurie Marker attended all the meetings, accompanied by Dr. Anne Schmidt-Küntzel (3 meetings), Gail Potgieter (5 meetings) and the following CCF staff: Leigh Whelpton, Jacqueline Maisonpierre, Ezequiel Fabiano, Matti Nghikembua and Katherine Forsythe (1 meeting each). Furthermore, visiting students Aletris Neils (PhD student, 3 meetings) and Sarah Grigg (1 meeting) and a visiting colleague, Dr. Amy Dickman (1 meeting) attended by CCF invitation. A new LCMAN policy that will take effect next year will limit the number of representatives per organisation to two, unless other representatives are elected to serve on specialised committees.

The Cheetah and Wild Dog National Plan, the National Lion Management Plan and the Captive Carnivore Policy were discussed during the LCMAN meeting of 13 January 2010. During the 25 March 2010 meeting, MET official, Dr. Ortwin Aschenborn, was introduced to LCMAN as the new MET carnivore coordinator, replacing Josephine Henghali whose health deteriorated during the year. Josephine passed away in June.

On 11 June 2010, a day-long planning session took place to develop a Terms of Reference for the organization and discuss the way forward for the group. At the Annual General Meeting on 12 June 2010, Faith Chambara was officially introduced as the new LCMAN coordinator/Secretariat working within the Namibian Nature Foundation, thus reducing the responsibilities that CCF has carried for over 10 years in this role. These important developments will help in communications with MET and increased the flow of information among LCMAN members.

The increased communication with MET led to LCMAN members providing expert advice to MET at a special meeting on 12 July 2010 regarding their pending census of leopards in Namibia. By combining the experience of all the LCMAN member associations, a plan for obtaining a good estimate of leopard numbers in the country was put forward to the MET. Once completed, the census will guide the quota system for hunting leopards in the country to ensure that this species is not overexploited.

Several committees were developed to drive LCMAN's actions, and Dr. Laurie Marker became the Chair of the Research Committee. This committee held a special meeting to develop a protocol for the pickup and release of large carnivores captured by Namibian farmers. Their recommendations were presented at the 25 November 2010 LCMAN meeting. This is an important step towards standardizing the methods and defining best practice procedures among carnivore conservation NGOs in Namibia.

Conservancy Association of Namibia

For the past five years, Dr. Laurie Marker has served as the Conservancy Association of Namibia (CANAM) Chairwoman. She recently stepped down and took the position of Vice Chair. During the first six months of the year, Dr. Marker attended four meetings including a successful visioning meeting with key conservation partners in February to brainstorm the future direction for CANAM. A number of key issues were identified throughout the session including a concise vision which included:

- To promote and support farmers and conservancies to manage and develop their wildlife-based industries as a competitive form of land-use.
- To use the above as a practical working foundation/vision and work from this to establish practical and achievable goals. A consultative process should include the following objectives:
    - CANAM members should understand the economic benefits and opportunities that conservancies and wildlife management represent to each freehold conservancy;
    - CANAM members should also provide input on their needs and the services they require from CANAM;
    - Determine how CANAM can operate at a level of national advocacy for itself and its members
- Use AGM as a working session for CANAM's vision by working with conservancies through a facilitation process
- Secure renewed support and confidence from existing members

Dr. Marker helped to plan and manage the Annual General Meeting in April. The main work of CANAM for the year was to finalise first edition of the Commercial Conservancy publication which has been spearheaded by Dr. Marker and CCF. This publication is due to be printed in early 2011.

H. Sustainable Economic Programmes Supporting Local Communities & CCF

Humans must co-exist with cheetah if the world's fastest cat is to survive in the wild. The following progress has been made on CCF's activities that assure the economic well being of people living within the cheetah's range and provide resources to support CCF's long-term activity.

1. Bushblok

Sales remained fairly flat in 2010 with a total of 451 tons. Continuing problems with the extrusion presses hampered production. Solutions have been investigated and the problems are not expected to impact 2011 production. Advance requests for 2011 are over 1000 tons.

The low sales and a large increase in electricity charges negatively affected the profitability of the operation. However, late in the year we recovered part of a bad debt from a failed distributor in Cape Town.

General Manager Dr. Brewer met with the Otjozondjupa Regional Council and German Development Corporation (GTZ) regarding the possibility of applying for Clean Development Mechanism credits and collaborated with the Finnish research corporation VTT in submitting grant requests to the EEP (Energy and Environment Partnership Programme with Southern and Eastern Africa).

CCF assisted the Community Based Economic ND (CBEND) project by loaning them a wood chipper.

Former intern Ryan Richards completed his paper, "The potential for biomass certification to fuel landscape restoration in Namibia." This had been prepared at our request and was shared with Namibia's Department of Forestry. Dr. Brewer remains active in the government's Woodlands Management Council.

The Forest Stewardship Council (FSC) inspected CCF for major (5-year) certificate renewal in April. Two inspectors spent three days examining not only the woodlands harvest and chipping operations but also CCF's general environmental and social operations (what pesticides we might use, how we manage our waste, are workers appropriately trained and paid, etc.). Both Bushblok and CCF are now FSC certified.

2. Cheetah Country Initiatives

Cheetah Country Beef (CCB)

Cheetah Country Beef has not been active in 2010. However, from our work in this process, MeatCo has established an eco-friendly label; Nature's Friendly, with a price premium to farmers who agree not to kill predators. However, this is not a certified product and is not monitored. CCF continues to discuss co-branding with MeatCo. CCF presented MeatCo with the Smart Partnership Award at CCF's Gala Dinner in July, thus highlighting the importance of eco-labels. MeatCo has been able to introduce a code of conduct which helps farmers identify predators and teaches humane methods of predator management. We hope that this will lead to more initiatives and higher price premiums like our "Cheetah Friendly Beef" plans.

Cheetah Country Crafts

CCF has been involved in a Cheetah Country Crafts programme with local women for over 18 years to provide supplemental income. CCF provides materials to programme participants and then buys back the finished products to sell in the eco-tourism gift shop and over-seas during the Directors international travels. Since 2009, the primary focus of this programme has been on beaded necklaces. The programme has gained momentum through the training of local women in the production and sale of these crafts at CCF Education Centre's gift shop and during international travels by the Executive Director.

Cheetah Country Goat Cheese

CCF began making fresh goat cheese in August 2009 using the milk from CCF's dairy goats. Figure 32**Error! Reference source not found.** shows the amount of milk per month since milking began. The programme aims to facilitate training and skill development around the production of goat dairy products. The project enables livelihood diversification and provides supplemental income to community members. During 2010, the goat cheese has been used for CCF staff meals. During the year, CCF intern Anne-Sophia, a veterinary student from France assisted in a management plan for both CCF's cheesery and dairy goats. As of the end of 2010, marketing plans have been developed to begin selling the cheese to local lodges, restaurants and businesses.

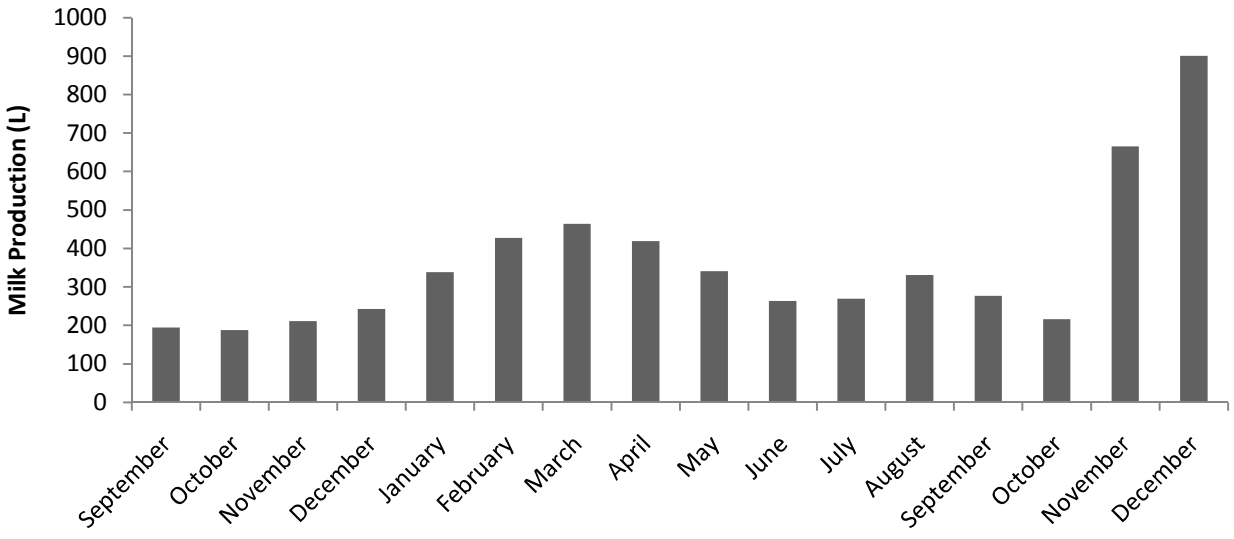


Figure 32. Goat milk production at CCF since inception of the dairy goat programme.

The main goal of the dairy goat programme is to produce milk in order to make goat cheese for consumption at CCF as well as selling cheese to tourists visiting CCF, and for local sales to establishments in Otjiwarongo. In 2010, CCF's milk production reached a peak in February, March and April, with a maximal production of over 400L per month; the production declined in September and October with only 80L, and peaked again in December, after several of the does kidded, for a total of 900L of milk in the month.

CCF has been experimenting with several cheeses. Currently, four kinds of cheese are being made: Feta, Ricotta, Chevin and a Hard Cheese.

3. Eco-Tourism

Tourism is one of Namibia's fastest growing industries, with a large number of developments emerging in the Otjiwarongo area over the past couple of years. CCF's ecotourism potential continues to grow and has become one of the region's leading travel and tourism destinations while boosting the local businesses of Otjiwarongo. CCF's tourism in 2010 stayed stable, despite a severe down turn in tourism for southern Africa due to the World Cup in South Africa and the volcanic ash cloud that caused havoc on international flights from and to Europe.

Some of the visitors CCF welcomed this year included a team from the Indianapolis Zoo visited CCF to learn more about cheetah husbandry. During the same time, we also hosted special CCF friends from the WILD Foundation and included Maggie Bryant --who has supported our re-introduction research and the genetics lab, and Vance Martin, President of the WILD foundation where CCF began in 1990. Vance was the CCF USA President for 12 years and is now one of our CCF USA Trustees. In February, Frans Schepers from the World Wildlife for Nature (WWF) Netherlands, accompanied by Chris Weaver from WWF Namibia, visited to see the CCF land that the WWF Uriot Legacy grant supported for large carnivore management areas. Later in the year, we had visitors from Pfizer South Africa, who donated a large amount of medicines for our veterinary clinic.

This year, CCF management staff worked to create a stable and supportive operating environment looking to the best ways of expanding CCF's tourism activities to ensure the long-term sustainability in tourism to support CCF' s mission.

Information

CCF has traditionally been a research driven organization that has received international recognition for its work in the field of conservation and has been actively developing its tourism potential to derive a more sustainable revenue stream for the organization.

CCF's properties offer a unique array of activities that are not available at other tourism properties in the area, thus lending itself to exclusivity. CCF is working to place its tourism activities as a part of other accommodation establishments in the region. Through this, CCF Tourism has managed to increase visitor numbers in the 2010 tourism season (Figure 33). Even though Namibia had external influences that negatively impacted the national tourism in 2010, CCF showed an increase in visitor numbers. Figure 34 indicates that 31 % of the visitors to CCF during 2010 were from neighbouring establishments or our booking agent, Nuevas Ideas.

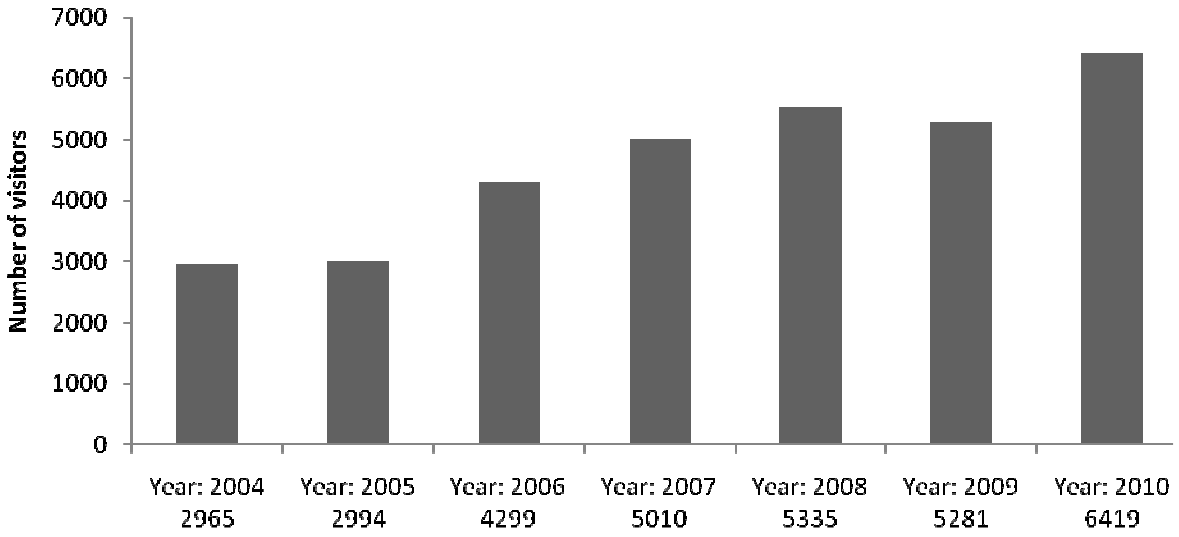


Figure 33. Total number of visitors to CCF for the past seven years.

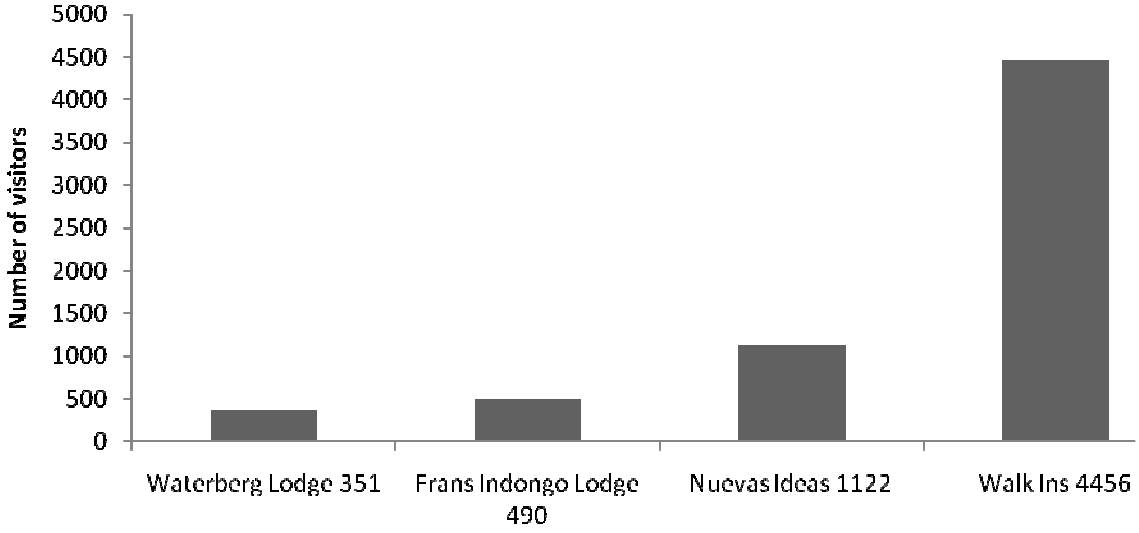


Figure 34. Origin of the total numbers of visitors for 2010 Tourism season. Waterberg Lodge and Frans Indongo Lodge are neighbouring establishments. Nuevas Ideas is CCFs booking agent situated in Windhoek.

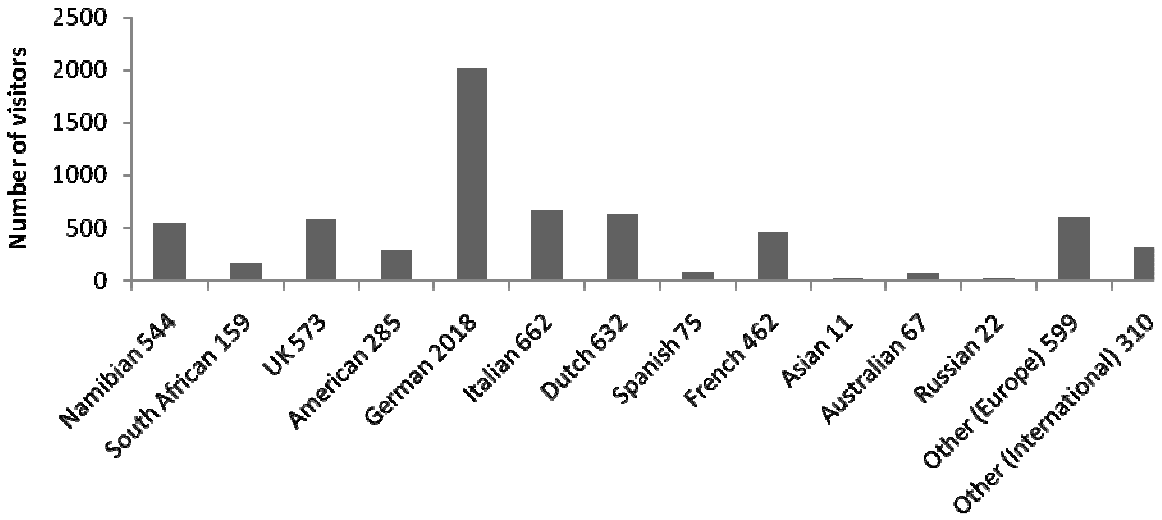


Figure 35. Breakdown of the 2010 tourism season, total visitor nationalities.

CCF maintains records on its visitors to understand the demographics which can assist in developing marketing plans. Germany continues to be a strong tourism market due to its historic connection with Namibia. Figure 35 shows the increased diversification and awareness for Namibia internationally.

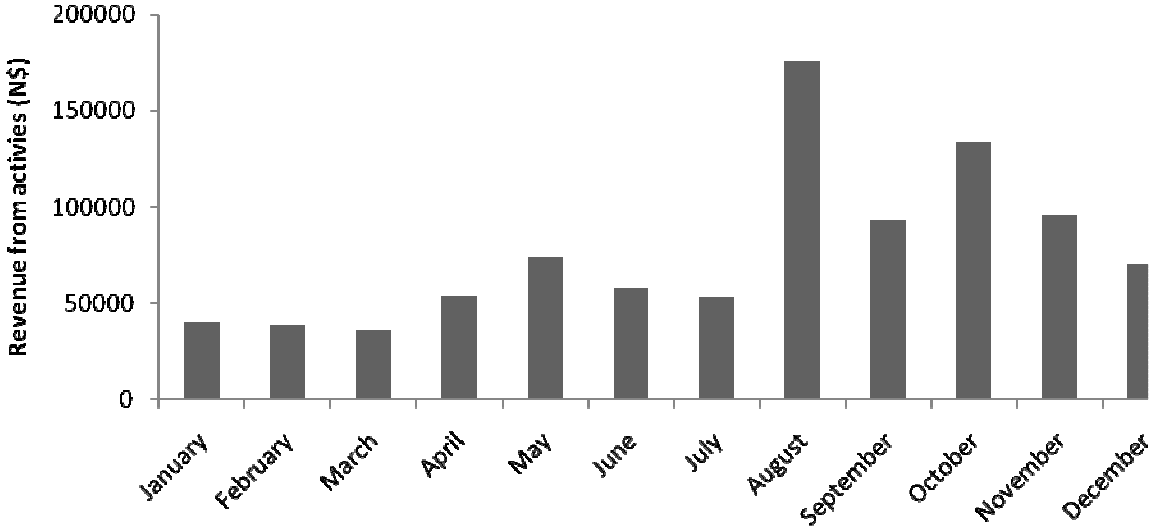


Figure 36. Revenue generated from CCF tourism activities for each month in the 2010 tourism season.

Figure *36* shows the seasonality of tourism in Namibia and at CCF allowing for staff planning around the tourism peaks. Understanding these trends creates an opportunity for CCF Tourism to expand its marketing emphasis on the local and southern African markets to balance the flow of visitors throughout the year. The majority of CCF's tourism revenue comes from the activities offered to tourists, followed by the gift shop (*Figure 37*).

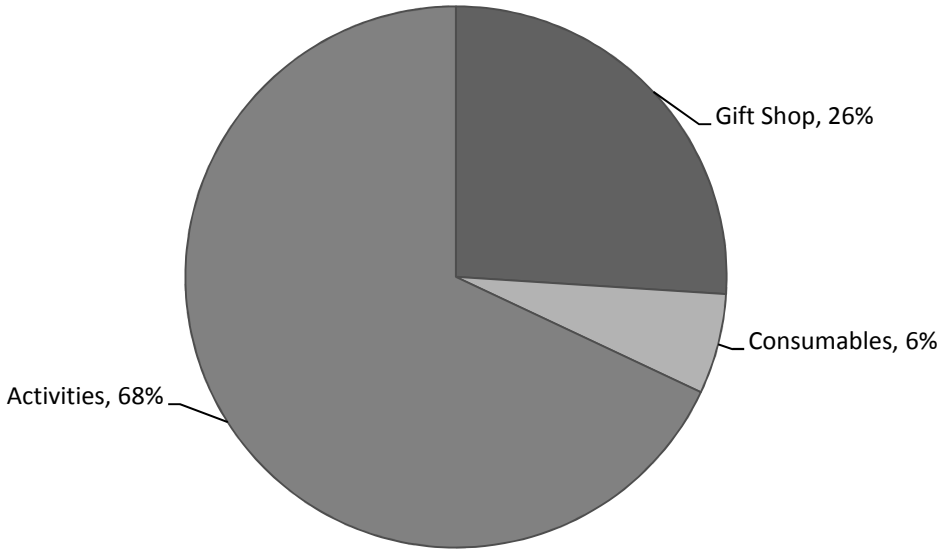


Figure 37. Breakdown of total sales generated for the year 2010 as part of CCF tourism department.

Marketing

CCF is at an exciting point in its tourism development. With a wide-ranging and unique activity product to offer, CCF continues to market in various local markets to boost its international awareness and to continue to develop products that will generate more revenue streams for the organization. In an effort to align itself with travel and tourism agents, CCF has pursued tourism partners through the development of a strong "CCF" brand with a domestic regional identity. CCF has aligned itself with some travel and tourism agents who are beginning to market internationally and assist with awareness creation campaigns, to enhance CCF's image as a tourism destination and generate new demand for its activities. In November, CCF had a booth at Namibia's Hospitality Association of Namibia (HAN) conference and met with many local travel agents. In addition, the Namibian Tourism Association representative from Germany brought a group of travel agents to CCF in December.

By defining CCF as an 'experience' – rugged, natural, soulful and liberating – the foundation could be set for a coordinated marketing effort by the CCF Tourism Department.

CCF volunteers and visitors

CCF's volunteer and staff continue to be a huge management aspect of the organization. With this, appropriate food and housing continue to be a priority. CCF management continues to analyze the costs and benefits of maintaining these operations. Related to the kitchen, management is currently sourcing new avenues and suppliers to provide CCF with a more cost -effective and reliable product and delivery structure for 2011. Figure 38 below indicates the main kitchen suppliers for CCF, which are both located in Otjiwarongo. The value combination of both these suppliers amounts to N$ 703 840.96 for the physical year, which represents 2.1% of the 2010 CCF generated revenue. These cost figures are in direct relationship with the number of people (staff and volunteers) that CCF feeds on a monthly basis (Figure 39). With these figures, CCF's Management is working to maintain efficient controls and structures.

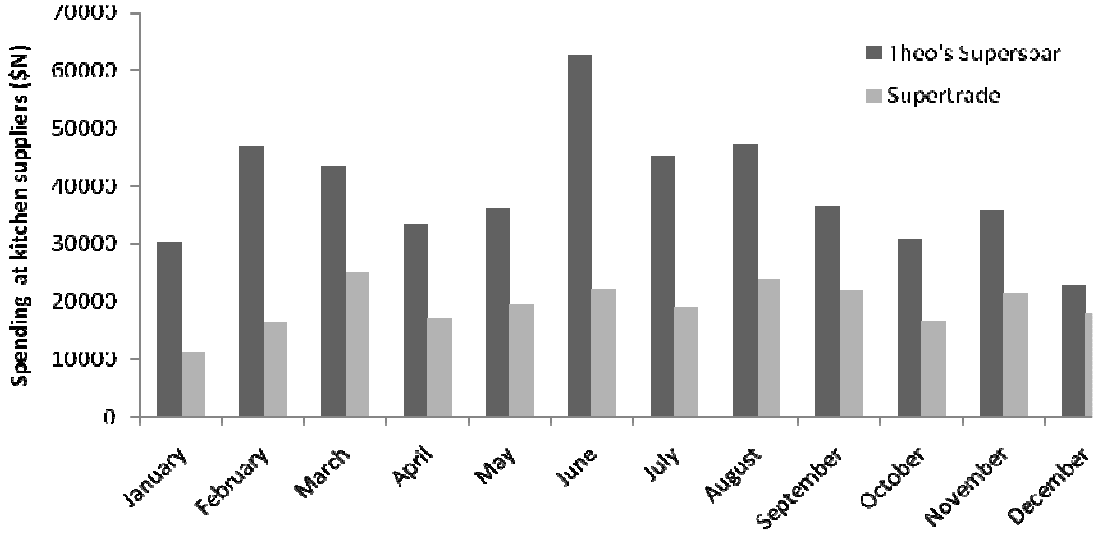


Figure 38. Spending at CCF's two main food and kitchen suppliers in Otjiwarongo for 2011.

In addition, Figure 38 shows the main fresh and dry-goods suppliers in Otjiwarongo that are currently used by CCF. Spending at Supertrade is much more consistent throughout the year in contrast with spending at Superspar, due to Superspar's variable pricing for fresh fruit and vegetables and the increased purchases in the months when CCF had a great number of students at CCF (June, July and August) and during the international training courses (February, March and June).

CCF continuously monitors the attendance of the meals on offer to its staff, interns and volunteers. Figure 39 shows the monthly attendance at lunch and dinner meals during the year.

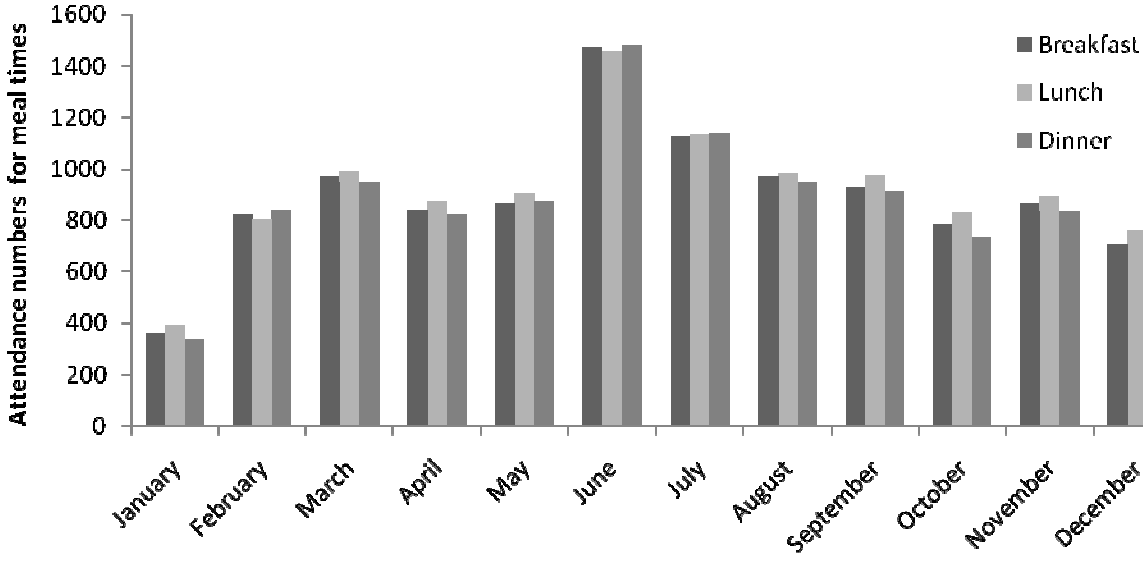


Figure 39. Total monthly staff and volunteer attendance at mealtimes for 2010.

VI. STRUCTURAL ACTIVITIES

A. Namibian Facility Developments

1. Existing Structural Projects and New Projects

In 2010, a volunteer from Sweden, Goran Lindstrom retired from his business and decided to send CCF a container full of equipment from his vehicle mechanics repair business. Under his supervision, extensive renovation of the main barn/workshop continued through the year. The electrical was upgraded in the barn and a vehicle lift was installed as well as a tire-repair area with wheel balancer. Storerooms were renovated and internal locking store rooms were put within the barn. Exterior work included extension of the shed to include a vehicle wash bay and more bays under roof. An extensive repair of the back-up generator was completed including the addition of more automatic safety shutdown controls. A few storage batteries were replaced in the main Babson/Senior Staff houses array. The goat compound was improved and a milking stall added. Two new livestock guard dog pens were constructed.

Ten permanent huts were constructed at Lightfoot Camp and decorated with murals. An improved water tank stand was constructed at Farm Boskop.

2. The Rhino Reserve

Fence repair was ongoing on the reserve perimeter. The two dams renovated at the end of last year caught water sufficiently for many months. Roadwork to improve drainage (and dam infill) was undertaken along the Main Road and towards South Dam.

3. Automotives

A generous grant from the Solvay Okorusu Flourspar mine sponsored the purchase of two Nissan double-cab trucks. The “cheetah bus” underwent a major renovation; however by the end of the year it needs a new engine. A second Toyota Quantum van was purchased at the beginning of the year to help with international courses. The petrol and diesel storage area on Elandsvreugde was renovated.

4. Recycling

All trash pits and the compost area were cleaned in preparation for the FSC inspections. Volunteers took many spent printer cartridges away for recycling.

B. Staffing

Dr. Laurie Marker, DPhil – Founder/CEO
Dr. Bruce Brewer, PhD - General Manager
Dr. Anne Schmidt-Küntzel, DVM, PhD - Research Geneticist and Assistant Director for Animal Health and Research
Patricia Tricorache – Assistant Director, International Programmes, Webmaster

Engelhardt Awaseb - Assistant Farm Manager
Johan Britz – Farm Manager
Tanya Britz - CCF Bush Book-keeper
Matt Cleverley - Cheetah Keeper and Research Assistant
Ignatius Davids - Tour Guide
Kate Echement - Cheetah Keeper and Research Assistant
Karen Falk – Part-time Accountant Assistant
Ezekiel Fabiano - Research Assistant, PhD. candidate
Katherine Forsythe - Ecologist
Rosie Glazier - Veterinary Nurse
Anaïs Herbert, DVM - Research Veterinarian
Joeh Jonas - Livestock Husbandry Assistant
Christine Kamukwanyame – Genetics Lab Technician
Donna Lee Korita – Administrative Assistant
Juan Marx – Tourism Manager
Priskila N. Nepela - Eco-tourism Educational Aide
Gabriel Angala - Tourism Officer
Matti Nghikembua - Senior Ecologist and Education Officer
Gebhardt Nikanor - Education Officer
Gail Potgieter - Livestock Guarding Dog Programme and Human Wildlife Conflict Co-ordinator
Bessie Simon – Assistant Farms Manager
Max Simon - Mechanic
James Logan Slade - Game Ranger
Heike Stackmann - Volunteer Co-ordinator, Public Relations and Gala Dinner Organiser
Stefanos Upani - Tourism Officer
Carolyn Whitesell - Livestock Guarding Dog Handler and Research Assistant
Rick McKena – Volunteer supervisor

CCF Namibia also employs 28 Namibian farm and domestic workers.

CCF USA Staff

Hillary Russell Davidson - Director, Operations and Finance
Paula Martin - Administrative Officer
Allison Rogers - Grants Manager and CCF Kentucky Chapter Leader
Laurie Payne - Fundraising Project Manager and CCF NoCal Chapter Leader
Shannon Sharp - Donor Information Manager

VII. ORGANIZATIONAL ACTIVITIES

A. <u>Fundraising</u>

1. Namibia

The 12th annual fundraising gala was held in mid-July. This year's theme, Racing into the Future, highlighted CCF's vision for long-term cheetah survival and celebrated its 20th anniversary.

The event, emceed by CCF's vice chairman Mr. Tangeni Erkana, featured a silent auction with more than 90 items donated by local businesses, live music, and a menu that included Namibian Nature's Reserve beef, generously sponsored by Meatco. Approximately 275 people attended, including representatives from the business, conservation, agriculture and government sectors in Namibia and internationally.

The evening's Keynote Speaker, The Hon. Netumbo Nandi-Ndaitwah, Minister of Environment and Tourism, representing HE President Hifikepunye Pohamba, talked about the inter-relationship of cheetah and conservation as an important balance of the country's ecosystem. Ms. Jacqueline Asheeke, CEO of Federation of Namibian Tourism Associations (FENTA), gave an inspirational and lively speech on the importance of the tourism sector and the inter-relationship between conservation and tourism. Dr. Marker spoke briefly on CCF's first 20 years and her vision for the next 20.

This year's Conservation Awards recognised educators, farmers and smart business practitioners that help conserve the cheetah and the Namibian environment."

- Kobus du Plessis, CEO of Meatco, was presented the 2010 Cheetah Business of the Year - Smart Partnership Award for promoting and supporting predator-friendly farming practices.

- The 2010 Cheetah Farmer of the Year Award was given to Ms. Ida Katuta, a farmer who practices predator-friendly livestock management practices, including the use of a Livestock Guarding Dogs from CCF.

- CCF Senior Research Assistant and PhD Candidate, Ezequiel Chimbioputo Fabiano, was presented the 2010 Conservation Educator Award for his integral involvement in teaching professionals at CCF's International Conservation Biology Training courses.

- The 2010 Cheetah Conservationist of the Year Award was presented to John Kasaona, Assistant Director of the IRDNC in the Kunene region and Chairman of NACSO (Namibian Association of CBNRM Support Organisations). Kasaona gave an exciting talk on the development of communal conservation in Namibia.

2. International Review

a) CCF USA

(1) Campaigns

CCF's fundraising campaigns involved five mailers and 45 blasts (293,126 e-mails) including 15 info-appeals/solicitations, three newsletters, 15 targeted announcements and two in-appreciation/thank-you mailings.

- **February: A Cheetah Valentine (Selected countries)** – An e-mail campaign directed at 33 countries that celebrate this holiday, sent to 14,312 recipients.
- **Get in the Starting Gate for the Run for the Cheetah! (USA)** – Run for the Cheetah announcement with Virtual Race to sponsor a cheetah or a dog, sent to 10,239 e-mail addresses.
- **March: State of the Cheetah "Cheetahs, Farmers and YOU" (World)** – Info-appeal focusing on farmer Andronicos Tjituka sent twice as an e-blast with a 3-week interval to 17,262 and 17,198

addresses in addition to 17,966 pieces sent by mail. $53,668 donated. Approx 1.76% response rate.

- **May: Spring appeal "Cheetahs in Angola" (World)** – Info-appeal in connection with Dr. Marker's trip to Angola, where cheetah presence was confirmed. Sent twice as an e-blast with a 3-week interval to 16,967 addresses worldwide and 10,074 US addresses the second time. Sent 18,796 pieces by mail. 1.94% response rate.
- **June: Prospect mailer** – Reprinted Spring appeal piece mailed to 11,939 US addresses. Generated 105 new names for CCF.
- **July: Chewbaaka's 15th Birthday Challenge (World)** – Info-appeal sent by e-mail three times with 3-week intervals: to 16,927 worldwide addresses (6-Jul-10), 10,042 US addresses (29-Jul-10), and 16,991 worldwide addresses (17-Aug-10). Sent 33,428 pieces by mail. Response rate 1.68%.
- **November: Cheetah/dog sponsorship drive (UK)** – Year end CCF UK campaign, sent twice to 1,444 addresses with 1 month interval.
- **November: Year-End Matching Challenge "Four go out, For come in" (World)** – Four info-appeals focusing on the Bellebenno rewilding project and the Okakarara cubs, sent by e-mail as follows:

Description	Distribution	Date	Coverage
Four go out, four come in...	21,762	23-Nov-10	Worldwide
Vier gehen, vier kommen…	994	24-Nov-10	Germany
What we could accomplish!	16,651	13-Dec-10	Worldwide
Only 2 Days Left	10,534	29-Dec-10	US

16,564 were pieces sent by mail. 3.1% response rate.

In addition to the above, this year CCF sent out 31 other e-mail blasts (110,313 e-mails) including:

- **Dr. Laurie Marker's Notes from the Field** – Three e-newsletters were sent out during this reporting period: March = 20,632 e-mails; August = 20,572; and December = 21,895.

- **Informational/targeted e-blasts** = 14,955 e-mails including
  - In appreciation for 2009 year-end Challenge: = 20,516 e-mails
  - Happy Holidays to Namibian mailing list = 1,045 e-mails
  - Studbook: 1 e-blast = 413 e-mails
  - Media announcements: 10 e-blasts = 2,564 e-mails (see Media section)
  - Events or announcements: 14 e-blasts = 22,604 e-mails (see table below)

Description	Distribution	Date	Coverage
Fernseh-und Radioberichterstattung über den CCF, Namibia	977	29-Jan-10	Germany (radio show)
TV-Tipp: Teil 2 der Planetopia-Reportage aus dem Geparden-Schutzprojekt	964	4-Feb-10	Germany (TV show)
Pâques au Parc de Thoiry avec Laurie Marker	294	15-Mar-10	France (tour)
Make a Date with the Cheetah: 17 July 2010.	1,099	15-Mar-10	Namibia (gala)
Cheetah Presence at the London Marathon!	1,398	13-Apr-10	UK (event)

Help Authorize a Wildlife Postage Stamp	10,223	28-May-10	US (mobilization)
Fotografeneditionen unterstützen den Schutz der Geparde	954	16-Jul-10	Germany (publication)
An Evening with Dr. Laurie Marker - Sept. 27, 2010	770	28-Aug-10	DC (tour)
CCF UK 20th Anniversary Gala - 16 September, 2010	1,391	28-Aug-10	UK (tour)
CCF UK 2011 Cheetah Calendar Now Available!	1,387	13-Sep-10	UK (merchandise)
Reminder: Only a few tickets left for the CCF DC Chapter Gala! - Sept. 27, 2010	769	21-Sep-10	DC (tour)
CCF New York & Philadelphia Invitation with Dr. Laurie Marker at the Explorers Club!!	959	11-Oct-10	NY/PA (tour)
Please Join Me at Lincoln Center on October 24th!	1,105	13-Oct-10	NY (tour)
Les Orphelins du Paradise - France 2 - Dimanche 14/11 à 16:30	314	9-Nov-10	France (TV show)

Finally, and as mentioned under the Volunteers and Interns section, a new newsletter designed to maintain communication with CCF's past volunteers, "Cheetah Champs," was launched in March 2010 with a second issue published in August, both reaching approximately 750 of CCF's former volunteers.

(2) Tours

Dr. Marker's fundraising tours in the US included an accumulated total of 35 cities and 20 states in the US.

- **Spring Tour**

From 21 April to 31 May, Dr. Laurie Marker travelled to 12 states and 19 cities during her six-week USA Spring Tour 2010. This year with the onslaught of the ash clouds in the UK and Europe, Dr. Marker travelled with CCF Namibia Manager Bruce Brewer from South Africa to Brazil and then to Los Angeles to receive as co-recipient this year's prestigious Tyler Prize for Environmental Achievement –known as the "Nobel" of the environmental awards. As a leading conservationist, Dr. Marker received $100,000 for her intensive scientific research efforts in environmental sustainability with Bushblok.

Dr. Marker's fundraising tour proceeded to Arizona for the 6th Annual Run for the Cheetah in Phoenix with Claudia Whitehead and over 600 CCF supporters and runners, before driving to Tucson with events at the Reid Park Zoo and University of Arizona hosted by the John Carver Family, founders of CheetahKids.com.

Atlanta, GA was a stopover for dinner with host Dante Stephensen and supporter John Wilson before heading to New York and New Jersey with Chapter Head Ronit Kobrinski to meet with donors. As a result of the Tyler Prize Award, Dr. Marker received considerable attention and was interviewed by three major media outlets in New York City.

Before heading for California, Dr. Marker made brief stopovers in Illinois with the CCF Chicago Chapter and Nebraska at the University of Lincoln for a Seminar with Professor Larkin Powell and 100 students and faculty. In California she met with her parents, friends and family in the Sacramento area for a lecture with ambassador cheetah Kaigo and Laurie Payne. This new area brought in over 60 new

participants. Marker then headed down to the San Jose area for meetings with CCF board member, Robert Ludlow, wildlife photographer Frans Lanting, and a luncheon hosted by Gregor & Cecilia Freund.

CCF Trustee Patricia Klitgaard hosted a special donor party at Perry's to thank CCF's high-end stakeholders in the San Francisco area, followed by an evening lecture at San Jose's Happy Hollow Zoo coordinated by Donna Erikson.

In Seattle, Washington, Dr. Marker met CCF's Board member Carol Hosford and Trustee Eric Berman, as well as CCF supporter Charlie Atterbury and son Joey for an intimate dinner. While in Washington, Laurie visited Vashon Island for an evening lecture with Ellen Kritzman, Kim Farrell and John Cornelison who hosted a unique benefit for the cheetah with an African slide showcase to over 80 participants on 13 May.

Washington, DC was the next stop for a special fundraising event hosted by Nicole Petrosky and husband Kali of Cheetah Aid DC. Laurie was greeted by Columbus Zoo ambassador cheetah, Ro, and many new donors at a roof top party overlooking the city. The next day, she travelled with Allison Rogers to Middleburg, VA for a VIP evening event with Maggie Bryant's family and friends from the area, including Widget and Jim Weber.

Many Washington appointments and lectures were structured into the DC visit, including meetings held at the State Department, World Bank, ICCF, and a White House luncheon at the Navy Mess Hall with Jeff Bader and wife Rohini Talalla. Dr. Marker was also invited to a special tea hosted by the Society of Woman Geographers (SWG) with Martha Talbot and members at the Cosmos Club.

Dr. Marker, along with CCF PhD. Candidate, Ezekiel Fabiano, who was also in DC working at Dr. Steve O'Brien's lab, gave a stimulating seminar at the US-Angola Chamber of Commerce updating everyone of the recent discovery of cheetah in Angola this past spring.

Dr. Marker then flew to San Diego on 20 May for an exciting fundraising party hosted by Jordan Sachs of Jordan Couture and Judy Wheatley of Del Mar, CA. This was a VIP cheetah event with Wild Wonders ambassador cheetah, Victor, and trainer Jackie Navarro of Zoofari. Over 100 guests participated in the silent auction and photo ops with Victor. Laurie also had the opportunity to visit the San Diego Zoo, where she is now a Lifetime Member, and with *Mongabay*'s Mark Szotek for a magazine interview coming out this summer.

Before leaving southern California, Laurie stopped for a short trip to Santa Barbara to meet hostess Ann Smith and Joan Amon for an afternoon fundraiser in the Montecito area benefiting CCF. Laurie had the pleasure of meeting new members to CCF and friends, Heidi Hayes and Marie Vergotti with daughter Sheridan.

The Indianapolis Zoo was the next stop in Dr. Marker's tour to celebrate the opening of the special multi-million dollar Cheetah –The Race for Survival exhibit, funded in partnership with Tony Stewart Foundation and CCF Trustee Polly Hix and husband Tony Fair. Dr. Marker spoke to over 400 visitors and participants at the VIP Reception on 25 May. The visit in Indianapolis concluded with a benefit hosted by Gordon Wishard and wife Anne Emison for attending CCF Board members and staff, as well as hosting this year's spring CCF Board Meeting at the office of IceMiller in downtown Indianapolis. The call-in Board Meeting achieved almost 100% participation on behalf of the all the Board of Directors and Trustees with nominations for newly elected Director Claudia McMurray and Trustee Rohini Talalla.

From Indiana, Dr. Marker travelled to Dallas, Texas for the opening of Dallas Zoo's 30-million dollar exhibit called the "Giants of the Savannah" with CCF's board member, Gary Lee, who helped to build and design the new exhibit through his firm CLR Design. Hosted by CEO Gregg Hudson and Dallas Zoological Society's President Michael Meadows, Dr. Marker and CCF USA Executive Assistant Paula Martin attended the Ribbon Cutting ceremony accompanied by Brian Greene and cheetah ambassador Ro from the Columbus Zoo. The three-day tour of Dallas concluded with a dinner to benefit CCF at the home of Carol Considine in the Lakewood area, with CCF members and donors.

Dr. Marker's spring tour proved to be fruitful and with this ambitious undertaking, CCF has opened this spring three new CCF Chapters in the US: San Diego, Indianapolis, and Denver.

Also in February, CCF's International Assistant Director Patricia Tricorache presented CCF's Educational programs to ~40 zoo educators from around the country. The workshop was hosted by Brevard Zoo in Florida, which had just inaugurated a new cheetah exhibit with graphics provided by CCF. Brevard Zoo has been a supporter of CCF for several years.

- **Fall Tour**

Dr. Laurie Marker's 2010 fall lecture and fundraising tour to the United States began in Washington, D.C. and ended in New York City after visiting more than 16 cities and eight states in six weeks. At the end of her trip she was presented with the prestigious Lowell Thomas Award at the Explorers Club. This year's theme for the award was "Exploring Extinction: Is it Forever?" It was truly an honour for her to be amongst the awardees from around the world who are dedicated to the advancement of scientific research to preserve and explore the world and its species. She had the pleasure of meeting Constance Difede, Vice President for Flag and Honors of The Explorers Club; Peter Nicholson, Director of Communications, Rolex Watch, USA, Inc., and Lorie Karnath, President of The Explorers Club. CCF good friend and Chicago journalist and producer Bill Kurtis was the Master of Ceremonies for the evening.

While in the East Coast, The International Conservation Caucus Foundation (ICCF) hosted the US Congressional International Conservation Gala on September 22 in Washington, D.C. CCF was pleased to be represented by CCF Board of Directors Chair, Dr. Stephen O'Brien; Trustee Rohini Talalla; and Board member, Claudia McMurray. The Library of Congress hosted a venue for Marker's lecture: The Cheetah: A Race for Survival, which is available as a web cast on the www.loc.gov web site.

Washington was also the venue for CCF USA's annual board meeting held at the Cosmos Club. Visiting board members from the United Kingdom, as well as CCF USA Trustees and staff joined in the meetings and festivities this year. New CCF Trustee Gary Kopff and wife Judy hosted a celebratory Dessert Party at their lovely home in Cleveland Park to meet all the board members and to kick off the 2010 fall tour. Trustee Elizabeth Karch and the DC Chapter members worked tirelessly to make this year's DC Chapter's annual fundraising gala a huge success with the Columbus Zoo ambassador cheetah Reh. The Embassy of Namibia representatives Ms. Julia Imene-Chanduru, First Secretary of the Office, and Mr. Freddie U.!Gaoseb, Commercial Counsellor, as well as embassy representatives from Angola and Botswana, attended the gala which celebrated CCF's 20th anniversary hosted at the beautiful offices of Foley & Lardner.

In New York, Dr. Marker had the unique opportunity to visit with supporters and friends at her lecture, "A Look at an Apex Predator--the Cheetah--and its Importance," hosted by David Holbrooke from

Mountainfilm in Telluride, held at Lincoln Center. The Explorers Club Philadelphia Chapter hosted Dr. Marker at the Academy of Natural Sciences speaking on the topic of 20 Years of Cheetah Conservation. CCF supporters from the Philly area as well as many zoo friends and associates attended the lecture. Christine Bartos, who trained CCF scat detection dog Finn, was there along with host Christopher Gervais.

Dr. Marker visited CCF supporters during a short trip to Stuart, Florida at the home of Magalen & Jim Webert. Plans are in the works for a larger event in 2011.

On the West Coast, Dr. Marker travelled to California for the annual Wildlife Conservation Network Expo in Los Altos. Dr. Anne Schmidt-Küntzel, CCF Geneticist, joined Dr. Marker to meet Charlie Knowles and the conservationists from around the world, including actor Ed Norton --United Nations' Goodwill Ambassador for Biodiversity. Dr. Marker lectured to a full crowd of supporters the mission to save the species from extinction.

Nancy and Peter Lang of Safari West in Santa Rosa hosted CCF's annual "Celebration of Speed and Elegance" lecture and dinner. It was a great crowd and a wonderful silent auction with cheetah-themed items. African dancers and music entertained guests throughout the evening, along with costume characters created by Lex Rudd, owner and head designer of Primal Visions. Little Emily Koesters from Omaha and cheetah friends came to Safari West hand carrying her CCF donation of $2,000!

Dr. Marker flew to Los Angeles to meet with CCF USA Director Margery Nicolson, who co-hosted The G2 Gallery fundraising event in Venice, with owners Susan and Dan Gottlieb. The beautiful art gallery houses many works supporting conservation. Dr Marker was delighted to speak to everyone that evening on CCF's mission to save the cheetah and ensure its future on the planet.

Trustees Walt Bodley and Teresa Delaney participated with Dr. Marker at a lecture at the University of the Pacific in Stockton, as part of the 2010 Practitioner Speaker Series, hosted by the Global Center of Social Entrepreneurship. The lecture highlighted Bushblok and CCF's recent Tyler Prize Award.

The historic Kenwood Depot in Sonoma was the location for a special fall evening hosted by Michael and Janet Hogan with the support of Trustees Bob Page, Patricia Klitgaard, and Walt and Sandra Bodley. St. Francis Winery and 65 new friends from the area were introduced to CCF's collaborative efforts to save the cheetah in the wild.

The CCF Oregon Chapter's 10th Annual Big Cat.Big Party took place this year at the Oregon Zoo with many guests coming to support CCF and meet Wildlife Safari ambassador cheetah Taini. Chapter Head Donna Coe and CCF volunteers created a special evening of silent and live auctions to support this year's event. Benefactor Howard Hedinger graciously raised his paddle to donate $5,000 for CCF. The evening celebrated and honoured CCF's 10 years in Portland.

While travelling between coasts, Dr. Marker had the opportunity for two brief but important stopovers. She made a quick trip to Indianapolis to visit Trustees Polly Hix and Anne and Gordon Wishard to celebrate her second nomination as an Indianapolis Prize Finalist --Dr. Iain Douglas-Hamilton received the 2010 Indy Award. She also visited Chicago with Trustee Jayne Bazos and supporter Marion McCreedy, who hosted a lovely dinner party at her home for the CCF Chapter volunteers and stakeholders.

(3) Run for the Cheetah Events

Portland and Phoenix celebrated their 6th Annual Run for the Cheetah and Chicago celebrated their 3rd annual Run.

Operationally, all three runs ran very smoothly and our feedback continues to be overwhelmingly positive. Exposure, through media and advertising, particularly in Portland, was extensive. Recognition of the run itself and CCF is very high.

Fundraising pages were significantly improved and exceeded our fundraising goals. In all three markets we received increased numbers of people fundraising for us and making donations, rather than simply participating in the Run. This continues to be a path for future revenue.

Additional ways to raise monies, beyond registrants, were tapped in all three markets which helped with our bottom line profit this.

CCF combined an overall profit preliminarily of $41,000 with 1,700 participants. This is a reduction in participants but our revenue is very close to last year. The economy affected race numbers in all three markets and in one a change of venue, bad weather and an early date also affected participation. Two of three markets held steady and one increased their revenue despite less participants. We are quite pleased with our net profit given that our numbers were down. Increased sources of revenue, and hard work paid off.

All three runs were very positive and continue to grow in interest from vendors and local businesses. The catch of supporting an animal and conservation is a unique pitch. Increased synergy between the three cities was a fantastic addition to the smoothness of these runs.

Volunteers continue to return at a rate of over 90% ~ between three cities, this involves nearly 2oo people. Social media was used extensively and CCF USA's Trustee Eric Berman's help with the website was invaluable. We were all conscientious about cutting costs in all areas and this helped considerably. Fundraising pages and the board challenge are also growing considerably.

(4) Governance

The US Board of Directors had three meetings scheduled in 2010. The spring meeting was held on May 24, 2010. The Annual Board Meeting was held September 27-28, 2010 at the Cosmos Club in Washington, DC. The third meeting scheduled for December 21 was postponed due to the lack of availability of several members of the Executive Committee. An informal meeting was conducted instead, with the formal meeting to be rescheduled for January 2011.

The Board approved the Chewbaaka Society, a concept that will honour individuals who have established a Legacy Gift to CCF in their will, trust, life insurance policy, or retirement plan. The Board is currently fine tuning the legal aspects and implementation is being planned for 2011.

b) UK: CCF UK

CCF UK's Founder and Trustee Peter Stewart passed away in March after a long fight against cancer. As a result, CCF UK has gone through a re-organisation period that includes new Trustees and the re-

direction of the organisation's approach. The web site www.cheetah.org.uk is in its first stage of re-vamping with the assistance of CCF's web master Patricia Tricorache

CCF's 20th anniversary celebration was the theme for a major fundraising event held in September at the one-year-old Darwin Centre at the Natural History Museum. The High Commissioner for the Republic of Namibia, His Excellency Mr. George Liswaniso, his wife Agnes and approximately 100 guests enjoyed the wonderful auction of donated items and a sumptuous dinner, while Ngoma, a trio of African drummers and dancers entertained with their rhythmic drumming, dancing and singing. This was CCF UK's second major fundraising gala, and it surpassed everybody's expectations, with new friends and supporters joining established members.

Friends of Conservation (FOC) UK has negotiated a new collaboration with Baobab Expeditions to include CCF as part of their de-luxe travel experience.

c) France: AMIFELINS

During meetings in Europe in the spring, Dr. Marker travelled to France for the second consecutive year to lecture at Zoo Thoiry over Easter weekend. The lectures, organised by CCF's French fundraising partner, AMIFELINS, and the Zoo, did not receive the expected attendance due to bad weather. However, this visit offered Dr. Marker a good opportunity to re-connect with AMIFELINS and CCF supporters, and to continue with CCF's zoo outreach efforts. Dr. Marker also had the opportunity to meet with a few media outfits during the Zoo visit, one of which preceded a film crew visit to CCF in Namibia. AkaRoa, an organisation supporting AMIFELINS and CCF filmed Dr. Marker's visit and filmed a video to support their outreach efforts in that country.

In June, AMIFELINS set up booths at the annual Puteaux Fair and the Neuilly Center for Youth and Culture (MJC) event, "Become a player in your future...Protect your environment." The cheetah booth in Neuilly, organised in partnership with photographers Tony Crocetta and Laurent Geslin, attracted a lot of attention, especially from children who were curious and eager to learn. AMIFELINS' member Danielle Beck volunteered her talents to many children who waited eagerly to have their faces painted like a cheetah.

d) Germany: Action Campaign for Endangered Species (ACES)

CCF's German partner, ACES, represented CCF at a Nature Conservation event organised by the German-Namibian Society. The event, held at the Berlin Zoo to celebrate the 10th Anniversary of the "Twin Cities Partnership", included representatives of Namibia's Ministry of Environment and Tourism as well as various NGOs in Namibia. ACES presented CCF's activities during the lectures entitled "Protected Area Management on State and Private Land".

ACES was instrumental in facilitating the filming of the TV documentary Planetopia in Namibia, which aired in two parts on German TV in February 2010. For more information see Media section.

In addition, ACES negotiated with the German "Editions" series, which will support the work of CCF with the first edition of a photography book on Southern Africa. The book is scheduled for publication in October 2010. In addition to financial support, CCF will be featured in the book.

e) Italy: Associazione Ambiente, Storia e Natura (ASN)

CCF's 20th anniversary was the focus of a lecture by Dr. Marker at the Milan's Museum of Natural History in Italy. About 100 people (many of whom have visited CCF in Namibia) attended the lecture, during which the Namibian Honorary Consul, Dr. Petter Johannesen, spoke about Namibia, the Cheetah Capital of the World. The lecture was followed by a fundraising dinner at the museum to benefit CCF, which was organised by Prof. Elisabetta von Hoenning, Docent Linguist and CCF's Italian representative, with the support of CCF's Italian partner, ASN (Ambiente, Storia e Natura).

After a brief stop at Le Cornelle Zoo in Bergamo to meet the staff and cheetahs, Dr. Marker travelled to Florence to lecture in the magnificent Hall of Skeletons at the Museum of Zoology and Natural History "La Specola." The well-attended lecture, organised by CCF's friend and volunteer Jacopo Cresti, provided a great opportunity to meet many new supporters as well as students and professors of the Florence University's Department of Biology.

B. PR and Marketing

1. Web Presence

After the successful launch of CCF's new web site last year, focus has now shifted to taking a more active role in social networking web sites. In addition to the re-vamped Cheetah News blog and Twitter account that continues to attract new followers, CCF's "fan" page on Facebook, started in April with 866 followers, grew to 3,224 members at the end of this reporting period. Web-based social networking also continues to spread with independently created pages on Facebook: two CCF alumni (volunteers) pages and two general CCF pages, as well as one CCF Causes page which accepts donations and currently includes 9,656 members, an increase of 4,287 since 31 December 2009.

CCF's increased popularity on Facebook resulted in its selection by KrugerPark.com's Facebook community as the recipient of a portion of the proceeds of every booking. KrugerPark.com is a tour operator based in South Africa that books tours and holidays for the national parks in South Africa. CCF was chosen among seven very worthy causes, including the World Wildlife Fund South Africa, the International Anti-Poaching Foundation and Save the Rhino.

2. Other PR Efforts

The International Union of the Conservation of Nature (IUCN) featured the cheetah in their Red List Species of the Day on 4 December. This date honours the birth of Khayam, the cheetah raised by Dr. Marker in Oregon and brought to Namibia 34 years ago to conduct reintroduction research. The Species of the Day is a joint project of the IUCN Species Programme and the Species Survival Commission (SSC) to increase awareness of the enormous variety of life on our planet and to raise the profile of threatened species.

In addition, and thanks to CCF's supporter in Arizona, CheetahKids.com, CCF and Sony Online Entertainment LLC (SOE) announced in November the launch of *Wildlife Refuge,* a new game playable on Facebook that immerses players in the heart of Africa as they set out on a mission to help build a refuge and care for exotic animals. In the game, players customise their own refuge as they discover new breeds and protect this habitat from poachers and other dangers that threaten their existence. *Wildlife*

Refuge also offers players the opportunity to make a difference in real life as SOE will donate a percentage of the proceeds generated from the sale of select virtual items to the Cheetah Conservation Fund and Cheetah Kids.

Finally, Discovery Communications chose CCF USA to participate in its first annual "Creating Change" program, which provides pro bono creative expertise to nonprofits during a marathon event. At CCF's request, the Discovery team designed web ads as well as templates for print and online newsletters, all of which will be introduced in 2011. The CCF staff is extremely grateful to have been chosen to participate in this invaluable program.

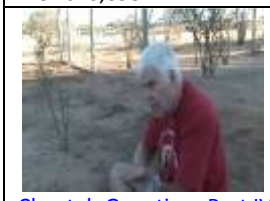
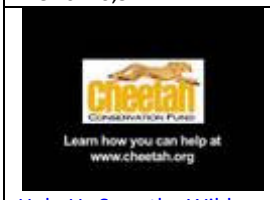
3. Advertising

Google Grants continues to donate free advertising through their popular search engine. During January-December 2010, CCF has benefited from over $65,000 worth of advertising via 8.5 million ad impressions that generated 115,497 clicks.

In late November, Trip Advisor, a worldwide web site dedicated to publicising travel destinations, offered CCF free ad placement on their web sites in exchange for a link on CCF's web site. The Otjiwarongo page where the ad appears has a monthly viewership of about 1,000.

Seven new CCF videos (Run for the Cheetah, Jeff Corwin, 2 Angola, Cheetah Census, Chewbaaka Challenge and Indianapolis Prize 2010) were posted on the CCF's YouTube.com channel during this period, and have been viewed nearly 15,000 times. Collectively, all 25 CCF videos have been viewed over 192,000 times since CCF created the YouTube.com account in August 2006. A Google Checkout button for donations is available to users since March 2008. The videos can also be seen on the CCF and CCF UK web sites. All videos have been rated five stars and have received very positive comments.

 The Indianapolis Prize 2010: Dr. Laurie Marker Added: Oct 13, 2010 Views: 1,411	 CCF 2010 Chewbaaka Challenge Added: July 06, 2010 Views: 3,064	 There are Cheetahs in Angola! (re-edit) Added: May 01, 2010 Views: 2,591	 After a long civil war: There are cheetahs in Angola! Added: April 27, 201 Views: 685
 Counting Cheetahs at the Cheetah Conservation Fund Added: April 10, 2010 Views: 755	 Jeff Corwin Introduces CCF Added: February 09, 2010 Views: 2,285	 2010 Run for the Cheetah January 21, 2010 Views: 4,283	 **2009 Year-end message** Added: Dec. 01, 2009 Views: 10,922

 **2009 Year-end message (short version)** Added: Dec. 01, 2009 Views: 2,749	 **Chewbaaka celebrates his 14th Birthday!** Added: July 10, 2009 Views: 2,972	 CCF Rhino Release Added: March 03, 2009 Views: 2,640	 Released CCF Cheetahs Tracked by GSM Collars Added: Dec. 13, 2008 Views: 4,883 views
 Sophia wants to save the Cheetah, do you? Added: December 03, 2008 Views: 6,095	 Cheetah Genetics - Part I of IV Added: November 24, 2008 Views: 1,524	 Cheetah Genetics - Part II of IV Added: Nov. 24, 2008 Views: 523	 Cheetah Genetics - Part III of IV Added: Nov. 24, 2008 Views: 458
 Cheetah Genetics - Part IV of IV (Last) Added: Nov. 24, 2008 Views: 1,018	 CCF Bushblok fuel logs (short version) Added: Nov. 09, 2008 Views: 3,262	 Message from Dr. Laurie Marker Added: Nov. 20, 2007 Views: 17,178	 CCF and Bushblok fuel logs Added: Nov. 05, 2008 Views: 1,049
 Welcome to the Cheetah Conservation Fund Added: June 18, 2007 Views: 20,922	 Cheetah Tales: Ben Rush Meets Jalani Added: October 19, 2006 Views: 13,114	 Run for the Cheetah Added: September 06, 2006 Views: 26,674	 A Message From the Cheetah Conservation Fund Added: August 26, 2006 Views: 22,646
 Help Us Save the Wild Cheetah Added: August 23, 2006 Views: 40,384			

4. Media

During this reporting period, 19 CCF-related press releases were issued (Table 14), including the announcement of Dr. Marker's research trip to Angola, where cheetah presence was confirmed after

nearly 30 years of civil war. This press release received ample worldwide coverage resulting from its being picked up by the Associated Press. Ample international attention was also given to a press release issued by Sony Online Entertainment –and re-distributed by CCF, regarding Wildlife Reserve, a new virtual online game that will benefit CCF.

Table 14. Press Releases issued between 1 Jan and 31 December 2010.

Date	Title	Distribution	Originator:
17-Jan-10	Cheetah Conservation Fund to Conduct Country-wide Health Survey of Livestock Guarding Dogs	Namibia	CCF
1-Mar-10	International Conservationists attend courses at the Cheetah Conservation Fund	Africa	CCF
16-Mar-10	Cheetah Presence Confirmed in Angola	Worldwide	CCF
13-Apr-10	Laurie Marker Named Finalist for the 2010 Indianapolis Prize	US - Africa	Borschoff PR
27-Apr-10	Cheetah Conservation Fund Education Programmes Highlight 2010 United Nation's Year of Biodiversity	Africa	CCF
3-May-10	Tyler Prize Laureate Discusses Cheetah & Habitat Conservation Reflects on Gulf of Mexico Oil Spill's Devastation to Wildlife	Local - California	Tyler Prize
5-May-10	The Gulf of Mexico Oil Spill and the Need for Alternative Fuel Sources	Worldwide	CCF
23-Jun-10	CCF Announces its 2010 Annual Fundraising Gala	Africa	CCF
19-Jul-10	CCF held its 12th Annual Fundraising Gala and Conservation Awards	Africa	CCF
10-Aug-10	Cheetah found in Swakopmund now safe at CCF	Africa	CCF
12-Aug-10	First AI Litter of Livestock Guarding Dogs Born at CCF	Worldwide	CCF
2-Sep-10	U.S. Trade Mission Visits CCF and Bushblok	Africa	CCF
11-Sep-10	CCF Joins Army Ten-Miler Youth Run	Local - DC	CCF Chapter
4-Oct-10	Award Winning Authority to Speak at the Oregon Zoo	Local – OR	CCF Chapter
5-Oct-10	Scientists Confirm the Role of Rewilding Captive Populations to Save the South China Tiger	Worldwide	Save China's Tiger
3-Nov-10	CCF Founder Receives Prestigious Lowell Thomas Award	Worldwide	CCF
7-Nov-10	Rare Kangal Puppies join the Cheetah Conservation Fund	Worldwide	CCF
24-Nov-10	Sony announces online game to benefit CCF	Worldwide	CCF
5-Dec-10	Reducing Predator Conflict During Calving Season	Namibia	CCF

- The two PR agencies representing the Tyler and the Indianapolis prizes worked closely with CCF to promote these awards. The Tyler Prize PR efforts resulted in ample coverage worldwide, and included publications and media outlets such as Discover Magazine, Los Angeles Times, Associated Press, and BBC Radio. (See **Error! Reference source not found.**).

Media Inquiries and Interviews

CCF staff handled 100 media inquiries, including 45 print (magazines/newspapers), 46 electronic (radio/ film/TV) and one media trip. These resulted in 45 published, aired or scheduled for publication/airing.

- Three advertising related for Explore Namibia, Travel Africa and Petit Fute magazines.
- Seven image requests (six of which have been published or are awaiting publication, including articles on the Indianapolis Zoo, FACES and Dogs in Canada magazines.)

- 36 print media interviews (28 published or scheduled for publication, including feature article on Namibia's Green Bay Magazine, one on the "O, The Oprah Magazine," one on "Cesar's Way" (The Dog Whisperer), five on National Geographic Kids, a full feature article on The Oregonian, as well as numerous interviews in connection with the Tyler and the Indianapolis prizes.
- Four web media interview, one of which was published by Mongabay.com in July 2010.
- 11 radio interviews including the Patt Morrison show on NPR (So. California), AgriNews on NBC (Namibia), In Your Element with Annabel Linder on CHAI FM (So. Africa), Animal House on American University Radio (DC, USA), and interviews with Radio Luxembourg, 774ABC Melbourne (Australia), Zoo Talkin' (USA) and Radio Channel Africa (South Africa).
- 35 TV/film inquiries of which two have aired or are scheduled to air: iPredator (NatGeo) and Good Morning Namibia (NBC).

CCF handled two film crews. News and Pictures Fernsehen GmbH & Co. (Germany) visited CCF in January to film a TV documentary titled Planetopia that aired in two parts on SAT1 TV Germany in February. In June, a crew from One Planet (France) shot the documentary "Save the Wild Orphans" hosted by renowned French journalist Olivia Mokiejewski. This will be a six-part documentary that aired on several international networks such as France 5 (the educational station), YLE (Finland), and Discovery Channel.

In total, the following six shows/documentaries filmed by crews in Namibia aired between January-December 2010:

Company/Title	Date shot	Media	Outcome
BBC (UK): "Inside the Perfect Predator"	July-August 2009	TV	Aired 25 March 2010 on BBC One. Announced for 6 April on Animal Planet, but not aired. http://www.bbc.co.uk/programmes/b00rfh1s#clips, http://press.discovery.com/us/apl/programs/inside-perfect-predator/
Fernsehen GmbH & Co. KG (Germany): Planetopia	21-23 January 2010	TV	Aired in two parts in February 2010. http://www.planetopia.de/archiv/news-details/datum/2010/07/11/geparden-in-not-wissenschaftler-retten-die-bedrohten-raubtiere.html
Namibian Broadcasting Corporation: Good Morning Namibia	April 2010	TV	Aired April 16 - 7:00 a.m.
FL Concepts (France): ExtinctionsTV	April 2010	TV	Aired July 26 on France 5. Interviews and teasers available at http://www.youtube.com/user/EXTINCTIONStv
Rovi Film (Germany): Jerome: The Story of a Cheetah	5-19 November 2009	TV	Aired 30 May 2010 on ARD's "W wie Wissen" Germany - http://www.rovi-film.de/index.php?go=show_video&id=v004 / http://www.ardmediathek.de/ard/servlet/content/3517136?documentId=4538704
One Planet (France): Les Orphelins du Paradise (Wild Orphans)	November 2009	TV	Aired 14 Nov 2010 on France 2 TV. Clips available at http://www.oneplanet.fr/flash.php?ref=26

Other CCF and/or Cheetah-related Coverage

CCF staff monitors media through Google's free News Alerts service. During this period, Google reported 294 articles or electronic media items in connection with CCF or its projects. All but 16 mentioned CCF and/or Dr. Laurie Marker. 86 articles were the result of CCF's pro-active media outreach, such as press

releases and announcements, with the Angola press release obtaining the most coverage: 22. Efforts by PR agencies representing the Tyler Award, the Lowell Thomas Award and the Indianapolis Prize, as well as the new cheetah exhibit at the Indianapolis Zoo, resulted in 72 articles. The remaining articles resulted from volunteers' lectures or other cheetah-related topics.

5. Book Collaborations

CCF staff worked on 15 requests for collaboration in various books (Table 15), including review and image requests. One of these, Cheetah: Speed Demon (Bearport Publishing) was published within the same period.

In January, two books authored or co-authored by CCF were self-published for internet sales: *CCF 2009 Highlights*, an excerpt of CCF's 2009 annual progress report; and *Saving the Cheetah by Managing the Conflict: International Integrated Livestock, Wildlife and Cheetah Conservation Courses.* This book was co-authored by Laurie Marker, D.Phil & Dennis Wilson, Ph.D., and gives a brief overview of an international conservation course run by CCF in Namibia that was sponsored by the Howard G. Buffett foundation. The book was made for Howard Buffett as a thank you and to show how his funding helps conserve the cheetah. Dr. Marker was also the co-author of the chapter Cheetahs and Ranches in Namibia: A Case Study in Biology and Conservation of Wild Felids, edited by Macdonald, D.W. and Loveridge, J and published by. Oxford University Press.

Table 15. Book collaborations.

Company	Book type/Title	Description	Outcome
Independent Writer		Children's book about LSGD	Visited Namibia in October to photograph kid with LSGD.
Columbus Zoo Association	"Frenemies for Life" by Johnn Becker	Review book and supply images	Launched in March 2010.
Bearport Publishing	"Cheetah: Speed Demon!" by Adam Siegel	Review children's school library book.	Published. - Cheetah: Speed Demon! (Blink of an Eye) by Natalie Lunis, Bearport Publishing Co. 2010
Independent Writer	Collection of stories about interesting interspecies bonds	Comments/quotes about the interesting relationship between dogs-cheetahs	Forwarded to Laurie.
Solow Literary Enterprises (NoCal)		Wants to write a book with Laurie Marker	Pending. Awaiting more information.
Celebrity Black Book	Celebrity Black Book 2010	Pro-active: requested edits on CCF's entry	Updated. http://celebrityblackbook.com/
National Geographic Books	"Soul of a Lion" on Marieta van der Merwe and the Harnas Foundation by Barbara Bennett	Requested quote by Laurie Marker.	Published in September 2010.
Earthwatch Volunteer	"In the Company of Cheetahs" by Sharon Neil	Permission to use photos; fact checking and foreword.	Awaiting publication.
U.S. Director, IFAW	Profiles of wildlife conservationists: "WILDLIFE HEROES" by Jeff Flocken	Requested interview with Laurie Marker if interested.	Awaiting interview set ups.
Zanichelli editore S.p.A	Textbook for Italian middle schools by Kelly Calzini	Permission to use images.	Forwarded to Laurie Marker.
Independent Writer	Dog-related careers by Kim Thornton	Image request.	Awaiting publication.
Photographers	Cheetah book in hardback coffee	Requested foreword.	Forwarded to Laurie Marker.

	table style		
Bearport Publishing	"Eco Dogs" about conservation dogs featuring a chapter about scat detection dogs, aimed at grade 3 readers.	Images of Finn and fact checking.	Edits done by CCF. Images provided by Chris Bartos (Philadelphia Zoo). Awaiting publication.
Independent Writer	Ice Castle of Fire: Orion Spence and the Explorers (65,000 words) by Ziya Altug.	Seeking collaboration for fast-paced, multicultural, middle grade novel.	Manuscript under review.
Writer/Artist	Endangered Species Book by Marv Lyons.	Contributing author request.	Under consideration.

VIII. PLANNED ACTIVITIES: JANUARY-JUNE 2011

In line with this statement our Goals for 2011 are as follows:

- *Continue intensive scientific research on cheetah health, reproduction, genetics, ecology and species survival;*
- *Create and manage long-term conservation strategies for the cheetah throughout their range, and develop and implement better livestock management practices, eliminating the need for ranchers to kill cheetah;*
- *Conduct conservation education programs for local villagers, ranchers and school children;*
- *Continue fundraising to maintain programs.*

To achieve these goals we will be undertaking the following objectives and planned activities.

A. Research

- Continue with tag-and-release programme and biomedical sampling on both, as well as research into population dynamics and cheetah densities.
- Continue with cheetah relocation research, including the use of CCF's Bellebenno farm for first stage of re-introductions. Consulting on re-introductions of cheetah in Zambia and Iran.
- Continue to collaborate with the Zoological Pathology Program of the University of Illinois, the Brookfield Zoo and the White Oak Conservation Centre on stress -related disease research.
- Continue to collaborate with the Smithsonian Institution on reproductive physiology studies.
- Continue to develop CCF's genetics lab to extract DNA from scat and work with collaborators throughout the cheetah's range.
- Continue to use trained scat sniffing dog for scat collection.
- Continue research on squamous cell carcinoma (SSC) on Livestock Guarding Dogs (tongue cancer).
- Continue ecology projects: Game/strip counts, Waterberg Conservancy annual waterhole count, Research/Education plots of grasses and bush, and further development and use of camera traps as a census technique in known and possible cheetah range areas.
- Publish peer-reviewed scientific papers on CCF's research, and continue to contribute to popular publications.
- Publish the 2010 International Cheetah Studbook.

B. Conservation

- Continue implementing strategies planned at the 2007 Eastern and Southern African strategic planning meetings with partner organizations.
- Continue working with the Large Carnivore Management Association (LCMAN).
- Help try to coordinate a Namibian National Cheetah Workshop in 2011.
- Continue working with farmers on cheetah-related issues and reducing conflict with cheetahs.
- Continue working with the Conservancy Association of Namibia (CANAM), the Waterberg Conservancy, the Greater Waterberg Complex, and various communal conservancies in wildlife and habitat monitoring, eco-tourism activities, and promoting the concept of conservancies.
- Continue to expand the Livestock Guarding Dog Programme through breeding, placement and monitoring of dogs.
- Work with the Ministries of Agriculture, Environment and Tourism, and Trade and Industry on bush encroachment-related research and bush industry development.
- Continue CCF Habitat restoration project and the production marketing and sales of Bushblok, nationally and internationally.
- Continue promoting Cheetah Country Beef.
- Attend Namibian Agricultural & Industrial Shows.
- Continue to assist other cheetahrange countries with their cheetah programs.
- Continue communications in Angola, Zambia, Mozambique and other North and West African countries on cheetah programmes.
- Continue to monitor rhinos on CCF Rhino Reserve.
- Continue Model farm operations and use farm for training programmes as well as a profit making centre.

C. Education

- Continue to expand CCF's community development programme.
- Continue to conduct educational assembly programmes in schools throughout Namibia, and distribute teacher and student materials.
- Host high school students and university students various international travelling schools for a number of days when they visit Namibia.
- Host the Earth Expeditions in cooperation with the Cincinnati Zoo.
- Host student groups in cooperation with the University of Namibia.
- Continue with student internships in co-operation with Namibia's Polytechnic, teacher training colleges, the University of Namibia, and Oregon's Global Graduate Program, and other international universities, including Master Degree students.
- Continue as a field station for Earthwatch and work with Earthwatch volunteers.
- Continue to conduct farmer and farm worker training courses in cooperation with various Namibian industry partners.
- Continue to co-ordinate and host international Cheetah Conservation Biology courses and Integrated Livestock and Predator Management courses, involving researchers and outreach/community development officers from cheetah range countries around the world in co-operation with the African Cheetah Initiative of the Howard Buffett Foundation and the Smithsonian Institution.
- Provide training to CCF's professional staff:

- Research Assistant Ezekiel Fabiano is conducting his Doctorate degree. He will continue course work in 2011 and begin his field research. Fabiano received a Sidney Byers Scholarship for Wildlife Conservation towards his studies in 2009 and 2010.
- Livestock Guarding Dog programme coordinator Gail Potgieter will complete field work and write up her Master's degree thesis degree on the use of Livestock Guarding Dogs.

D. <u>Fundraising</u>

- CCF Executive Director to travel to the US, UK and EU for fundraising and lectures.
- Continue developing CCF USA, CCF UK as well as the development of international fund raising arms in Germany, France, Holland, Italy and Japan.
- Identify candidates to lead Cheetah Conservation Fund Canada.
- Begin an endowment fund for CCF.
- Organise CCF Namibia's annual fundraising dinner for July 2011.
- Continue to host national and international journalists and film crews.
- Increase local sponsorship opportunities.
- Continue to develop eco-tourism at CCF through marketing: Bellebenno Safaris, Elandsvreugde Safaris, Little Serengeti, Cheetah Runs, and the Babson Guest House.

Continue planning the development of a high -end tourism tented camp at CCF.