2022 Annual Progress Report

Reporting Period

January-December 2022

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I. Executive Summary

With the complete lifting of restrictions imposed by COVID-19, our research, education, conservation and capacity building programs were able to continue as before the pandemic. We had several success stories in 2022 and perhaps the most historically noteworthy event is that of the translocation of eight Namibian cheetahs to India in which CCF had a direct role to play. After 12 years of consultation with the government of India and their scientists on how to bring cheetahs back to the landscape, on 16 September 2022, the project finally came to fruition with the gift from the Government of Namibia of eight cheetahs to India. I was honored to be managing this historic relocation effort on behalf of Namibia.

In addition to the 8 cheetahs that were part of the India relocation project, CCF's rewilding program released 8 additional more cheetahs locally, for a total of 16 cheetahs, 9 male and 7 female. Another success story of CCF's rewilding program is that of Hella, a captive raised cheetah which after more than a year of being released into the wild gave birth to 4 healthy cubs, 1 male and 3 female. The resident cheetah population at CCF Namibia had decreased to 26 individuals as of 31 December 2022, the lowest it had been in the last 10 years – what a way to celebrate another decade of cheetah conservation!

Other highlights for 2022 include a first time visit of a Somaliland delegation to Namibia in July, which consisted of; Somaliland's Minister Shukri H. Ismail of the Somaliland Ministry of Environment and Climate Change (MoECC); Minister Mohamoud Hassan Saad, Minister of Trade and Tourism; Minister of Parliament Mubarak Musa Ismail, Chairman of the Committee on Environment, Natural Resources, Production and Energy at Somaliland House of Representatives; Head of Mission to the United States, Bashir Goth; and Fatima Saeed, CCF's Senior Advisor to Parliament. The delegation learned about Namibian conservation policies and about the daily operation of CCF's world-renown Centre in Otjiwarongo. The Somaliland delegation also visited Erinidi Private Wildlife Reserve, Etosha National Park, Twyfelfontein, and conservancies in the Kunene region and the CCF Centre. They met with representatives from the Namibian government, , NACSO (a conservation NGO consortium), and trade groups in Windhoek. In mid-December, CCF led a similar delegation to Kenya on a five-day tour together with Kenyan CBNRM consultant Fiesta Warwina and Mary Wykstra, the Executive Director of Action for Cheetahs Kenya (ACK).

In Kenya, the delegation visited Amboseli National Park, Tawi Conservancy, Kalama Conservancy, the Save The Elephants Camp in Samburu Game Reserve, and the BigLife Foundation (BLF) Headquarters. The goal of both tours was to transfer institutional knowledge and experience about CBNRM, eco-tourism, and the development of concessions around protected areas. The Somaliland government is developing their own model to meet the needs of nomadic pastoral communities while mitigating threats to wildlife, with a focus on the cheetah.

The Life Technologies Conservation Genetics Laboratory continued under Dr Anne Schmidt-Küntzel and continues to be an official placement for 4th year undergraduate students from the University of Namibia (UNAM) and Namibia University of Science and Technology (NUST), allowing students to earn credits for their internship at the CCF laboratory. The laboratory also trains recent graduates through its internship programme. Camryn van Wyk from NUST joined the laboratory in October 2022 for a 4-weeks placement as part of NUST's Work Integrated Learning course. Dr Kimberly Johnson a retired Medical Doctor volunteered in the laboratory in July for 6 weeks.

Our Scat Detection team covered a total of 453 km on and offsite, collecting a total of 250 scat samples from potentially 14 different species, and 84 of those scat samples were identified as target species in the field (48 cheetah, 36 African wild dog). The team successfully trialed the systematic 2021 'Gobabis Project 'design in the Ondjou Communal Conservancy and found that the African wild dog was the main species of conflict in that area.

The Ecology team continued to monitor the weather and game on CCF property. The annual waterhole count was conducted on 28 July with the help of members from Earth Expeditions course, after a two year absence due to the pandemic. A total of 41 waterholes were sampled through direct observation by

volunteers/intern/staff and by camera trap. A total of 1,398 individuals from 21 different species were counted, most of which were observed at Elandsvreugde, Bellebenno and Osonanga.

As part of CCF's ongoing research activities, the Biomass programme together with other local and international partners acquired an EU grant that investigates a torrefaction process using superheated steam. In March 2022, CCF hosted the "6 month" meeting of all 15 partner organizations (4 Namibian, 11 other).

Professor Manuel Martin-Vivaldi from the Universidad de Granada along with his two students returned to CCF in September to continue his study on hornbills and hoopoes. Dr. Mark Stanback also visited to continue his long-term research on hornbills after a two-year absence imposed by COVID-19.

Thirteen journal papers and two book chapters were published by CCF staff and collaborators during this reporting period, two of which were part of student projects.

To date we have placed 719 dogs through our Livestock Guarding Dog (LGD) program. With a three year waiting list for farmers applying for one of our LGD, the programme has become an effective means to promote coexistence with cheetahs and other predators. This year 32 puppies were born and 42 were successfully placed on farms. The placed puppies include those born the previous year.

Tourism in Namibia and at CCF is recovering very well post-pandemic. CCF hosted 9,891 visiting tourists representing a 298% increase from 2,512 tourists in 2021. A similar increase was recorded in revenue for all our centre-based activities and accommodations.

The publication of the Red Data Book, which represented five years of work between LCMAN, the Namibian Chamber of Environment (NCE) and the Ministry of Environment, Forestry and Tourism (MEFT) and comprises the 34 terrestrial Namibian carnivore species, was published and we attended the launch of the book on 24 November. Dr. Laurie Marker and CCF staff Dr. Anne Schmidt-Kuentzel, Matti Nghikembua and Lauren Pfeiffer are co-authors for the chapters on cheetahs and African wild dog, while Stijn Vershueren was acknowledged for his contribution on the African wild dog chapter.

Our work in the Greater Waterberg Landscape communal conservancies kick-started with the rabies vaccination campaign whose primary goal is to vaccinate domestic pets (dogs and cats) against rabies to join in the World Organization for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO) and the Global Alliance for Rabies Control (GARC) in their Global Strategic Plan 'Zero by 30'. This Strategy aims to eliminate rabies death cases in humans by 2030. This year we vaccinated 1,306 animals of which 997 were dogs and 309 were cats, showing an increase in the number of vaccinations when comparing with the year 2019 as a baseline.

CCF East Carnivore Conflict Field Station continued to work with livestock farmers and building relationships with stakeholders in our efforts to assist affected communities with human-wildlife conflict issues, especially with cheetahs. In our most recent project at the field station, the Predator Early Warning System (EWS) project, which was launched in August 2021, 24 farmers covering 57 farms have signed a memorandum of agreement. The aim of the EWS project is to minimize HWC involving cheetahs on these farms by serving as an early warning system through the GPS collars that transmit information via email, SMS or WhatsApp when there is a breach of the virtual fence.

Several local schools participated in CCF's Future Conservationist of Africa (FCA) programme. A total of 10,855 Namibian learners and 428 teachers participated in our distance, outreach and centre-based programmes. We also hosted two overnight international groups; members of the Earth Expeditions course, which resumed this year after a two-year hiatus imposed by COVID-19, and the University of Nebraska. CCF also visited 17 villages identified as HWC areas and 225 farmers and community members participated in the Future Farmers of Africa (FFA) programme.

Work in Somaliland continues to expand on the capacity building, infrastructural development, and promotion of regional cooperation with other countries of the Horn of Africa to stop the Illegal Wildlife Trade (IWT). This year had its challenges especially with escalation of confiscations of cheetah cubs from the IWT. CCF recorded 19 events related to cheetah poaching, trade, and trafficking involving at least 65 cheetahs.

Sadly, we also discovered for the first time through one of the confiscations that local Somalilanders held cheetah cubs as pets for themselves. This is preliminary evidence that exotic pet ownership is a practice that even locals desire. We will need to monitor this and revise our messaging to cover ownership and not only poaching for sale to other countries. As of 31 December 2022, CCF Somaliland was caring for 87 cheetahs, one leopard and one caracal.

CCF Somaliland was involved in the majority of confiscation cases, working directly with the relevant authorities. Principal Legal Intelligence/Cheetah Illicit Trade (LICIT) activities in 2022 included training workshops and community awareness campaigns. After several pandemic-related postponements, CCF and partners were able to hold the final two of three project training/capacity building workshops in 2022. One workshop, which provided wildlife-specific law enforcement training for participants from Ethiopia, Somalia, and Yemen, was held in Addis Ababa, Ethiopia in February 2022. The second workshop, focused on building cross-border cooperation between Ethiopia and Somaliland, took place in Jijiga, Ethiopia, in June, and followed up an initial cross-border meeting held in 2020.

We are grateful for all the grants CCF received to stop the illegal wildlife trade during this reporting period. These include;

A follow-up grant from UK DEFRA following the success of LICIT-1, to deliver our project proposal named LICIT-II, or Legal Intelligence and community Governance for Cheetah Illicit Trade. LICIT-II will run for 3 years from July 2022 to June 2025 and will be implemented with two partners – Legal Atlas and TRAFFIC. It will enhance national and regional capacity in the Horn of Africa to fight wildlife crime by leveraging gains made through LICIT1.

A first-time EU grant for CCF Somaliland to merge established anti-trafficking and protected area methodologies to reduce wildlife trafficking and forest crime. The project will run for two years, June 2022 – May 2024.

Another first for CCF Somaliland, our Wildlife Crime Program received funding to conduct work through the US Fish and Wildlife Service Species Conservation Catalyst Fund opportunity. This 5-year grant brings together CCF's Wildlife Crime, Genetics and Research, and Ecology Programs in a joint endeavor.

An IUCN grant to support CCF's project in the Horn of Africa to eradicate illegal trade in cheetah through a two-year grant. The objective of the proposed project is to "To mitigate human-wildlife conflict and eradicate illegal trade in cheetah while building resilience and creating better livelihoods for people in northwestern Somaliland".

CCF Somaliland made great progress in the construction of its new facility to hold the cats in a better, more naturalistic environment. The new Cheetah Rescue and Conservation Centre is very close to being operational. Buildings have been completed including a manager's house, four 4-room staff houses, a staff kitchen/meal house, a Veterinary Clinic and cub nursery, meat room and barn, as well as a solar power system and batteries to run the operations. Cheetah compounds have been completed ranging in size from 2 ha to 8 ha.

CCF's work is funded through donations, grants and eco-tourism. I hope you will continue to support the successful research, education, and conservation programs including the fight against Illegal Wildlife Trade. Saving the cheetah means saving the world. Won't you join us?

Laurie Marker, DPhil.
Founder and Executive Director

II. Organisational Structure

The Cheetah Conservation Fund (CCF) is an international organisation with registered not-for-profit organisations in Namibia, the United States, Canada, the United Kingdom, Australia and Italy. In addition, CCF has Memoranda of Understanding with partner fundraising organisations in the Netherlands, France, and Germany.

CCF's International Research and Education Centre in Namibia is the primary base for all of CCF's global activities. In 1991 CCF became a Namibian Voluntary Trust and in 2002 was registered as a not-for-profit Namibian Section 21 Company. CCF's Namibian Board of Directors is comprised of leaders in the local community, businesses, 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 aided by short-term volunteers and students who assist with daily operations and data collection.

The CCF Centre includes the farms Elandsvreugde, Osonanga (two sections), Boskop (Khayam's Kopje), Cheetah View, Bellebenno, Janhelpman, Bynadaar, Padberg , and Otjenga totalling 58,067 hectares. CCF's Centre is located in prime cheetah habitat and a wildlife-friendly area, with many neighbouring farmers who believe in conservation ethics. This ensures a large prey population, which is important for the cheetah population and serves to provide a model for farmers to demonstrate that they can live harmoniously with cheetahs.

CCF is an active member of the Waterberg Conservancy, which 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 that in turn provides habitat and prey base for the cheetah. CCF also sits on the Steering Committee of the Greater Waterberg Landscape, an area comprising 16,000 km^2, or close to 2 million hectares, around the Plateau and in Hereroland.

III. Research

During 2022, the Cheetah Conservation Fund continued working towards achieving its research objectives and strengthening collaborative efforts. Research continued in overall health and genetics, ecological surveying, cheetah releases, and ecosystem research.

A. Population Dynamics

As of end of December 2022, the number of CCF's resident captive cheetahs has decreased to 26 individuals (12M, 14F), compared to December 2021, 32 individuals (16M, 16F).

Throughout 2022, there were six deaths (4M, 2F), one birth (1M, 3F), 17 transfers in (9M, 8F), and 16 transfers out (9M, 7F).

The 6 (4M, 2F) deaths were:

- Daenerys (AJU1669) died on 12 February due to septic infection in the bone of her broken leg
- Nefertiti (AJU2062) died on 17 February due to gastric blockage
- Ron (AJU1473) was euthanized on 28 February due to old age and organ failure
- Khayjay (AJU1602) died on 5 March due to gastric/intestinal tumour
- Talisker (AJU1909) died on 5 August due to capture myopathy
- Scarface (AJU2056) died on 25 September due to septic shock

The one birth (1M, 3F) was:

- Hella (AJU1785), caught from Erindi Private Game Reserve and destined to go to India, but surprised us all by giving birth to four healthy cubs. She stayed at our quarantine pens, until the cubs were big enough to be moved back to Erindi Private Game Reserve with her.

The 17 (9M, 8F) transfers in were:

- Teja (AJU2105), Kora (AJU2107) and Shy (AJU2106) came in on 31 March, they were cubs of one of our released females, Calypso (AJU2063), who passed away from a snake bite, we found the cubs via her GPS points. All were at the time just one month old and came from Farm Morgan in Gobabis.
- Two adult males (AJU2151 and AJU2152) came in on 12 May from Farm Quinta in Gobabis.
- One adult male (AJU2153) came in on 13 July from Farm Summerdown in Gobabis.
- Aasha (AJU2154) came in on 16 July caught on Farm Okanenembandi next to CCF property.
- One adult female (AJU2155) and two subadult cubs, one male (AJU2157), one female (AJU2156) came in on 27 July from Farm Selborne in Gobabis.
- Hella (AJU1785), Oban (AJU1908), Talisker (AJU1909) and Tbilisi (AJU2104) came in on 4 August from Erindi Private Game Reserve for quarantine purposes in preparation for India transfer
- Kaveri (AJU2158) came in on 9 August Farm Okatjomboa in Gobabis, as an approximately two month old orphaned cub

- Freddie (AJU2066) and Elton (AJU2067) came in on 12 August captured on CCF property for quarantine purposes in preparation for India transfer

- Aasha (AJU2154) came in on 19 August caught again on Farm Okanenembandi next to CCF property.

The 16 (9 M, 7F) transfers out were:

- Two adult males (AJU2101 and AJU2102) were released to Etosha Heights Reserve on 16 February. They came to CCF 28 December 2021

- Two adult males (AJU2151 and AJU2152) were released to Etosha Heights Reserve on 28 June

- Aasha (AJU2154) was released on Farm Elandsvreugde/CCF on 17 July

- Two adult male (AJU2153) was released back onto Farm Summerdown in Gobabis on 20 July

- Two Adult female (AJU2155) and two subadult cubs, one male (AJU2157), one female (AJU2156), released in Namib-Naukluft National Park by MEFT on 16 August

- Oban (AJU1908), Tbilisi (AJU2104), Freddie (AJU2066), Elton (AJU2067), Asha (AJU2154), Siyaya (AJU2017), Savannah (AJU1900) and Sasha (AJU1773) were transported from CCF headquarters to Hosea Kutako International Airport for transport to India for rewilding on 16 September

- Hella (AJU1785) and her four cubs (1 male, 3 females) were transferred to a boma in Erindi Private Game Reserve on 30 December

B. Medical Examinations

Between 1 January and 31 December 2022, CCF performed a total of 53 medical examinations under anaesthesia on 33 individuals (19M, 14F) (Table 1); Six (3M, 3F) of these cheetahs and an additional 11 (4M, 7F) also received blood draws without anesthesia (Table 2), leading to a total of 44 (23M, 21F) individuals with a medical workup. Vaccinations of resident cheetahs and overall health evaluations are also routinely performed in a trap cage without anesthesia.

Of the 44 animals examined during this time period, 21 (8M, 13F) are captive individuals, 12 (7M, 5F) cheetahs were either release cheetahs, offspring of release cheetahs, or received examinations in preparation of a release, and 11 (8M, 3F) cheetahs were of wild origin and were or will be released back into the wild as soon as their age and condition allow.

Eight cheetahs (5M, 3F) died during this time period and their necropsies were performed. Non-cheetah carnivore examinations and necropsies were also performed.

1. Examinations under Anaesthesia

Each cheetah that is examined under anaesthesia by CCF, both captive and wild, is assessed for general health and fitness. The examinations follow standard protocols for health assessment, measurements, and sample collection. Male examinations include semen collection and female examinations include the collection of vaginal swabs. The semen is analysed, and sperm frozen viably; all samples are stored in the Genome Resource Bank (GRB). During this reporting period CCF performed 53 examinations under anaesthesia on 33 individuals (19M, 14F) (Table 1).

Table 1: Summary of medical examinations performed under anaesthesia on wild and captive cheetahs during the reporting period, in chronological order from 1 January – 31 December 2022.

ID	Sex	Name	Exam date	Reason for exam

AJU1669	F	Daenerys	3-Jan-2022	Medical
AJU2101	M	AJU2101	24-Jan-2022	Wild
AJU2102	M	AJU2102	24-Jan-2022	Wild
AJU1898	M	Ben	3-Feb-2022	Collaring
AJU1779	M	Max	3-Feb-2022	Collaring
AJU1783	M	Loki	3-Feb-2022	Collaring
AJU1786	M	Thor	3-Feb-2022	Collaring
AJU2062	F	Nefertiti	5-Feb-2022	Medical
AJU1669	F	Daenerys	5-Feb-2022	Medical
AJU1669	F	Daenerys	10-Feb-2022	Medical
AJU1669	F	Daenerys	12-Feb-2022	Medical
AJU1602	M	KhayJay	24-Feb-2022	Medical
AJU1602	M	KhayJay	26-Feb-2022	Medical
AJU1602	M	KhayJay	1-Mar-2022	Medical
AJU1771	F	Bella	3-Mar-2022	Medical
AJU1602	M	KhayJay	3-Mar-2022	Medical
AJU1601	M	Peter	4-Mar-2022	Medical
AJU1908	M	Oban	16-Mar-2022	Collaring
AJU1780	M	West	16-Mar-2022	Collaring
AJU1900	F	Savannah	28-Mar-2022	Medical
AJU2057	F	Old Lady	11-Apr-2022	Medical
AJU2151	M	AJU2151	20-May-2022	Wild
AJU2152	M	AJU2152	20-May-2022	Wild
AJU2151	M	AJU2151	1-Jun-2022	Collaring
AJU2152	M	AJU2152	1-Jun-2022	Collaring
AJU2152	M	AJU2152	8-Jun-2022	Dental
AJU1785	F	Hela	15-Jun-2022	Collaring
AJU2154	F	Aasha	16-Jul-2022	Entry
AJU2153	F	AJU2153	16-Jul-2022	Entry
AJU1603	F	Tiger Lily	18-Jul-2022	Medical
AJU2153	F	AJU2153	18-Jul-2022	Dental
AJU2155	F	AJU2155	2-Aug-2022	Entry
AJU2156	F	AJU2156	2-Aug-2022	Entry
AJU2157	M	AJU2157	2-Aug-2022	Entry
AJU1909	M	Talisker	4-Aug-2022	Medical
AJU1908	M	Oban	4-Aug-2022	Medical
AJU1785	F	Hela	4-Aug-2022	Medical
AJU1922	F	Nandi	5-Aug-2022	Medical
AJU1908	M	Oban	12-Aug-2022	Medical
AJU2066	M	Freddie	13-Aug-2022	Re-collaring
AJU2067	M	Elton	13-Aug-2022	Re-collaring
AJU1783	M	Loki (Mike)	15-Aug-2022	Medical
AJU1780	M	West	16-Aug-2022	Management
AJU2017	F	Siyaya	18-Aug-2022	Collaring
AJU2154	F	Aasha	26-Aug-2022	Management

AJU2104	F	Tbilisi	26-Aug-2022	Management
AJU2104	F	Tbilisi	12-Sep-2022	Re-collaring
AJU1773	F	Sasha	12-Sep-2022	Collaring
AJU1900	F	Savannah	12-Sep-2022	Collaring
AJU1749	M	Koya	5-Nov-2022	Medical
AJU2163	F	Daylight	9-Nov-2022	Entry
AJU2105	M	Teja	17-Dec-2022	Medical

2. Examinations without anaesthesia

Most of the captive cheetahs at CCF have been trained to go into a squeeze cage, which allows the veterinary team to do a basic visual examination, administer vaccines and basic treatments, or draw blood without anaesthesia. Small cubs can also be examined with physical restraint and an anaesthesia may therefore not be necessary.

CCF performed several blood draws on 17 (7M, 10F) (Table 2), performed health evaluations, and treated wounds gastritis and pneumonia in several cheetahs. Physical exams and vaccinations of resident cheetahs are performed in catch cages. Resident cheetahs are vaccinated against rabies and triple feline (Rhinotracheitis, calici and panleukopenia virus) using a killed vaccine and overall health visual evaluations are performed weekly.

Table 2: Summary of voluntary blood collection on captive cheetahs from 1 January – 31 December 2022.

ID	Sex	Name	Age	Collection date/frequency
AJU1473	M	Ron	16 years old	Monthly – until euthanized
AJU1581	M	Mischief	13 years old	Monthly
AJU1669	F	Rainbow	10 years old	Every 3 months
AJU1771	F	Bella	6 years old	27-Jan-2022
AJU2057	F	Old lady	15 years old	Monthly
AJU2056	M	Scarface	13 years old	Every 3 months - until animal died
AJU2058	M	Al Pacino	13 years old	Every 3 months
AJU1600	F	Senay	12 years old	Monthly
AJU1601	M	Peter	12 years old	Monthly
AJU1603	F	Tiger Lilly	12 years old	Monthly
AJU1582	F	Polly	13 years old	Every 3 months
AJU1602	M	Khayjay	12 years old	Monthly - until animal died
AJU2105	M	Teja	1 month old	Entry check up on cub
AJU2107	F	Kora	1 month old	Entry check up on cub
AJU2106	F	Shy	1 month old	Entry check up on cub
AJU2158	F	Kaveri	2 months old	Entry check up on cub
AJU1641	F	Aurora	10 years old	Every 3 months

3. Health-Related Medical Examinations: Captive Cheetahs

In 2022, 21 captive cheetahs (8M, 13F) received a health-related medical examination. Of these, one also received a dental check-up. Nine (2M, 7F) consisted of a voluntary blood draw without anesthesia and do not have associated case descriptions. Details of the cases of the 12 remaining captive cheetahs (6M, 6F) and their on- and off- site procedures are provided hereafter in order of ascending AJU numbers.

- Resident male AJU1473 (Ron) was 17 years old and showed advanced age-related signs since December 2021, such as arthritis, chronic kidney disease, and fly strikes due to the lack of grooming. In addition to receiving a number of medications to address the medical issues, he was receiving fluids daily, his meat was minced and split into multiple meals per day. His quality of life was quickly decreasing and the decision to euthanize him was made on 28 February 2022.

- Resident male AJU1601 (Peter) was anesthetized for blood collection on 4 March 2022 to serve as blood donor to male resident sibling AJU1602 (KhayJay).

- Resident male AJU1602 (KhayJay) had a swollen and bloody spot on his neck on 12 February 2022 that was cleaned without anesthesia for a couple of days. Since 15 February 2022, his water consumption increased and starting on 18 February 2022 his appetite reduced. Since his food intake was insufficient, he was anesthetized on 24 February 2022 for diagnosis using ultrasound and radiographs, and a dental cleaning. He continued deteriorating so another workup was done on 26 February during which an orogastric tube was inserted to reduce large gas volumes identified on x-ray. On 1 March 2022 a feeding tube was placed as he was still not eating sufficiently. An exploratory laparotomy revealed a considerable amount of fluids in his abdomen, a lot of intestinal attachments and necrotic fat in the mesentery and omentum. On 3 March 2022, a new feeding tube was placed. Due to worsening anemia a blood transfusion was performed on 4 March 2022 without anesthesia. Due to not responding to treatment, rapid deterioration and blood values showing kidney and liver deterioration, he was euthanized on 5 March 2022. During necropsy an exceedingly large mass of necrotic adipose tissue was found around his intestines, many adherences in small and large intestines.

- Resident female AJU1603 (Tiger Lily) showed signs of loss of sight (e.g., bumping into fences), and lesions to both eyes were seen. She was anesthetized on 18 July 2022 (same day) for better examination. A fluorescein stain test revealed corneal ulceration in both eyes, which likely caused by a spitting cobra. She was put on antibiotics and anti-inflammatories for 3 weeks and regained sight in both eyes over the duration of the treatment.

- Resident female AJU1771 (Bella) had difficulty eating and complications from palatine erosion were suspected. A workup was performed on 3 March 2022 where a palatine perforation was confirmed and addressed: the corresponding lower-left molar (309) was filed down to avoid further erosion and an attempt to close the opening was made.

- Resident male AJU1749 (Koya) got injured when fighting (and killing) a baboon that had entered his enclosure. A workup was done on 5 November 2022 and his wounds were cleaned and dressed with one wound requiring stitches.

- Resident female AJU1900 (Savannah) was drooling, with a slightly swollen left upper lip, and constant chewing as if something was stuck in her mouth. After 3 days without improvement a quick workup was performed but nothing unusual was found and the issue resolved spontaneously after a couple of days.

- Resident female AJU1922 (Nandi) was anesthetized on 5 August 2022 for a blood donation to second generation release male (AJU1909).

- Resident male AJU2056 (Scarface) was severely depressed with a distended abdomen on 24 September 2022. An ultrasound was performed and free fluid was observed. He passed away a few

hours later. A necropsy was performed and septic peritonitis secondary to a perforating gastric ulcer diagnosed as cause of death.

- Resident female AJU2057 (Old lady) had an excessive amount of fly bite wounds and maggots on her rear end that could cause complications if not addressed promptly. For that reason, on 11 April 2022, a workup was performed to clean all these wounds and get rid of the maggots.

- Resident female AJU2062 (Nefertiti) was limping for a couple of days in February 2022. X-rays were taken during anesthesia on 5 February 2022, without finding an abnormality that could be causing the limping, she slightly improved with anti-inflammatories (NSAIDs). She died on 17 February of unrelated causes.

- Resident male AJU2105 (Teja) was found with a severely swollen left eye on 17 December 2022. He was anesthetized on the same day and the eye was flushed and examined. A large corneal ulcer was found as well as pin-point bleeding on the surface of the third eyelid and a contusion on the medial surface of the upper eyelid. Injury most likely resulted from trauma to the eye. He was put on antibiotic eye ointments and anti-inflammatories.

4. Released Cheetah Examinations

In 2022, 12 release-related cheetah (7M, 5F) examinations were performed. Details of on- and off- site procedures are provided hereafter in order of ascending AJU numbers.

- Release female AJU1669 (Daenerys), was returned to captivity in February 2021 due to a fibula fracture and dislocated tibia-tarsus articulation. After unsuccessful surgical procedures, an orthopedic specialist, Dr. Margraff, performed an immobilization of the joint (arthrodesis) and placed an external fixator. She was anesthetized to clean the surgical wound on 5, 10 and 12 February 2022. She developed severe osteomyelitis that didn't respond to the broad-spectrum antibiotic therapy, so it was decided to amputate the extremity on 13 February 2022. However, the infection had already spread to the blood and during the anesthesia, she passed away due to septic shock.

- Release candidate males AJU1779 (Max), AJU1780 (West), AJU1783 (Loki), AJU1786 (Thor), and AJU1898 (Ben) were recollared on 3 February 2022 and 16 March 2022 in preparation for their release into Erindi Private Reserve (hereafter Erindi) on the 16 March. AJU1780 was recollared on 16 August 2022.

- Release female AJU1785 (Hela) was recollared in Erindi on 15 June 2022 and re-captured on the 4 August 2022 to enter quarantine in preparation for potential re-introduction to India. On the 25 August 2022, AJU1785 gave birth to 4 cubs AJU2159, AJU2160, AJU2161 and AJU2162 (1M, 3F) and therefore returned to Erindi on 30 December 2022 for a soft release into her past home range.

- Captive females AJU1773 (Sasha) and AJU1900 (Savannah) were selected for the re-introduction to India. They were anesthetized on 12 September 2022 and a pre-travel veterinary examination including sample and measurement collection, as well as collaring were performed. They were relocated to India on 16 September 2022.

- 2nd generation release male AJU1908 (Oban) was recollared on 16 March 2022 in Erindi. AJU1908 was re-captured on 4 August 2022 to enter quarantine in preparation for re-introduction to India. On 12 August 2022, AJU1908 was anesthetized and a pre-travel veterinary examination including sample and measurement collection, as well as collaring were performed.

- 2nd generation release male AJU1909 (Talisker) was captured at Erindi on 4 August to enter quarantine in preparation for re-introduction to India. At capture AJU1909 went into distress and was hyperthermic and hyperventilating, he was stabilized and transported under tranquilization. On the afternoon of 5 August 2022, he went into severe distress and was comatose; he passed away from the complications associated with capture myopathy despite intense efforts to resuscitate him.

- Release female AJU2017 (Siyaya) was selected for the re-introduction to India. She was anesthetized on 18 August 2022 and a pre-travel veterinary checkup including sample and measurement collection, as well as collaring were performed. She was relocated to India on 16 September 2022.

5. Wild Cheetah Examinations

In 2022, examinations were performed on 11 wild cheetahs (8M, 3F). Details of on- and off- site procedures are provided hereafter in order of ascending AJU numbers.

- Wild males AJU2066 (Freddie) and AJU2067 (Elton) were captured on 12 August 2022 and entered quarantine in preparation for their translocation for re-introduction to India. They received their pre-travel health examination and were collared on 13 August 2022 and relocated to India on 16 September 2022.

- Wild males AJU2101 and AJU2102 were captured on a farm. A general veterinary check, including sample and measurement collection, and collaring were performed on 24 January 2022. They were translocated and released in Etosha Heights on 16 February 2022.

- Wild males AJU2151 and AJU2152 were captured on a farm. A general veterinary check, including sample and measurement collection, was performed on 20 May 2022. They were collared on 1 June 2022, and on 8 June AJU2052 went for a dental procedure. After a successful recovery, both males were released in Etosha Heights on 28 June 2022.

- Wild male AJU2153 was captured on a farm. A general veterinary check, including sample and measurement collection, and collaring were performed on 16 July 2022. AJU2153 was taken for a dental procedure on 18 July and after a successful recovery, was released back onto the farm of capture.

- Wild female AJU2154 (Asha) was captured on a farm. A general veterinary check, including sample collection and measurements, and collaring were performed on 16 July 2022. AJU2154 was released on 16 July but re-captured on the same farm as the first capture. She was hence selected for re-introduction to India and placed in quarantine in preparation. On 26 August 2022, AJU2154 received her pre-travel health examination (including pregnancy diagnosis ultrasound), and was collared.

- Wild cheetahs AJU2155(F), AJU2156(F) and AJU2157(M) were captured on a farm. A general veterinary examination including sample collection and measurements was done on 2 August 2022, the cheetahs were released into the Naukluft mountains by the Ministry of Environment, Forestry, and Tourism on 16 of August.

- Wild female AJU2163 (Daylight) was captured on a farm in Gobabis district. A general veterinary check, including collaring, sample collection and measurements were done at a clinic in Gobabis on 9 November 2022. The female was released on another farm in the same district on the same day.

6. Dental Procedures on CCF's Wild and Captive Cheetahs

In 2022, dental procedures were performed on two wild male cheetahs (Table 1):

- Wild male AJU2152 was transported to Windhoek Animal Hospital on 8 June 2022 to perform a dental work up on his broken bottom right canine, it was cleaned and a root canal was performed.

- Wild male AJU2153 was taken to the local DeHaast dental clinic on 18 July 2022 for a dental work up on his broken bottom right canine, it was cleaned and a root canal was performed.

7. Deaths, Euthanasia, and Necropsies

In 2022, eight (5M, 3F) resident and wild cheetahs were euthanized (Table 3). Animals that were found dead without a case history are described here.

Table 3: Summary of animals that died (natural mortality and euthanasia) and/or were necropsied in 2022, ordered by date of death with details regarding date of necropsy, age at death and cause of death.

AJU#	Sex	Name	date of death	date of necropsy	Age at death	Cause of death
AJU1669	F	Daenerys	13-Feb-22	14-Feb-22	5 years	Septic shock
AJU2062	F	Nefertiti	17-Feb-22	17-Feb-22	1.5 years	Found dead- Gastric blockage
AJU1473	M	Ron	28-Feb-22	28-Feb-22	17 years	Euthanasia - Old age, life quality
AJU1602	M	KhayJay	05-Mar-22	05-Mar-22	12 years	Euthanasia - Hepatic lipidosis, renal failure, intestinal tumor
AJU2063	F	Calypso	23-Mar-22	11-Apr-22	8 years	Died in the wild, unknown cause
AJU1909	M	Talisker	5-Aug-22	6-Aug-22	4 years	Capture myopathy
AJU1783	M	Mike(Loki)	16-Aug-22	17-Aug-22	4 years	Euthanasia - Lion attack, severed spine
AJU2056	M	Scarface	25-Sep-22	25-Sep-22	13 years	Septic peritonitis secondary to a perforated gastric ulcer

- Resident female AJU2062 (Nefertiti) was active and bright the day before she was found dead. Her death was attributed to a severe stomach gastric blockage of hay and grass on 17 February 2022.

- Wild female AJU2063 (Calypso) was 8 years old and her carcass was found on 11 April 2022 after her collar indicated a lack of movement. Necropsy was performed but due to the advanced state of decomposition of the carcass (>10 days), no final conclusions could be inferred. No visible predator bites, fractures, nor gunshot wounds were found and a poisonous snake bite was suspected.

8. Non-cheetah Carnivore Examinations and Necropsies

African Wild Dogs

On 16 May 2022, the African wild dog NA-LP10001 (Zebra Legs) and NA-LP10002 (White Collar) were vaccinated and dewormed.

During this reporting period, one necropsy was performed by CCF on one African wild dog. The carcass of LP150 was brought to CCF by the field team. The animal appeared to have been run over by a vehicle.

Other Carnivores

During this reporting period, medical examinations were performed on two female leopards that were captured and collared in the CCF reserve (Table 4) and necropsies performed on another two leopards (1M, 1F) whose carcasses were brought to CCF by a neighbouring farmer. Both leopards died of from gunshot wounds.

Table 4: Summary of the two leopards examined in 2022.

ID	Sex	Species	Name	Date	Exam type
NA-PPA0095	F	leopard	Vicky	07/28/2022	Collaring
NA-PPA0096	F	leopard	PPA 096	08/05/2022	Collaring

C. Health and Reproduction

1. Genome Resource Bank

Since 2002 CCF has been collecting, evaluating, and freezing cheetah sperm. During January – December 2022, collections were performed on 9 cheetahs, which produced 9 samples for the GRB.

CCF continues to bank sperm, serum, plasma, white and red blood cells, hair, and skin samples on all cheetahs worked up. Additionally, an increasingly extensive scat sample collection from wild cheetahs in Namibia and neighbouring countries is kept at CCF. All samples are part of CCF's Genome Resource Bank (GRB). Since 1991, blood and tissue samples have been obtained from over 900 individual cheetahs. These samples are used for over-all health and genetic purposes, with backups stored at both CCF Namibia and the Smithsonian Institution in the USA. With the creation of CCF's genetics laboratory, most samples are now held at CCF. Currently, CCF holds the world's largest wild cheetah database of biological material, which also creates the need to curate all the samples and the development of database management systems.

D. Conservation Genetics

1. Life Technologies Conservation Genetics Laboratory

The Life Technologies Conservation Genetics Laboratory (formerly known as the Applied Biosystems Genetic Conservation Laboratory) was set up in 2008/2009 by Dr Anne Schmidt-Küntzel for CCF, thanks to the generous support of Life Technologies Inc. (formerly Applied Biosystems, today Thermo Fisher Scientific) and the Ohrstrom Foundation. In 2014 Thermo Fisher Scientific donated a refurbished 4-capillary genetic analyser, which greatly increased the capacity of the laboratory until April 2021 when it broke down. In 2015 the genetics laboratory moved to the new Visitor Centre. This laboratory was designed with a forensic laboratory layout and is larger in order to be able to host visiting scientists and university interns. In 2021 a new analyser was purchased from Thermo Fisher Scientific, as part of a major laboratory upgrade, which also included the expansion of the database system into all the laboratory areas as well as new equipment such as PCR machines, a new gel imaging system and centrifuges, to replace the second hand equipment that was obtained in 2008 and was no longer fully reliable.

The laboratory's main aim is to contribute to the on-going research and conservation of cheetahs by working together with the ecology and biomedical departments in CCF's cross-disciplinary mode of operation. The CCF Scat Detection Dog programme is part of this approach and was put into place to provide the necessary samples to the various genetics projects. The main genetics projects are related to cheetah population structure, census, relatedness, and assignment of individual ID to non-invasive samples such as scat. Projects related to other species are performed with outside funding and are currently limited to collaborative projects.

Hafeni Hamalwa, who started as an intern in the laboratory in the first half of 2017, remained at CCF after that to pursue his MSc ("Systematics and population structure of the Kenyan cheetah based on mitochondrial DNA analysis") at CCF with the University of Namibia (2018-2021), which he defended in May 2022. Hafeni accepted a position as Laboratory Technician in October 2021. Several staff members left in 2022; Julia Zumbroich (MSc) returned to Germany after having worked as Laboratory Technician since December 2018, Michelle Magliolo (MSc) returned to South Africa in December 2022 after having worked as Laboratory Technician since November 2021, and Nerea Sanchis (MSc) returned to Spain after half a year at CCF to pursue her PhD. Benny Munyandi, who had joined CCF as a NUST rotation student end of 2019 returned to CCF in February 2020 for a 12-month internship. Benny then pursued his Honours degree with the CCF genetics laboratory via NUST, which he completed end of 2021, after which he stayed on as Genetics Laboratory Assistant. Anastasia Turenko (MSc) started as Laboratory Technician in September 2022.

CCF's genetics laboratory is an official placement for final-year undergraduate students of the University of Namibia (UNAM) since 2017 and of Namibia University of Science and Technology (NUST) since 2018,

allowing students to earn credit for their internship at the CCF laboratory. The laboratory also trains recent graduates through its internship programme. Albertina Shiwale from NUST (BA) and Lisa Mutzberg from the German University Rhine-Waal (BSc) joined the laboratory in September 2021 for a 5-month placement, both left January 2022. Camryn van Wyk from NUST joined the laboratory in October 2022 for a 4-weeks placement as part NUST's Work Integrated Learning course. Dr Kimberly Johnson a retired Medical Doctor volunteered in the laboratory in July for 6 weeks.

Genetics Projects

Cheetah genotypes of known individuals (blood/tissue samples)

As part of CCF's on-going research at the genetics laboratory, DNA is extracted from all individuals from which blood and tissue samples are available. All extracted DNA samples are assessed for quality via gel electrophoresis and genotypes obtained for 17 microsatellite markers. Those markers are amplified in six multiplex reactions to cut down on cost and optimize time. Additionally, new markers were designed to extend the genotypes. Sample collection started in 1992; however up until the setup of the genetics laboratory in 2008, cheetah samples were sent to Dr Stephen O'Brien's laboratory at the National Cancer Institute, USA. Since 2008, blood and tissue samples from over 200 Namibian cheetahs have been extracted and an extended genotype was obtained.

Cheetah genotypes of unknown individuals (scat samples) using non-invasive techniques

Since the identity of the cheetah is unknown for non-invasive samples, the first step is to obtain a genetic ID to assign an individual ID. Over a thousand samples have been collected over the years. Many of these scat samples were collected by the CCF ecology team or with the help of CCF's scat detection dogs Finn, Tiger, and Enya. Other samples were obtained from collaborators from other conservation organisations, taxidermists, and the farming community. A set of microsatellite markers have been redesigned and optimized for scat samples and are used routinely in the laboratory. The sex of the individual is also determined genetically (Zn-Finger).

Coalition of wild males around CCF centre: Between July 2008 and October 2013, over 950 scat samples were collected from a coalition of two wild cheetah males ('The Wild Boys': Hifi - AJU 1543, and Sam - AJU 1542) around the CCF Centre, in a daily effort. The two cheetah males defecated around the CCF centre on a regular basis, since they were attracted by the captive female cheetahs. While the two wild males have since died (AJU 1542 in August 2010, AJU 1543 in October 2013), the sample collection represents an invaluable resource for long-term monitoring of physiological parameters in two wild cheetahs. The parasite levels were assessed and recorded on a regular basis at the time of collection. Hormone work to determine stress and testosterone levels will be performed when funding is secured. The aim of the study is to identify samples for every 3-5 days throughout the entire five-year period and conduct hair analysis to determine the wild males' diet over time. A multiplex of four markers, aimed specifically at differentiating two wild male cheetahs was used to identify AJU 1542 and AJU 1543 scat samples. To date 413 samples have been finalized, of which 392 were successfully assigned to AJU1542, 1543, or another wild individual, 3 to captive cheetahs (found next to enclosure), and 18 identified as not being cheetah but other carnivores.
Between August 2021 and September 2022 another coalition of two wild cheetah males ('The Rockstars': AJU2066 and AJU2067) has included the CCF centre in its territory. The areas surrounding the cheetah enclosures are searched during the periods when the males are present in the area (based on satellite information). 210 suspected cheetah scat samples were collected from this coalition.

Other suspected cheetah samples: All other suspected cheetah samples are analysed so that unique individuals can later be included in population studies. Over 400 samples were collected between 2008 and 2016. An individual genetic cheetah ID could be assigned to 197 of these samples (corresponding to less than 20 individuals), 54 were assigned to other carnivore species using a barcode sequencing approach. Since 2020, 355 suspected cheetah scat samples were added to the sample collection thanks to the extensive work of the

scat detection dog team. A hundred and thirty-two (132) samples from the Gobabis area have been identified down to species and individual level.

Cheetah scat samples caught on camera trap: The data from scat samples collected at camera trap stations from CCF's camera trap surveys between 2008-2014 was part of Lucia Mhuulu's MSc research thesis, which she defended in June 2015. For this study, the genetic ID was combined with the visual ID from the camera traps, to pair a physical appearance to the genetic genotype without handling the animal. The study was conducted until January 2019.

Release study: Sixty-six release and pre-release scat samples were extracted and assigned to an individual cheetah in 2013. Once identified, an aliquot of these samples was sent to the Smithsonian Institution in the US to be analysed for faecal hormone levels.

Verification of the accuracy of the scat detection dogs

The species of the scat samples found by the dogs and suspected to be cheetah is routinely verified using molecular markers.

Illegal Trade

Illegal product trade: Starting 2013, the species content of samples from illegal trade was assessed using molecular markers specifically designed to identify carnivore species in samples of poor quality. PCR products were taken to the United States by Dr Anne Schmidt-Küntzel to do next generation sequencing in a collaborator's laboratory.

Illegal pet trade of cheetah cubs: Between 2004 and December 2022, CCF has received over 1000 samples from 184 individuals (mostly cubs rescued from the illegal wildlife trade)

The results obtained from these illegal trade studies are sensitive and will be made public when possible.

Babesia

Starting in 2013, a trial study on Babesia was conducted, to determine the percentage of affected cheetahs that are currently at CCF and compare those to the results obtained from microscopic evaluation of blood smears from other captive cheetahs. We also developed a diagnostic test to be used for further screening of the samples. The initial testing was assigned to Shalette Dingle, a visiting Cornell veterinary student in 2013; since then, a more sensitive test was also tested with promising results. Cornell veterinary student intern Natasja Lavin read the blood slides corresponding to the genetic samples in mid-2015. In March 2016, Karen Holm, veterinarian and working guest, finalized the last samples for the existing data set. In 2018, veterinary student Armaghan Nasim trialled the diagnostic test for the detection of babesia in ticks collected from babesia-positive and negative cheetahs. She also collected ticks which are currently used to determine the effect of storing ticks in methylated spirits. DNA from ticks was extracted after 14 days, 24 days, 34 days, 3 months, 6 months, 15 months, 22 months, 29 months, 36 months and 42 months, the latest date of extraction was in August 2022. Further tests will be performed over the coming years.

Carnivore diet

In 2014, visiting student intern Alicia Walsh from University of New Hampshire (USA) extracted DNA from 50 carnivore scat samples and verified the species they belong to using a mitochondrial marker. She also identified what the animals ate by using a variety of approaches including hair, bone, exoskeleton, and vegetation analysis. She published the project in the university's Inquiry journal in 2015. In 2016, a preliminary analysis of the diet composition was performed by ecology research assistant, Samara Moreira.

Current Collaborative Genetics Projects

Oxalate nephrosis in cheetahs

In March 2012 a collaboration on oxalate nephrosis was started with Dr Karen Terio from the University of Illinois and Dr Emily Lane from the National Zoological Gardens of South Africa. This collaborative project aims to investigate whether oxalate nephrosis in the cheetah is caused by mutations in the same genes as in humans and cats. A genetic component was supported by the preliminary analysis performed by Dr Anne Schmidt-Küntzel. Primers were designed by Dr Anne Schmidt-Küntzel, and tested and optimized at the CCF genetics laboratory in 2013. In 2013 and 2014, diseased individuals were tested in the laboratory of the South African collaborators. In the first half of 2015 a second gene was investigated. To date no candidate mutation was found. Results will be published once results obtained. Additional research is required and will be pursued once funding is obtained.

International cheetah samples

Over the years CCF has collected cheetah samples in Angola, Somaliland, and Niger, where no genetic studies have been performed to date. In addition, samples have been obtained from collaborators in Angola, Algeria, Botswana, and South Africa.

Angola: Dr Ezekiel Fabiano, who graduated from his PhD in genetics with CCF in 2013, brought Angolan cheetah and other carnivore faecal samples to CCF subsequently for them to be analysed at the genetics laboratory as part of an ongoing collaboration.

Kenya: In 2017, Action for Cheetahs Kenya sent MSc student Brian Solomon to CCF with DNA from scat and tissue samples. Since 2018, Hafeni Hamalwa has continued the laboratory work to complete the genotypes of the 172 samples and obtained his MSc degree in April 2022 on the mitochondrial haplotypes present in the Kenyan cheetah population.

United Arab Emirates: A collaboration with cheetah holding facilities and veterinary clinics in the UAE was initiated in June of 2013. In 2014 sperm and genetic samples were collected on males to start the country's Genome Resource Bank (GRB) of cheetahs. Blood samples from the males that were worked up, as well as additional individuals, were taken back to Namibia with the relevant permits for banking and analysis. The samples are currently being analysed to identify the provenance of the animals, of which a large proportion originate from the illegal trade.

Carnivore species ID

Over 1000 carnivore scat samples were collected in 2009 in the scope of an ongoing collaboration with Dr Eduardo Eizirik on carnivore diversity. Future laboratory work will be performed at the CCF laboratory as soon as outside funding for this study becomes available.

In collaboration with the Brown Hyaena Project in Lüderitz, carnivore hair samples obtained from rubbing stations and hair snares in southern Namibia were analysed at the genetics laboratory in 2014, to identify the species of the carnivore. This work was part of Sarah Edward's PhD (Royal Holloway, University of London). The genetic analysis was finalized in 2014, and the PhD successfully defended in October 2015.

Brown hyaena

As part of collaboration with Dr Ingrid Wiesel from the Brown Hyena Project in Lüderitz, which started in 2016, we received two sets of paste marks of brown hyenas (*Hyaena brunnea*). This allowed us to optimise protocols to successfully extract DNA from pastemarks. A total of 59 samples were genotyped with published markers. However, variability of the markers in the study population was insufficient, and additional markers are needed. The whole genome of the brown hyaena was mined by a joint collaborator and will allow for the design of additional markers for brown hyaena.

Caracal

Since 2016, caracal hair and tissue samples, collected from killer traps in South Africa, were brought to the genetics laboratory to assess relatedness. This study is a collaboration with Kristine Teichman (PhD student from British Columbia University, Canada). Most samples were processed in 2018, and the dataset is expected to be finalized in 2022.

Current Collaborative Non-carnivore Genetics Projects

Rhinoceros

In the scope of a collaboration with the research centre of Ongava Wildlife Reserve, MSc student Abigail Guerier finalized a pedigree of white rhinoceros (*Ceratotherium simum*) thanks to the inclusion of genetic data. The results have major implications for the management of captive rhinoceros populations and were part of her MSc thesis. A manuscript was published in 2012 ("Parentage analysis in a managed free ranging population of southern white rhinoceros: genetic diversity, pedigrees and management", Guerier et al, 2012). Since 2013 more samples are collected by the Ongava research team to include additional generations to the project. Abigail Guerier also started a genetics project on black rhinoceros (*Diceros bicornis*) at the CCF genetics laboratory. She continues to visit the laboratory once or twice a year with new batches of samples. Her last visit was at the end of February 2022.

Elephants

As part of a collaboration with Dr Caitlin O'Connell, the genetics laboratory has received 426 elephant scat samples, of which 203 in 2019. Two hundred samples were identified as priority. To date, 178 samples have been extracted and partial genotypes obtained for 12 markers.

Herpetology

As part of collaboration with Paul Kornacker from the Museum König in Germany on lizard species identification on samples from the NamibRand region of Namibia, 81 samples were extracted in 2017, and species identity was determined for half of the species. A new primer was ordered, which did amplify some of the remaining species. Further research is funding dependent.

Termites

In May 2015 and February 2016, a research team from the University of Florida worked with CCF to do a pilot study on termites. The initial tests were successful, and additional markers will be developed by CCF's collaborators. The team has since visited CCF on a regular basis, and more research is planned for upcoming years.

Bird Sexing

CCF started offering bird sexing as tool for collaborators studying birds whose sex could not be determined by looking at the birds or chicks.

Vultures: In 2022 the Genetics laboratory received 23 vulture samples from Lorinda Hart from the University of Namibia. The blood samples were extracted and their analysis completed by September 2022; a final report has been submitted.

Oxpeckers: In 2022 the Genetics laboratory received 36 oxpecker samples from Michael Lukubwe from the University of Namibia. The blood samples were extracted from filter paper and their analysis completed by December 2022; a final report was compiled.

2. Scat Detection Dogs

CCF's scat detection dog unit was put in place to increase the number of cheetah scat samples found in the field. Scat samples are analysed at the CCF genetics laboratory as part of CCF's ongoing conservation efforts to gather valuable information on an animal's gender, individual, and species. Working with scat detection dogs on cheetahs is quite challenging, and we calculated a 22 km distance covered for each sample found along a road (data presented in the 'black gold' chapter of "Cheetahs: Biology and Conservation", 2018).

The test phase of the programme started with the arrival of Border Collie, Finn, in February 2009. Since 2009 the programme has trained and/or hosted several scat detection dogs, including Tiger a spaniel donated by dog trainer Steve Austin from Australia and who was CCF's main detection dog for several years. CCF's current team consists of Tim Hofmann, his Weimaraner Ole, and CCF's two Belgian Malinoises Enyakwa and Gamena. Tim joined CCF in 2018 as a scat dog researcher and has now started his PhD about the scat detection dog project

Enyakwa has been the main scat detection dog at CCF since June 2019 (Figure 1). Her high toy drive and ability to correctly identify target species puts her ahead of the other two dogs. Her sister Gamena is a lot calmer and often more careful which can be a useful trait for certain tasks.

Figure 1: Scat detection dog, Enyakwa resting in the shade.

The regular scent line-up exercises, implemented in 2020, to evaluate the dog's precision, are still ongoing. Here different scents are hidden in 4 metal boxes ('sniffer boxes') that are organised in a line which the dogs have to walk up and down. Once they reach the box containing the target scent they are supposed to show their trained indication behaviour which is sitting. These line-ups are very helpful to monitor their precision but can also be used to efficiently teach new target species. Also in 2020, several training transects were designed that are searched at consistent time intervals to document the team's development. Here target and non-target scats are hidden along road transects in different habitats to mimic real search conditions. The scent line-ups together with the assessment transects allow for a precise 'real time' evaluation of the team throughout the year.

In 2022, the dogs covered a total of 453 km of transects and the team collected 250 scat samples from potentially 14 different species, and 84 of those were identified as target species in the field (cheetah = 48, African wild dog = 36). Those searches were conducted both on CCF land and off site in Namibia.

We applied the study design, trialed and found successful in the systematic 2021 'Gobabis Project', to two different areas in Namibia. The first area is the Ondjou communal conservancy in Namibia's East (Figure 2). Here African wild dogs, Enya's second target species, are reported as the main conflict species. Together with the ecology department we conducted two trips to collect scats (and set up/take down camera traps). We found 90 scat samples of which three were suspected to be from cheetah and 32 from African wild dogs. Enya walked a total of 144 km to accomplish that. This was the first systematic survey in a communal conservancy for the scat dog team, and it led to finding cheetah samples further east than any other sample found to date, thus greatly contributing to CCF's genetic and ecological research. Enya also detected African wild dog scats and fresh spoor.

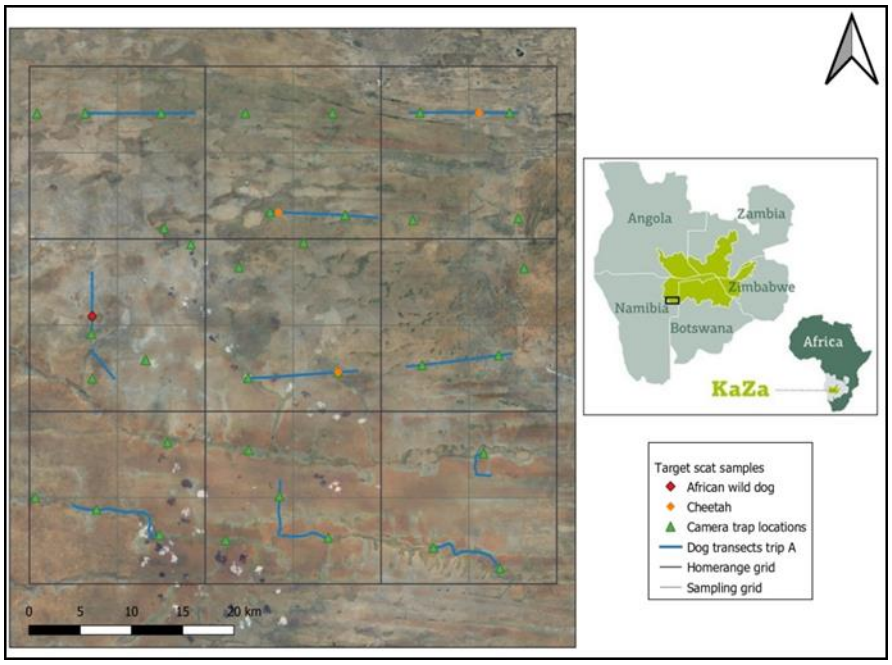


Figure 2: Overview of the survey in the Ondjou Communal Conservancy.

The second area was on CCF land and surrounding farms. Enya walked a total of 173 to find 121 scats of which 41 were suspected to be cheetah. Those 41 samples were collected at 10 different playtrees of which five were discovered during this survey. The newly discovered playtrees informed the ecology team for their camera trap placement for their survey. While we see less cheetah activity on our land than in the past, it is still incredible to find new playtrees in our well-known backyard, thanks to Enya.

In addition, the scat dog team's collaboration involving long-term CCF collaborator Dr. Ezequiel Fabiano and CIBIO (Centro de Investigação em Biodiversidade e Recursos Genéticos) from the University of Porto in Portugal is still ongoing. In the scope of this collaboration, the scat dog team travels to Angola several times per year for three weeks to find predator scat in one national park and one private game reserve. The first trip for this year happened in June and the second in October. In addition to her work in Namibia, Enya walked a total of 323 km to find 788 scat samples in Angola. Enya indicated 9 samples which make us hope that we detected African wild dogs in a new area in Bicuar National Park.

E. Large Carnivore Research and Ecology

1. Cheetah Releases and Monitoring

Dax (AJU2010)

Dax is an adult male cheetah, approximately seven years old who was released into Erindi on 25 January 2021 after a short period at CCF. He is doing well at Erindi after two years back in the wild (Figure 3).

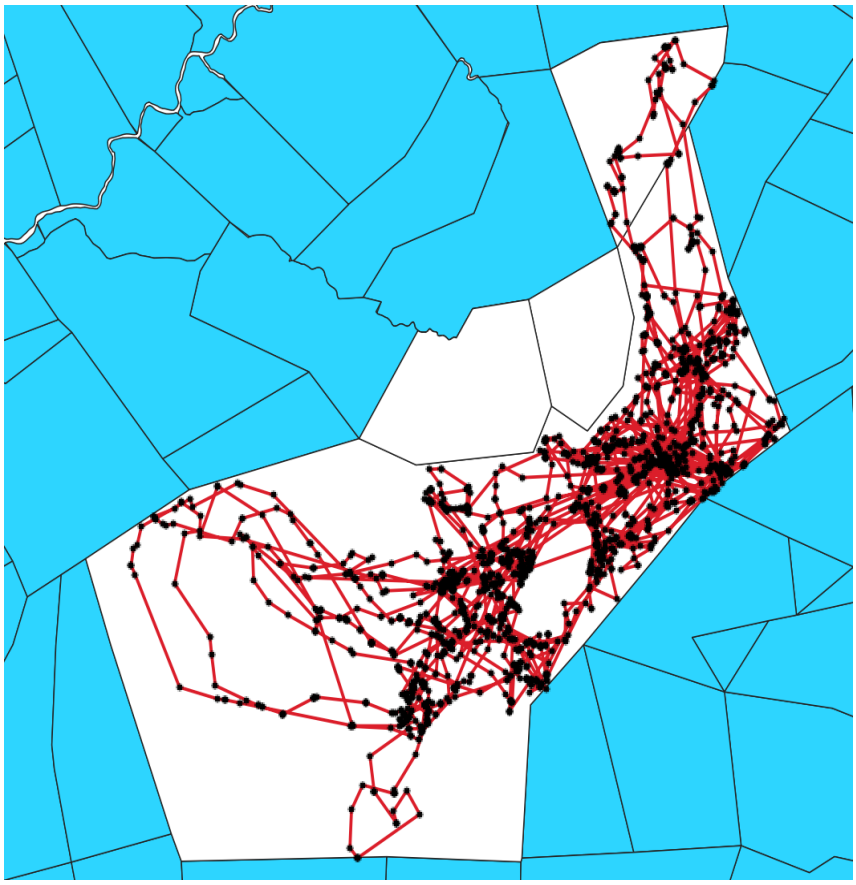


Figure 3: Dax's movement from January – December 2022.

Hella (AJU1785)

After more than a year back in the wild, Hella is still doing fine. She became totally independent, and she has been seen with Atlanta by Erindi staff. Her GPS collar was replaced in June 2022. She was supposed to be part of the Indian project but she gave birth to 4 cubs (1M, 3F) (Figure 4).

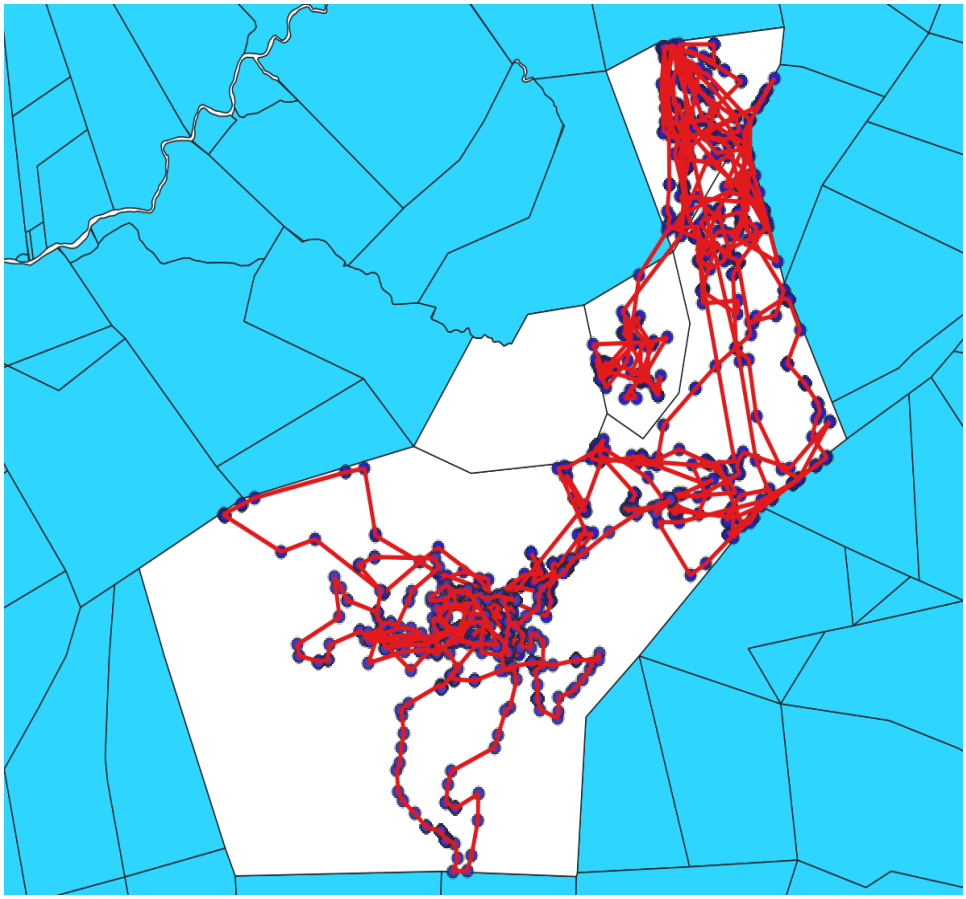


Figure 4: Hella's movement from January – December 2022.

Lauw (AJU2050)

Lauw is an adult male cheetah, approximately five years old who was released onto the Erindi reserve on 25 January 2021 after a short stay at CCF. He is in good condition and doing well at Erindi (Figure 5).

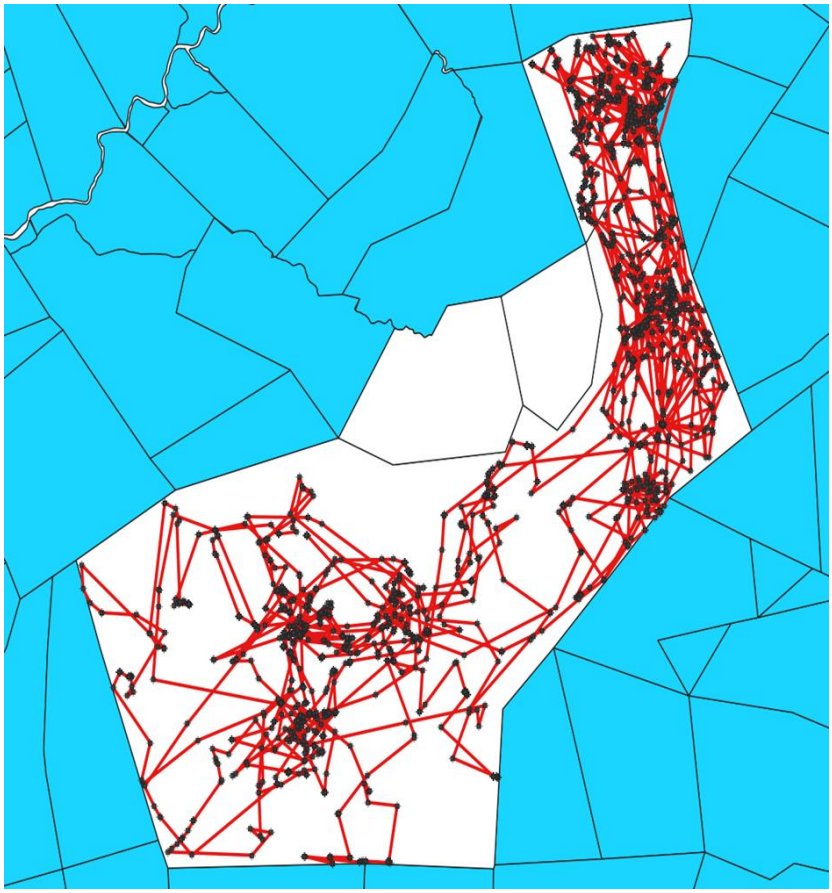


Figure 5: Lauw's movement from January – December 2022.

Oban and Talisker (AJU1908 and AJU1909)

Since leaving their mother, Savanna, this young coalition of males have been doing well surviving on their own in Erindi. The Erindi team sees these males frequently and they are always in good condition. They have been observed killing adult male ostrich on a few occasions. Oban was re-collared on the 15 March 2022 (Figure 6). These two males were selected to go in India. Oban is actually one of the famous cheetahs in India, but unfortunately for Talisker, he did not survive the capture for the transfer to India and died on 4 August 2022.

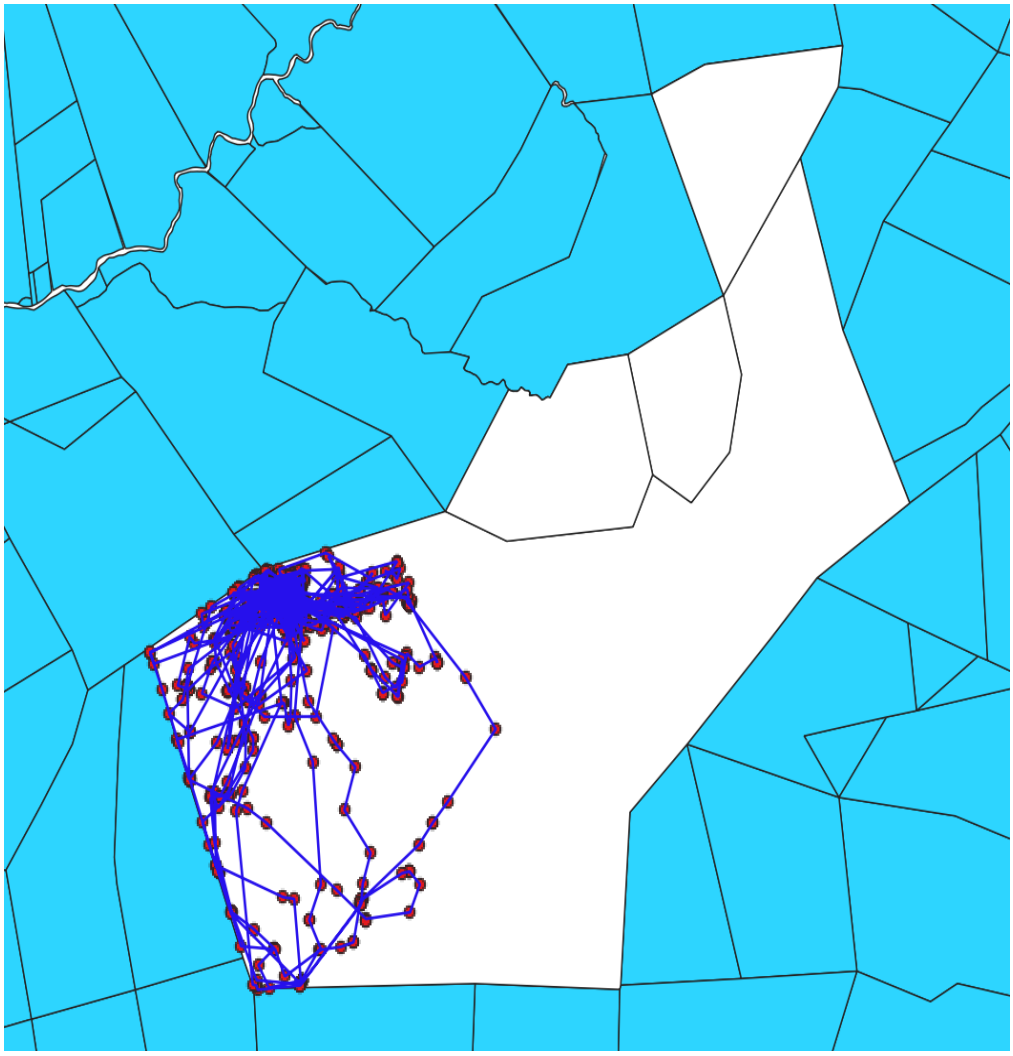


Figure 6: Oban and Taliskers movement from March – August 2022.

Atlanta and Tbilisi (AJU2103 & AJU2104)

After leaving their mom at the age of 15 months which is very young, they managed to survive. They stayed together until end of 2021. They have been seen by Erindi team regularly and both re-collared with GPS collars in August 2022. Tbilisi was captured and is now part of the Indian project since September 2022. She is adapting well in her new environment.

The 5 Boys (AJU1898, AJU1779, AJU1780, AJU1783 & AJU1786)

Max, Ben, West, Loki and Thor are five males that were brought to Erindi at the beginning of July 2021. They were re-collared with a GPS collars, then released from their boma in March 2022. They have been observed by Erindi staff feeding on a very young giraffe kill (Figure 7). Unfortunately, Loki was caught by a lioness in August 2022. He was badly injured and paralyzed due to a broken spine. He was euthanized by CCF vet team on site. All the other four are doing great.

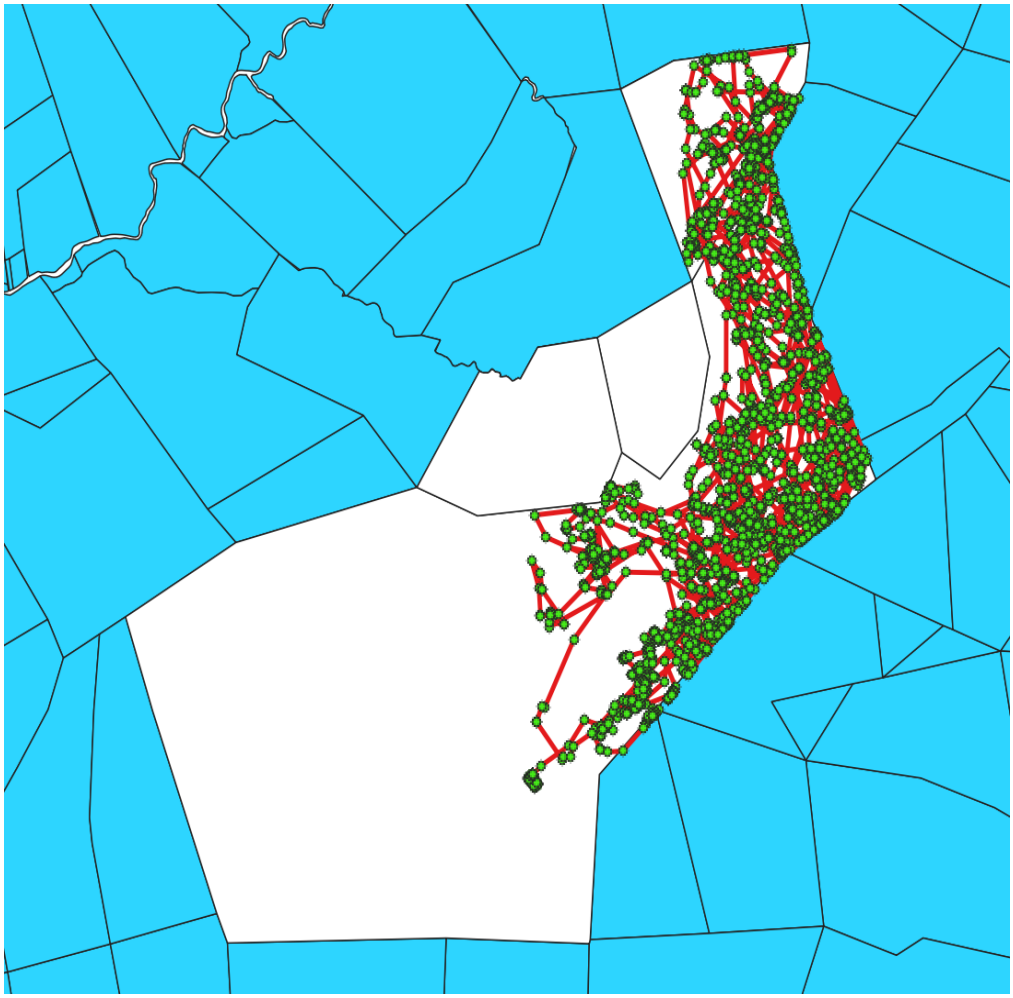


Figure 7: The five boys' movements from March – December 2022.

The Rockstars (Elton AJU2067 & Freddy AJU2066)

Elton and Freddy are two wild brothers. They have been roaming around the CCF center throughout much of 2021 and were first detected on camera traps placed at playtrees. The CCF team captured and collared them with a LoRaWAN collar and satellite collar respectively. We have been monitoring their movement patterns closely and have visited GPS location clusters to determine their diet (Figure 8). Elton and Freddy were selected to be send to India. They have been in India since mid-September and were the first to be released from the quarantine. They killed a spotted deer less than 48hours after released and are doing great in their new environment.

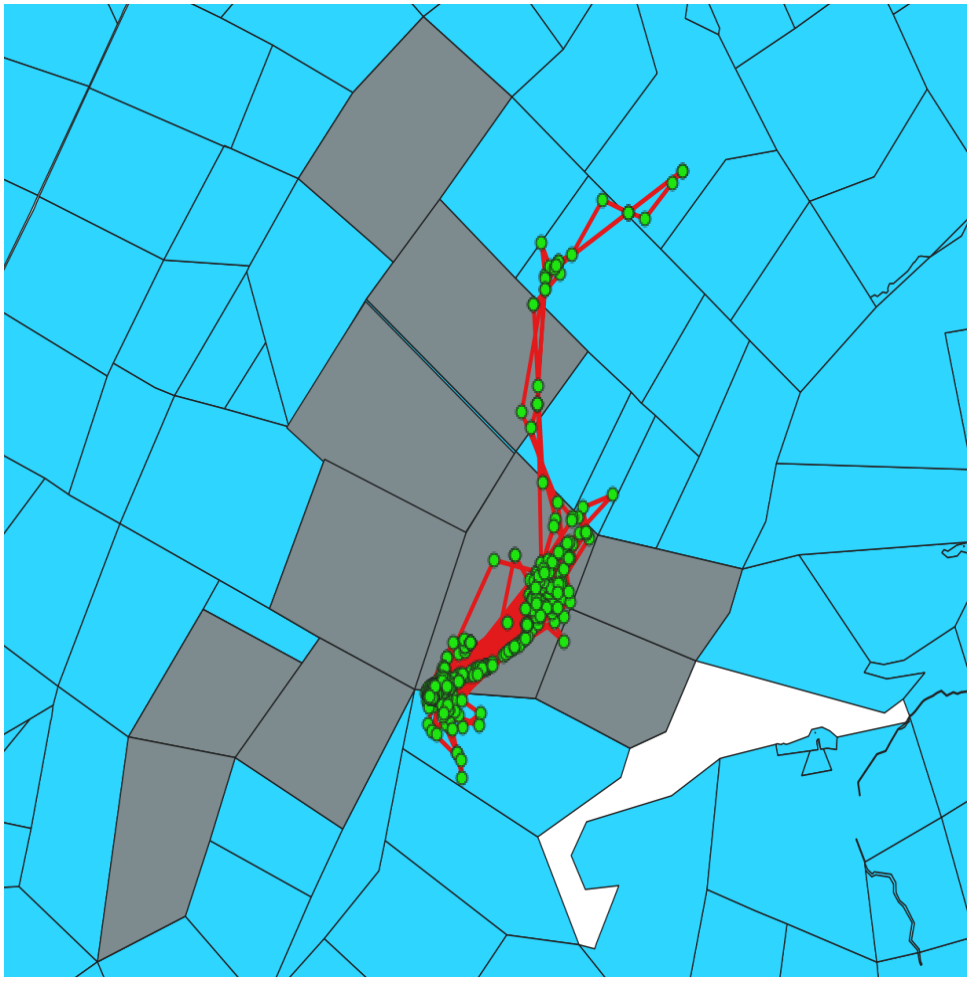


Figure 8: The Rockstars' movement from January – December 2022.

Etosha Heights Males (AJU2101 & AJU2102)

These two males were released at Etosha Heights on 16 February 2022. They were captured on a farm in the Gobabis area before being brought to CCF for a check-up and sperm collection. Shortly after their release into Etosha Heights, they broke into Etosha National Park (Figure 9). Unfortunately, AJU 2101 was found dead in Etosha National Park around the 10 April 2022. His cause of death is unknown. Since being on his own, AJU 2102 has established his home range around Dolomite Camp in the western part of Etosha National Park.

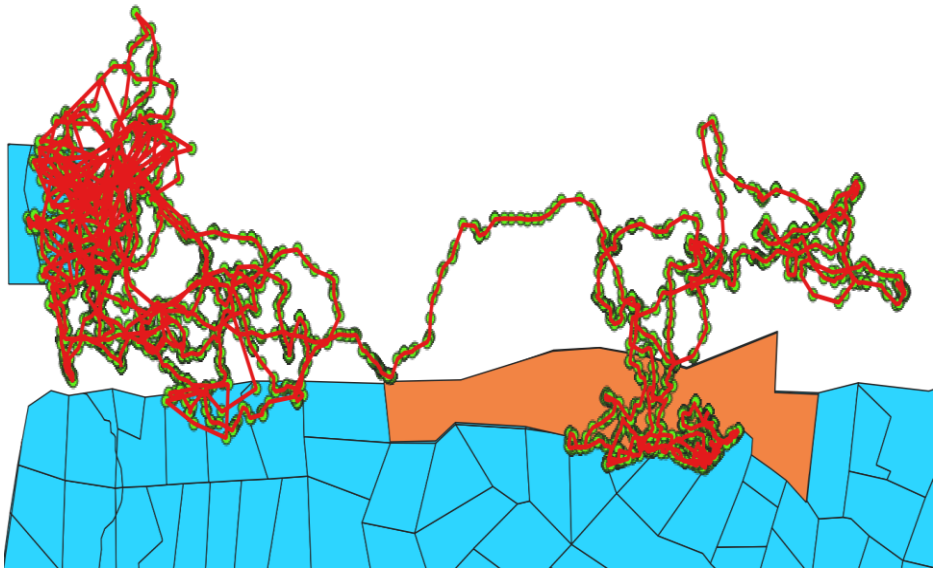


Figure 9: AJU 2101 & AJU 2102's movement between Etosha Heights and Etosha National Park from February - December 2022.

Etosha Heights Males (AJU2151 & AJU2152)

These two males were released in Etosha Heights on the 28 June 2022. They were captured on a farm in the Gobabis area before being brought to CCF for a check-up and sperm collection. Less than a week post release, they broke out of Etosha Heights and are now living in Etosha National Park. Unfortunately they left Etosha National Park and headed south on farm land, and were both shot by a farmer around mid-October 2022 (Figure 10).

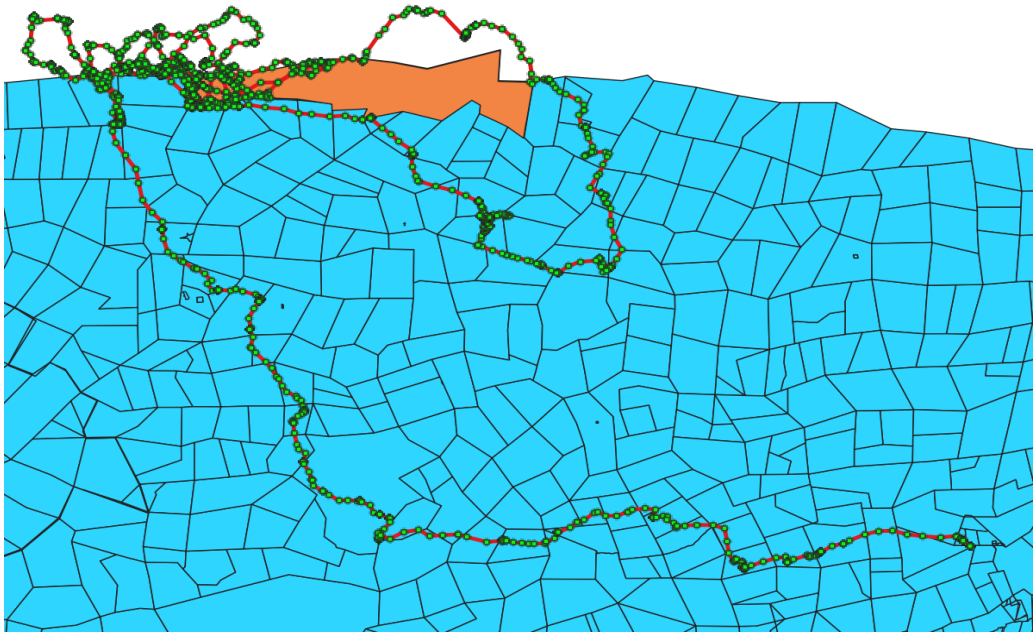


Figure 10: AJU 2151 & 2152 movements between Etosha Heights and Etosha National Park from June – October 2022.

Gobabis Summerdown Male (AJU2153)

This male was captured on 7 July on Summerdown Farm in the Gobabis district. The owner of the farm did not have any livestock losses and agreed to collaborate with CCF in the Early Warning System. After organizing with MEFT, the cheetah was transported to CCF for a check-up and to fit him with a GPS radio collar. This approximately 4-year-old cheetah was in good shape but he had a tooth issue that needed to be fixed before release. On the 27 July, he was released back on Summerdown Farm (Figure 11).

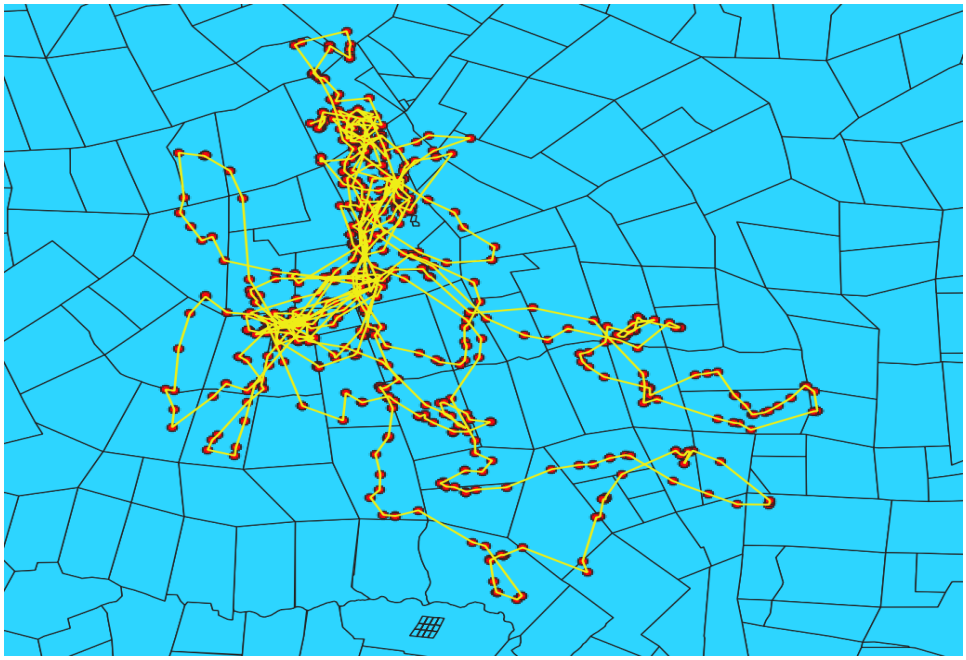


Figure 11: AJU 2153 movement in the Gobabis district from July – December 2022.

Gobabis female (AJU 2163) with four cubs

An adult female and her two cubs were caught late afternoon in the Gobabis district on Monday 7 November 2022. On Tuesday morning, 8 November 2022, a third cub was caught, and a fourth observed outside. The farmer set up a third trap cage in an effort to catch the fourth cub. The cubs were aged to be around 2 – 2.5 months old and the mother around 4 - 5 years old. After a veterinary check-up the mother was fitted with a GPS collar and released with her four cubs mid-November on a farm in Okahandja district (Figure 12).

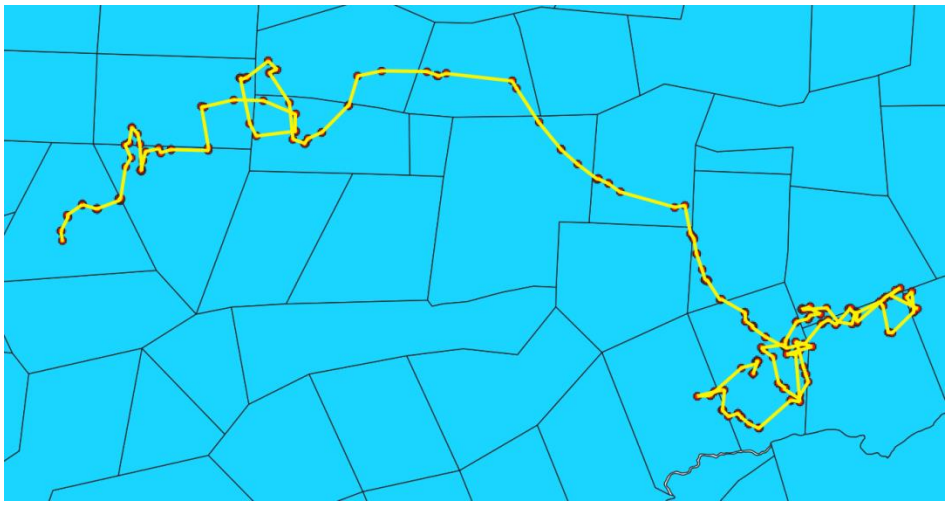


Figure 12: Females' movement in Gobabis district from November - December 2022.

Calypso (AJU2063)

This female was captured with her two sub adult cubs on the 30 August 2021 on a farm in Gobabis district after killing a calf inside the kraal. Even with his loss the farmer agreed to have the three cheetahs released on his land, but only if the three cheetahs would be fitted with the GPS collars. Unfortunately, Calypso was

found dead on 30 March 2022 after the GPS location showed a few days of clustering in the same vicinity (Figure 13). Her carcass did not show any indications of the cause of the death. After searching the vicinity, the three cubs were found. They were estimated to be around 1- month old and were brought to CCF.

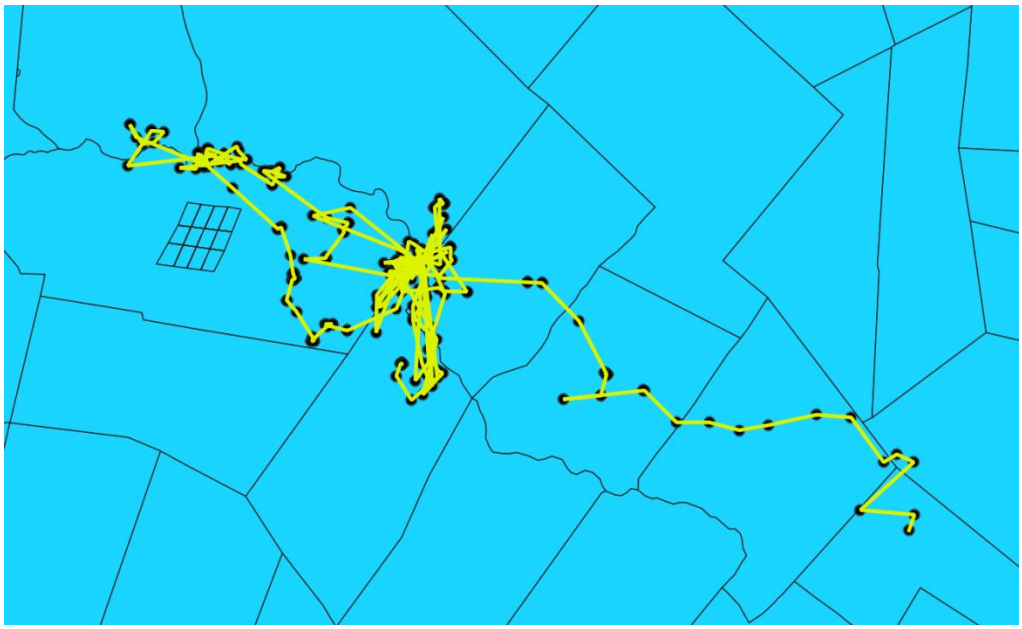


Figure 13: Calypsos' movement in Gobabis district from January - March 2022.

Calypso's male and female cubs (AJU2064 & AJU2065)

After leaving their mother, the siblings stayed together for some time heading north-west The young female finally settled and her brother kept going exploring towards the north-west (Figure 14). The male cub has been exploring a lot and travelled kilometers. He almost went up to Erindi which is very far from where he was first found. They both seem to be doing well according to their movements.

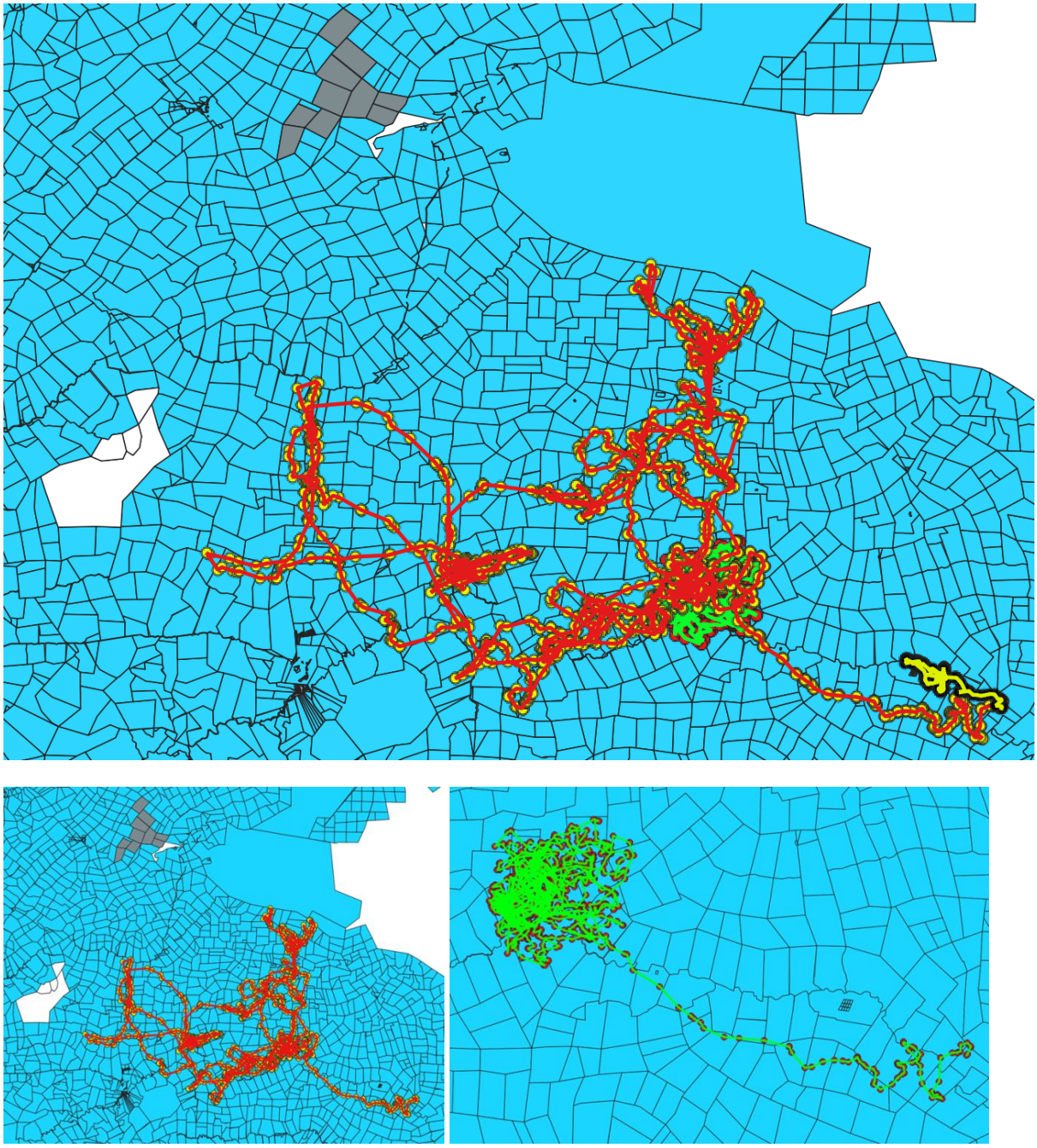


Figure 14: Calypso's and her cub's movement in the Gobabis district from January - December 2022; Calypso's movement in yellow, female cub in green and male cub's in red.

2. Indian Cheetah Project

On the 17 September 2022, eight cheetahs (Elton AJU 2067, Freddy AJU 2066, Oban AJU 1908, Siyaya AJU 2017, Tbilisi AJU 2104, Aasha AJU 2154, Sasha AJU 1773 and Savannah AJU 1900) traveled by plane from Namibia to India. Once in Kuno National Park in India, were released in a quarantine area to make sure they do not carry any diseases, allowing for CCF staff not only to monitor and work on the animals in their new environment but also to train Indian staff how to monitor, safe handling and behaviour with cheetah in captivity. Elton, Freddy, Oban, Tbilisi and Aasha were kept in the same area but in different enclosure apart from Elton and Freddy that were kept together. The three other females, Savannah and Sasha were kept in the same enclosure next to Siyaya.

In early November 2022, Elton and Freddy were released in a larger boma (+/- 80ha) with available prey. They managed to kill their first spotted deer less than 48 hours after their release. Step by step the other cheetahs were released as well in their larger boma and all of them managed to make kills within a few days post-release. The eight cheetahs are adapting very well to their new environment so far. We are hoping to release all of them in the National Park in few months.

F. Ecosystem Research

As over 80% of Namibia's game inhabits farmland, assessment of the Namibian ecosystem for long-term habitat viability for the cheetah and its prey is a part of CCF's primary on-going research.

1. Weather Monitoring

CCF staff continued to collect rainfall data at the centre and farms and daily high and low-temperature readings at the CCF centre throughout 2022 (Figure 15 and Figure 16). Between January and December 2022, CCF received 410.5mm total amount of rainfall which is almost half of the rainfall received in 2021 (Figure 15). The first drop of rainfall in summer was recorded on 25 October 2022 (0.5mm) and the highest amount of rainfall was recorded on 15 February 2022 (35mm).

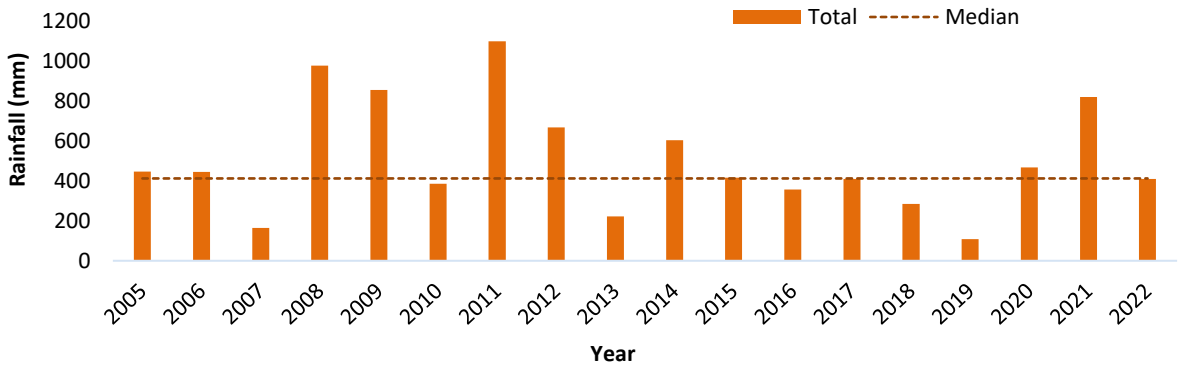


Figure 15: Annual seasonal rainfall from 2005 - 2021. Each rainy season comprises the precipitations occurring between October (previous year) and July (year shown). Horizontal line represents the median of the last 10 years (412.75 mm).

The lowest temperature during this report period was recorded on 21 June at 3 °C, and the highest temperature was recorded on 4 October at 34°C. Overall, monthly temperatures were similar between 2021 and 2022 (Figure 16).

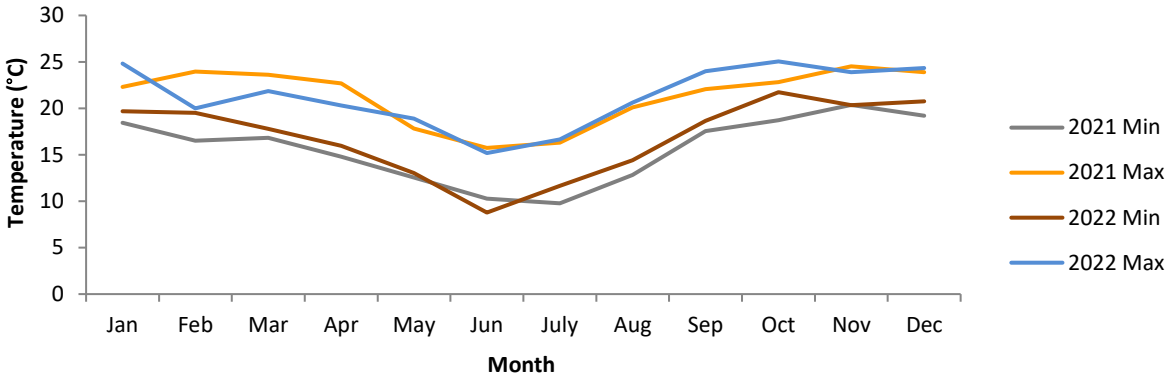


Figure 16: Monthly average minimum and maximum temperatures (°C) for 2021 and 2022.

2. Game Monitoring

CCF's long-term wildlife monitoring programme continues with the assistance of volunteers and student interns. The research conducted on CCF farms is designed to understand the patterns and trends of game density, movements, demographics, and habitat utilisation. The monthly monitoring involves visual road counts, categorising vegetation types, densities, and distributions. This information is correlated with data collected on rainfall and temperature.

Big Field Game Counts

CCF's Big Field, also known as 'The Little Serengeti', is an old uncultivated field of 14.9 km^2. 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 containing high prey densities for cheetahs and leopards, this area contains the most game, so monitoring trends and understanding the dynamics of how the game utilises the field provides important information for future management strategies and is very helpful for tourism in the long term. For this reason, CCF has been conducting monthly counts since 2004. The field habitat has changed over the years and continues to show a high density of Bitter bush (*Pechuel-loeschea leubuitziae*), which has triggered a change in species density on the field.

During this reporting period, a total of 72 replicate counts (3 routes each sampled daily for 3 consecutive days over 12 months) were conducted on the Big Field, resulting in a sampling effort covering 593.28 km. There are three routes on the field: Chewbaaka Road (6.34 km), Midfield Road (5.38 km), and Osonanga Road (4.76 km) (Figure 17). The total distance travelled by three teams is 16.48km per day and 49.44km per month.

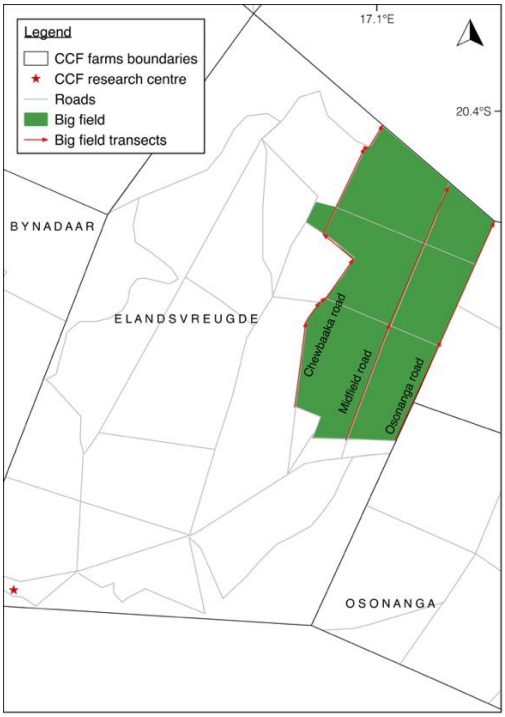


Figure 17: Map of CCF land and location of the Big Field showing the three transects driven monthly for game counts.

All data from these surveys were entered into the main database (FileMaker Pro 18) and preliminary results on trends were produced. Density estimates for the most common species (representing more than 10% of sightings) are reported in (Table 5). Densities were estimated using Distance 7.2 Software in the R package. The current period was compared to the same period in 2021, showing an overall decrease for most species densities. There was an overall decrease in the most common species except for springbok and slight increase in warthog (Figure 18).

Table 5: Density estimates (individual/km2[BC1]) with 95% confidence interval of the most common species seen on Big Field in 2021 and 2022.

	2020			2021		
Species	**Mean**	**Lower CI**	**Upper CI**	**Mean**	**Lower CI**	**Upper CI**
Warthog (*Phacochoerus africanus*)	0.10	0.03	0.32	0.01	0.01	0.02
Springbok (*Antidorcas marsupialis*)	0.04	0.03	0.04	0.003	0.002	0.003
Red hartebeest (*Alcelaphus buselaphus caama*)	0.01	0.00	0.01	0.002	0.001	0.004
Oryx (*Oryx gazella*)	0.02	0.02	0.03	0.01	0.01	0.07
Eland (*Taurotragus oryx*)	0.01	0.01	0.04	0.01	0.01	0.08
Kudu (*Tragelaphus strepsiceros*)	0.02	0.01	0.06	0.003	0.001	0.006

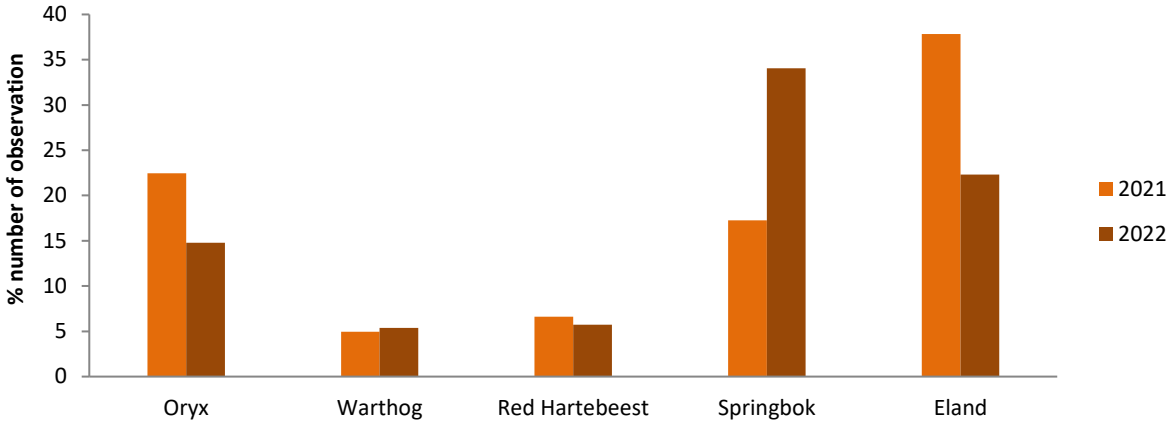


Figure 18: Frequency of sightings for the most common species during the Big Field counts in 2021 and 2022 (January – December).

Night counts - Circuit B

The night count (also known as Circuit B) was also driven once a month (7 pm – 10 pm in winter, and 8 pm – 11 pm in summer) using spotlights on both sides of the vehicle (Figure 19). The night count focuses on nocturnal species.

Figure 19: Location of Circuit B on farm Elandsvreugde.

During this reporting period, 11-night counts were conducted (no night count was conducted in December). Figure 20 shows a comparison of the current period to the same period in 2021. Black-backed jackal and caracal observations increased in 2022. There was a notable decrease in the African wild cat, bat-eared fox,

duiker, porcupine, small-spotted genet, and scrub hare in 2022. There were no sightings of aardwolf, leopard, and striped polecat. Scrub hare and black-backed jackal were the most frequently sighted species during the night count.

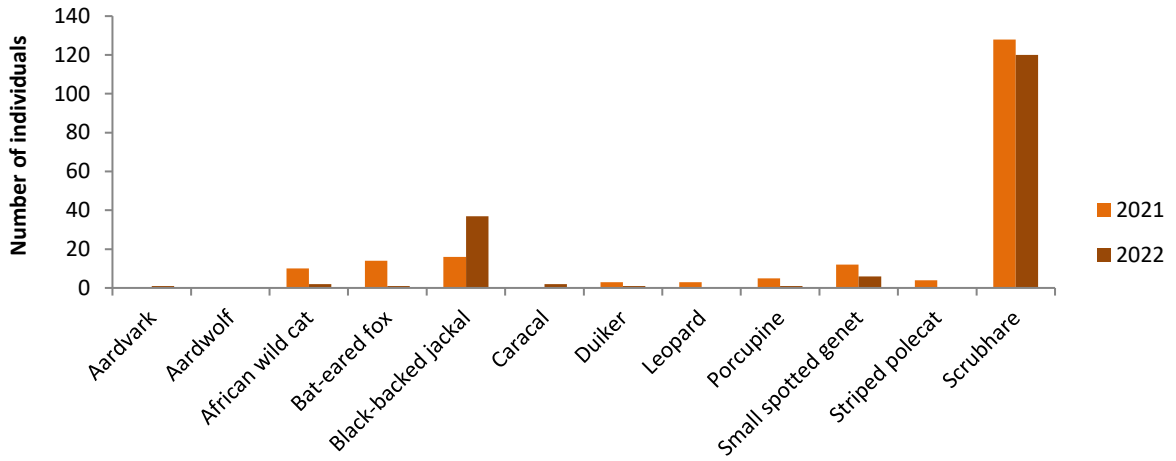


Figure 20: Sightings of nocturnal species during night counts in 2021 and 2022.

Bellebenno 12-hour Waterhole Counts

The 12 hours Bellebenno direct visual counts have been discontinued and replaced with continuous monitoring of the waterholes using camera traps. The monitoring of the species is currently in its early stages as the images are being sorted. However, based on the information currently available, it appears that the species do visit the waterholes frequently.

Annual waterhole counts

In 2022 the annual 12h waterhole count was conducted from 28 July. A total of 41 waterholes were counted during a 12-hour period (6:30 am 18:30 pm) (Figure 21), of which 24 were sampled through direct observation by volunteers/interns/staff, and the remaining 17 by camera trap.

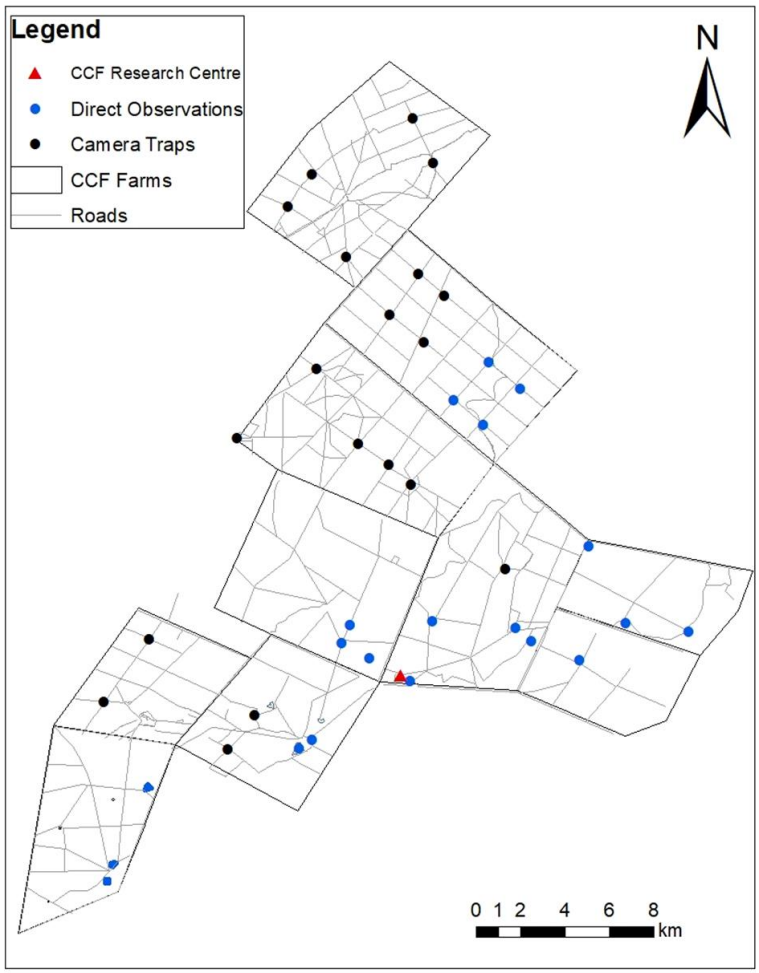


Figure 21: Location of waterholes surveyed the 12-hour annual count in 2022.

A total of 1,398 individuals from 21 different species were counted, of which 17 were mammals and four birds. The most frequently observed prey species were warthog, kudu, common duiker, and eland (Table 4). Most individuals were observed at Elandsvreugde, Bellebenno, and Osonanga. Janhelpman had the least frequency of species observed (Table 6).

Table 6: Frequency of species observed and recorded during the annual count in 2022.

Species	FARMS									Total
	BBNO	BV	BOS	BND	ELVDE	JHPM	OSO	OTJG	PAD	
Banded mongoose *(Mungos mungo)*	-	-	-	-	11	-	-	-	-	11
Black Backed Jackal *(Canis mesomelas)*	11	2	1	-	1	-	-	-	4	19
Lappet-faced Vulture *(Torgos tracheliotos)*	1	-	-	-	-	-	-	-	-	1
Cape Vulture *(Gyps coprotheres)*	1	-	6	-	-	-	-	-	-	7
Chachma baboon *(Papio ursinus)*	-	-	31	-	48	-	-	-	-	79
Common duiker *(Sylvicapra grimmia)*	14	9	30	22	8	5	48	6	5	147

Common Warthog *(Phacochoerus africanus)*	127	10	22	6	124	-	78	26	13	406
Eland *(Taurotragus oryx)*	62	-	1	-	71	-	3	-	-	137
Gemsbok / Oryx *(Oryx gazelle)*	26	4	8	-	10	-	14	12	1	75
Giraffe *(Giraffa cameleopardalis)*	21	-	-	-	10	-	15	-	-	46
Greater Kudu *(Tragelaphus strepsiceros)*	29	22	78	1	31	-	43	55	27	286
Honey Badger *(Mellivora capensis)*	4	-	-	-	1	-	-	1	2	8
Impala *(Aepyceros melampus)*	-	48	20	-	-	-	-	-	-	68
Plain zebra *(Equus quagga)*	4	-	-	-	-	-	-	6	-	10
Red hartebeest *(Alcelaphus buselaphus)*	-	-	-	-	26	-	-	-	-	26
Scrub Hare *(Lepus saxatilis)*	1	3	-	-	-	-	-	-	-	4
Secretary Bird *(Sagittarius serpentarius)*	-	-	1	-	2	-	-	-	-	3
Slender mongoose *(Galerella sanguinea)*	1	-	-	-	1	-	5	-	-	7
Steenbok *(Raphicerus campestris)*	5	9	16	2	2	-	16	-	4	54
Waterbuck *(Kobus ellipsiprymnus)*	3	-	-	-	-	-	-	-	-	3
Total	331	107	214	31	346	5	222	106	56	1398

Figure 22 shows overall trends in the densities of the main ungulate species from 1995 - 2022 in relation to annual precipitation. Although rainfall was high from 1995 - 2002, species density was low, which could be because the numbers were still picking up and the area sampled was relatively small. The density of the main prey species declined during the years of drought in 2003, 2009, and 2019, which was the result of variation in rainfall. Rainfall was low in 2022, while the density of the main species increased.

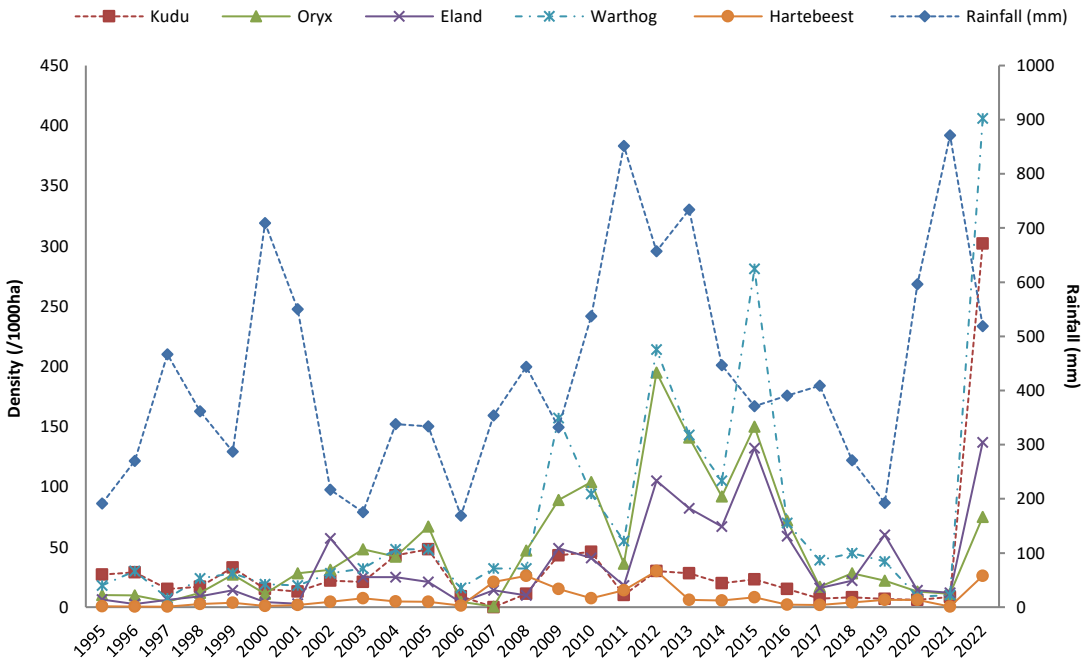


Figure 22: Density estimates of species in relation to rainfall from 1995 – 2022.

Seasonal Count across CCF farms

Starting in July 2017, CCF began conducting seasonal, rather than only annual, strip counts across all CCF farms. These seasonal counts follow transects used in the past for annual counts with added routes to cover Osonanga, Janhelpman, the non-game fenced section of Bellebenno, Padberg and Otjenga (Figure 23). They are repeated twice (one morning and one-afternoon count) for each season (hot, wet, cold dry and hot dry). The 11 transects cover a total of ~213 km (426 km including the repetitions). Densities were estimated for the most commonly seen species following the same methods as for Big Field counts.

Densities for the most frequently sighted species were calculated using the 'Distance Sampling in R' package using R Studio.

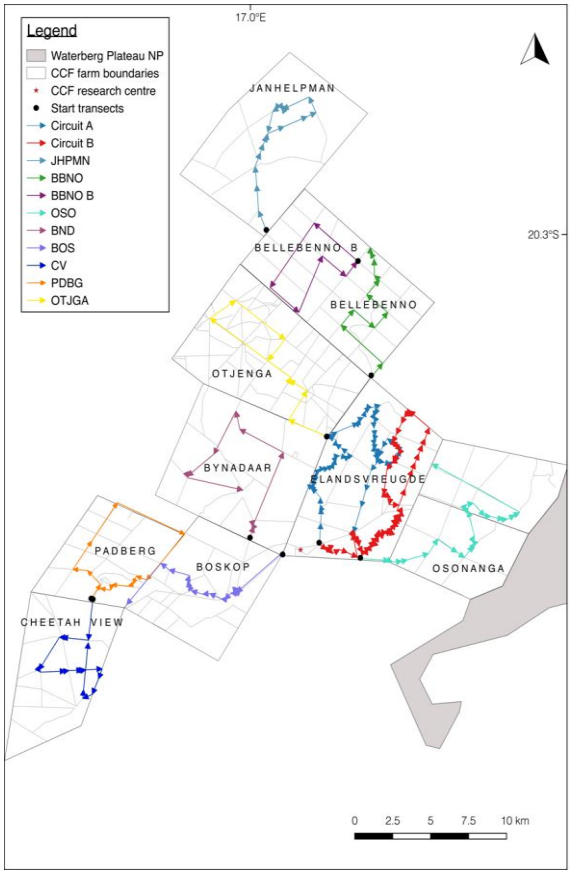


Figure 23: Map of seasonal strip count transects on CCF land.

Most of the species are distributed across CCF land with the exception of impala and plain zebra. Impala are largely restricted to Cheetah View and Boskop while plain zebra are only found in the game-fenced portion of Bellebenno, Padberg, and Boskop. Although the species were sighted, their counts were insufficient to run analyses in R, hence, impala, plains zebra, and red hartebeest densities could not be calculated for all three seasonal counts. Giraffe and kudu had a lower count for analysis for two seasons and springbok only had a lower count for one season.

The densities of giraffe, kudu, oryx, springbok, steenbok, and red hartebeest were lower in 2022 compared to 2021. There was a slight increase in the abundance of some species in the cold wet season. This may be because of food and water availability from good rainfall, resulting in good reproduction and survival rates of the animals. Based on the density estimates in Table 7, eland, steenbok, springbok, oryx, warthog, and common duiker are the most abundant species on CCF land. However, overall there appears to be a decline in ungulate densities.

Table 7: Density estimates of main species counted during seasonal strip counts, during the wet season of 2021 and 2022. Cells marked with * had fewer observations to run the Distance analysis.

Density estimate (individual/km^2)						
	2021			**2022**		
Species	**Hot Wet**	**Cold Wet**	**Hot Dry**	**Hot Wet**	**Cold Wet**	**Hot Dry**
Common Duiker (*Sylvicapra grimmia*)	0.05 (0.02-0.16)	0.14 (0.05 - 0.38)	0.38 (0.10 - 0.56)	0.02 (0.004-0.07)	0.003 (0.001 - 0.01)	0.01 (0.01 - 0.03)
Eland (*Taurotragus oryx*)	0.18 (0.03 - 1.17)	1.14 (0.21 - 6.17)	7.21 (0.35 - 146.65)	0.02 (0.003 – 0.008)	0.004 (0.001 – 0.01)	0.21 (0.17 – 0.04)

Giraffe (*Giraffa camelopardalis*)	0.08 (0.02 - 0.29)	0.37 (0.13 - 1.05)	0.44 (0.11 - 1.78)	0.03 (0.01 - 0.08)	*	*
Kudu (*Tragelaphus strepsiceros*)	0.25 (0.10 - 0.60)	0.56 (0.25 - 1.29)	0.79 (0.44 - 1.43)	0.04 (0.02 - 0.11)	*	0.003 (0.001 – 0.01)
Oryx (*Oryx gazella*)	0.81 (0.41 - 1.57)	0.43 (0.19 - 0.98)	0.34 (0.17 - 0.69)	0.02 (0.01 – 0.07)	0.003 (0.002 - 0.01)	0.004 (0.002 – 0.009)
Red hartebeest (*Alcelaphus buselaphus caama*)	0.03 (0.01 - 0.15)	0.04 (0.01 - 0.21)	*	*	*	*
Springbok (*Antidorcas marsupialis*)	1.16 (0.12 -11.23)	3.25 (0.21 - 49.60)	4.80 (0.24 - 95.14)	0.01 (0.01 -0.05)	*	*
Steenbok (*Raphicerus campestris*)	0.53 (0.29 - 0.96)	0.72 (0.41 - 1.27)	2.23 (1.39 - 3.59)	0.13 (0.08 - 0.21)	0.03 (0.02 – 0.01)	0.001 (0.001 – 0.002)
Warthog (*Phacochoerus africanus*)	0.31 (0.14 - 0.68)	0.20 (0.05 - 0.73)	0.55 (0.26 - 1.17)	0.03 (0.01 - 0.11)	0.02 (0.01 - 0.04)	0.005 (0.001 – 0.02)
Plains zebra (*Equus quagga*)	0.35 (0.06 - 2.16)	*	2.13 (0.41 - 1.10)	*	*	*
Impala (*Aepyceros melampus*)	1.06 (0.19 - 5.78)	0.14 (0.03 - 0.63)	0.22 (0.05 - 1.07)	*	*	*

3. Bush Encroachment and Biodiversity

Bush encroachment is an environmental problem threatening Namibia's rangeland productivity, food security, and biodiversity conservation nationwide. However, it also has the potential for a renewable source of alternative energy, especially in rural areas, and may alleviate electricity shortages projected to affect Namibia in the near future. The CCF Bush Project, now housed at the Biomass Technology Demonstration Center (BTDC) on the main campus, was established to investigate uses of the encroaching bush. This is the production site for BUSHBLOK®. The former BUSHBLOK® factory in Otjiwarongo continued operations as the CCF depot.

CCF has collaborated with the Namibian University of Science and Technology (NUST) and others for related studies. CCF, the University of Hamburg in Germany, and UNAM have an agreement to study the impacts of bush encroachment and bush thinning on soil and vegetation characteristics, and on the savannah water budget. This project is part of the Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL). The project has three sites in Namibia and includes CCF farms. In November 2014, data collection equipment consisting of rain gauges and soil moisture meters, as well as remote digital data transmitters were installed in previously harvested sites and current bush-encroached sites on CCF farms Cheetah View and Boskop. Both UNAM and Hamburg partners continued with field research during this reporting period, with the involvement of their graduate students and faculty members.

As part of our ongoing research activities, the Biomass programme together with other local and international partners have acquired an EU grant (grant agreement No 101036401; STEAMBIOAFRICA [SBA]) that investigates a torrefaction process using superheated steam. In March CCF hosted the "6 month" meeting of all 15 partner organizations (4 Namibian, 11 Other). CCF Forest and Safety officer, David Shipingana physically attended Steam Bio Africa's "12 month" meeting in Gaborone, Botswana. Stakeholders who could not physically attend the meetings joined via Zoom.

Research activities within the grant scheme include preliminary soil sampling (data collection) to look at carbon content following bush thinning. Soils were collected in March, from CCF farms and farm Ombanje (Otavi district) where bush thinning has taken place. This sampling process was conducted by the SBA overall project coordinator Prof. Heike Knicker from Seville, Spain (IRNAS-CSIC), as well as CCF Senior Ecologist and Forest Steward, Matti Nghikembua and Forest and Safety officer David Shipingana (Figure 24). A total of 76 samples were collected from four different farms, and were analysed at the Namibia University of Science and Technology (NUST) science laboratory. Analysis of soil properties (chemical and physical properties) between harvested and non-harvested bush encroached habitat in order to understand long-term natural regeneration and recovery of the soils and restored vegetation continued. The results will be utilised as a baseline for further ecological research and monitoring of harvested sites. The findings have applications to bush harvesting operations in both commercial and communal farmlands. The research will also provide necessary reference information to the public and for farmland management. This project is part of David Shipingana's honours research.

In 2022 construction of infrastructure for SBA was obvious at the BTDC. A slab for the associated material handling shed was completed and, though not erected, the steel for the shed had arrived. A large gantry to house the torrefaction machine was constructed and the solar panels for its powerplant were installed.

Figure 24: Soil sampling process conducted out in the field by prof. Heike Knicker (IRNAS-CSIC), CCF ecology team and officials from N-BiG, March 2022.

David Shipingana continued as Forestry and Safety Officer on the biomass team. Forest Steward and Senior Ecologist Matti Nghikembua continued studies in Finland for a PhD in Forestry in addition to overseeing biomass activities. Matti and David led a successful FSC inspection audit in August 2022.

Matti continued progress towards a PhD in Forestry with completion of a third paper: Nghikembua, M.T., Marker, L.L., Brewer, B., Leinonen, A., Mehtätalo, L., Appiah, M., Pappinen, A., 2022. Response of woody vegetation to bush thinning on freehold farmlands in north-central Namibia, which has been accepted for publication in the Scientific Reports Journal *(10.1038/s41598-022-26639-4).*

Dr Bruce Brewer, CCF's General Manager, remained active in groups involved with bush encroachment in Namibia. These included the Namibia Biomass Group (N-BiG), and the GIZ/MAWF De-bushing project, which is supported by the German Development Authority.

4. Playtree Research

Cheetahs are known to frequent scent-marking posts ('play trees') for territorial marking and social interactions. Olfactory communication plays a vital role in conspecific interactions as it allows for communication in the absence of the sender. Furthermore, every mark can possess detailed information about the sender. Namibian cheetahs are highly selective when choosing sites for scent-marking.

CCF has conducted camera trap surveys at such scent-marking sites on their property since 2005 to estimate cheetah and leopard densities. Assessing trends in abundance and density is crucial to inform conservation and management strategies.

Since recent years, we observe leopards more frequently at play trees. CCF continues to study and investigate the effect of leopards on cheetahs as we know that interspecific competition may form a threat towards the survival of cheetahs. We recently found that cheetahs visit these play trees at different times of the day and select specific play trees that are visited less frequently by leopards. Increasing densities of leopards, as seems to be the case on Namibian farmlands, may reduce availability of scent-marking sites, so we continue to monitor the interactions between these two felids (Figure 25).

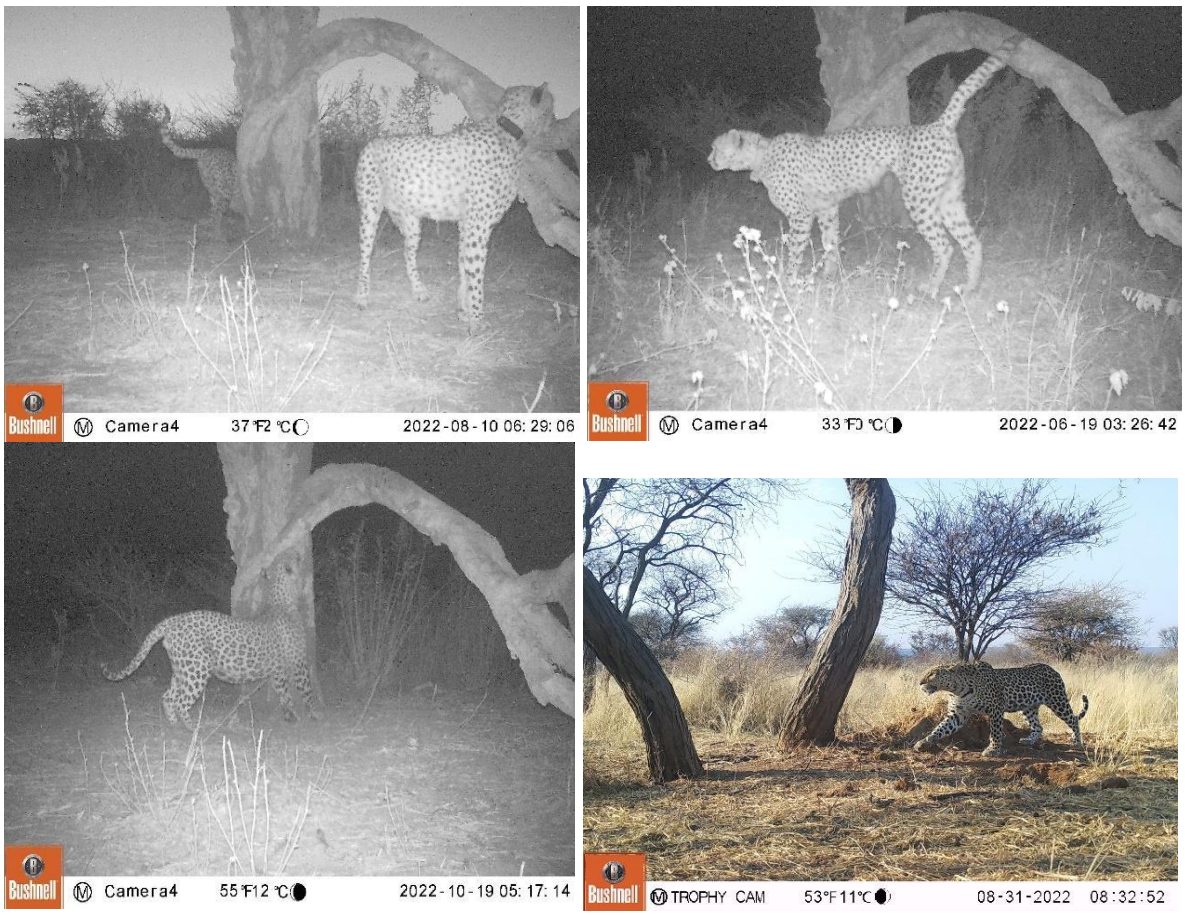


Figure 25: A few camera trap photos of cheetahs and leopards at play trees during 2022.

5. Giraffe Monitoring

CCF has been monitoring and identifying giraffes using camera trap photos, photos taken during waterhole counts and opportunistic photos taken by CCF staff, interns and visitors. The monitoring includes identifying individuals by recording their age and sex ratios, plus visitation times. Thus, determining the function of giraffe ecotourism while also beginning to comprehend population dynamics and herd dynamics for potential management applications are the goals of the study on CCF sites.

Amy Tyler, a CCF intern, used the time stamp from camera trap photos to calculate the minutes that giraffe visits from January to July at waterholes in the Ecological Reserve and Bellebenno. According to the findings, activity around waterholes was substantially less intense in March and April than it was in January, May, June, and July (Figure 26). In June, giraffe appear to spend almost six times as much time at waterholes as they do at other times of the year. They may be maximizing the usage of water as soon as it is discovered because

June is a dry month rather than wasting time traveling to other sources that may or may not have water. At the end, giraffes only utilized 12 waterholes during those specific months in 2022.

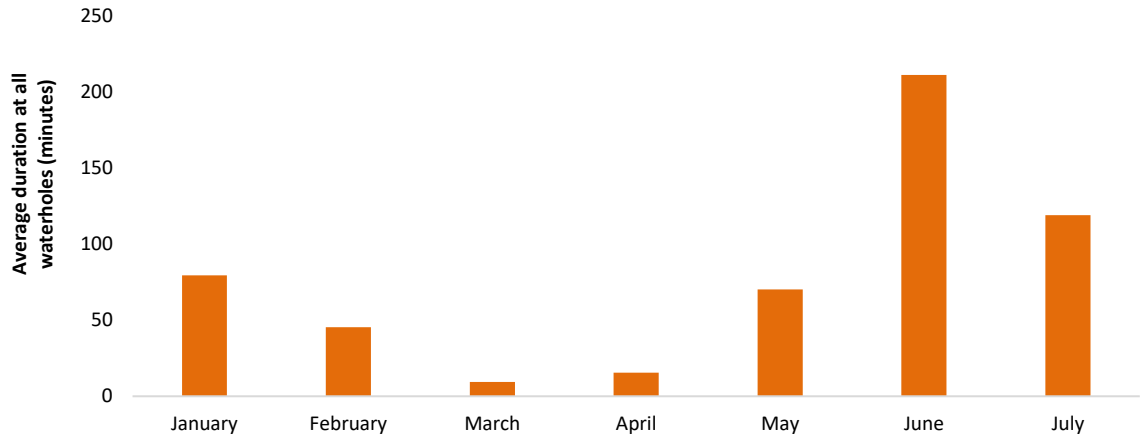


Figure 26: Average duration of giraffe activity across all waterholes from January – July 2022.

6. Visiting Researchers

Professor Manuel Martin-Vivaldi: hornbill and hoopoes researcher

Professor Manuel Martin-Vivaldi from the Universidad de Granada, Spain along with his two students visited in September to continue their study on hornbills and hoopoes. The two students stayed a further three months to continue the project.

Dr. Mark Stanback: hornbill researcher

Dr. Mark Stanback from Davidson College, US visited to continue his long-term research on hornbills in November after not being able to visit his study site for two years due to the COVID-19 pandemic.

G. Scientific Publications and Papers

1. Puplished Papers

Aslam, A., O'Flaherty, C., Marker, L. and Rooney, N. (2022). Factors affecting livestock guarding dog's proximity to their herd and association with perceived effectiveness. Journal of Veterinary Behavior Clinical Application and Research, 51, 43-51.

Atkinson H, Cristescu B, Marker L, Rooney N (2022) Bush encroachment and large carnivore predation success in African landscapes: A review. Earth, 3, 1010-1026.

Atkinson H, Cristescu B, Marker L, Rooney N (2022) Habitat thresholds for successful predation under landscape change. Landscape Ecology, 37, 2847–2860.

Bouchet, H., Lemasson, A., Collier, K., Marker, L., Schmidt-Küntzel, A., Johnston, B., Hausberger, M. (2022). Early life experience and sex influence acoustic repertoire use in wild-born, but hand-reared, captive cheetahs (*Acinonyx jubatus*). Developmental Psychobiology, 64(7):e22309.

Mangiaterra S., Marker L., Cerquetella. M., Galosi L., Marchegiani, A., Gavazza, A.and Rossi, G. (2022). Chronic stress-related gastroenteric pathology in cheetah: relation between intrinsic and extrinsic factors. Biology, 11, 606-616.

Mangiaterra, S., Schmidt-Küntzel, A., Marker, L., Di Cerbo, A., Piccinini, R., Guadagnini, D., Turba, M.E., Berardi, S., Galosi, L., Preziuso, S., Cerquetella, M. and Rossi, G. (2022). Effect of a Probiotic Mixture in Captive Cheetahs (*Acinonyx Jubatus*) with Gastrointestinal Symptoms—A Pilot Study Effect of a Probiotic Mixture in Captive Cheetahs (*Acinonyx Jubatus*) with Gastrointestinal Symptoms—A Pilot Study. Animals, 12, 395-405.

Marker, L., Honig, M., Pfeiffer, L., Kuypers, M., Gervais, K. (2022). Captive rearing of orphaned African Wild dogs (*Lycaon pictus*) in Namibia: A case study. Zoo Biology, 41, 181-189.

Marker, L., Pfeiffer, L., Maketo, T., Pöntinen, A. (2022). Women's thirty-year contribution to cheetah conservation: An insight into volunteer-based conservation program supported by female scientists. Frontiers in Conservation Science, https://doi.org/10.3389/fcosc.2022.1028851

McGowan E. N, Marks, N.J., Maule, A.G., Schmidt-Küntzel, A., Marker, L.L., Scantlebury, D. M. Categorising cheetah behaviour using tri-axial accelerometer data loggers: a comparison of model resolution and data logger performance. Movement Ecology, 10, https://doi.org/10.1186/s40462-022-00305-w.

Ruble DB, Verschueren S, Cristescu B, Marker LL (2022) Rewilding apex predators has effects on lower trophic levels: Cheetahs and ungulates in a woodland savanna. Animals, 12, 3532.

Verschueren, S., Briers-Louw, W.D., Monterroso, P., Marker, L. Local-scale variation in land use practice supports a diverse carnivore guild on Namibian multiple-use rangeland. Rangeland Ecology & Management, 79, 64-76.

Verschueren S, Fabiano EC, Kakove M, Cristescu B, Marker L (2022) Reducing identification errors of African carnivores from photographs through computer-assisted workflow. Mammal Research. Online First.

Walker, E., Verschueren, S., Schmidt-Küntzel, A., Marker, L. (2022). Recommendations for the rehabilitation and release of wild-born, captive-raised cheetah: the importance of pre- and post-release management for optimising survival. Oryx, 56, 495-504.

2. Accepted Papers

Marker, L., Connolly, E., Saed, A.H., Reasoner, E., Aden, K.Y., Cristescu B. Cheetahs persist in the wild in Somaliland's remote Awdal region. Oryx. In press.

Nghikembua, M.T., Marker, L.L., Brewer, B., Leinonen, A., Mehtätalo, L., Appiah, M., Pappinen, A. Response of woody vegetation to bush thinning on freehold farmlands in north-central Namibia. Scientific Reports. In press.

3. Submitted Papers – In Revision

Verschueren, S., Fabiano, E.C., Nghipunya, E.N., Cristescu, B., Marker, L. Social organization of a solitary carnivore, the leopard (*Panthera pardus*), inferred from behavioural interactions at marking sites.

Marker, L., Shipingana, D., Fleury, G., Pfeiffer, L., Pöntinen, A., Nghikembua, M.T. Promoting human-carnivore coexistence through outreach in Namibia's eastern communal conservancies.

4. Submitted Papers

Bandyopadhyay, K., Cristescu, B., Alfeus, M., Koprowski, J.L., Marker, L. Declining trends in density and biomass, and incipient population halving of African herbivores in a woodland savanna.

Bandyopadhyay, K., Cristescu, Beck, J.L., Koprowski, J.L., Marker, L. Status and density of threatened Kori bustard in a woodland savanna.

Schmidt-Küntzel, A., Yashphe, S., Hamalwa, H., Ismail, S.H., Tricorache, P., Brewer, B., O'Brien, S.J., Marker, L. Genetic support to uplist an African cheetah subspecies, *Acinonyx jubatus soemmeringii*, imperiled by illegal trade.

Tordiffe, A.S.W., Jhala, Y.V., Boitani, L., Cristescu, B., Kock, R.A., Meyer, L.R.C., Naylor, S., O'Brien, S.J., Schmidt-Küntzel, A., Stanley-Price, M., van der Merwe, V., Marker, L. The case for the reintroduction of cheetahs (*Acinonyx jubatus*) to India: A response to Gopalaswamy et al. (2022).

5. Published Book Chapters

Hanssen, L., Lines, R., Thomson, G., Marker, L., LeRoux, N. & Pfeiffer, L. (2022). A Conservation Assessment of African Wild Dog (*Lycaon pictus*) In: NCE, LCMAN, MEFT (eds) 2022. Conservation Status and Red List of the Terrestrial Carnivores of Namibia, pp. 83-91, MEFT, LCMAN & NCE, Windhoek, Namibia.

Melzheimer, J., Weise, F., Schmidt-Kuentzel, A., Marker, L., Nghikembua, M., Fleury, G., Wachter, B. & Portas R. (2022). A Conservation assessment of cheetah (*Acinonyx jubatus*) In: NCE, LCMAN, MEFT (eds) 2022. Conservation Status and Red List of the Terrestrial Carnivores of Namibia, pp. 14-22, MEFT, LCMAN & NCE, Windhoek, Namibia.

6. MSc. Papers

Hamalwa, H. (2022). Mitochondrial analysis for systematics and population structure in Kenyan cheetahs. (Unpublished MSc thesis). University of Namibia, Windhoek, Namibia.

IV. Conservation

Whether perceived or real, livestock loss to cheetahs is an economic and emotional issue as farmers' livelihoods depend on the economic success of their livestock and wild game industries. While many Namibian farmers are very respectful of nature and tolerate a certain level of loss, some resort to lethal predator control rather than alleviating their problems in a non-lethal manner through appropriate livestock and predator management. By addressing livestock-predator conflict through a conservation management strategy that benefits both humans and cheetahs, CCF is ensuring the long-term species' survival on Namibian farms and has raised greater awareness of better farm practices.

A. Livestock Guarding Dog Programme

1. Programme Overview

CCF's Livestock Guarding Dog Programme (LGD) continues to be one of the most successful conservation projects to assist farmers with predator conflict in Namibia. To date, CCF has placed 719 (374M, 345F) Livestock Guarding Dogs with farmers throughout Namibia and other parts of Africa. As of 31 December 2022, there were 218 (105M, 113F) dogs alive in the programme (Table 8), of which 168 (85M, 83F) are working dogs and 41 (19M, 22F) are retired or housed as pets.

Table 8: Dogs alive as of 31 December 2022. The dogs in South Africa and one female in Tanzania are now pet dogs.

Location	M	F	Total
Commercial	29	28	57
Commercial (CCF Working)	7	16	23
Commercial (CCF Puppies)	8	15	23
Communal	24	18	42
Emerging Commercial	13	9	22
Resettled	3	6	9
Freehold	3	0	3
Tanzania	1	1	2
Total Working	88	93	181
Retired/Pet (Breeding)	17	20	37
Total dogs alive:	**105**	**113**	**218**

CCF began a collaboration with the Ruaha Carnivore Project (RCP) in Tanzania in 2013, which is working to mitigate human-carnivore conflict in the Ruaha area. A large part of this conflict is driven by attacks on livestock, so CCF has provided RCP with a total of 10 (5M, 5F) puppies throughout the years to protect the livestock of Maasai and Barabaig farmers. Although the program has been quite successful, only two (1M, 1F) dogs are still working and one female had to be placed as a pet due to an eye issue that affected her working skills.

CCF has also donated numerous puppies over the years to Cheetah Outreach, another facility that works to save the wild cheetah in South Africa, to help form their own livestock guarding dog programme. Since the

trial programme was so successful in 2005, they also began breeding and providing Anatolian shepherds to South African farmers after the CCF model. The programme is key to helping farmers protect their livestock and thus save more cheetahs.

Currently, there are 21 (5M, 16F) intact dogs in CCF's breeding programme (Table 9), of which 18 (4M, 14F) reside at CCF as working dogs, two (1M, 1F) reside on commercial farms, and two (1M, 1F) resides in South Africa. Four dogs were added to the breeding programme and two dogs were removed from Table 8 in 2022, see below;

- Catalina (SB#883), a future breeding female was donated on 17 January 2022 by Reni van der Merwe as part of a breeding agreement with her where we lent Brooks (SB#814), one of our breeding males, to cover her female, Naartjie (SB#886).

- Misty-Lee (SB#881), a future breeding female donated by Timm Miller on 2 March 2022 as part of a breeding agreement due to the donation of Dusty (SB#751) as an offsite breeding female in 2019.

- Zeke (SB#882), a future breeding male donated by Timm Miller on 2 March 2022 as part of a breeding agreement due to the donation of Dusty (SB#751) as an offsite breeding female in 2019.

- Jenny (SB#884), a future breeding female was imported from Germany on 16 April 2022.

- Bowie (SB#832), a Bella (SB#788) puppy was removed from the breeding program due to elbow dysplasia on 22 May 2022.

- Delarey (SB#707), a donated breeding male to the Cheetah Outreach was removed from the breeding program due to passing away from snake bite on 4 March 2022.

Table 9: Intact livestock guarding dogs as of 31 December 2022.

SB#	Dog Name	Born	Sex	Working/Pet	Farm Type	Country
405	Pandora	8/5/2010	F	Pet	N/A	South Africa
431	Firat	8/31/2010	M	Pet	Commercial	Namibia
628	Susie	11/11/2015	F	Working (CCF)	Commercial	Namibia
660	Bolt	5/20/2016	M	Working (CCF)	Commercial	Namibia
709	April	8/1/2017	F	Working (CCF)	Commercial	Namibia
718	Tika	8/8/2017	F	Working (CCF)	Commercial	Namibia
751	Dusty	8/10/2018	F	Working	Commercial	Namibia
772	Koda	4/21/2019	F	Working (CCF)	Commercial	Namibia
788	Bella	1/5/2019	F	Working (CCF)	Commercial	Namibia
789	Mia	6/14/2019	F	Working (CCF)	Commercial	Namibia
799	Kuvvet	5/7/2020	F	Working (CCF)	Commercial	Namibia
809	Katira	6/15/2020	F	Working (CCF)	Commercial	Namibia
810	Ana	6/15/2020	F	Working (CCF)	Commercial	Namibia
814	Brooks	9/1/2017	M	Working (CCF)	Commercial	Namibia
825	Dionne	3/9/2021	F	Working (CCF)	Commercial	Namibia
833	Nahanni	7/9/2021	F	Working (CCF)	Commercial	Namibia

837	Oonkondo	5/14/2021	M	Working (CCF)	Commercial	Namibia
881	Misty-Lee	01/06/2022	F	Working (CCF)	Commercial	Namibia
882	Zeke	01/06/2022	M	Working (CCF)	Commercial	Namibia
883	Catalina	10/19/2021	F	Working (CCF)	Commercial	Namibia
884	Jenny	13/12/2021	F	Working (CCF)	Commercial	Namibia

The LGD programme is a crucial part of CCF's mission to conserve the wild cheetah and its continuing success is due to the efforts of dedicated CCF staff. Gebhardt Nikanor has worked on placing dogs with farmers for over 10 years. Calum O'Flaherty arrived in June 2019 to manage the programme. Eveline Iikondja has taken over from Stella Emvula in assisting to manage the programme since December 2020.

2. Breeding and Puppy Placements

Since the programme's inception, 98 litters have been born at CCF for a total of 795 (390M, 389F, 16U) puppies. From January to December 2022, a total of 32 (15M, 17F) puppies were born to CCF's onsite breeding females. Of these 2022 litters, one male was still born (Table 10). Of the puppies born to CCF's onsite females, 42 (26M, 16F) were placed on farms.

Table 10: Puppies born and type of placement as of 31 December 2022 (K = Commercial Farm; C = Communal Farm; EC = Emerging Commercial Farm; R = Re-settled Farm; P/B = Pet/Breeder; D = Dead; NP = Not Placed; IP = Intact Puppies).

Sire/Dam	**814/709**	**660/789**	**847/810**	**814/772**	**660/628**	**837/709**	**837/799**	**847/809**	**847/810**	**Totals**		
DOB:	**25Oct'21**	**23Nov'21**	**28Nov'21**	**05Dec'21**	**22Dec'21**	**03Oct 22**	**08Oct 22**	**24Nov 22**	**13Dec'22**			
Sex:	**M F**	**M F**	**M F**	**M F U**	**M F**	**M F**	**M F**	**M F**	**M F**	**M**	**F**	**U**
K	4 2	3 2	1 0	4 0 0	1 2	2 0	1 0	0 0	0 0	16	6	0
C	0 0	0 2	1 3	0 0 0	0 0	0 0	0 0	0 0	0 0	1	5	0
EC	2 1	2 1	0 0	1 0 0	0 0	0 2	3 0	0 0	0 0	8	4	0
R	0 0	0 0	1 1	0 0 0	0 0	0 0	0 0	0 0	0 0	1	1	0
F	0 0	0 0	0 0	1 0 0	0 0	0 0	0 0	0 0	0 0	1	0	0
P/B	0 0	0 0	0 0	0 0 0	0 0	0 0	0 0	0 0	0 0	0	0	0
D	0 0	0 2	0 0	0 3 1	0 0	0 0	1 0	0 0	0 0	1	5	1
NP	0 0	0 0	0 0	0 0 0	0 0	0 3	0 3	5 3	3 6	8	15	0
Total	6 3	5 7	3 4	6 3 1	1 2	2 5	5 3	5 3	3 6	36	36	1
IP	0 0	0 0	0 0	0 0 0	0 0	0 0	0 0	0 0	0 0	0	0	0

- April (SB#709), was bred with our Anatolian male Brooks (SB#814) for the second time in August 2021. She gave birth to 9 (6M, 3F) puppies on 25 October 2021. These puppies were placed in February 2022. Six of these puppies (4M, 2F) were placed on commercial farms. The remaining 3 puppies (2M, 1F) were placed on emerging commercial farms.

- Mia (SB#789) was bred with our Kangal male Bolt (SB#660) for the first time in September 2021. She gave birth to 12 (5M, 7F) puppies on 23 November 2021. One female was stuck in the birth canal

and died several hours after birth from fluid in the lungs (SB#858). Another female was stillborn (SB#859). Her remaining 5 males and 5 females were placed in February 2022. Five of these puppies (3M, 2F) were placed on commercial farms with two females also being placed on commercial farms. The remaining 3 puppies (2M, 1F) were placed on emerging commercial farms.

- Ana (SB#810), a mongrel working and breeding dog at CCF, was bred with a mongrel working dog Bushman (SB#847) for the first time and she gave birth on 28 November 2021 to 7 (3M, 4F) puppies. All puppies were placed in February 2022. Four of her puppies (1M, 3F) were placed on communal farms, with a further two puppies (1M, 1F) being placed on resettled farms. The final male puppy was placed on a commercial farm.

- Koda (SB#772) was bred with our Anatolian male Brooks (SB#814) for the first time in October 2021. She gave birth to 10 (6M, 3F, 1U) puppies on 05 December 2021. One puppy was stillborn (SB#874) and showed signs of dying in the womb before birth as it was not fully formed. A female puppy was also stillborn (SB#875), and another female was rolled on by the dam a few days later (SB#876). The remaining female (SB#873) also passed away on 7 February 2022 during her castration. The remaining puppies were placed in March 2022. Five puppies (5M, 0F) were placed on commercial farms and the other male on an emerging commercial farm.

- Susie (SB#628) was bred with our Kangal male Bolt (SB#660) for the fourth time. She gave birth on 22 December 2021 to 3 (1M, 2F) healthy puppies. These puppies were placed in March 2022. All three (2M, 1F) of these puppies were placed on commercial farms.

- April (SB#709), was bred with our Kangal male Oonkondo (SB#837) for the first time in August 2022. She gave birth to 7 (2M, 5F) puppies on 03 October 2022. Four of these puppies were placed in December 2022. Two of them (2M, 0F) were placed on commercial farms. The other two puppies (0M, 2F) were placed on emerging commercial farms. The remaining 3 puppies will be placed in January 2023.

- Kuvvet (SB#799), was bred with our Kangal male Oonkondo (SB#837) for the first time in August 2022. She gave birth to 8 (5M, 3F) puppies on 08 October 2022. One male puppy was stillborn (SB#903). Four of these puppies were placed in December 2022. One of them (1M, 0F) was placed on a commercial farm. The other three puppies (3M, 0F) were placed on emerging commercial farms. The remaining 3 puppies will be placed in January 2023.

- Katira (SB#809), a mongrel working and breeding dog at CCF, was bred with a mongrel working dog Bushman (SB#847) for the first time and she gave birth on 24 November 2022 to 8 (5M, 3F) healthy puppies who will be placed in February 2023.

CCF delivers each puppy to their new farm to ensure the farmer and workers are properly trained on the correct methods of raising a livestock guarding dog and to make sure the puppy settles into their new farm. Each farmer receives packets of information covering the care and training of their livestock guarding dog as well as an Integrated Livestock and Predator Management book to assist with predator-friendly management.

3. Follow-up on Prior Placements and Health Survey

Before any dog is placed on a farm in Namibia, CCF conducts a pre-approval farm visit to ensure that the farm has the facilities and capabilities to ensure the health and wellbeing of the dog and that it can provide the right conditions for the dog to succeed as a livestock guarding dog. After a puppy is placed, CCF performs follow-up visits at three, six, and 12 months of age, and then yearly, to ensure the health and success of each dog. When dogs are found to be unhealthy or not doing their job, they are removed from that specific farm, evaluated, and placed on another farm if deemed appropriate or placed as pets if they are no longer able to work as livestock guarding dogs due to health or behavioural concerns.

During this reporting period, CCF staff visited 72 (40M, 32F) dogs, this number includes dogs counted multiple times because they have been visited several times throughout the year to complete their required 3-month, 6-month, and 1-year visits or follow-up visits. Of the 72 dogs, 10 (6M, 4F) received their one-year of age visit. The dogs were vaccinated against rabies and other canine diseases, had an overall health check, and were evaluated on their working success. The following are some outcomes and findings from the visits:

Dog Deaths

- Karlien (SB#372), a working dog on a commercial farm, died due to old age on 2 January 2022.
- Captain (SB#624), a working dog on a commercial farm, died from snake bite on 1 February 2022.
- Unnamed Dog (SB#873), a female puppy from Koda's (SB#772) litter, died on 7 February 2022 during her spay procedure.
- Kadafi (SB#400), a pet dog on a communal farm, died in her sleep due to old age on 1 March 2022
- Deleray (SB#707), a breeding dog donated to the Cheetah Outreach in South Africa, died from a snake bite on 4 March 2022.
- Bella (SB#753), a working dog on a commercial farm, died from snake bite on 8 March 2022.
- Moses (SB#838), a working dog on a commercial farm, died after he jumped from a moving vehicle on his farm on 17 March 2022.
- Pohamba (SB#616), a working dog on an emerging commercial farm, died from a snake bite on 30 March 2022.
- Wagter (SB#828), a working dog on a commercial farm, was returned to CCF due to walking uncomfortably. It was discovered he had severe elbow and hip dysplasia and was euthanized on 16 April 2022 due to the severity of the dysplasia. See section, Dog Health, for more information
- Bondera (SB#731), a working dog on a communal farm, was killed by a baboon on 30 April 2022.
- Tylie (SB#378), a pet dog, was euthanized due to a rapid decline in health brought on by old age on 2 May 2022.
- Bully (SB#850), a working dog on a commercial farm, died of an unknown disease on the 2 May 2022.
- Fire (SB# 787), a working dog on a communal farm, died from snake bite on 4 May 2022.
- Tekkie (SB#438), a working dog on a commercial farm, was euthanized on 6 May 2022 due to not fully recovering from surgery. See section, Dog Health, for more information
- Mike (SB#830), a working dog on an emerging commercial farm, died from snake bite on 20 May 2022.
- Kaspaas (SB# 456), a pet dog, was euthanized due to a ruptured spleen on 14 September 2022. See section, Dog Health, for more information
- Bonza (SB#365), a pet dog on a commercial farm, was euthanized on 17 September 2022 due to old age.
- Meisie / Sina (SB#752), a pet dog, was euthanized due to an infection in her lungs on 17 September 2022

- Aleya (SB#424), an on-site working dog, was euthanized on 20 September 2022 due to a severe Infection in her abdomen. See section, Dog Health, for more information

- Rex (SB#822), a working dog on a commercial farm, died from snake bite on 01 October 2022.

- Nakakule (SB#860), a working dog on a resettled farm, died from snake bite on 6 October 2022.

- Unnamed Dog (SB#903), a male puppy from Kuvvet's (SB#799) litter, was stillborn on 08 October 2022.

- Leila (SB#595), a working dog a commercial farm died to SCC on 13 October 2022

- Bobby (SB#863), a working dog on a resettled farm, died from snake bite on 15 November 2022.

- Bravo (SB#653), a pet dog, was euthanized due to a rapid decline in health brought on by leukemia on 6 December 2022.

- Cappuccino (SB#407),), a pet dog, was euthanized due to a rapid decline in health brought on by old age on 28 November 2022

Rehomed dogs

- Frank (SB#880), an unidentified Anatolian was found by the SPCA on 26 December 2021, brought to CCF, and found not to microchip number, meaning he was not one of our dogs. He was thus placed as a pet dog on a commercial farm on 29 January 2022.

- Wagter (SB#769), a working dog on a resettled farm was returned on 26 February 2022 due to a poor work ethic and no longer going out with the herd. He was then re-evaluated with CCF's herd and rehomed as a working dog on a commercial farm on 16 April 2022.

- Shaera (SB#659), a working dog on a commercial farm was returned on 16 March 2022 due to poor work ethic. She was re-evaluated with our herd and re-homed as a working dog on 29 June 2022. Shaera returned once more on the 2 November 2022 for the same reason and the decision was made to re-home her on one of CCF's farms as a working dog on 23 December 2022.

- Rebecca (SB#820), a working dog on a commercial farm, was returned on 22 March 2022 due to poor work ethic, She was then re-evaluated with CCF's herd and rehomed as a working dog on 6 April 2022.

- Miracle (SB#836), a working dog on a commercial farm, wag confiscated on 2 February 2022 due to poor body condition and severe tick bite necrosis. Her condition was improved during her stay at CCF. She was then re-evaluated with CCF's herd and rehomed as a working dog on 18 May 2022. A month later she was returned on 4 June 2022 as she was not well bonded with livestock at that farm. She was re-evaluated further and re-homed as a working dog on 30 August 2022.

- Whitey (SB#692), a working dog on a communal farm, was returned on 26 February 2022 due to poor work ethic, he was then re-evaluated with CCF's herd and rehomed as a working dog on 11 May 2022

- Hendrick (SB#611), a pet dog returned on 26 March 2022, was not eating and losing body condition due to tongue cancer (see SCC section). His condition improved while at CCF and was placed as a pet dog closer to CCF on 21 May 2022.

- Tesa (SB#854), a working dog on an emerging commercial farm was returned due to poor work ethic as she refused to stay out with her herd and the farmer eventually sold their livestock. Upon arrival at

CCF on 20 May 2022, she was re-evaluated with our herd and re-homed as a working dog on 25 August 2022.

- Tiger (SB#796), a working dog on a resettled farm was confiscated on 31 May 2022 due to neglect. He was re-evaluated with our herd and re-homed as a working dog on 28 July 2022 at an emerging commercial farm. A few months later he was returned on the 9 September 2022 for poor work ethic, returning to his homestead early. He was re-evaluated further and rehomed on 25 October 2022.

- Snefel (SB#655), a working dog on a commercial farm was returned due to poor work ethic on 3 August 2022. She was re-evaluated with our herd and successfully re-homed as a working dog on 9 September 2022.

- Zipo (SB#842), a working dog on a commercial farm was returned on 11 August 2022 as he had killed a lamb. He was re-evaluated with our herd and re-homed as a working dog on 28 August 2022.

- Hans (SB#748), a working dog on a commercial farm was returned on 23 October 2022 for biting goats. She was re-evaluated with our herd and re-homed as a working dog on 30 October 2022; she was then found by the SPCA on the side of the road with another Anatolian so returned to CCF on 24 November 2022. Finally, Hans was re-homed as a working dog on 19 December 2022.

- Wagter (SB#630), a pet dog was confiscated due to neglect on 26 November 2022. He will soon be re-homed as a pet dog.

- Lady (SB#865), a working dog on a communal farm was returned due to neglect on 13 December 2022. She will be re-evaluated with our herd once her body condition has improved and will then be re-homed.

- Matwi (SB#811), a working dog on a commercial farm was confiscated due to neglect on 15 December 2022. She was re-evaluated with our dairy herd and will be re-homed as a working dog.

- Wagter (SB#793), a working dog on a communal farm was confiscated due to neglect on 15 December 2022. He will be re-evaluated with our herd once his body condition has improved, and will then be re-homed.

- Swartbek, (SB#755), a working dog on a commercial farm was confiscated on 24 December 2022 due to neglect. He has yet to put on some weight and have his condition improved before being re-evaluated with our herd. He will be re-homed shortly thereafter.

Other than routine vaccinations, CCF provides de-worming tablets, veterinary supplies for minor injuries, and topical antiparasitic agents that are available from donations. The medical supplies ensure that the dogs' health is a priority. Dog food is offered for purchase at a discounted rate to the farmers to encourage that a correct diet is followed consistently. The dogs' working success has been correlated with good care from the owner. Many farmers are part-time and thus their attention is divided between their farm and other business activities, however, this is not a problem if they have good herders who assist with livestock and dog care. It is important that the owners are in touch with the developmental phases of their dogs so that problems can be dealt with immediately as they occur, preventing bad habits from developing and the dog failing as a result.

4. Dog Health

All CCF's Anatolian shepherd and Kangal dogs, as well as the scat-detection dogs, are enrolled in a preventative medicine programme. Every month, a broad-spectrum anti-parasite product for endo-parasites is administered. The product utilised is rotated continually to help prevent the development of resistance. Every four weeks an ectoparasite prevention product is applied topically to prevent fleas, ticks, and mites. Each dog receives vaccinations annually against canine distemper virus, canine parvovirus, adenovirus, parainfluenza virus, and rabies virus. Each month every dog is weighed to make sure they are at healthy body

weight. The following are some of the special cases CCF's veterinary team dealt with during this reporting period:

- Ana (SB#810), a working dog on a CCF commercial farm and onsite breeding female, was brought in with a swollen paw. She was given an E-collar on 1 January 2022, and the paw was continually monitored and cleaned. Her medications were upped on 4 January 2022 to 20 mg twice daily for the next four days. Her wound was continually cleaned and monitored until it was healed. However, it was decided she would be retired as working dog and will remain at CCF as a breeding dog.

- Bowie (SB#832), an onsite working female, was brought in for a radiograph on 9 January 2022. Her hairline fracture is healing nicely, and she was confirmed to be able to go out with the herd. She will be monitored over time to evaluate her healing process. Another x-ray was administered on 9 March 2022, and the fracture healed nicely. Also on 9 March, three vaginal smears were performed as she had a light yellow mucus discharge. There were a lot of neutrophils in the smears, which was worrisome. However, her temperature was normal and she was continually monitored until recovered. Originally meant to be a breeding female, Bowie was spayed on 22 May 2022 due to her elbow dysplasia and was rehomed as a pet dog on 22 September 2022.

- Shiponga (SB#866), a daughter of Ana (SB#810), got stuck on a fence and required stitches on 11 January 2022. Her wound was reopened in the morning due to her scratching out the stitches, and so the edges were superglued together and she was placed on anti-inflammatories. She has since fully recovered and was placed on a communal farm on 25 February 2022.

- Spucky (SB#711), an onsite working male, was brought into the clinic on 16 January 2022 due to maggots being found in his hind paws. He was started on a course of antibiotics and given an E-collar, and his paw was continually monitored. Once he had recovered he resumed as a working dog at CCF.

- Mia (SB#789), an onsite breeding female, was brought to the clinic on 18 January 2022 for alopecia spots. The skin scraping did not bring about anything abnormal, and she was started on an F10 ointment treatment. Her fur recovered after a couple of weeks.

- Bella (SB#341), an onsite breeding female, was brought to the clinic on 25 January 2022 for a bilateral nasal discharge. The hematology showed no signs of infection. She was put on antibiotics and was monitored. She recovered on the 08 February 2022.

- Ugab (SB#710), a working dog on a commercial farm, was brought into the clinic on 29 January 2022 after being attacked by baboons. He sustained multiple bite wounds on his neck, right ear, side of head, and right shoulder. He received antibiotics, anti inflammatories, and pain medication. His wounds were stitched and drains were placed where the vets deemed necessary. He was continuously monitored over the next few days, and his condition improved rapidly. He was returned to his farm on 11 February 2022.

- Miracle (SB#836), a working dog on a commercial farm, was confiscated on 2 February 2022 for a severe case of tick bite necrosis and tick bite fever. She had multiple wounds all over her body. The vet team cleaned and stitched her wounds and she was put on a course of antibiotics and pain medications as well as acriflavine twice daily on her wounds. She has since fully recovered and was re-placed on a commercial farm on 18 May 2022.

- Catalina (SB#883), an onsite breeding female puppy, was found to have a sore throat on 12 February 2022. She was given a course of oral medication and closely monitored until she was fully recovered.

- Unnamed puppy (SB#878), a Susie (SB#628) puppy, was brought into the clinic due to a lack of interest in food on 13 February 2022. Her temperature was normal, but there seemed to be noise in

her lungs and was therefore placed on a course of medication and monitored over the next few days until she recovered.

- Rex (SB#848), a Mia (SB#789) puppy, was brought into the clinic on 20 February 2022 for a lack of interest in food and a lack of defecation. Both his temperature and behavior were normal, but his x-rays showed a buildup of gas in his intestines due to consuming sand. He was placed on medications and received fluids. The gas passed within 48 hours and fully recovered.

- Aleya (SB#424), was found to have a swollen left front paw after going out with the herd on 27 February 2022. She was given antibiotics and pain medication and continuously monitored until she recovered a few days later.

- Houdini (SB#870), a Koda (SB#772) puppy was brought into the clinic on 01 March 2022 due to lethargy and a lack of interest in food. He had a fever of 40.8 degrees Celsius, and was placed on an IV for fluids. He was also administered antibiotics and monitored over the next few days until recovered. Additionally, he had a lesion on his eyelid that needed to be stitched back together. He was placed on antibiotics and monitored, and the lesion healed well. On 30 March 2022, on his way to be placed on a farm, Houdini jumped out of the moving car and broke his back right leg. He was administered pain medication, antibiotics, and anti-inflammatories. Pins were placed in his leg under sedation, and he was carefully monitored in the clinic for a couple of months. He has since fully recovered and was placed on a freehold farm on 29 July 2022.

- Bolt (SB#660), an onsite breeding male, received x-rays for a hairline fracture on 09 March 2022. He received pain medications until there was no more pain upon palpation, and his movement was restricted to a smaller area while he underwent continued monitoring. He has now fully recovered.

- Tika (SB#718), an onsite breeding and working female, was hit by a car on 19 April 2022. She dislocated her left hind leg, and was given pain medication and anti-inflammatories. Re-setting of the leg was attempted, but she ultimately had to travel to Windhoek to undergo a femoral head removal. This surgery was successful. She has since recovered and has resumed as a working dog at CCF.

- Tekkie (SB#438), a retired offsite pet, was brought in on 28 April 2022 with a growth on her left elbow and a slight bend to the tibia on her right leg. The bend was suspected to have been an old break that had subsequently healed, and the growth was successfully removed. Unfortunately, Tekkie did not recover well from the anesthetic, and had to be euthanized on 06 May 2022.

- Dionne (SB#825), an onsite breeding female, was brought into the clinic with irritation around her eyes on 02 May 2022. She received eye ointment and went under sedation for hip x-rays on 03 May 2022. She stopped breathing under sedation, but was revived and recovered fully. Her eye irritation was believed to be due to an allergy which has not been determined yet, the clinic continues to do tests to investigate further.

- April (SB#709), an onsite working and breeding female, came into the clinic 05 May 2022 to remove a recurring lump on her throat. She took her drain out during recovery on 12 May 2022, but she recovered completely over the next few weeks and resumed as working dog at CCF.

- Tiger (SB#796), and offsite working dog, was confiscated on 31 May 2022 due to neglect by his farmer. Tiger arrived back at CCF incredibly skinny and with mange. He was treated and quarantined in the clinic for his recovery, and then returned to the kraal. He has since fully recovered and was re-placed on a commercial farm on 25 October 2022.

- Zeke (SB#882), an onsite breeding male puppy, underwent sedation on 20 June 2022 for a cyst removal on his side. Upon removal, it was discovered that Zeke had broken his rib sometime prior. The cyst was wrapped around the broken rib, and the surgery ended up being more complicated than originally expected. The sharp piece of rib was taken out, and Zeke recovered well in the clinic for the

next two weeks. X-Rays have been completed monthly to monitor the healing of the break and due to a good recovery; no further surgeries have been needed.

- Dionne (SB#825), an onsite breeding female was brought into the clinic on 04 July 2022 and diagnosed with GDV(Gastric dilatation and volvulus) , a gastropexy was performed on the 05 July 2022 where they discovered that she had an enlarged spleen and thus the clinic team had to perform and emergency splenectomy. She has since fully recovered and re-entered the breeding program at CCF.

- Repet (SB#507), a working dog on a commercial farm was brought into the clinic due to being attacked by porcupine on 28 July 2022; she was prescribed medication to reduce inflammation and pain. She was returned to her farm on 29 July 2022

- Spucky (SB#711), an onsite working male was brought into the clinic on 03 August 2022, due to being attacked by a honey badger. He was given a rabies booster and anti-inflammatory medication. He has now recovered and resumed as a working dog at CCF.

- Kaspaas (SB#456), a pet dog, was brought into the clinic on 8 September for being lethargic. He was treated and started showing signs of recovering. However, on 14 September 2022 he was euthanized after he crashed due to a ruptured tumor on his which was confirmed by necropsy.

- Aleya (SB# 424), an onsite working dog was brought into the clinic with a necrotic tick bite wound on her back on 09 September 2022. On 13 September 2022 she crashed with a fever, the vets managed bring her fever down, but she was still not eating or standing. Her health further deteriorated rapidly and the decision was taken to euthanize her on the 20 September 2022. Necropsy results show sever tick bite necrosis and subsequent infection was the cause of deterioration.

- Miracle (SB#836), a working dog on a commercial farm was brought into the clinic on 13 September 2022 due to being attacked by a baboon She had a big cut on the right hand side. The wound was cleaned and stitched. She has since fully recovered and returned to her farm on 29 September 2022.

- Bushman (SB#847), a working, breeding male on a commercial farm came in on 26 September 2022 for breeding and subsequently sustained an injury to his penis during coitus. The penis was flushed, cleaned and he was given anti-inflammatory. He has since fully recovered and returned to his farm.

- Mia (SB#789), an onsite breeding female was brought into the clinic with a lump on her left hind leg. Samples were taken and it was discovered this was a malignant cancer, which had not spread yet. On the 23 November 2022, it was decided a amputation of the leg would occur to prevent further spreading of the cancer. She was put on pain medication and antibiotics while the vet team cleaned her wound every day. She is being kept in the clinic until she recovers fully.

- Owca (SB#765), a working dog on a commercial farm came in on 13 November 2022 with two cysts and swollen anal glands on both sides of her tail, the vet team drained them out and out and put her on a course of antibiotics. After a few days the cysts refilled and she was re-scheduled for surgery on the 18 November 202, where they removed the cysts. These cysts have since refilled but due to the benign nature of them, it was decided to let her return to her. She will return in January 2023.

Squamous Cell Carcinoma (SCC)

Each dog that comes into CCF with SCC begins treatment. Each dog first receives a biopsy of the tongue which is taken to confirm the damage is caused by SCC. While under sedation, a prednisolone injection will be inserted into the tongue along the lines of damage. The prednisolone will help decrease inflammation and reduce pain but only lasts for one month. Monthly biopsies and injections will be completed to continue pain treatment and see if there is any cellular change. All dogs will be fed a soaked pelleted diet to ease eating. The condition of the dog and tongue will be monitored from month to month. CCF is working on finding a suitable chemotherapy drug to help treat any confirmed SCC cases.

- Fisch (SB#583), a working dog on a communal farm, had experienced problems with eating in the past, and we had encouraged the farmer to pre-soak his pelleted food, but his condition worsened. The farmer asked that the dog be returned and looked at on 9 November 2019 as he felt we could better provide for him. He was started on meloxicam tablets to reduce pain and inflammation although his case is moderately severe as he is missing the sides of his tongue. Fisch underwent blood draws in July and again in October to compare vitals, which were fine. He started on oral PetCam treatment which appeared to be better for him as it increased his appetite. He was brought into CCF again on 15 May 2021 and completed his first biopsy and treatment. It was discovered that his inflammation had since reduced, and his body condition had improved. On 09 October 2021 another biopsy was taken and a resection was performed as well. On 6 March 2022 a follow-up was conducted, which showed no further signs of SCC; however a new biopsy was taken. He was treated with Depo-Medrol and sent back to his farm. A further follow-up was conducted on the 10 November 2022; again it showed no further signs of SCC. He was given Depo-Medrol and sent back to her farm.

- Repet (SB#507), a resident working dog, had been experiencing some trouble eating since March 2018 and would return from working with a limp. She was prescribed Meloxicam to help with inflammation for a few months and taken off it once she had a litter in July 2018. In December 2018 her tongue started to look sore as she was throwing her head back to eat pellets properly, she started back on meloxicam and received it until the decision was made to try a tongue treatment with Methylprednisolone and biopsy procedure on 6 March 2019. Since then she had not been prescribed medication, but underwent her second treatment on 28 October 2020, as her tongue had worsened. Two biopsies were taken for a diagnosis. On 24 July 2021 she had another biopsy done, and 4cm of her tongue was removed due to the cancer spreading. Her follow-up tongue evaluation on 8 October 2021 showed the tongue is doing well, and Depo-Medrol was injected. Her tongue was checked again in December, which showed it had not significantly spread. On 19 June 2022 a follow-up was conducted, which showed no further signs of SCC; however a new biopsy was taken. She was treated with Depo-Medrol and sent back to her farm. A further follow-up was conducted on the 10 November 2022; again it showed no further signs of SCC. She was given Depo-Medrol and sent back to her farm.

- Mweneni (SB#713), a working dog on a communal farm, had signs of sun damage during his dog visit in 2019. In 2020, the condition of his tongue had worsened quite severely so he was brought in for treatment in November 2020. Two biopsies were taken for diagnosis. He was brought into CCF again on 2 June 2021, and another biopsy and treatment were performed. It was discovered that a part of his tongue had become necrotic and was thus removed. On 27 May 2022 a follow-up was conducted, which showed no further signs of SCC; however a new biopsy was taken. He was treated with Depo-Medrol and sent back to his farm.

- Hendrick (SB#611), a working dog on a communal farm, was confiscated due to neglect in March 2020 and had signs of suspected tongue cancer. He underwent his first tongue treatment while residing at CCF to improve his condition and was brought in for a second treatment in November 2020 and then a third on 23 May 2021. There had been no change in the tongue's severity between his second and third treatment. Another biopsy was performed on 10 November 2021, as well as a resection. On 24 February 2022 a follow-up was conducted, which showed no further signs of SCC; however a new biopsy was taken. He was treated with Depo-Medrol and sent back to his farm.

- Ugab (SB#710), a working dog on a commercial farm, appeared to show signs on 16 May 2021. He was brought in for treatment on 23 June 2021 and three samples were taken for diagnosis. During his biopsy it was determined that a partial (3cm) resection of the tongue was necessary. On 12 October 2021 a follow-up was conducted, which showed no signs of SCC. He was treated with Depo-Medrol and sent back to his farm. On 18 May 2022 a follow-up was conducted, which showed no further signs of SCC; however a new biopsy was taken. He was treated with Depo-Medrol and sent back to his farm.

- Dolly (SB#719), a working dog on a communal farm, was brought in on 11 November 2021 due to excessive drooling and trouble eating. She was given Depo-Medrol and a biopsy was performed.

- Piet (SB#737), a working dog on a commercial farm, was brought in on 11 May 2022 due to trouble eating and salivating. A first time tongue biopsy was done and three samples were taken. He was given Depo-Medrol and returned to his farm on 13 May 2022.

- Shaera (SB#659), a working dog on a commercial farm, was brought in on 24 May 2022 due to trouble eating and poor body condition. A first time tongue biopsy was done and three samples were taken. She was given Depo-Medrol and rehomed to a commercial farm on 29 June 2022.

- Fluffy (SB#732), a working dog on a commercial farm, appeared to show signs on 19 July 2022 and was subsequently brought in. He was taken to clinic for treatment on 20 July 2022 and three samples were taken for diagnosis. During his biopsy it was determined that a partial resection of the tongue was necessary. He was given Depo-Medrol and returned to his farm a few days later.

- York (SB#728), a working dog on a commercial farm, appeared to show signs (trouble eating and excessive salivating) on 22 July2022 and was subsequently brought in. He was taken to clinic for treatment on 23 July 2022 and three samples were taken for diagnosis. During his biopsy it was determined that a resection of the tongue was not necessary just yet. He was given Depo-Medrol and returned to his farm a few days later.

- Matwi (SB#811), a working dog on a communal farm, was confiscated due to neglect on 15 December 2022. During a full health check on his arrival, it was discovered that he had some damage to the tongue. He was taken to clinic for treatment on 20 December 2022 and three samples were taken for diagnosis. During his biopsy it was determined that a partial resection of the tongue was necessary. He was given Depo-Medrol and will be re-homed once his condition has improved.

B. CCF Model Farm

CCF's farm provides the opportunity to practice and experiment with optimal methods of livestock and non-lethal farm management practices, especially acting as a showcase model of success. The cattle, goat, and sheep herds at CCF continue to increase and selected herds have been used during various Farmer Training programmes. Table 111 provides an overview of CCF's livestock.

Table 11: CCF livestock from 1 January - 31 December 2022.

	Stock Start	Born	Purchased	Sold	Died	Slaughtered/ CCF use	Stock Adjustment	Stolen	Stock End
Cattle	**645**	197	0	192	2	9	-71	0	**568**
Boer Goats	**99**	99	1	63	36	0	0	0	**100**
Damara Sheep	**92**	73	1	53	3	0	0	0	**110**
Dairy Goats	**224**	97	1	76	35	0	0	0	**211**
Donkeys	**18**	6	120	7	12	79	0	0	**46**
Horses	**12**	2	36	0	5	32	0	0	**13**

CCF's Farm Manager, Johan Britz; Large Stock Assistant Manager, Johan Gibson; Small Stock Manager, Calum O'Flaherty; Small Stock Herder, Armas Shanika, and the animal health team carry out proper management to maintain the general health and welfare of the animals.

During this period, CCF farm staff continued to work on fence repairs and basic farm maintenance. Work also continued on firebreaks, road maintenance, provision of water as well as weed control and eradication of alien species.

1. Cattle

CCF cattle are managed in a 100% predator-friendly environment. A cow-calf system is in place and weaners are sold before one year of age based on market conditions. Factors such as severe bush encroachment and theft continue to be a challenge.

Normal management is done in coordination with nature, therefore mating seasons differ yearly but generally it is from January to the end of April. This period has been extended due to a shortage of bulls. When necessary, CCF utilises six to eight bulls that are on loan. Pregnancy determination is normally done in July or August. Dehorning and castration are done as needed during the calving season. 2022 was an above average raining season with good grazing available.

By the end of 2022, CCF had 568 cattle compared to 574 at the end of 2021, furthermore due to change in management, some cattle were counted twice resulting in a stock adjustment of minus 71 cattle and therefore 574 cattle at the end of 2021 and not 645 as reported in the 2021 report (Table 11). Sales were 192 (87male and 105 female). Cheetah Conservation Fund also rents grazing land to one farmer for their cattle (approximately 500 herd total), thus providing an extra income.

Vaccination Programme

CCF firmly believes in farming with animals adapted to the Namibian climate with a strong natural resistance to most diseases. As such, unnecessary vaccinations are avoided to minimise costs and reduce stress on the animals. Compulsory brucellosis and anthrax vaccinations are administered and other vaccinations are done purely as needed. Periodical internal and external parasite control is also in place.

Other

Since cattle falls under the Fanmeat scheme of Namibia, CCF must ensure compliance with the European Union (EU) and the Fanmeat scheme. Fanmeat stands for Farm Assured Namibian Meat, which is a standard for meat production, specifically for cattle, that involves the traceability, animal health and welfare, record keeping, and animal movement in Namibia. The CCF cattle recordkeeping and data have passed inspection every year, and our cattle operation is mentioned by the Directorate of Veterinary Services as an excellent standard when it comes to the fulfilment of these requirements.

2. Small Stock

Goats and sheep are an essential part of CCF's LSGD programme as the puppies must be raised amongst the goats and sheep in order for them to form a close bond with the livestock. As part of CCF's Model Farm, dogs and small stock are used during farmer-training programmes as a method to raise livestock around predators without using lethal methods to prevent predation.

In addition to the 23 adult Anatolian Shepherd and Kangal dogs mentioned in the previous section, as of 31 December 2022, the kraal contains 211 (11M, 200F) Dairy goats, 100 (3M, 96F, 1W) Boer goats, and 111 (2M, 109F) Damara sheep.

In 2022, 192 small stock were sold, 76 dairy goats (2M, 12F, 62W) Dairy goats, , 63 goats (28M, 35F, 0W) Boer goats, and 53 sheep (34M, 18F, 1W) Damara sheep bringing in a total of N$137,515.00.

Boer Goats

The Boer goat herd stood at 100 (3M, 96F, 1W) at the end of this reporting period, up from 99 at the end of 2021. Out of the 80 Boer goats that were bred in September 2021, 10 were sold. Of the remaining 70 females, 44 gave birth between March and April 2022 to a total of 85 kids (Table 12). Where UNK is placed for the Dam and Sire in Table 11, the Dam has lost her tag since breeding, a tag has been replaced since but we cannot 100% confirm it is the correct tag. Furthermore, eight does were accidentally bred due to meeting an unknown male from another herd in the field, these females gave birth in December 2022 to a total of 14 kids.

Table 12: Boer goat births from 1 January - 31 December 2022 (cM = castrated male, iM =intact male).

SB #	Tag #	Sex	Date of Birth	Dam	Sire	Alive or Dead
807	1-22	F	17-Feb-2022	28-18	19-1264BSB	Alive
808	2-22	M	18 -Feb-2022	23-15	14-197	Alive
809	3-22	M	21-Feb-2022	UNK	UNK	Alive
810	4-22	F	21-Feb-2022	47-17	14-197	Dead
811	5-22	M	21-Feb-2022	47-17	14-197	Alive
812	6-22	F	21-Feb-2022	47-17	14-197	Dead
813	7-22	F	21-Feb-2022	47-17	14-197	Dead
814	8-22	M	21-Feb-2022	86-17	14-197	Alive
815	9-22	M	21-Feb-2022	86-17	14-197	Alive
816	10-22	M	21-Feb-2022	UNK	UNK	Alive
817	11-22	F	21-Feb-2022	UNK	UNK	Alive
818	12-22	M	22-Feb-2022	66-17	14-197	Alive
819	13-22	F	22-Feb-2022	66-17	14-197	Alive
820	14-22	F	22-Feb-2022	UNK	UNK	Alive
821	15-22	M	23-Feb-2022	6-17	14-197	Alive
822	16-22	M	23-Feb-2022	6-17	14-197	Alive
823	17-22	M	23-Feb-2022	36-17	14-197	Alive
824	18-22	M	23-Feb-2022	36-17	14-197	Alive
825	19-22	F	24-Feb-2022	UNK	UNK	Alive
826	20-22	M	24-Feb-2022	44-15	14-197	Alive
827	21-22	F	24-Feb-2022	44-15	14-197	Alive
828	22-22	F	24-Feb-2022	44-15	14-197	Alive
829	23-22	F	25-Feb-2022	UNK	UNK	Alive
830	24-22	M	25-Feb-2022	UNK	UNK	Dead
831	25-22	F	25-Feb-2022	UNK	UNK	Alive
832	26-22	M	25-Feb-2022	UNK	UNK	Alive

833	27-22	F	25-Feb-2022	UNK	UNK	Dead
834	28-22	F	25-Feb-2022	UNK	UNK	Dead
835	29-22	M	25-Feb-2022	UNK	UNK	Alive
836	30-22	F	25-Feb-2022	UNK	UNK	Alive
837	31-22	F	25-Feb-2022	UNK	UNK	Alive
838	32-22	F	25-Feb-2022	UNK	UNK	Alive
839	33-22	M	26-Feb-2022	4-17	14-197	Alive
840	34-22	F	26-Feb-2022	4-17	14-197	Dead
841	35-22	F	26-Feb-2022	4-17	14-197	Dead
842	36-22	M	26-Feb-2022	10-16	14-197	Alive
843	37-22	M	26-Feb-2022	10-16	14-197	Alive
844	38-22	F	26-Feb-2022	27-15	14-197	Alive
845	39-22	M	26-Feb-2022	81-17	14-197	Alive
846	40-22	M	26-Feb-2022	F	14-197	Alive
847	41-22	M	28-Feb-2022	F	14-197	Dead
848	42-22	F	28-Feb-2022	69-17	14-197	Alive
849	43-22	F	28-Feb-2022	69-17	14-197	Alive
850	44-22	M	07-Mar-2022	6-19	19-1264BSB	Alive
851	45-22	F	07-Mar-2022	6-19	19-1264BSB	Alive
852	46-22	M	09-Mar-2022	57-15	14-197	Alive
853	47-22	F	09-Mar-2022	57-15	14-197	Alive
854	48-22	M	11-Mar-2022	32-19	19-1264BSB	Alive
855	49-22	F	11-Mar-2022	32-19	19-1264BSB	Alive
856	50-22	F	11-Mar-2022	UNK	UNK	Dead
857	51-22	F	11-Mar-2022	UNK	UNK	Dead
858	52-22	M	13-Mar-2022	4-19	19-1264BSB	Alive
859	53-22	F	13-Mar-2022	4-19	19-1264BSB	Alive
860	54-22	M	13-Mar-2022	14-18	19-1264BSB	Dead
861	55-22	M	13-Mar-2022	14-18	19-1264BSB	Dead
862	56-22	F	13-Mar-2022	26-19	19-1264BSB	Dead
863	57-22	F	13-Mar-2022	26-19	19-1264BSB	Dead
864	58-22	F	13-Mar-2022	26-19	19-1264BSB	Dead
865	59-22	M	14-Mar-2022	39-19	19-1264BSB	Dead
866	60-22	F	14-Mar-2022	39-19	19-1264BSB	Dead

867	61-22	M	15-Mar-2022	42-19	19-1264BSB	Dead
868	62-22	F	15-Mar-2022	42-19	19-1264BSB	Alive
869	63-22	F	15-Mar-2022	25-16	14-197	Dead
870	64-22	F	15-Mar-2022	25-16	14-197	Alive
871	65-22	F	15-Mar-2022	35-18	19-1264BSB	Alive
872	66-22	F	15-Mar-2022	35-18	19-1264BSB	Dead
873	67-22	F	15-Mar-2022	44-17	14-197	Alive
874	68-22	F	15-Mar-2022	44-17	14-197	Dead
875	69-22	M	15-Mar-2022	3-19	19-1264BSB	Alive
876	70-22	F	15-Mar-2022	3-19	19-1264BSB	Dead
877	71-22	M	15-Mar-2022	10-14	14-197	Alive
878	72-22	M	19-Mar-2022	27-18	19-1264BSB	Dead
879	73-22	M	19-Mar-2022	27-18	19-1264BSB	Dead
880	74-22	F	19-Mar-2022	27-18	19-1264BSB	Alive
881	75-22	M	19-Mar-2022	13-19	19-1264BSB	Alive
882	76-22	M	19-Mar-2022	13-19	19-1264BSB	Alive
883	77-22	F	23-Mar-2022	26-18	19-1264BSB	Alive
884	78-22	F	23-Mar-2022	26-18	19-1264BSB	Alive
885	79-22	F	23-Mar-2022	26-18	19-1264BSB	Alive
886	80-22	F	25-Mar-2022	25-18	19-1264BSB	Alive
887	81-22	F	26-Mar-2022	3-18	19-1264BSB	Alive
888	82-22	M	03-Apr-2022	9-12	14-197	Alive
889	83-22	F	03-Apr-2022	9-12	14-197	Alive
890	84-22	F	07-Apr-2022	16-13	14-197	Alive
891	85-22	F	07-Apr-2022	16-13	14-197	Alive
892	86-22	F	23-Nov-2022	33-21	UNK	Alive
893	87-22	M	24-Nov-2022	34-21	UNK	Dead
895	88-22	M	24-Nov-2022	34-21	UNK	Dead
896	89-22	F	25-Nov-2022	26-19	UNK	Alive
897	90-22	F	27-Nov-2022	53-21	UNK	Alive
898	91-22	F	27-Nov-2022	53-21	UNK	Alive
899	92-22	M	28-Nov-2022	15-21	UNK	Alive
900	93-22	M	28-Nov-2022	15-21	UNK	Dead
901	94-22	F	01-Dec-2022	38-21	UNK	Alive

902	95-22	M	01-Dec-2022	52-21	UNK	Dead
903	96-22	M	04-Dec-2022	23-21	UNK	Alive
904	97-22	F	04-Dec-2022	23-21	UNK	Alive
905	98-22	M	05-Dec-2022	43-21	UNK	Dead
906	99-22	F	05-Dec-2022	43-21	UNK	Alive

In 2022, 36 Boer goats (13M, 23F) died due to causes listed in Table 13.

Table 13: Boer goat deaths from 1 January – 31 December 2022.

SB #	Tag #	Sex	Date of Death	Cause of Death
811	7-22	F	22-Feb-2022	Bacterial Infection
810	6-22	F	23-Feb-2022	Bacterial Infection
808	4-22	F	25-Feb-2022	Bacterial Infection
838	34-22	F	28-Feb-2022	Bacterial Infection
845	41-22	M	28-Feb-2022	Stillborn
797	49-21	F	01-Mar-2022	Snake Bite
832	28-22	F	02-Mar-2022	Bacterial Infection
839	35-22	F	03-Mar-2022	Bacterial Infection
828	24-22	M	04-Mar-2022	Bacterial Infection
854	50-22	F	13-Mar-2022	Bacterial Infection
855	51-22	F	13-Mar-2022	Bacterial Infection
859	55-22	M	13-Mar-2022	Stillborn
860	56-22	F	13-Mar-2022	Stillborn
861	57-22	F	13-Mar-2022	Stillborn
862	58-22	F	13-Mar-2022	Stillborn
700	39-19	F	14-Mar-2022	Infection from Necrotic Kids
863	59-22	M	14-Mar-2022	Stillborn
864	60-22	F	14-Mar-2022	Stillborn
870	66-22	F	15-Mar-2022	Stillborn
872	68-22	F	15-Mar-2022	Stillborn
874	70-22	F	15-Mar-2022	Stillborn
858	54-22	M	19-Mar-2022	Bacterial Infection
876	72-22	M	20-Mar-2022	Bacterial Infection
867	63-22	F	21-Mar-2022	Bacterial Infection
877	73-22	M	21-Mar-2022	Bacterial Infection

865	61-22	M	07-May-2022	Cleft pallet-Euthanized
831	27-22	F	09-May-2022	Hypoglycemic shock
528	6-17	F	19-Jul-2022	Veterinary procedure
804	56-21	F	31-Jul-2022	Fluid around organs
894	88-22	M	28-Nov-2022	Starvation due to Inexperienced Doe
904	97-22	F	06-Dec-2022	Starvation due to Inexperienced Doe
900	93-22	M	11-Dec-2022	Starvation due to Inexperienced Doe
905	98-22	M	12-Dec-2022	Starvation due to Inexperienced Doe
902	95-22	M	24-Dec- 2022	Starvation due to Inexperienced Doe
898	91-22	F	25-Dec-2022	Starvation due to Inexperienced Doe
893	87-22	M	29-Dec-2023	Starvation due to Inexperienced Doe

CCF's Boer goats are managed for meat production and castrated males and old or inferior does are sold at auction. Between 1 January and 31 December 2022, 63 goats (28M, 35F, 0W) were sold, amounting to N$51,825.00. Table 14 provides an overview of CCF's Boer goat sales. One new Boer buck (SB#894) was purchased on 17 June 2022 for N$8,000. He is a 2-year-old male who was born on 4 October 2020. He was purchased from AGRA auctions in Otjiwarongo and underwent a period of quarantine upon arrival at CCF.

Table 14: Boer goat sales from 1 January – 31 December 2022 (M = male, F = female, U = wether).

SB #	Tag #	Sex	Date of Birth	Date of Sale	Price
281	2-13	F	28-Apr-2013	11-Mar-2022	N$1400.00
294	15-13	F	07-May-2013	11-Mar-2022	N$1400.00
319	33-13	F	26-Dec-2013	11-Mar-2022	N$1400.00
340	14-14	F	05-Aug-2014	11-Mar-2022	N$1400.00
344	18-14	F	08-Aug-2014	11-Mar-2022	N$1400.00
349	23-14	F	14-Aug-2014	11-Mar-2022	N$1400.00
350	24-14	F	14-Aug-2014	11-Mar-2022	N$1400.00
357	31-14	F	24-Aug-2014	11-Mar-2022	N$1400.00
396	37-15	F	08-Aug-2015	11-Mar-2022	N$1400.00
418	61-15	F	13-Aug-2015	11-Mar-2022	N$1400.00
450	10-16	F	11-Jan-2016	11-Mar-2022	N$1400.00
457	16-16	F	20-Aug-2017	11-Mar-2022	N$1400.00
541	19-17	F	02-Jan-2017	11-Mar-2022	N$1400.00
546	23-17	F	20-Aug-2017	11-Mar-2022	N$1400.00
575	50-18	F	20-Aug-2017	11-Mar-2022	N$1400.00
612	84-17	F	30-Oct-2017	11-Mar-2022	N$1400.00
600	32-20	F	15-Jan-2020	04-May-2022	N$1700.00

740	39-22	F	27-Feb-2022	14-May-2022	N$400.00
808	2-22	M	18-Feb-2022	14-May-2022	N$400.00
815	9-22	M	21-Feb-2022	14-May-2022	N$400.00
826	20-22	M	24-Feb-2022	14-May-2022	N$400.00
827	21-22	F	24-Feb-2022	14-May-2022	N$400.00
828	22-22	F	24-Feb-2022	14-May-2022	N$400.00
878	74-22	F	19-Mar-2022	14-May-2022	N$300.00
UNK	No tag	F	UNK	07-Jul-2022	N$ 1350.00
UNK	No tag	F	UNK	07-Jul-2022	N$ 1350.00
295	16-13	F	09-May-2013	07-Jul-2022	N$ 1350.00
308	25-13	F	12-Dec2013	07-Jul-2022	N$ 1350.00
336	10-14	F	05-Aug-2014	07-Jul-2022	N$ 1350.00
378	19-15	F	06-Aug-2015	07-Jul-2022	N$ 1350.00
463	23-16	F	31-Aug-2016	07-Jul-2022	N$ 1350.00
666	3-19	F	03-Jan-2019	07-Jul-2022	N$ 1350.00
667	4-19	F	04-Jan-2019	07-Jul-2022	N$ 1350.00
809	5-22	M	21-Feb-2022	07-Jul-2022	-
812	8-22	M	21-Feb-2022	07-Jul-2022	-
814	10-22	M	21-Feb-2022	07-Jul-2022	-
816	12-22	M	22-Feb-2022	07-Jul-2022	-
819	15-22	M	23-Feb-2022	07-Jul-2022	-
820	16-22	M	23-Feb-2022	07-Jul-2022	-
822	18-22	M	23-Feb-2022	07-Jul-2022	-
844	40-22	M	27-Feb-2022	07-Jul-2022	-
848	44-22	M	07-Mar-2022	07-Jul-2022	-
850	46-22	M	09-Mar-2022	07-Jul-2022	-
851	47-22	F	09-Mar-2022	07-Jul-2022	-
852	48-22	M	11-Mar-2022	07-Jul-2022	-
879	75-22	M	19-Mar-2022	07-Jul-2022	-
886	82-22	M	03-Apr-2022	07-Jul-2022	-
770	69-22	M	26-Jan-2022	22-Jul-2022	N$ 375.00
821	17-22	M	23-Feb-2022	22-Jul-2022	N$ 375.00
830	26-22	M	25-Feb-2022	22-Jul-2022	N$ 375.00
833	29-22	M	25-Feb-2022	22-Jul-2022	N$ 375.00

837	33-22	M	26-Feb-2022	22-Jul-2022	N$ 375.00
840	36-22	M	26-Feb-2022	22-Jul-2022	N$ 375.00
841	37-22	M	26-Feb-2022	22-Jul-2022	N$ 375.00
856	52-22	M	13-Mar-2022	22-Jul-2022	N$ 375.00
875	71-22	M	15-Mar-2022	22-Jul-2022	N$ 375.00
521	50-18	F	20-Mar-2018	15-Sep-2022	N$1000.00
442	2-16	F	03-Jan-2016	07-Dec-2022	N$2500.00
727	26-22	F	06-Jan-2022	22-Dec-22	N$750.00
846	42-22	F	28-Feb-2022	22-Dec-22	N$750.00
847	43-22	M	28-Feb-2022	22-Dec-22	N$750.00
880	76-22	M	19-Mar-2022	22-Dec-22	N$750.00
806	19-1264BSB	M	08-Oct-2021	29-Dec-2022	N$3000.00
				Total:	**N$51,825.00**

CCF's strategy is to keep improving the quality of its Boer herd by bringing in quality bucks and continuing to improve the selection of animals for breeding. This will provide more income from the sales of these goats, as some can be sold as breeding animals versus only meat.

Damara Sheep

The Damara sheep herd stood at 111 (2M, 109F) at the end of this reporting period, up from 92 at the end of 2021.

Out of the 87 Damara Sheep that were bred in August 2021, 27 females were sold. Of the remaining 60 females, 59 gave birth from December 2021 to February 2022 to a total of 72 lambs (33M, 39F) (Table 15). Where UNK is placed for the Dam and Sire, the Dam has lost her tag since breeding, a tag has been replaced since but we cannot 100% confirm it is the correct tag.

Table 15: Damara sheep births from 1 January – 31 December 2022 (cM = castrated male, iM = intact male).

SB #	Tag #	Sex	Date of Birth	Dam	Sire	Dead or Alive
702	1-22	F	28-Dec-2021	6-20	Meatmaster 2	Alive
703	2-22	F	28-Dec-2021	14-19	Meatmaster 2	Alive
704	3-22	M	29-Dec-2021	72-16	DS6204	Alive
705	4-22	F	31-Dec-2021	36-19	Meatmaster 2	Alive
706	5-22	F	31-Dec-2021	47-18	DS6204	Alive
707	6-22	F	31-Dec-2021	47-18	DS6204	Alive
708	7-22	F	01-Jan-2022	42-15	DS6204	Alive
709	8-22	M	01-Jan-2022	60-18	DS6204	Alive
710	9-22	F	01-Jan-2022	31-18	DS6204	Alive

711	10-22	F	01-Jan-2022	34-19	DS6204	Alive
712	11-22	F	01-Jan-2022	34-19	Meatmaster 2	Alive
713	12-22	F	01-Jan-2022	37-20	Meatmaster 2	Alive
714	13-22	M	03-Jan-2022	24-20	Meatmaster 2	Alive
715	14-22	M	03-Jan-2022	65-16	DS6204	Alive
716	15-22	M	03-Jan-2022	5-20	Meatmaster 2	Alive
717	16-22	F	03-Jan-2022	7-19	Meatmaster 2	Alive
718	17-22	F	04-Jan-2022	7-19	Meatmaster 2	Alive
719	18-22	F	04-Jan-2022	55-18	DS6204	Alive
720	19-22	M	04-Jan-2022	27-19	Meatmaster 2	Alive
721	20-22	F	05-Jan-2022	40-20	Meatmaster 2	Alive
722	21-22	M	05-Jan-2022	45-16	DS6204	Alive
723	22-22	F	06-Jan-2022	53-18	DS6204	Alive
724	23-22	M	06-Jan-2022	22-20	Meatmaster 2	Alive
725	24-22	F	06-Jan-2022	22-20	Meatmaster 2	Alive
726	25-22	M	06-Jan-2022	39-17	DS6204	Alive
727	26-22	F	06-Jan-2022	68-16	DS6204	Alive
728	27-22	M	06-Jan-2022	52-16	DS6204	Alive
729	28-22	M	06-Jan-2022	23-19	Meatmaster 2	Alive
730	29-22	M	08-Jan-2022	36-20	Meatmaster 2	Dead
731	30-22	M	08-Jan-2022	2-19	Meatmaster 2	Alive
732	31-22	F	08-Jan-2022	10-19	Meatmaster 2	Alive
733	32-22	F	08-Jan-2022	10-19	Meatmaster 2	Dead
734	33-22	F	08-Jan-2022	25-12	DS6204	Alive
735	34-22	M	09-Jan-2022	50-18	DS6204	Alive
736	35-22	F	09-Jan-2022	50-18	DS6204	Alive
737	36-22	F	09-Jan-2022	12-14	DS6204	Alive
738	37-22	F	09-Jan-2022	6-19	Meatmaster 2	Alive
739	38-22	M	10-Jan-2022	4-16	DS6204	Alive
740	39-22	F	10-Jan-2022	4-16	DS6204	Alive
741	40-22	M	10-Jan-2022	27-20	Meatmaster 2	Alive
742	41-22	F	10-Jan-2022	27-20	Meatmaster 2	Alive
743	42-22	M	10-Jan-2022	21-20	Meatmaster 2	Alive
744	43-22	M	10-Jan-2022	21-20	Meatmaster 2	Alive

745	44-22	M	10-Jan-2022	1-20	Meatmaster 2	Alive
746	45-22	F	10-Jan-2022	1-20	Meatmaster 2	Alive
747	46-22	M	10-Jan-2022	UNK	UNK	Alive
748	47-22	F	10-Jan-2022	29-20	Meatmaster 2	Alive
749	48-22	F	10-Jan-2022	29-20	Meatmaster 2	Alive
750	49-22	M	10-Jan-2022	19-18	DS6204	Alive
751	50-22	M	11-Jan-2022	UNK	UNK	Alive
752	51-22	F	11-Jan-2022	UNK	UNK	Alive
753	52-22	M	11-Jan-2022	12-19	Meatmaster 2	Alive
754	53-22	M	11-Jan-2022	16-19	Meatmaster 2	Alive
755	54-22	F	11-Jan-2022	19-20	Meatmaster 2	Alive
756	55-22	F	12-Jan-2022	39-20	Meatmaster 2	Alive
757	56-22	M	12-Jan-2022	3-19	Meatmaster 2	Alive
758	57-22	F	12-Jan-2022	52-18	DS6204	Alive
759	58-22	F	14-Jan-2022	32-20	Meatmaster 2	Alive
760	59-22	M	15-Jan-2022	UNK	UNK	Alive
761	60-22	F	15-Jan-2022	UNK	UNK	Alive
762	61-22	M	15-Jan-2022	25-20	Meatmaster 2	Alive
763	62-22	F	15-Jan-2022	27-16	DS6204	Alive
764	63-22	F	16-Jan-2022	44-16	DS6204	Alive
765	64-22	M	20-Jan-2022	25-19	Meatmaster 2	Alive
766	65-22	F	20-Jan-2022	25-19	Meatmaster 2	Alive
767	66-22	M	21-Jan-2022	UNK	UNK	Alive
768	67-22	F	23-Jan-2022	11-20	Meatmaster 2	Alive
769	68-22	M	23-Jan-2022	9-16	DS6204	Alive
770	69-22	M	29-Jan-2022	36-16	DS6204	Alive
771	70-22	M	29-Jan-2022	10-17	DS6204	Alive
772	71-22	F	03-Feb-2022	28-19	Meatmaster 2	Alive
773	72-22	M	03-Feb-2022	49-15	DS6204	Alive
774	73-22	M	04-Feb-2022	UNK	UNK	Alive

In 2022, three sheep (1M, 2F) died due to causes listed in Table 16.

Table 16: Damara sheep deaths from 1 January – 31 December 2022.

SB #	Tag #	Sex	Date of Death	Cause of Death
563	31-19	Female	01-Jan-2022	Poisonous Plants
730	29-22	Male	08-Jan-2022	Stillborn
733	32-22	Female	08-Jan-2022	Stillborn

CCF's Damara sheep are managed for meat production and castrated males and old or inferior dams are sold at auction. Between 1 January and 31 December 2022, 53 sheep (34M, 18F, 1W) were sold, totaling N$42,250 in sales. Table 17 provides an overview of CCF's Damara sheep sales. One new Damara Sheep Ram (SB#775) was purchased on 17 June 2022 for N$14,000. He is a one-year-old male who was born on 15 February 2021. He was purchased from AGRA auctions in Otjiwarongo and underwent a period of quarantine upon arrival at CCF.

Table 17: Damara sheep sales from 1 January - 31 December 2022 (M = male, F = female, U = wether).

SB #	Tag #	Sex	Date of Birth	Date of Sale	Price
197	25-12	F	29-Oct-2012	11-Mar-2022	N$1650.00
235	12-14	F	21-Jan-2014	11-Mar-2022	N$1650.00
301	49-15	F	30-Jan-2015	11-Mar-2022	N$1650.00
306	42-15	F	10-Feb-2015	11-Mar-2022	N$1650.00
332	4-16	F	28-Jan 2016	11-Mar-2022	N$1650.00
336	9-16	F	30-Jan-2016	11-Mar-2022	N$1650.00
353	27-16	F	09-Feb-2016	11-Mar-2022	N$1650.00
363	36-16	F	12-Feb-2016	11-Mar-2022	N$1650.00
372	45-16	F	19-Feb-2016	11-Mar-2022	N$1650.00
392	65-16	F	02-Apr-2016	11-Mar-2022	N$1650.00
399	72-16	F	12-Apr-2016	11-Mar-2022	N$1650.00
535	10-17	F	28-Jan-2017	11-Mar-2022	N$1600.00
618	DS6204	M	17-Mar-2016	11-Mar-2022	N$3000.00
704	3-22	M	11-Mar-2022	11-Mar-2022	N$0.00
708	7-22	F	01-Jan-2022	11-Mar-2022	N$0.00
714	13-22	M	03-Jan-2022	11-Mar-2022	N$0.00
722	21-22	M	05-Jan-2022	11-Mar-2022	N$0.00
724	23-22	M	06-Jan-2022	11-Mar-2022	N$0.00
737	36-22	F	09-Jan-2022	11-Mar-2022	N$0.00
740	39-22	F	10-Jan-2022	11-Mar-2022	N$0.00
763	62-22	F	15-Jan-2022	11-Mar-2022	N$0.00

769	68-22	M	23-Jan-2022	11-Mar-2022	N$0.00
770	69-22	M	29-Jan-2022	11-Mar-2022	N$0.00
771	70-22	M	29-Jan-2022	11-Mar-2022	N$0.00
773	72-22	M	03-Feb-2022	11-Mar-2022	N$0.00
737	32-20	F	26-Jan-2020	08-Apr-2022	N$1700.00
709	8-22	M	01-Jan-2022	10-May-2022	N$520.00
715	14-22	M	03-Jan-2022	10-May-2022	N$520.00
716	15-22	M	03-Jan-2022	10-May-2022	N$520.00
720	19-22	M	04-Jan-2022	10-May-2022	N$520.00
726	25-22	M	06-Jan-2022	10-May-2022	N$520.00
728	27-22	M	06-Jan-2022	10-May-2022	N$560.00
731	30-22	M	08-Jan-2022	10-May-2022	N$560.00
725	34-22	M	09-Jan-2022	10-May-2022	N$560.00
739	38-22	M	10-Jan-2022	10-May-2022	N$560.00
741	40-22	M	10-Jan-2022	10-May-2022	N$560.00
743	42-22	M	10-Jan-2022	10-May-2022	N$660.00
744	43-22	M	10-Jan-2022	10-May-2022	N$660.00
745	44-22	M	10-Jan-2022	10-May-2022	N$660.00
747	46-22	M	10-Jan-2022	10-May-2022	N$660.00
748	47-22	M	10-Jan-2022	10-May-2022	N$660.00
750	49-22	M	10-Jan-2022	10-May-2022	N$800.00
751	50-22	M	11-Jan-2022	10-May-2022	N$800.00
753	52-22	M	11-Jan-2022	10-May-2022	N$800.00
754	53-22	M	11-Jan-2022	10-May-2022	N$800.00
757	56-22	M	11-Jan-2022	10-May-2022	N$800.00
760	59-22	M	15-Jan-2022	10-May-2022	N$580.00
762	61-22	M	15-Jan-2022	10-May-2022	N$580.00
765	64-22	M	20-Jan-2022	10-May-2022	N$580.00
767	66-22	M	21-Jan-2022	10-May-2022	N$580.00
774	73-22	M	04-Feb-2022	10-May-2022	N$580.00
729	28-22	W	06-Jan-2022	20-June-2022	N$600.00
564	32-19	F	19-Apr-2019	07-Dec-2022	N$1600.00
				Total:	**N$42,250.00**

CCF's strategy is to keep improving on the quality of its Damara sheep herd by bringing in quality rams and continuing to improve the selection of animals for breeding. This will provide more income from the sales of these sheep, as some can be sold as breeding animals versus only meat.

Dairy Goats

The dairy goat herd stood at 212 (11M, 201F) at the end of this reporting period, down from 224 at the end of 2021.

The dairy goat does are managed in such a way that when half of them are being bred, the other half are lactating to keep a continuous production of milk. In March 2022, 79 does were bred with three breeding males; Picasso (SB#256), Michel (SB#580) and Leo (SB#590). These does are expected to kid in August (Table 18). One new dairy buck named Raphael (SB#801) was purchased on 17 June 2022 for N$2,000. He is a one year old male who was born in January 2021. He was purchased from AGRA auctions in Otjiwarongo and underwent a period of quarantine upon arrival at CCF. He will become an important part of CCF's dairy goat breeding program. One doe was accidentally bred to Raphael (SB#801) in June 2022.

Table 18: Breeding and kidding months for 80 Dairy does from 1 January - 31 December 2022. (Abo = aborted, NP = not pregnant).

Goat	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ablonia			Bred					Kid				
Ada			Bred					Kid				
Amanda			Bred					NP				
Amelia 2			Bred					NP				
Aune			Bred					NP				
Belle			Bred					NP				
Beulah			Bred					Kid				
Blackfoot			Bred					Kid				
Blanc			Bred					Kid				
Brenna			Bred					Kid				
Bridget			Bred					Kid				
Brier			Bred					Kid				
Burgandi							Bred					Kid
Carolina			Bred					Kid				
Catherine			Bred					Kid				
Cecelia			Bred					NP				
Charlotte			Bred					Kid				

Chianti			Bred					Kid				
Chive											Bred	
Claret			Bred					Kid				
Clover			Bred				Kid					
Constantia			Bred			NP	Bred					Kid
Cosmos			Bred					NP				
Crystal			Bred					Kid				
Daisy 2			Bred					NP				
Denali (SA)			Bred					NP				
Elsa			Bred					Kid				
Erin 2			Bred					Kid				
Foibe			Bred					Kid				
Gabela			Bred					NP				
Glory			Bred					NP				
Gardenia			Bred					Kid				
Halali			Bred					Kid				
Helena			Bred					Kid				
Henrietta			Bred					Kid				
Indigo			Bred					Kid				
Isabel			Bred					NP				
Juniper 2			Bred					Kid				
Kariba			Bred					NP				
Kaylee			Bred					NP				
Khenzi			Bred					Kid				
Kwando			Bred					Kid				
Kylie			Bred					Kid				
Lily 2			Bred			NP	Bred					NP
Lizzie			Bred					NP				
Lolita			Bred				Kid					

Lotus			Bred					Kid				
Louise							Bred					Kid
Lunda			Bred						Bred			
Madeira			Bred					Kid				
Maria			Bred					Kid				
Marie-Antoinette			Bred					NP	Bred			
Malbec											Bred	
Marigold			Bred					NP				
Matilda			Bred					Kid				
Meredith			Bred					NP			Bred	
Moonstone			Bred					NP				
Moyo			Bred					Kid				
Nala			Bred					Kid				
Ndahafa			Bred					NP				
Ngoma							Bred					
Nicole			Bred					Kid				
Nigella			Bred				Kid					
Nutmeg			Bred					NP				
Olifa			Bred					Kid				
Orchid			Bred			NP	Bred					Kid
Pearl									Bred			
Pepper 2			Bred					Kid				
Petit			Bred					Kid				
Petrina			Bred					NP				
Philippa			Bred					NP				
Quartz			Bred			NP	Bred					Kid
Rose			Bred			NP	Bred					NP
Rosemary			Bred					NP				
Rue			Bred					NP				

Ruacana										Bred	
Sage			Bred					NP			
Selena			Bred					Kid			
Shila			Bred					NP			
Takue			Bred					Kid			
Tayla			Bred					Kid			
Thistle			Bred					NP			
Tina 2						Bred					NP
Topaz 2			Bred					Kid			
Tulip			Bred					Kid			
Wendy			Bred					Kid			
Zara			Bred					Kid			
Zemba			Bred					Kid			

In 2022, 97 (50M, 47F) dairy kids were born (Table 19).

Table 19: Dairy goat births from 1 January – 31 December 2022 (M = male, F = female, U = unknown).

Studbook #	Name	Sex	Date of Birth	Dam	Sire	Alive, Sold or Dead
802	-	M	28-Jul-2022	Clover	Michel	Dead
803	-	M	31-Jul-2022	Nigella	Picasso	Sold
804	-	M	31-Jul-2022	Nigella	Picasso	Dead
805	Skylar	F	31-Jul-2022	Nigella	Picasso	Alive
806	Maple	F	31-Jul-2022	Nigella	Picasso	Alive
807	-	M	31-Jul-2022	Lolita	Picasso	Sold
808	Sasha	F	31-Jul-2022	Lolita	Picasso	Alive
809	Moana	F	31-Jul-2022	Lolita	Picasso	Alive
810	Dory	F	31-Jul-2022	Lolita	Picasso	Alive
811	-	M	01-Aug-2022	Takue	Michel	Sold
812	-	M	01-Aug-2022	Takue	Michel	Sold
813	Ramonda	F	01-Aug-2022	Takue	Michel	Alive

814	-	M	03-Aug-2022	Bridget	Michel	Sold
815	-	M	03-Aug-2022	Bridget	Michel	Sold
816	Utaa	F	03-Aug-2022	Bridget	Michel	Alive
817	2817	M	03-Aug-2022	Halali	Picasso	Sold
818	Aranos	F	03-Aug-2022	Halali	Picasso	Alive
819	-	M	04-Aug-2022	Zemba	Michel	Sold
820	Zambezi	F	04-Aug-2022	Zemba	Michel	Alive
821	-	F	04-Aug-2022	Zemba	Michel	Dead
822	-	M	05-Aug-2022	Tulip	Michel	Sold
823	Piper	F	05-Aug-2022	Tulip	Michel	Alive
824	-	M	05-Aug-2022	Erin 2	Michel	Sold
825	Lindsay	F	05-Aug-2022	Erin 2	Michel	Alive
826	Arabella	F	06-Aug-2022	Catherine	Michel	Alive
827	Bryce	F	06-Aug-2022	Catherine	Michel	Alive
828	Taylor	F	07-Aug-2022	Helena	Michel	Alive
829	Mulan	F	08-Aug-2022	Nala	Picasso	Alive
830	Tinkerbelle	F	08-Aug-2022	Nala	Picasso	Alive
831	-	M	08-Aug-2022	Brenna	Picasso	Sold
832	-	M	08-Aug-2022	Brenna	Picasso	Sold
833	-	M	08-Aug-2022	Foibe	Michel	Sold
834	-	M	08-Augt-2022	Nicole	Michel	Sold
835	-	M	08-Aug-2022	Olifa	Picasso	Sold
836	-	M	08-Aug-2022	Olifa	Picasso	Sold
837	Shuri	F	08-Aug-2022	Olifa	Picasso	Alive
838	Willow	F	09-Aug-2022	Gardenia	Picasso	Alive
839	-	F	09-Aug-2022	Gardenia	Picasso	Dead
840	-	M	09-Aug-2022	Brier	Michel	Sold
841	Ash	F	09-Aug-2022	Brier	Michel	Alive
842	Cypress	F	09-Aug-2022	Brier	Michel	Alive

843	Lucia	F	09-Aug-2022	Carolina	Picasso	Alive
844	-	M	10-Aug-2022	Pepper 2	Michel	Sold
845	-	M	10-Aug-2022	Pepper 2	Michel	Sold
846	-	M	10-Aug-2022	Juniper 2	Michel	Sold
847	-	M	10-Aug-2022	Chianti	Picasso	Sold
848	-	M	10-Aug-2022	Chianti	Picasso	Sold
849	-	M	10-Aug-2022	Moyo	Michel	Sold
850	Anabeb	F	10-Aug-2022	Moyo	Michel	Alive
851	Nakia	F	10-Aug-2022	Moyo	Michel	Alive
852	-	M	11-Aug-2022	Wendy	Picasso	Sold
853	Mercelin	F	11-Aug-2022	Wendy	Picasso	Alive
854	-	M	11-Aug-2022	Kylie	Michel	Sold
855	Olive	F	11-Aug-2022	Lotus	Picasso	Alive
856	Sequoia	F	11-Aug-2022	lotus	Picasso	Alive
857	-	M	11-Aug-2022	Beulah	Leo	Sold
858	-	M	11-Aug-2022	Beulah	Leo	Sold
859	-	M	11-Aug-2022	Beulah	Leo	Dead
860	-	M	12-Aug-2022	Claret	Michel	Sold
861	Eileen	F	12-Aug-2022	Matilda	Leo	Alive
862	-	F	12-Aug-2022	Matilda	Leo	Dead
863	Bardolino	F	13-Aug-2022	Petit	Michel	Alive
864	Beaujolais	F	13-Aug-2022	Petit	Michel	Alive
865	-	F	13-Aug-2022	Ablonia	Michel	Dead
866	Vawa	F	13-Aug-2022	Ablonia	Michel	Alive
867	-	M	13-Aug-2022	Zara	Michel	Sold
868	-	M	13-Aug-2022	Zara	Michel	Sold
869	Amarula	F	13-Aug-2022	Madeira	Michel	Alive
870	-	M	14-Aug-2022	Ada	Picasso	Sold
871	Gwen	F	14-Aug-2022	Ada	Picasso	Alive

872	Cheetah	F	14-Aug-2022	Selena	Michel	Alive
873	Veisy	F	14-Aug-2022	Tayla	Leo	Alive
874	-	M	15-Aug-2022	Elsa	Picasso	Sold
875	Tatiana	F	16-Aug-2022	Charlotte	Michel	Alive
876	Jane	F	16-Aug-2022	Charlotte	Michel	Alive
877	Bacardi	F	17-Aug-2022	Blanc	Picasso	Alive
878	Agate	F	17-Aug-2022	Topaz 2	Michel	Alive
879	-	M	17-Aug-2022	Henrietta	Michel	Sold
880	Michelle	F	17-Aug-2022	Henrietta	Michel	Alive
881	-	M	18-Aug-2022	Crystal	Michel	Sold
882	Meru	F	18-Aug-2022	Khenzi	Picasso	Alive
883	-	M	27-Aug-2022	Blackfoot	Picasso	Sold
884	-	M	18-Aug-2022	Blackfoot	Picasso	Sold
885	-	M	18-Aug-2022	Kwando	Picasso	Dead
886	Lelou	F	29-Aug-2022	Maria	Michel	Alive
887	Cherry	F	29-Aug-2022	Indigo	Picasso	Alive
888	-	M	27-Dec-2022	Burgandi	Michel	Dead
889	-	M	27-Dec-2022	Burgandi	Michel	Sold
890	-	M	27-Dec-2022	Burgandi	Michel	Dead
891	-	M	01-Dec-2022	Louise	Michel	Alive
892	-	M	01-Dec-2022	Louise	Michel	Alive
893	-	M	04-Dec-2022	Orchid	Michel	Alive
894	-	F	04-Dec-2022	Orchid	Michel	Alive
895	-	M	14-Dec-2022	Constantia	Jasper	Alive
896	-	M	14-Dec-2022	Constantia	Jasper	Alive
897	-	M	17-Dec-2021	Quartz	Jasper	Alive
898	-	M	17-Dec-2021	Quartz	Jasper	Dead

In 2022, 35 (9M, 26F) Dairy goats died to causes listed in Table 20.

Table 20: Dairy goats that died from 1 January – 31 December 2022.

SB #	Name	Sex	Date of Death	Cause of Death
139	Zinfandel's Boy	M	27-Jan-2022	Euthanized – Old Age
760	N/A	M	30-Jan-2022	Pneumonia
282	Violet	F	21-Feb-2022	Euthanized – Brucellosis
293	Astrid	F	21-Feb-2022	Euthanized – Brucellosis
317	Maggie	F	21-Feb-2022	Euthanized – Brucellosis
405	Emerald	F	21-Feb-2022	Euthanized – Brucellosis
785	N/A	M	4-Mar-2022	Heart Abscess
357	Joan	F	5-Mar-2022	Kidney Failure
154	Queen Mary	F	8-Apr-2022	Abomasal Perforation
28	Tina 1	F	09-May-2022	Euthanized – Old Age
256	Picasso	M	14-June-2022	Killed by Leopard
336	Petrina	F	26-Jul-2022	Euthanized – Mastitis
371	Nolana	F	26-Jul-2022	Euthanized – Mastitis
520	Nutmeg	F	26-Jul-2022	Euthanized – Mastitis
563	Julia	F	26-Jul-2022	Euthanized – Mastitis
802	2802	M	28-Jul-2022	Stillborn
804	2804	M	31-Jul-2022	Fluid around organs
821	2821	F	04-Aug-2022	Laid on by Dam
413	Pepper 2	F	11-Aug-2022	Infection
859	2859	M	11-Aug-2022	Dystocia
862	2862	F	12-Aug-2022	Pneumonia
839	2839	F	13-Aug-2022	Laid on by Dam
779	Adelaide	F	14-Aug-2022	Leopard attack
865	2865	F	16-Aug-2022	Pneumonia
777	Myrtle	F	29-Aug-22	Lost
885	2885	F	03-Sep-2022	Anemia
757	Kameron	F	7-Sep-2022	Euthanized
769	Schnapps	F	08-Sep-2022	Pneumonia
693	Minnie	F	02-Oct-2022	Internal parasites

579	Wilbur	M	07-Oct-2022	Infection
482	Ada	F	27-Oct-2022	Snake bite
829	Mulan	F	29-Nov-2022	Pasteurella
616	Juniper	F	30-Nov-2022	Poisonous plants
478	Elsa	F	26-Dec-2022	Pulpy Kidney
889	2889	M	27-Dec-2022	Pneumonia

CCF's Dairy goats are managed for milk production and castrated males and inferior bucks are sold at auction. Between 1 January and 31 December 2022, 76 Dairy goats (2M, 12F, 62W) were sold, amounting to sales of N$43,440. Table 21 provides an overview of CCF's Dairy goat sales.

Table 21: Dairy goat sales from 1 January – 31 December 2022 (M = male, F = female, U = wether).

SB #	Name	Sex	Date of Birth	Date of Sale	Price
749	-	W	24-Nov-2021	2-Apr-2022	N$190.00
752	-	W	24-Nov-2021	2-Apr-2022	N$190.00
754	-	W	04-Dec-2021	2-Apr-2022	N$190.00
755	-	W	04-Dec-2021	2-Apr-2022	N$190.00
758	-	W	06-Dec-2021	2-Apr-2022	N$190.00
762	-	W	08-Dec-2021	2-Apr-2022	N$190.00
763	-	W	08-Dec-2021	2-Apr-2022	N$190.00
765	-	W	08-Dec-2021	2-Apr-2022	N$190.00
767	-	W	08-Dec-2021	2-Apr-2022	N$190.00
768	-	W	11-Dec-2021	2-Apr-2022	N$190.00
770	-	W	11-Dec-2021	2-Apr-2022	N$190.00
771	-	W	11-Dec-2021	2-Apr-2022	N$190.00
774	-	W	12-Dec-2021	2-Apr-2022	N$190.00
775	-	W	12-Dec-2021	2-Apr-2022	N$190.00
776	-	W	13-Dec-2021	2-Apr-2022	N$190.00
782	-	W	16-Dec-201	2-Apr-2022	N$190.00
783	-	W	17-Dec-2021	2-Apr-2022	N$190.00
784	-	W	17-Dec-2021	2-Apr-2022	N$190.00
786	-	W	18-Dec-2021	2-Apr-2022	N$190.00
787	-	W	18-Dec-2021	2-Apr-2022	N$190.00
788	-	W	18-Dec-2021	2-Apr-2022	N$190.00
792	-	W	22-Dec-2021	2-Apr-2022	N$190.00

793	-	W	22-Dec-2021	2-Apr-2022	N$190.00
794	-	W	25-Dec-2021	2-Apr-2022	N$190.00
795	-	W	25-Dec-2021	2-Apr-2022	N$190.00
796	-	W	24-Dec-2021	2-Apr-2022	N$190.00
797	-	W	24-Dec-2021	2-Apr-2022	N$100.00
81	Princess Adela	F	29-Nov-2011	27-Sep-2022	N$2250.00
100	Chenin Blanc	F	30-Jul-2012	27-Sep-2022	N$2250.00
109	Whinnie	F	31-Aug-2012	27-Sep-2022	N$2250.00
124	Tina 2	F	15-May-2013	27-Sep-2022	N$2250.00
132	Caitlin	F	02-Jul-2013	27-Sep-2022	N$2250.00
137	Poppy	F	07-Sep-2013	27-Sep-2022	N$2250.00
138	Primrose	F	07-Sep-2013	27-Sep-2022	N$2250.00
158	Princess Beatrice	F	12-Aug-2014	27-Sep-2022	N$2250.00
417	Queen Elizabeth	F	05-Aug-2018	27-Sep-2022	N$2250.00
548	Sophie	F	03-Nov-2018	27-Sep-2022	N$2250.00
671	Gamey	F	15-Dec-2020	27-Sep-2022	N$2250.00
673	-	M	19-Dec-2020	27-Sep-2022	N$3000.00
676	Natalia	F	21-Dec-2020	27-Sep-2022	N$2250.00
814	-	W	03-Aug-2022	17-Nov-2022	N$ 220.00
822	-	W	05-Aug-2022	17-Nov-2022	N$ 220.00
831	-	W	08-Aug-2022	17-Nov-2022	N$ 220.00
832	-	W	08-Aug-2022	17-Nov-2022	N$ 220.00
847	-	W	10-Aug-2022	17-Nov-2022	N$ 220.00
852	-	W	11-Aug-2022	17-Nov-2022	N$ 220.00
860	-	W	12-Aug-2022	17-Nov-2022	N$ 220.00
868	-	W	13-Aug-2022	17-Nov-2022	N$ 220.00
881	-	W	18-Aug-2022	17-Nov-2022	N$ 220.00
803	-	W	31-Jul-2022	28-Nov-2022	N$ 220.00
807	-	W	31-Jul-2022	28-Nov-2022	N$ 220.00
811	-	W	01-Aug-2022	28-Nov-2022	N$ 220.00
812	-	W	01-Aug-2022	28-Nov-2022	N$ 220.00
815	-	W	03-Aug-2022	28-Nov-2022	N$ 220.00
817	-	W	03-Aug-2022	28-Nov-2022	N$ 220.00
819	-	W	04-Aug-2022	28-Nov-2022	N$ 220.00

824	-	W	05-Aug-2022	28-Nov-2022	N$ 220.00
834	-	W	08-Aug-2022	28-Nov-2022	N$ 220.00
835	-	W	08-Aug-2022	28-Nov-2022	N$ 220.00
836	-	W	08-Aug-2022	28-Nov-2022	N$ 220.00
840	-	W	09-Aug-222	28-Nov-2022	N$ 220.00
844	-	W	10-Aug-2022	28-Nov-2022	N$ 220.00
845	-	W	10-Aug-2022	28-Nov-2022	N$ 220.00
846	-	W	10-Aug-2022	28-Nov-2022	N$ 220.00
848	-	W	10-Aug-2022	28-Nov-2022	N$ 220.00
849	-	W	10-Aug-2022	28-Nov-2022	N$ 220.00
854	-	W	11-Aug-2022	28-Nov-2022	N$ 220.00
857	-	W	11-Aug-2022	28-Nov-2022	N$ 220.00
858	-	W	11-Aug-2022	28-Nov-2022	N$ 220.00
867	-	W	13-Aug-2022	28-Nov-2022	N$ 220.00
870	-	W	14-Aug-2022	28-Nov-2022	N$ 220.00
874	-	W	15-Aug-2022	28-Nov-2022	N$ 220.00
879	-	W	17-Aug-2022	28-Nov-2022	N$ 220.00
883	-	W	27-Aug-2022	28-Nov-2022	N$ 220.00
884	-	W	27-Aug-2022	28-Nov-2022	N$ 220.00
833	-	M	08-Aug-2022	28-Dec-2022	N$ 400.00
				Total	**N$43,440.00**

Milk Production

There are several major factors that play a role in the amount of milk given by a specific goat. These factors include; the breed, age of the animal, lactation stage, amount and type of feed, temperature, milking frequency, availability and duration of free-ranging, animal health condition, and the type of management practice. Each goat is milked twice a day, although the number of goats milked each month depends on their lactation stage.

In 2022, up to 69 goats were milked every day for a total production of 36,352.73kg of milk. Of this milk, 347.70kg was used to raise goat kids as per the new bottle raising protocol which meant all 36,005.03 was supplied to the creamery (Table 22).

Table 22: Goats milked, amount produced (kilograms), and how much allocated to kids and creamery from 1 January – 31 December 2022.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Goats milked	52	44	68	69	67	63	36	33	37	30	61	62
Total Produced	3237.53	3274.57	3354.78	4124.76	4192.93	2248.72	2070.77	2519.48	2700.10	2315.31	1920.22	4393.56
Used to Raise Kids	0	155	93	0	0	0	0	0	99.70	0	0	0
To Creamery	3237.53	3119.57	3261.78	4124.76	4192.93	2248.72	2070.77	2519.48	2600.04	2315.31	1920.22	4393.56

The amount of milk each individual goat produces is monitored on a daily, weekly, and monthly basis. This allows us to determine when they are producing the most milk and then compare the amounts produced to the feed they are given. Table 23 shows the amount of milk production per goat per month.

Table 23: Milk production (kilograms) per goat per month from 1 January – 31 December 2022.

Goat	SB#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ablonia	**492**	45.47	50.61	54.47	67.89	53.52	2.04	-	-	-	-	-	64.97
Ada	**482**	137.12	117.57	114.84	100.37	98.57	31.71	1.91	-	-	-	-	-
Amber	**553**	0.30	93.17	99.38	80.14	94.00	89.10	102.19	125.08	120.11	126.41	119.56	106.34
Astrid	**293**	0.10	-	-	-	-	-	-	-	-	-	-	-
Barolo	**521**	-	-	4.02	37.81	44.28	36.15	45.41	47.63	45.17	49.59	45.03	36.54
Beulah	**342**	61.09	68.45	73.88	55.61	79.91	14.90	-	-	-	-	0.10	76.76
Blackfoot	**622**	-	-	-	-	-	-	-	-	-	-	0.08	68.22
Blanc	**315**	125.45	124.24	99.27	77.73	74.67	15.38	-	-	-	-	0.36	47.91
Brenna	**182**	-	-	-	-	-	-	-	-	-	-	0.80	85.66
Bridget	**277**	50.30	72.67	99.93	84.91	72.82	-	-	-	-	-	0.17	78.87
Brier	**364**	-	0.10	6.41	25.45	26.89	14.98	-	-	-	-	0.08	74.95
Burgandi	**354**	-	-	6.04	80.21	92.87	71.60	65.08	69.44	54.09	10.20	0.85	-
Caitlin	**132**	-	-	4.82	47.64	63.67	57.33	75.94	79.25	64.87	-	-	-
Catherine	**593**	-	-	-	-	-	-	-	-	-	-	0.20	34.27
Chianti	**384**	147.55	133.91	107.36	107.35	108.89	21.63	-	-	1.49	-	0.86	97.34
Chive	**558**	-	-	5.84	71.20	83.12	77.87	83.40	99.82	101.60	100.51	82.54	87.27
Chloe	**434**	-	-	10.37	98.63	110.31	106.90	131.42	142.66	139.09	161.20	135.99	146.90
Claret	**383**	166.90	127.43	110.87	96.01	111.39	32.22	-	-	-	-	0.66	112.56
Clover		-	-	-	-	-	-	1.41	27.83	83.18	99.44	82.53	91.36
Constantia	**514**	105.07	87.92	76.55	60.05	64.95	41.49	-	-	-	-	-	-
Crystal	**510**	68.70	91.98	89.93	102.13	105.43	34.63	-	-	-	-	0.34	104.98

Daisy 2	**468**	-	-	-	0.25	1.50	-	-	-	7.75	71.15	91.37	82.31
Denali (SA)	**257**	-	8.68	34.48	35.46	32.00	37.48	2.99	22.84	58.68	93.52	97.03	91.67
Diamond	**291**	-	-	2.14	44.00	47.91	46.13	65.56	53.09	79.20	89.87	31.07	2.48
Diana	**59**	0.91	-	1.49	4.41	0.07	-	-	-	-	-	-	-
Dominique	**554**	-	-	1.75	53.22	75.84	47.00	74.48	78.73	88.30	83.18	75.10	76.47
Elsa	**478**	63.82	57.12	55.71	42.94	41.98	23.93	-	-	-	-	-	-
Erin 2	**203**	3.51	50.20	52.95	35.52	32.36	1.93	-	-	-	-	0.62	95.03
Foibe	**619**	-	-	-	-	-	-	-	-	-	-	0.15	49.32
Gardenia	**646**	-	-	-	-	-	-	-	-	-	-	-	52.53
Glory	**370**	0.93	3.89	12.79	18.85	29.20	1.57	2.54	-	1.97	0.80	-	-
Halali	**279**	64.26	59.00	69.98	67.40	57.94	3.32	-	-	-	-	0.16	55.29
Helena	**433**	4.39	5.45	54.64	101.70	120.29	31.07	-	-	-	-	1.45	88.66
Henrietta	**296**	151.19	142.32	128.64	98.54	63.28	6.87	-	-	-	-	0.90	94.89
Joan	**357**	3.06	-	-	-	-	-	-	-	-	-	-	-
Julia	**563**	-	-	6.47	40.74	26.62	10.20	-	-	-	-	-	-
Isabel	**595**	-	-	-	-	-	-	-	-	-	-	0.53	37.21
Khenzi	**628**	-	-	-	-	-	-	-	-	-	-	0.24	55.48
Kir	**346**	1.43	-	18.05	104.54	124.14	109.78	135.33	144.01	136.26	127.76	110.21	118.66
Kwando	**609**	-	-	-	-	-	-	-	-	56.78	81.89	78.90	77.65
Lizzie	**289**	85.40	57.89	58.54	69.05	95.30	25.96	17.12	81.69	91.21	101.49	97.21	102.88
Lolita	**289**	87.98	74.62	84.71	70.45	40.50	0.43	-	-	-	-	0.44	50.40
Lotus	**484**	98.22	82.91	65.00	58.72	63.97	27.61	-	-	-	-	-	-
Louise	**542**	118.61	124.81	102.04	95.02	98.48	76.99	96.51	106.95	102.34	39.23	2.27	-
Madeira	**522**	115.83	103.04	89.98	89.69	87.75	38.86	-	-	-	-	0.40	60.00
Malbec	**317**	-	-	17.65	100.26	115.60	95.40	129.32	138.92	131.95	136.27	104.51	103.01
Marie-Antoinette	**301**	-	-	-	-	-	-	-	-	-	0.72	-	6.63
Maria	**588**	-	-	-	-	-	-	-	-	-	-	0.30	47.74
Marigold	**284**	74.33	96.85	78.00	69.21	63.70	9.77	1.25	1.60	4.08	12.70	20.15	47.39
Marsala	**301**	1.45	-	7.32	80.42	93.93	85.72	101.84	116.76	117.89	115.16	85.28	110.83

Matilda	**356**	1.61	15.73	27.33	36.15	32.22	6.02	1.37	4.61	-	-	-	-
Meredith	**498**	135.08	116.59	111.28	86.64	86.71	55.31	13.34	67.86	120.29	132.87	107.26	115.51
Moyo	**512**	107.57	97.39	82.84	89.18	90.46	19.77	-	-	-	-	0.71	68.51
Nala	**599**	-	-	-	-	-	-	-	-	-	-	1.34	63.81
Nicole	**513**	107.29	106.75	74.54	64.42	54.29	0.76	-	-	-	-	0.42	113.45
Nigella	**407**	8.56	-	0.82	1.00	-	-	-	-	-	-	0.76	86.22
Nolana	**105**	-	5.35	22.98	14.70	25.62	9.20	-	-	-	-	-	-
Nutmeg	**520**	128.30	117.74	93.53	25.84	16.26	3.54	-	-	-	-	-	-
Olifa	**271**	140.41	119.90	101.06	71.49	46.25	1.25	-	-	-	-	0.54	100.27
Omao	**371**	3.26	-	-	-	-	-	-	-	-	-	-	-
Orchid	**280**	-	0.12	1.95	-	-	-	-	-	-	-	-	-
Pearl	**368**	-	1.64	8.90	16.21	19.93	34.85	81.49	88.35	86.38	74.27	50.03	17.80
Pepper 2	**303**	-	-	-	34.82	24.44	0.46	-	-	-	-	-	-
Petrina	**385**	97.66	89.20	120.44	55.25	23.64	4.77	-	-	-	-	-	-
Petit	**564**	-	-	-	-	-	-	-	-	-	-	0.22	8.76
Poppy	**186**	117.03	87.28	84.75	66.56	57.01	53.10	76.68	82.48	66.37	-	-	-
Primrose	**413**	2.05	-	4.20	43.01	59.41	55.77	73.02	78.75	72.83	-	-	-
Princess Adela	**336**	3.74	-	-	-	-	-	-	-	-	-	-	-
Princess Beatrice	**137**	-	-	2.62	48.07	65.44	56.37	74.45	86.08	77.36	-	-	-
Princess Eugenie	**138**	-	-	3.13	24.61	21.73	22.98	33.41	45.61	48.50	64.24	65.51	71.16
Quartz	**515**	60.10	55.45	50.50	53.78	71.87	40.19	-	-	-	-	-	-
Queen Elizabeth	**158**	-	-	8.18	106.78	82.39	27.69	21.15	5.03	18.82	-	-	-
Robin	**107**	7.12	55.72	77.55	75.24	84.96	75.61	87.27	98.84	95.16	95.01	75.11	83.30
Rose	**417**	15.78	46.34	64.90	88.52	92.32	28.99	60.44	119.24	119.83	122.31	102.98	100.44
Rosemary	**489**	66.18	68.14	65.64	57.32	43.21	14.41	0.58	1.13	7.28	17.37	10.23	36.29
Ruacana	**462**	8.04	-	5.42	69.11	63.52	51.03	53.39	60.16	59.76	65.45	17.40	35.19
Selena	**487**	100.61	115.36	98.62	88.45	89.72	42.09	-	-	-	-	0.65	50.81
Simone	**572**	-	-	4.31	59.57	72.61	68.35	92.70	111.32	109.37	104.11	99.27	80.32
Sophie	**307**	-	-	13.52	11.53	20.30	52.84	77.52	108.60	103.33	-	-	-
Stella	**144**	1.78	-	2.25	18.30	8.96	0.63	-	-	0.79	5.56	13.74	5.71
Tayla	**561**	1.90	-	-	-	-	-	-	-	-	-	-	-
Takue	**504**	-	-	-	-	-	-	0.84	-	-	-	0.11	41.47

Tina 2	**124**	124.09	125.53	113.89	83.88	83.33	49.25	61.67	89.58	84.68	-	-	-
Topaz 2	**511**	90.60	90.35	81.07	81.05	82.13	35.44	-	-	-	-	0.96	50.28
Tulip	**309**	-	-	-	-	-	-	-	-	-	-	0.77	86.53
Veneto	**570**	-	-	3.27	31.57	40.09	39.26	61.72	64.71	69.24	60.30	52.59	32.35
Violet	**548**	1.07	-	-	-	-	-	-	-	-	-	-	-
Vistoria	**562**	-	-	4.11	56.85	66.17	54.07	66.03	70.83	74.17	72.75	49.01	76.07
Wendy	**359**	-	-	1.44	0.63	-	-	-	-	-	-	0.08	49.27
Whinnie	**124**	63.62	73.04	62.98	20.57	4.38	-	-	-	-	-	-	-
Zara	**543**	60.73	52.15	50.50	70.19	65.94	16.78	-	-	-	-	0.35	72.49
Zemba	**367**	-	-	-	-	-	-	-	-	-	-	1.75	126.17
Total (kg)	-	3237.53	3274.57	3354.78	4124.76	4192.93	2248.72	2070.77	2519.48	2700.10	2315.31	1920.22	4393.56

Figure 27 displays the number of goats milked each month and the total milk production per month.

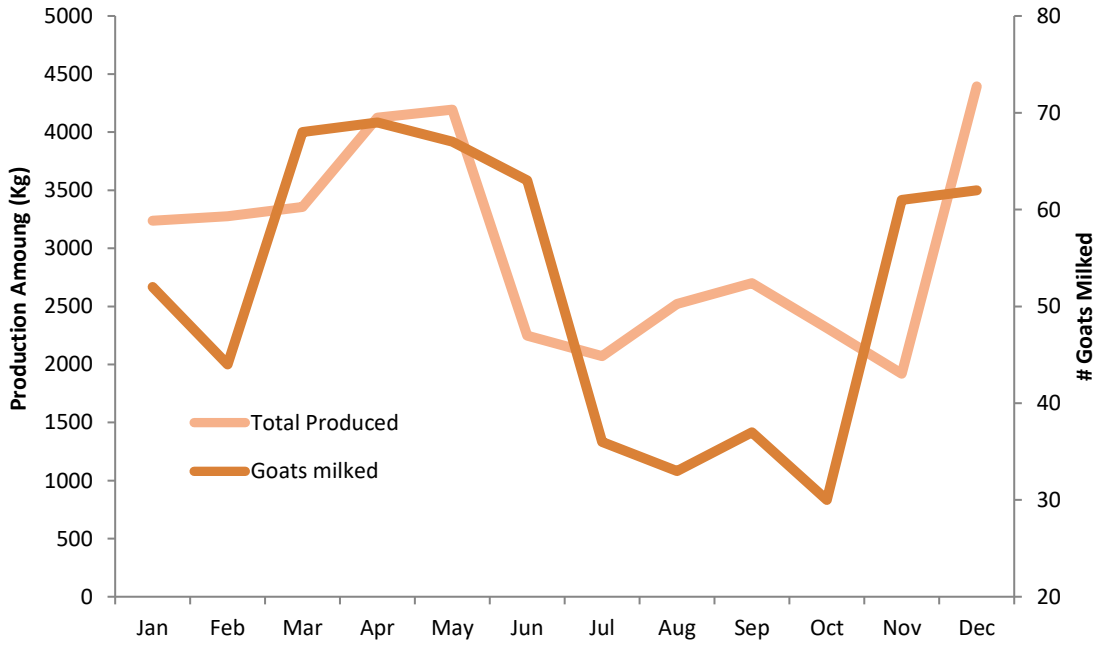


Figure 27: Milk production versus goats milked from 1 January – 31 December 2022.

Feed provided to CCF Small Stock

To ensure the health of all our goats and sheep we constantly monitor their food requirements and intake. We currently use four feed products to provide the correct variety of nutrients to our animals. They include Alfalfa hay; ram, lamb, and ewe pellets; milk goat pellets; and grass hay. Figure 28 shows the amount of feed used for each type during this reporting period.

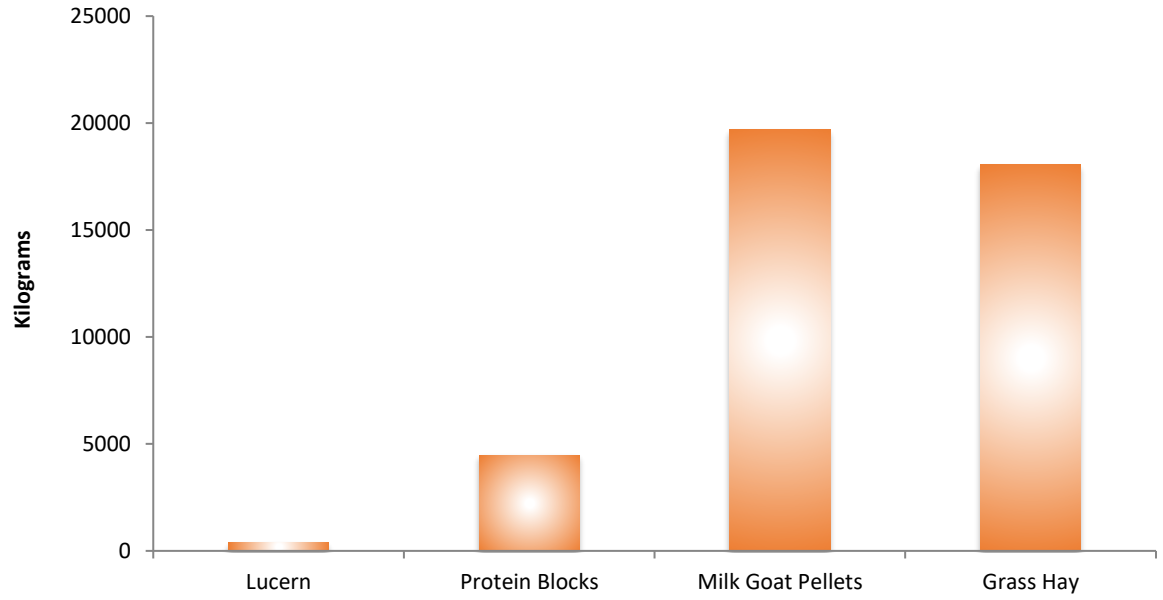


Figure 28: Amount of feed provided to CCF small stock 2022.

Vaccinations and De-worming

All of CCF's small stock is treated for internal and external parasites on a quarterly basis in January, April, July, and October of each year. The product used for internal parasite treatment rotates between the following four products: Fenbendazole, Ivermectin, Albendazole, and Doramectin. The product used at each treatment is determined by which product was used previously; anthelmvehiclintic products are rotated between drug classes in order to help prevent the development of resistance among the parasites, which can happen when the same product is used repeatedly. Both before and after each quarterly parasite treatment, a herd-wide Faecal Egg Count (FEC) is performed to determine the internal parasite burden in the animals. This is done by collecting representative faecal samples from various areas in the *kraal*. The pre- and post-treatment testing helps ensure that the treatments reduce the parasite burden in the animals, which helps to ensure the efficacy of the products used. For external parasite (tick, fly, and lice) prevention Paracide (Pfizer Animal Health) and Ultra-Boss Pour-On (Schering-Plough Animal Health) are rotated at each quarterly treatment. Vaccines are applied as follows. In addition, this year CCF vaccinated all small stock against Anthrax.

- Actinomyces – for the control of Caseous lymphadenitits (Corynebacterium pseudotuberculosis) – also known as cheesy gland.
    - All new-borns are vaccinated at two weeks old; three injections must be given 10 days apart and then one injection should be given every 6 months thereafter.
    - Adult animals are vaccinated every 6 months.

- MultiVax P Plus – for the control of dysentery, pulpy kidney disease (Clostridium perfringens Type D), tetanus (Clostridium tetani), Pasteurella (Pasteurella haemolytica) respiratory infection, blackleg (Gangraena emphysemtosa), clostridial metritis, bloodgut, and infections.
    - All new-borns are vaccinated at four weeks old, then a booster after a month and then annually thereafter.
    - Adult animals are vaccinated annually.

- Brucellosis – for the control of Brucellaovisand Brucellamelitensis, a bacterial infection of the reproductive tract.

    - This vaccine is given only once and provides life-long immunity; all young animals are vaccinated at four months of age.
- Enzootic Abortion – for the control of Chlamydophilapsittici, an organism that causes early and late term abortions.
    - All female animals are vaccinated one month before breeding on an annual basis.
- Rabies – for the prevention of rabies virus which causes fatal encephalitis.
    - All new-borns are vaccinated at four months of age, then a booster after a month and then annually thereafter.
    - All adult animals are vaccinated yearly.

3. Hay Production

In 2022, CCF produced 600 bales of hay.

4. Wild Game Hunted on CCF Property

As part of CCF Model Farm's sustainable wildlife management practices, CCF hunts several wild game species for consumptive purposes, including oryx, kudu, red hartebeest, and warthog. Figure 29 below displays the amount of wild game removed for consumptive use for this reporting period.

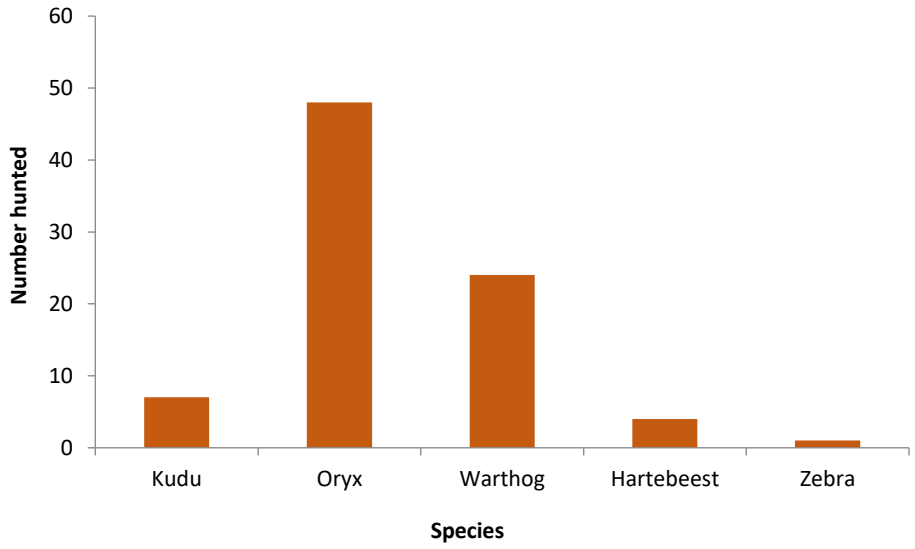


Figure 29: Amount of game utilized by CCF in 2022.

C. Sustainable Economic Programmes Supporting Local Communities

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

1. Certified Wildlife Friendly

CCF is a co-founder of The Wildlife Friendly Enterprise Network (WFEN), which is a global community dedicated to the development and marketing of products that conserve threatened wildlife while contributing to the economic vitality of rural communities. The WFEN provides the 'Certified Wildlife Friendly' trademark (Figure 30) that distinguishes enterprises that meet the highest standards of being wildlife friendly. CCF's Bushblok and Dancing Goat Creamery are both Certified Wildlife Friendly.

Figure 30: Certified Wildlife Friendly logo.

2. BUSHBLOK® and Fuelwood

Block production

Processing of raw wood for export continued. BUSHBLOK® production in 2022 amounted to 534 tonnes with sales of 518.37 tonnes. Production increased by 152 tonnes during this reporting period. Table 24 shows the monthly block production during this reporting period.

Table 24: Monthly block production in 2022.

Month	Amount (tonnes)
January	20
February	35
March	40
April	45
May	44
June	22
July	64
August	61
September	50
October	56
November	61
December	36

Total	**534**

Fuelwood production

Fuelwood production in 2022 amounted to 219.08 tonnes with sales of 202.74 tonnes. This production was 21.91 tons more than in 2021. Table 25 shows the fuelwood production during this reporting period.

Table 25: Monthly fuelwood production in 2022.

Month	Amount (tonnes)
January	3.5
February	0.15
March	0.63
April	29.93
May	3.88
June	34.78
July	28.54
August	4.65
September	1.68
October	28.19
November	39.17
December	43.98
Total	**219.08**

General Information

The Biomass Technology Demonstration Centre (BTDC) at CCF was in full operation. The former BUSHBLOK factory in Otjiwarongo continued operations as the CCF depot.

The CCF biomass program is part of a collaborative fifteen partner industry and research consortium from Africa and Europe to perfect a superheated steam torrefaction process. Torrefaction produces a clean burning, high value biomass feedstock with coal-like burning properties. This will increase the value of Namibian woodchip in the global biomass trade. A 250kg/hour throughput demonstrator plant has been designed and is under construction with commissioning planned to be complete by early 2023. It will then operate continuously at the CCF Biomass Technology Demonstration Center until mid-2024.

During this reporting period, David Shipingana continued as a Forestry and Safety Officer in the biomass team. David also registered to further his study at honours level, with the Namibia University of Science and Technology. Forest Steward and Senior Ecologist Matti Nghikembua continued studies in Finland for a PhD in Forestry in addition to overseeing biomass activities.

Dr Bruce Brewer, CCF's General Manager, remained active in groups involved with bush encroachment in Namibia. These included the Namibia Biomass Group (N-BiG), and the GIZ/MAWF De-bushing project, which is supported by the German Development Authority.

3. Cheetah Country Initiatives

Dancing Goat Creamery

Background

CCF began producing fresh goat cheese in August 2009 using the milk from six CCF's dairy goats, which came from the award-winning dairy farm Fairview in South Africa.

The herd has grown slowly over the past few years, as it takes approximately one and a half years to get a goat kid into production. At the end of 2022, there were 212 dairy goats at CCF with up to 69 being milked daily for a daily average of 97.72 kg per day. Milk yields from the dairy goats have steadily increased since the inception of the dairy goat programme. The programme aims to facilitate training and skill development around the production of dairy goat products, thus enabling livelihood diversification, and supplemental income to both CCF and community members.

In early April 2013, CCF opened the Dancing Goat Creamery, where high-quality artisanal fresh goat cheeses, as well as a variety of goat milk ice creams, fudge, and soaps, are produced daily by CCF's Creamery Manager Raul Carlos, Head Cheese Maker, Fransina Simson, and newly appointed staff Simeon Heita, who was a long term intern before his new position. The Dancing Goat Creamery is an essential part of CCF's Model Farm, which alongside its celebrated Livestock Guarding Dog Programme, allows CCF to demonstrate how cheetahs and livestock can live together and how local farmers can be successful using non-lethal predator management and alternative income source strategies to protect their livestock and thus their livelihoods.

As with the CCF International Research and Education Centre, the CCF Model Farm and Dancing Goat Creamery are open to the public daily and local farmers are encouraged to visit.

Production

CCF's Dancing Goat Creamery was supplied with a total of 36,005.03 kg of milk, however, due to human error, spilling and different/faulty scales, only 32,551 kg of milk was actually used in the creamery. Of the total milk used for creamery products, 31% was used to produce two of the creamery's original cheeses, feta and chèvre. Table 26 shows amounts of milk allocated to the production of each creamery product.

Table 26: Milk allocation per product in 2022.

Product	Milk Used (kg)
Feta	6,878
Chevre	3,241
Ricotta	636
Mozzarella	155
Hard cheese	2,298
Yogurt	3,887
Fudge	2,294

Ice cream	1,122
Soap	179
Milk to farm staff	9,675
Cream cheese	1,191
Halloumi	995
Total	**32,551**

Table 27 shows the amounts of two of these varieties produced each month in 2022. In addition, the creamery produced a total of 391 kg of fudge, 1,683 kg of ice cream, 57 kg of ricotta and 14 kg mozzarella cheese, 204 kg hard cheese, 97 kg cream cheese, and 3,787 kg yoghurt. The creamery started producing a new semi-hard cheese called Halloumi, for which 995 kg of milk was used to produce 85.05. All cheeses that were produced were used at the staff kitchen, Cheetah Café and the Cheetah View Lodge.

Table 27: Feta and Chèvre monthly production (kilograms) in 2022.

Month	Feta	Chèvre	Total
January	47.61	45.63	93.24
February	42.03	26.10	68.13
March	16.81	15.75	32.56
April	56.71	40.20	96.91
May	73.80	56.52	130.32
June	94.04	20.74	114.78
July	45.69	18.81	64.50
August	52.07	20.28	72.34
September	37.30	4.05	41.35
October	38.04	1.83	39.87
November	41.24	2.79	44.03
December	65.61	30.24	95.85
Total	**610.95**	**282.93**	**893.88**

Expenses

Creamery expenses such as cheese cultures, packaging, labelling, herbs, labour, gas, and electricity are estimated at N$18,136.37 for this period, averaging N$1.27 per kilogram of product. Total milk costs amounted to N$437,918.67. The average amount of milk required to produce a kilogram of cheese is 11.11kg, whereas ice cream required 0.67kg.

Table 28 shows the breakdown of costs for the various creamery products as well as the total cost per kilogram of product.

Table 28: Production costs (N$) of creamery products in 2022.

Product	Production (kg)	Milk per kg	Total Milk Used (kg)	Total Milk Cost	Total Other Cost	Total Production Cost	Total cost per kg
Feta	610.95	11.26	6,878.30	92,857.05	649.48	93,506.53	153.05
Chevre	282.93	11.45	3,240.70	43,749.45	300.78	44,050.23	155.69
Ricotta	57.23	11.11	635.9	8,584.65	60.84	8,645.49	151.06
Mozzarella	13.95	11.11	155	2,092.50	14.83	2,107.33	151.06
Hard cheese	203.97	11.27	2,298.3	31,027.05	216.83	31,243.88	153.18
Yogurt	3,787.10	1.03	3,887.1	52,475.85	4,025.96	56,501.81	14.92
Fudge	390.77	5.87	2294	30,969.00	415.42	31,384.42	80.31
Ice cream	1,682.55	0.67	1,121.7	15,142.95	1,788.67	16,931.62	10.06
Soap	269.10	0.67	179.4	2421.90	286.07	2,707.97	10.06
Milk to farm staff	9607.42	1.01	9,674.52	13,0606.02	10213.37	140,819.39	14.66
Cream cheese	97.07	11.11	1,078.5	14,559.75	103.19	14,662.94	151.06
Halloumi	47.91	20.77	995	13,432.50	50.93	13,483.43	281.43
Total	**17,050.95**	**97.33**	**32,438.42**	**437,918.67**	**18,126.37**	**456,045.04**	**1,326.54**

Sales

The Dancing Goat Creamery also creates a secondary industry for CCF with increased revenues for its ecotourism business by offering its products for sale to visitors at the Cheetah Gift Shop at retail price. Total profit from creamery products in 2022 was N$70,429.03, which saw a 25.2% increase from profit in 2021 at N$56,272.00. Creamery product amounts totaled 16,280.36 kg, while 227.81 kg were distributed as promotional samples and gifts at events such as agricultural shows, farmer's markets, and tourism fairs (Table 28).

As shown in Table 28, during this period the Creamery supplied the Gift Shop with 2,658.65 kg of product (cheese, fudge, ice cream, yoghurt and soap). The Creamery also supplies products to the CCF kitchens at Babson House, Cheetah Café, Hot Spot and Farm Workers. During this period, the CCF kitchens and staff were supplied with 9963.97 kg of ice cream, fudge, cheese, yoghurt, milk and soap.

Table 29: Creamery product sales (N$) in 2022. Figures in red indicate no profit from products.

Product	Kg	Cost/Kg	Total Cost	Revenue	Profit
Feta	131.6	153.05	20,141.62	10,800	-9,341.62
Chevre	1.63	155.69	253.78	260	6.22
Ricotta	0	151.06	0.00	0	0.00
Mozzarella	0	151.06	0.00	0	0.00
Hard cheese	101.25	153.18	15,509.58	6,350	-9,159.58
Yoghurt	1,689	1.00	1,689.00	14,190	12,501.00

Fudge	111.2	80.31	8,930.95	3,140	-5,790.95
Ice cream	250	10.06	2,515.77	7,000	4,484.23
Soap	7.4	10.06	74.47	1,150	1,075.53
Milk to farm staff	0	0.00	0.00	0	0.00
Cream cheese	56.625	151.06	8,553.95	3,400	-5,153.95
Halloumi	18.75	20.77	389.40	2,730	2,340.60
Total Stores and Lodges	**2,367.46**	**1,037.32**	**58,058.51**	**49,020.00**	**-9,038.51**
Fudge (Gift Shop)	167	80.31	13,412.49	21,010.00	7,597.51
Soap (Gift Shop)	92.1	10.06	926.81	1525	598.19
Cheese (Gift Shop)	178.55	152.52	27,232.25	15,530	-11,702.25
Yoghurt (Gift shop)	1,129	1.00	1,129.00	11,290	10,161.00
Ice cream (Gift Shop)	1,092	10.06	10,988.87	21,010	10,021.13
Total CCF Gift Shop	**2,658.65**	**253.96**	**53,689.42058**	**70,365.00**	**16,675.58**
Ice Cream (Babson)	68	10.06	684.29	14,960	14,275.71
Soap (Babson)	0	10.06	0.00	0	0.00
Cheese (Babson)	92.25	152.52	14,069.87	13,837.5	-232.37
Yoghurt (Babson)	0	1.00	0.00	0	0.00
Fudge (Babson)	57	80.31	4,577.91	14,250	9,672.09
Total Babson	**217.25**	**253.96**	**19,332.07**	**43,047.5**	**23,715.43**
Ice Cream (Café)	240	10.06	2,415.14	52,800	50,384.86
Yogurt (Café)	0	1.00	0.00	0	0.00
Cheese (Café)	315.77	152.52	48,160.90	47,365.5	-795.40
Total Café	**555.77**	**163.58**	**50,576.03**	**100,165.5**	**49,589.47**
Cheese (Hotspot)	153.45	152.52	23,404.03	23,404.03	0.00
Yogurt (Hotspot)	123	1.00	123.00	123.00	0.00
Ice Cream (Hotspot)	13	10.06	130.82	130.82	0.00
Total Hotspot	**289.45**	**163.58**	**23,657.85**	**23,657.85**	**0.00**
Milk (Farm staff)	9,674.52	10.00	96,745.20	96,745.20	0.00
Total CCF	**9,963.97**	**173.58**	**120,403.05**	**120,403.05**	**0.00**

Cheese samples	62.81	152.52	9,579.71	0	-9,579.71
Fudge samples	9.00	80.31	722.83	0	-722.83
Yoghurt samples	150.00	1.00	150.00	0	-150.00
Ice cream samples	6	10.06	60.38	0	-60.38
Total Samples	**227.81**	**243.89**	**10,512.92**	**0**	**-10,512.92**
Total All Products Sold	**16,280.36**	**2,289.83**	**336,229.9**	**406,658.9**	**70,429.03**

At the end of this period, the remaining inventory in CCF's freezers was 34.46 kg of cheese, 0.57 g fudge, 471.10 litres of yoghurt and 15.6 kg of soap, while 6kg of fudge and 428 kg of cheese spoiled (Table 30), due to the decrease in sales resulting from the COVID-19 pandemic.

Table 30: Amount of product left in inventory and those spoiled as of 31 December 2022.

Product	Amount (kg)	Amount spoiled (kg)
Fudge	0.57	6
Ice Cream	13.55	0
Yoghurt	471.10	225
Soap	15.6	0
Cheese	34.46	428
Total	**535.28**	**659.00**

Client Development

All the cheese recipes have been perfected to ensure consistent high quality and to ensure client satisfaction. Based on customers' suggestions, the Creamery team worked on the development of a variety of flavours for its existing cheeses.

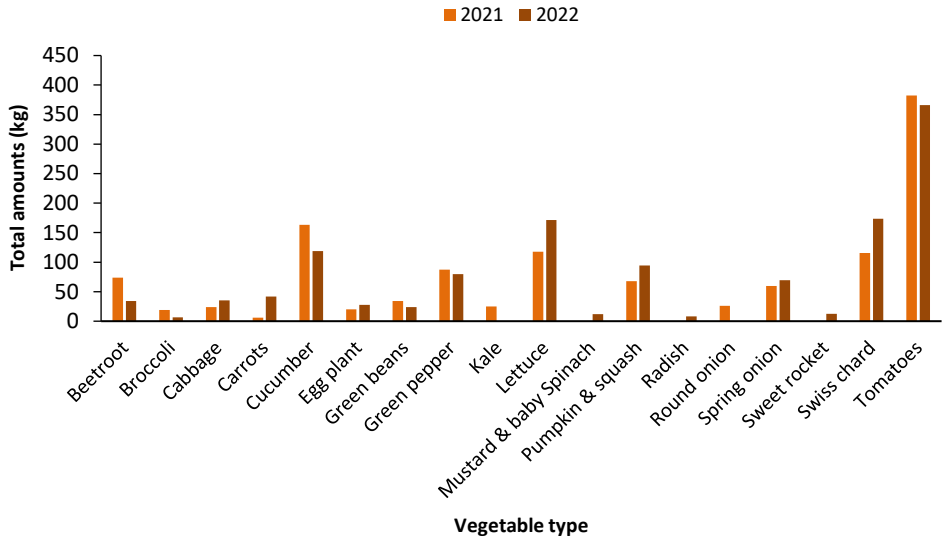
CCF will continue to place special emphasis on customer satisfaction and quality assurance in an effort to continue its growing sales trend. In addition, CCF will intensify the marketing and sales of its new cheese types while continuing to develop new products. Consequently, this growing demand for Creamery products will require increasing milk production.

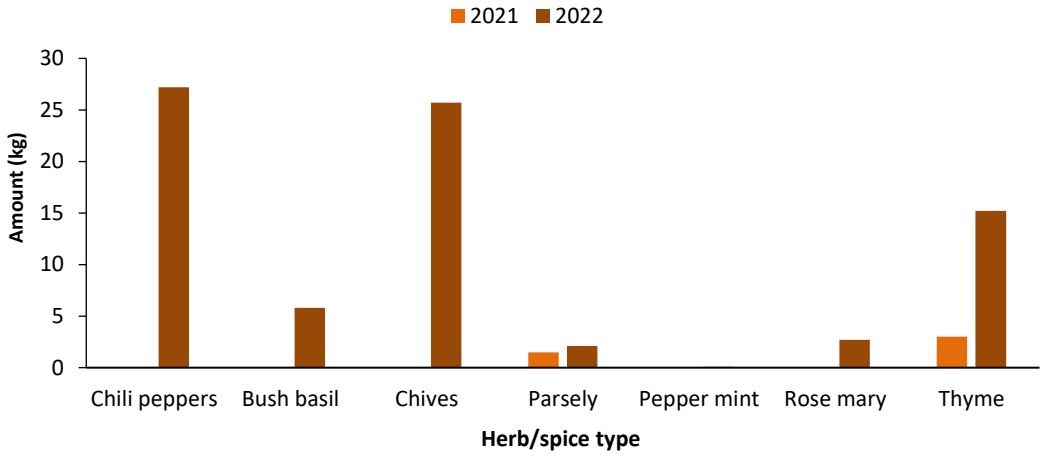
The Chewbaaka Memorial Garden

CCF's Chewbaaka Memorial Garden continues to produce fresh vegetables for consumption by more than 40 CCF staff and volunteers, as well as visitors to the Cheetah Café and Babson House guests. Namibia imports approximately 80% of its fruits and vegetables, mostly from South Africa, transporting them across long distances and increasing the use of fossil fuels and carbon emissions that contribute to climate change. By localising food production, CCF is not only reducing the environmental and social impacts of transporting food, but is also providing fresher, tastier, and more nutritious meals while saving money.

To counteract the heavy clay-sand soil, CCF uses aged manure from its farm animals, composting and a by-product from its BUSHBLOK production: wood dust. These materials are mixed into parent soil to improve fertility and organic matter content. CCF is also creating compost from food scraps, which is an essential ingredient for any organic garden. CCF staff, volunteers, and CCF gardeners, Hendrik Hoeseb and CCF interns

have been trained in proper composting techniques. CCF is consistently harvesting a variety of salads and vegetables including; beans, beetroot, squash, lettuce, rocket, spinach, basil, kale, peppers, eggplant, tomatoes, cucumber, spring onion. During this reporting period, CCF's Chewbaaka Memorial Garden also harvested a variety of fruits; fig, grape and paw-paw. A total of 1,680 kg of fresh produce was harvested from the garden between January and December 2022, representing a 223% increase from the previous reporting period (2021). Figure 31 shows the amounts of various produce harvested during the reporting period. Tomatoes, Papaya and Lettuce chard were the most harvested, representing 51% of the overall produce.





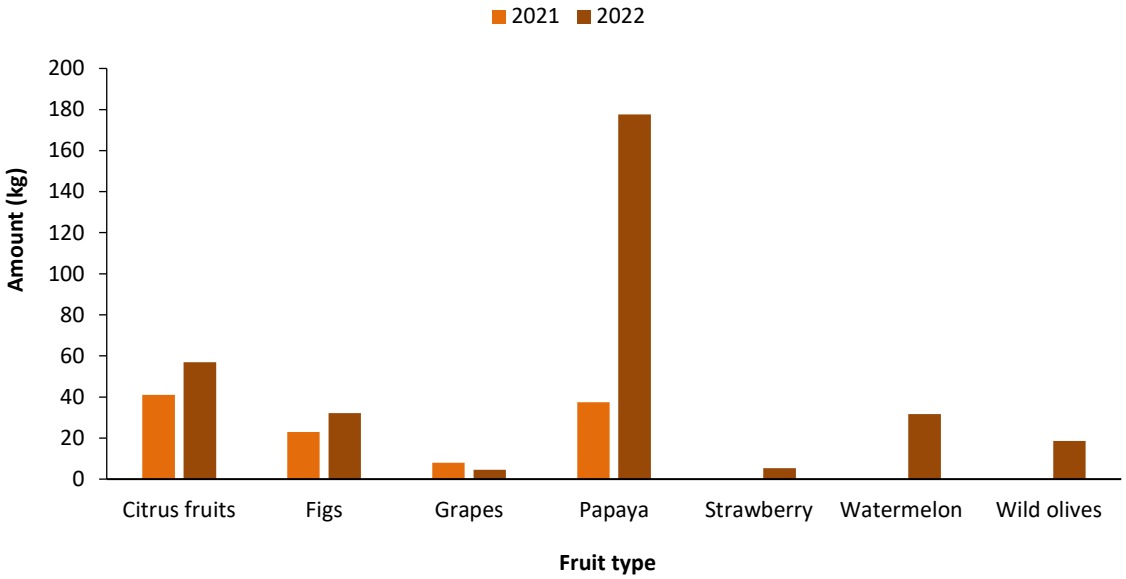


Figure 31: Vegetables, fruits and herbs harvested from the Chewbaaka Memorial Garden in 2022.

Since its inception, the garden's harvest has continued to grow. By having diverse plantings in a small space, the garden remains chemical-free because it invites beneficial insects to do the work of managing unwanted insects. Sunflowers and other flowers attract pollinators. The vegetables are therefore healthier for the environment, the growers, and the consumers. Seeds were provided courtesy of Baker Creek Heirloom Seeds, an American company based in Missouri that distributes from California. We have 42 varieties of heirloom vegetable seeds.

Because of a designated gift from CCF USA Trustee Candice Clough in honour of her father, a new greenhouse and pond were installed in May 2018, including electric and water servicing. The garden is one more step in CCF's sustainability programme, which includes an extensive recycling programme and composting. CCF includes the Chewbaaka Memorial Garden and Sustainable Practices in farmer training programmes as yet another way to promote alternative livelihoods and economic growth in Namibia.

CCF Vineyard

CCF harvested 500 kg of grapes in January 2022. The grapes were pruned in September 2022. The grapes that were planted in the CCF garden look very good. A lot of the new ones planted at Boskop did not do well.

Grapes will be ready for pruning again in mid-January 2023 and it looks like it will be a good harvest according to the fruits at the end of this reporting period.

D. Eco-Tourism

Tourism is one of Namibia's largest growing industries, with a large number of developments emerging in the Otjiwarongo area over the past couple of years. CCF's eco-tourism potential continues to grow, as it has become one of the region's leading travel and tourism destinations, thus boosting the local businesses of Otjiwarongo. We strive to provide supporters and guests the best stay and experience at its accommodations and during day visits at our Centre.

1. Visitors to CCF

By the end of 2022, CCF had received a total of 9,891 visiting tourists, of which 1,267(Cheetah View Lodge & Babson) were overnight tourists. This represents a 294% increase from 2,512 in 2021. In terms of total revenue, this reporting period saw a 254% increase at N$ 9,145,387.16 compared with N$ 2,582,966.72 in 2021. In addition to school groups and film crews mentioned separately, CCF hosted many CCF friends, supporters, and collaborators in 2022, many of them on return visits. The beginning of July is usually peak season for visiting guests, however this year peak season was from May to October, and early November.

The following friends, supporters, and collaborators visited CCF during this reporting period;

January

- Helge Bendl (Mr.) a journalist and photographer working mainly for German speaking media, covering conservation and tourism in Southern Africa visited during this month. One of his clients is the German magazine Süd-Afrika" (www.sued-afrika.de), a travel publication focused entirely on the region and has been around for more 25 years. They did a feature on the Waterberg Region and included CCF.

February

- The Indian Delegation visited CCF to plan and discuss the potential of releasing Namibian cheetahs in India.

March

- On 8 & 9 March, CCF hosted the Steambio group that had a site visit and meeting at CCF, including friends of CCF such as Huwe Parry and Dave Lello. CCF dear friend Heike Kinicke also joined and stayed a few nights longer.

- Isabel Doody returned to CCF as an overnight guest. She is an Irish Nature Photographer with a passion for wildlife and the natural world.

- Ethan Van Drunen and his family at CCF twice this year, once in March and in October. He is the Educational Director of the Windhoek International School originally from the USA.

- End of March we had Dr. Gerda Wittmann from the Department of Humanities & Arts Faculty of Education & Human Science at the University of Namibia staying at the Lodge for one night. She met up with CCF Education Manager, Annetjie Pöntinen to discuss future collaboration. At the same time we hosted Photographer Patricia Parinejad who is publishing a book called GREEN NAMIBIA and CCF will be featured on 3 double pages in this book. She is an excellent photographer and agreed to share 165 high resolution photos of CCF that she took while at CCF.

- Brandee Diner, the Program Coordinator and Teacher in the Department of Environmental and Wildlife Management at Vanier College, Montreal, Quebec Canada stayed as a working guest for a couple of weeks to further collaboration of sending students as well as faculty members to CCF. She had discussions with different department heads as well as our Education Manager.

May

- Dutch Film Crew Yolanda & Olaf from Wereldpaden Foundation (www.wereldpaden.nl) support projects that are committed to health care, education, cultural preservation and nature conservation. They visited CCF for a firsthand experience of what we do in hopes that they would share CCF's mission in the Netherlands, through their website, social media pages as well as through lectures with the aim that people in the Netherlands can support CCF projects through their foundation and to make people aware of what is going on in the world.

- Bryan & Kathy Slinker with their longtime friend Bayly and Sharyl Kammerzell stayed at Babson house, they are from Pullman, WA, USA. Bryan Slinker retired in 2020 after 11 years as Professor and Dean of the College of Veterinary Medicine at Washington State University.

- Gena Tweed stayed at the lodge for nights. She is a very important serving consultant at Extraordinary Journeys Gena Tweed and has been bringing us good business for years.

- Also in May we had Mark Goodman who is a retired pharmacy representative for Covidien and his son Grant Goodmann who works with Google, visit us at Babson House. We were delighted to show them what CCF does and some conservation in action. Mark is from Dallas and met Dr. Laurie Marker in 2018 at EarthX.

- Mrs Elizabeth Austin Tucker, won an auction prize in 2019 at an Online CCF auction and had to postpone their trip due to COVID-19 then she sadly passed away

- before she could visit CCF. The family had then decided to still travel in her honour. They all enjoyed a full schedule of activities at CCF while staying at Babson House.

- Sue Bates, Lesley Pritt and John & Leslie Nevison. Were our first Babson guests in

- May 2022. Leslie Nevison is the owner and founder of MTT Safaris (Mama Tembo

- Tours) in Lusaka in Zambia, originally from the states.

- We had Michael Hackett-Hale for two nights at Babson House. He is involved with WCN (Wildlife Conservation Network).

- We had Werner Petrick visit with his group from Nampower. Werner is the Founder of NAMISUN-Environmental Project & development.

- Long time veterinary friend and supporter Kathy Gervais stayed at Cheetah View Lodge for a couple of nights.

- Dr. Marker hosted a 'look & learn' for Somaliland Training Delegates.

June

- Long standing CCF supporters and donors, Henry and Barabara Eimstad visited in June.

- Robert Griffith and his son visited CCF at Babson House for one night. He is from the

- USA and a member of TEC (Technology Executive Committee) he also met up with

- Dr. Bruce Brewer while here.

- We also had the honor of hosting the High Commissioner of India in Namibia, Mr.

- Prashant Agrawal, who this time joined a delegation from India on their visit to CCF.

- The delegation had a 'look and learn' experience from CCF in full force conservation in action.

July

- Joe Rode and his wife Mel Malmberg stayed at Babson House for two nights. Joe is an Executive Committee member and the creator of Disney's Animal Kingdom.

- Chris Sutherland from the Centre for Research in Ecological & Environmental Modelling, School of Mathematics and Statistics from University of St Andrews & family stayed at the lodge and met up with Dr. Bogdan Cristescu to discuss further collaboration.

- Dr Paul Douglas Jackson & Miss Julia Marie Rainbow were the auction bid winners of the 'Remebering Cheetah' event in the UK and visited Babson House in July.

- Friends of Kathy Gervais stayed at Babson, Christie and Brice Seamens. Christie runs a remarkable nonprofit called Reef (http://reef.org/). They organize fish counts all over the world to accumulate data for research projects about how fish populations are changing.

- CCF Italy members Giorgio & Rosy Franco visited us for a few nights in July.

August

- The Vos family stayed at CVL for a fully inclusive Cheetah View Lodge booking. This is called the Kangal Anniversary package. Annemiek van Gijn is the owner of All of Nature a Tour company in the Netherlands that booked through Namibian Tracks & Trails, we discussed a great package for her guests so her guests get to go out to a farmer and meet a working dog for a day, they thank the farmer for the experience by donating things like dog food and blankets.

September

- CCF hosted the Indian Delegation that was part of moving cheetahs to India.

- In mid-September we hosted Dr Annegre Dammenhaint and her partner Siegi from the Travel-Service Walter, Germany, for a site inspection and a few days of relaxing at the lodge. They are looking into sending us working guest in 2023/4

October

- Rick & Kelly Schoenfield, Chuck Sheaff, and Jim Melville stayed at Babson House. Rick and Kelly are longtime supporters of CCF and were here in 2019. They won a three-night-stay at the 'Cheetah 2020 - Focus on the Future' auction.

November

- Gary Rygmyr & Jennifer Warbuton stayed at Babson house after a long awaited trip. They won a two-night stay organized by Mango Safaris at the BIG CAT BIG PARTY (BCBP) Event.

December

- Emma De Jue stayed at the lodge on the Kangal Anniversary package shes from the Netherlands and big Dag & Cheetah Fan.

- Roswitha Smale & Bronwyn Wallace stayed at Babson House. Roswitha is our US Board Member and lifetime supporter. She won the winning bid for a two-night stay at CCF's 'Cheetah 2020 - Focus on the Future' event. Bronwyn is her niece and this was her first trip to Africa.

2. Visitor and Guest Analysis

As tourists are increasingly becoming seasoned international travellers, they become more discerning and choose those destinations that can provide a more memorable experience and good value for their money. Therefore, CCF strives to ensure that the product offered to the tourism sector is sufficiently attractive. COVID-19 had a huge impact on the revenue and number of guests visiting CCF, the loss of income is tremendous as explained below.

Day Visitors

This reporting period shows an increase of 319% in day visiting tourists, from 2,059 in 2021 compared to 8,624 in 2022 (Figure 32).

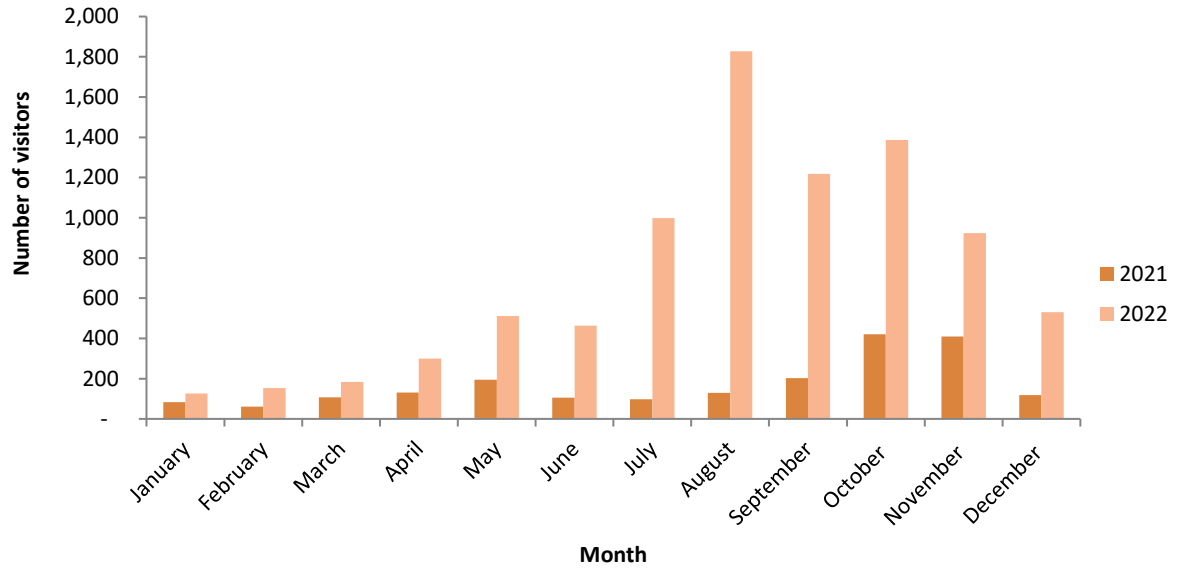


Figure 32: Number of visitors to CCF per month from 1 January – 31 December 2022.

The predominant language spoken by visitors during this period was German (25%), followed by English (23%) and French (19%). During this reporting period, more local visitors were received who spoke local languages; Otjiherero, Afrikaans and Khoekhoegowab (Figure 33). The majority of day visitors were from the following nationalities; France (23%), Germany (22%), and Italy (14%) (Figure 34).

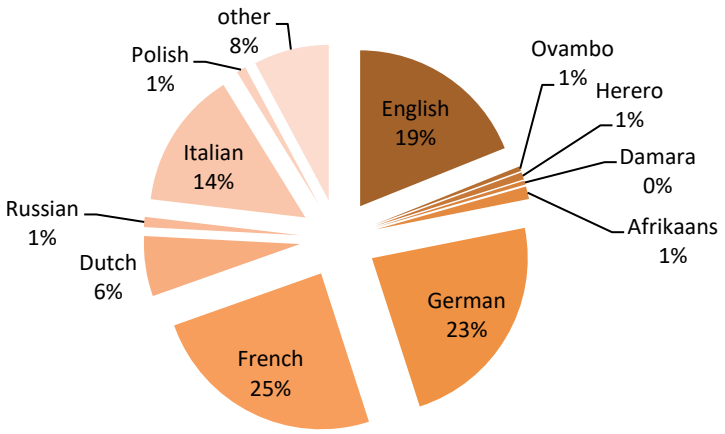


Figure 33: Languages spoken by visitors in 2022.

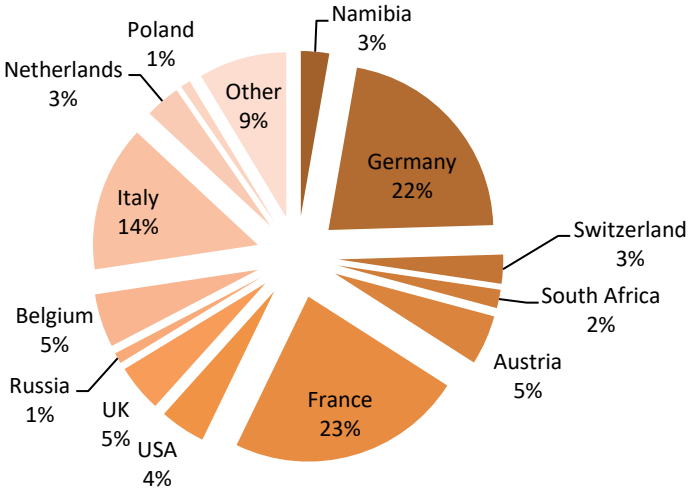


Figure 34: Percentage of visitors per country in 2022.

Most visitors continue to be walk-ins at 58%, this includes direct bookings from our reservation office, Exclusive Reservations, who also represent 26% of guests from all our tour operators. Surrounding Lodges continue to support us with a total of 16% of all the guests received for 2022 (Figure 35).

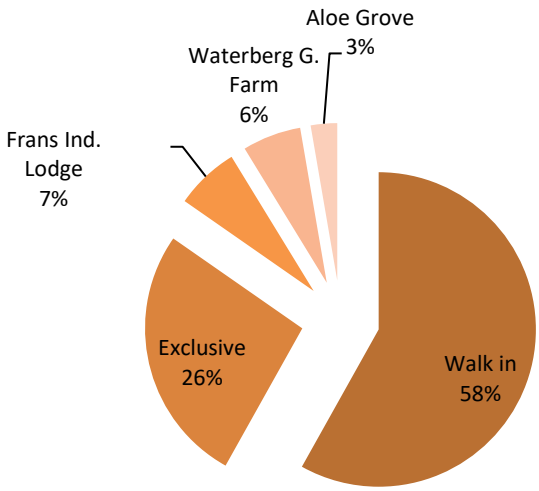


Figure 35: Source of visitors in 2022.

Financial

In terms of tourism revenue from day visiting guests, CCF saw an increase of 290% in revenue for 2022 at N$6,153,652.66, compared to N$1,578,160.21 in 2021 (Figure 36).

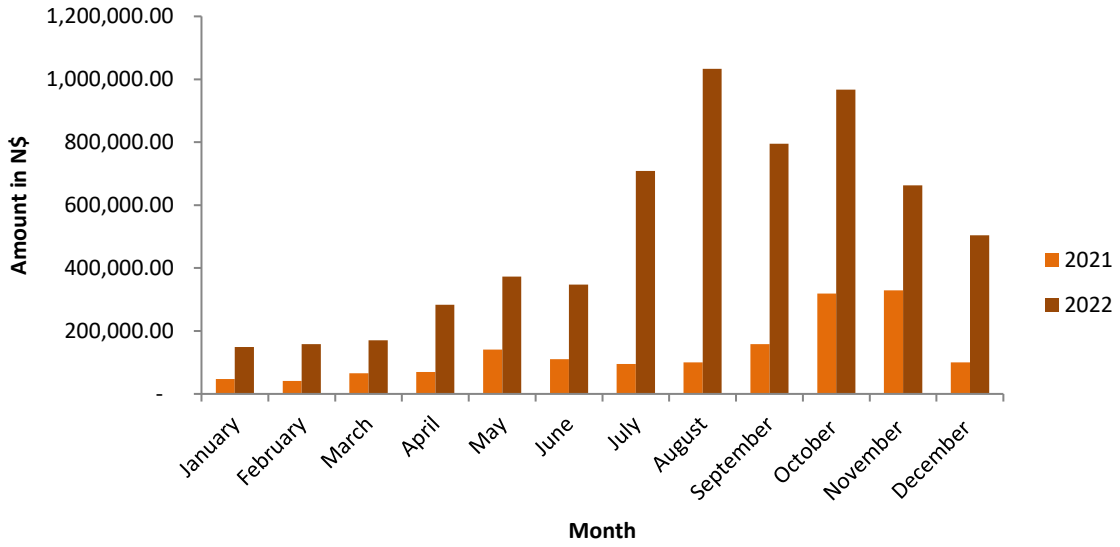


Figure 36: Tourism income (N$) comparison during 2021 versus 2022.

Table 31, provides the monthly breakdown of income per activity and number of visitors, showing that the month with the highest average of expenditure per visitor was January 2022 at N$1,179.36 and the lowest month was August 2022 with N$565.76. The average amount spent by visitors at CCF shows an -7% decrease in 2022 with N$713.55 compared to N$766.47 in 2021. Cheetah Drives (Elands) still represented the highest income source during this period, at 40% of the total income with an amount of N$2,446,494.19. Gift Shop revenue showed an 247% increase at N$1,409,875.85.00 in 2022 compared to N$406,709.00 in 2021 and places Centre Tours/Entrance fees as the third-highest revenue driver at 10%.

Table 31: Breakdown of revenue in 2022 based on activity.

ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	%
CHEETAH DRIVE	39033.75	46300.00	46445.00	114548.75	140957.75	112733.25	337848.95	563117.49	397002.50	320124.25	210494.00	117888.50	**2446494.19**	**39.76**
GIFT SHOP	69453.00	65347.00	71960.00	85767.00	106560.00	98975.00	172789.95	178468.00	145290.90	186156.00	123804.00	105305.00	**1409875.85**	**22.91**
ED CENTER	5610.00	10406.00	14371.50	17509.00	28534.00	44726.00	50027.00	114323.00	73689.00	127198.00	102436.00	41147.00	**629976.50**	**10.24**
RUN	6137.00	12100.00	9234.50	20310.75	52118.25	39722.00	58234.10	95733.50	67348.75	74829.75	45287.75	43002.50	**524058.85**	**8.52**
ACCOM	0.00	150.00	4000.00	7188.00	1680.00	300.00	4800.00	5035.00	2550.00	80045.00	104746.00	113225.00	**323719.00**	**5.26**
CAFÉ	12741.00	14962.00	17807.00	20637.00	24439.00	32697.00	54399.00	49600.00	72942.00	97544.00	49653.00	44283.00	**491704.00**	**7.99**
SERENGETI	0.00	3080.00	700.00	4158.00	6044.50	4389.00	8508.50	13436.50	15005.00	12551.00	13230.25	9392.50	**90495.25**	**1.47**
BEHIND THE SCENES	1500.00	1500.00	2400.00	7510.00	5550.00	4084.00	6600.00	4066.52	7225.00	12784.00	4080.00	18810.50	**76110.02**	**1.24**
DONATIONS	1000.00	1105.00	0.00	0.00	2000.00	0.00	1700.00	1000.00	0.00	1000.00	0.00	0.00	**7805.00**	**0.13**
OTHER	8070.00	19.00	-73.26	2235.00	600.00	4657.98	5025.22	1050.00	6340.00	47512.65	2397.41	4642.00	**82476.00**	**1.34**
CHEESE	5055.00	3130.00	3825.00	3818.00	4335.00	5620.00	8730.00	7805.00	7345.00	7680.00	6925.00	6670.00	**70938.00**	**1.15**
TOTAL	148599.75	158099.00	170669.74	283681.50	372818.50	347904.23	708662.72	1033635.01	794738.15	967424.65	663053.41	504366.00	**6153652.66**	**100.00**
VISITORS	126.00	154.00	184.00	300.00	511.00	464.00	999.00	1827.00	1218.00	1387.00	924.00	530.00	**8624.00**	
Avg. Exp/ Visitor	1179.36	1026.62	927.55	945.61	729.59	749.79	709.37	565.76	652.49	697.49	717.59	951.63	**713.55**	

Cheetah View Lodge

Cheetah View Lodge hosted 1,167 guests in 2022 compared to the 414 in 2021, a 182% increase. Overnight guests were recorded from January to December during this reporting period according to the number of bed nights. The total number of bed nights during this reporting period was 1,535 beds compared to 574 in 2021, representing a 167% increase (Figure 37).

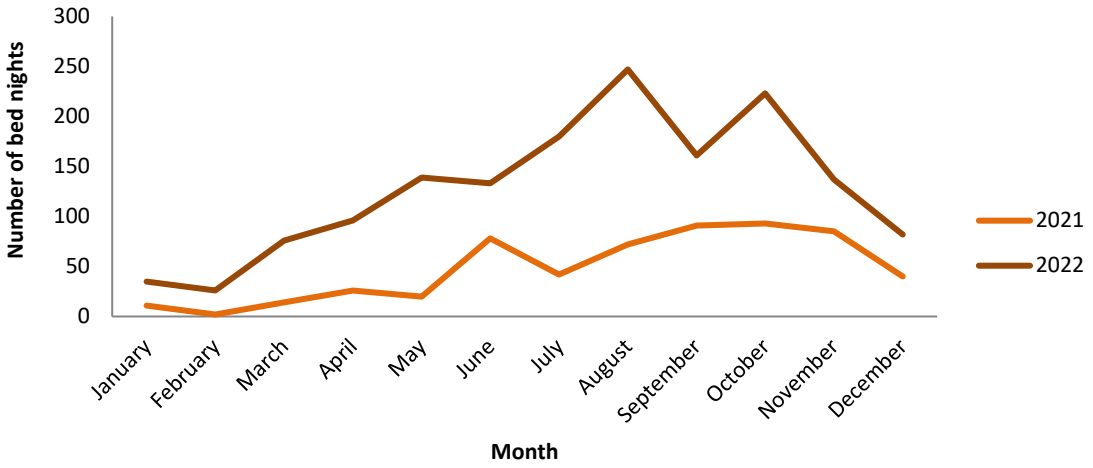


Figure 37: Number of bed nights at Cheetah View Lodge comparing 2021 vs. 2022.

Revenue from the Cheetah View Lodge saw an increase of 188%, from N$830,533.51 in 2021 to N$2,388,144.50 in 2021 (Figure 38).

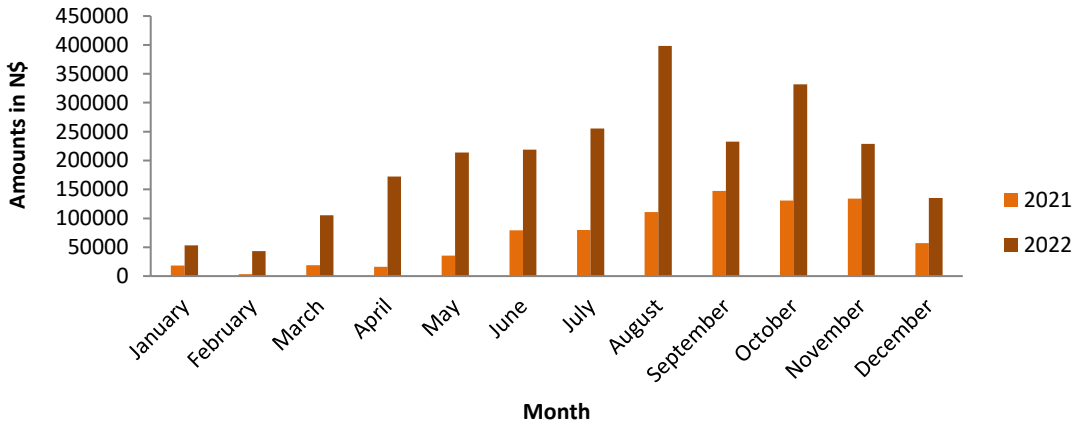


Figure 38: Revenue from the Cheetah View Lodge comparing 2021 vs. 2022.

Visitors were booked by various companies with the majority booking through our reservation office, Exclusive Reservations, representing 72% with 258 bookings. Direct private CCF bookings and from the CCF website, as well as private enquiries makes up a total of 28% at 99 bookings, including donors, friends of CCF, and Board Members. CCF received a total of 357 confirmed bookings throughout this reporting period (Figure 39). The current tour operators (TO) that make use of CCF are 78 different companies. Exclusive Reservations also handles all of CCF's tour operator bookings such as Katika Safaris (with the most TO bookings a total of 41 bookings for 2022), Damarana Safaris with 31 Bookings, Namibia Tacks & Trails with 27, Ultimate Safaris with 18 and Wild Africa Travel with 10 Bookings for this year and others with fewer than 10 bookings such as Wilderness Safaris, Mango Safaris, Infinite Safaris, Abenteuer Afrika Safaris, Compass Travel, Sense of Africa, Namibia Tours & Safaris, Nam Click, Natures Friend and Many more.

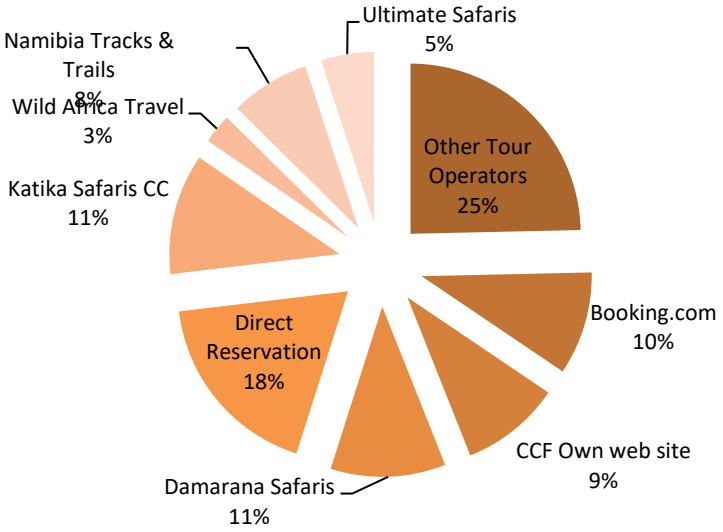


Figure 39: Booking sources for Cheetah View Lodge in 2022.

In terms of nationalities, most guests at Cheetah View Lodge were from Germany (26%), followed by France (15%), Italy (14%) and the USA (12%) (Figure 40).

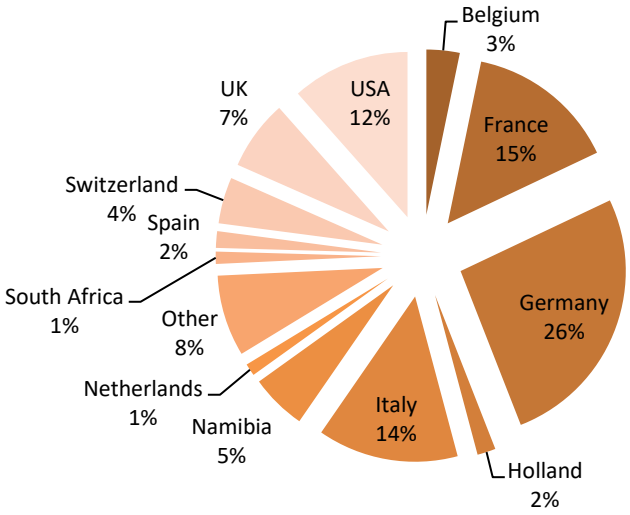


Figure 40: Nationalities of visitors staying at Cheetah View Lodge in 2022.

Babson House

Babson House is CCF's luxury guest house and is booked on a fully inclusive basis. This means that all our normal tourism activities and in-depth tours of each department, meals and drinks are included in this booking.

Babson House is usually very quiet during the first quarter of the year, with guests expected as of May to November. CCF hosted a total of 98 guests at Babson House in 2022, compared to 39 guests, in 2021 representing a 151% increase in guests. There was surprisingly a significant increase in bed nights and revenue too during this reporting period. Babson House had a 150% increase in Bed Nights at 175 in 2022, compared to 70 in 2021 (Figure 41).

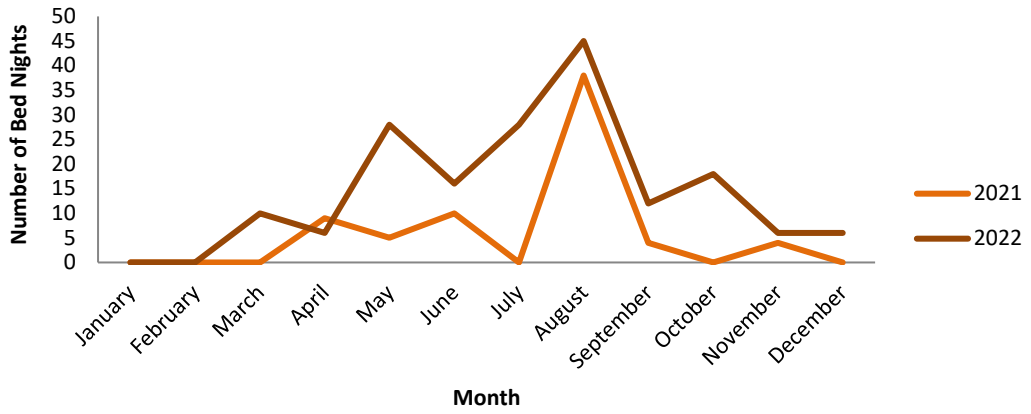


Figure 41: Number of bed nights for Babson House comparing 2021 vs. 2022.

Revenue from the Babson House saw an increase of 233%, from N$175,273.00 in 2021 to N$583,190.00 in 2022 (Figure 42).

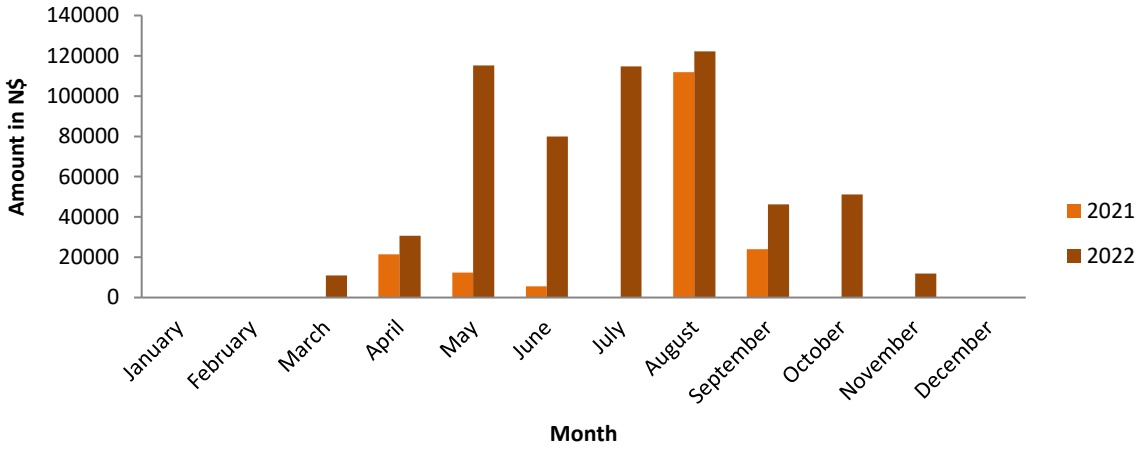


Figure 42: Revenue from Babson House comparing 2021 vs. 2022.

Most Babson House bookings were private Exclusive Reservations/CCF bookings at 14%. CCF received a total of 29 bookings for this reporting period. The majority (55%) of Babson House guest bookings were Tour Operator bookings made through Exclusive Reservations, including Ultimate Safaris with the most bookings of 14% of all the Babson Bookings, followed by Booking.com (also handled by Exclusive Reservations) at 17%, and other tour operators by Exclusive were Namibia Tracks & Trails with 2 bookings and Natural Selections, Mopane Game Reserve, ATC Namibia, Wilderness Safaris Namibia Wilderness Safaris SA, Mama Tembo Tours LTD, Roar Africa, Going Africa each having one booking at Babson house (Figure 43).

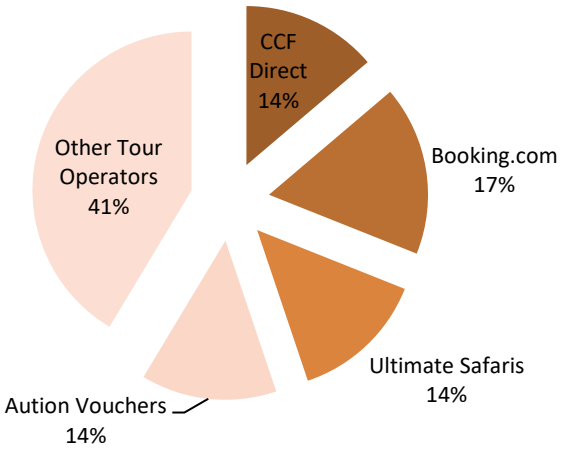


Figure 43: Sources of Babson House bookings in 2022.

Most overnight visitors at Babson House came from the USA (42%), followed by UK (11%) and Spanish (9%) (Figure 44).

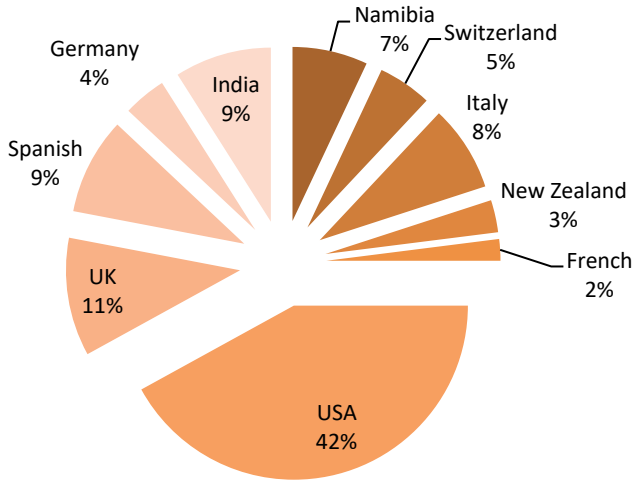


Figure 44: Nationalities of overnight visitors at the Babson in 2022.

3. Food Expenses

The number of people eating at CCF differs every day in accordance with the various guests, working guests, volunteers, and interns arriving and leaving CCF.

Table 32 shows the number of lunches and dinners that were cooked at CCF's community dining room, the Hot Spot, each month. A total of 21,710 meals were cooked during January to December 2022 for an average of 60 meals per day.

Table 32: Number of meals served at CCF's Hot Spot in 2022.

Meal	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lunch	769	706	846	1033	813	989	1230	756	778	817	904	923
Dinner	814	744	868	1196	845	1035	1302	767	851	813	919	992
Total	1583	1450	1714	2229	1658	2024	2532	1523	1629	1630	1823	1915

Average/day	53	48	57	74	55	67	84	51	54	54	61	64

A majority (48%) of the meals served at the Hot Spot were for CCF staff members. Volunteers and interns represented 37%, while Working Guests (WG) and other guests represented 15% (Figure 45).

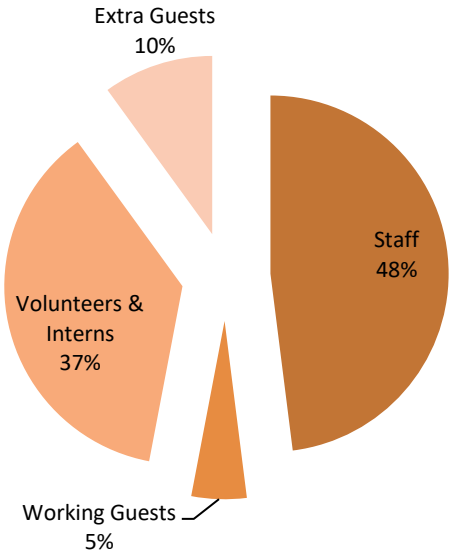


Figure 45: Overall categories of people served at the Hot Spot in 2022.

4. Marketing

We received Great Trip advisor reviews this year as follow; six excellent, one very good, one average and one poor due our rate charges.

Between January and December 2022, CCF hosted agents for an educational stay Ms. Sabina Basile from Italian Namibian based company Katika Safaris Agent. Also here for a educational/familiarization visit was, Maike Berg from Tracks 4 Africa in Germany who books through Namibia Clicks and Travel in Namibia.

CCF's marketing agent, Exclusive Reservations, continues to support our eco-tourism efforts both with reservations, bookings, and its objective of transforming the CCF brand to make it distinctive and different. Exclusive Reservations also promotes CCF by regularly visiting other tour operators in Windhoek at their offices and organizing meetings for companies based in Swakopmund. They also sent CCF's updated 2023 rates to all tour opperators during this period. Exclusive Reservation usually participates in expos based in South Africa, including Africa's largest travel show, INDABA Durban and the World Travel Market in Cape Town. Exclusive also organized an educational visit with some of the Namibian tour operators throughout the year to promote CCF's accommodation facilities, Cheetah View Lodge and Babson House, and to familiarize the tour operators with CCF's work as an education and research centre.

In November 2022, CCF attended the four-day Annual Tourism Expo, hosted in Windhoek. CCF's Annetjie Pöntinen and Ignatius Davids represented and marketed CCF at the Expo and received a Gold Award for the most engaging and interactive exhibition stall and price money of N$7,500 (Figure 46).

Figure 46: Annetjie Pöntinen and Ignatius Davids on the left with one of the expo organisers (left) and the CCF exhibition stall with Ignatius seated on the right.

Throughout 2022, CCF has continued its advertising partnerships with numerous publications and online channels adding a few new ones to the accommodations. These included Where to Stay, Namibian Holiday & Travel, Venture Media, Namibia Travel Info, CCF advertises with PAKO Kids Magazine as this also supports school children of Namibia. Work with Brochures Namibia, who distributes CCF brochures to the airport and hotels in Windhoek. CCF will also be featured in a new book called GREEN NAMIBIA, and is a member oF Africa Geographic. CCF had to cut a few down due to the loss of income and concentrate on one or two companies.

CCF tries to boost the local advertising and marketing on social media and by putting up posters throughout Otjiwarongo, Windhoek and the rest of Namibia.

CCF got involved with Great Media in South Africa who set out a new Magazine called Xtinct whos main focus is global extinction, endangered species and overall conservation. They offered CCF an NPO profile and they will feature an article by Dr Marker on our current global extinction and endangered species crises. They also invited Dr Laurie Marker to sit on their editorial board alongside Andrew Muir – CEO Wilderness Foundation Africa Marc Player – CEO Ian Player Foundation Cherryl Curry – CEO Wilderness Leadership School Dean Meldau – CEO Planet Savers Jo Roberts – CEO Wilderness Foundation UK Vance Roberts – CEO Wild Foundation USA,Tony Lubner – CEO of Orca Foundation Duncan Pritchard – MD Wilderness Leadership School Doctor and Simon King Lynn Chamier – CEO 1.5 Degrees, to name a few.

Attractions that encourage tourism operators to market CCF as a destination continue to be evaluated, as do the information and materials supplied to visitors on departure, to encourage them to become engaged and share their experience with their closer and wider networks once they have returned to their homes. CCF staff actively promote our social media websites (Facebook, Twitter, YouTube, TripAdvisor, and LinkedIn) to all guests visiting CCF.

5. CCF Cheetah Café

Since the opening of CCF's Dancing Goat Creamery early in 2013, menu items at the Cheetah Café include the very popular CCF Goat Cheese Platter, local platter, and baked feta, as well as fresh muffins, scones, quiches, wraps, a cake of the day, and goat milk ice cream, which is a favourite on hot days. Fudge produced at the Creamery is also offered for sale at the Gift Shop.

After a lightning fire on 16 October 2013 destroyed the CCF Visitor Centre, which housed the Cheetah Café, the Cheetah Café operated from a small room in the Cheetah Museum building, until the re-opening in June 2017, which is now seeing benefits as Lodge guests can now enjoy a light lunch, snack or coffee at the café between activities at CCF.

Total revenues from the Cheetah Café during this period was N$491,704.00, showing a significant increase of 549 % compared to N$ 75,696.00 during the same period in 2021 (Table 33). Tour Operator and large per-booked group bookings started May 2022.

Table 33 : Cheetah Café sales (N$) in 2022.

Month	Pre-Booked	A la Carte	Total
January	0.00	12,741.00	12,741.00
February	0.00	14,962.00	14,962.00
March	0.00	17,807.00	17,807.00
April	0.00	20,637	20,637.00
May	3,520	20,919	24,439.00
June	7,000	25,697	32,697.00
July	18,620	35,779	54,399.00
August	10,730	38,870	49,600.00
September	29,850	43,092	72,942.00
October	59,176	38,368	97,544.00
November	13,860	35,793	49,653.00
December	10,040	34,243	44,283.00
Total Sales	**152,796.00**	**338,908.00**	**491,704.00**

E. Association and Conservancy Relationships

1. Large Carnivore Management Association (LCMAN)

CCF is a founding member of LCMAN and continues to work as a stakeholder of this group of NGOs, researchers, farmers, and governmental departments and helps guide the conservation and management of large carnivores in the country and facilitates communication among the stakeholders to ensure a coordinated approach. Dr. Laurie Marker has been the Chair of LCMAN since 2015 and CCF's Lauren Pfeiffer has been the Secretariat since 2019. LCMAN also functions as a resource for the Namibian Ministry of Environment, Forestry and Tourism (MEFT) to provide expert advice and guidance during policy making procedures.

LCMAN continues to work with farmer organizations such as Namibia Agricultural Union (NAU) and Conservancies of Namibia (CANAM), along with the Professional Hunters Association of Namibia (NAPHA) in providing support to the farming community in order to help reduce human wildlife conflict (HWC). A farmer hotline is available at CCF and an LCMAN email exists to ensure constant communication with farmers or with other people when they have questions or conflict with large carnivores in or near their farms.

Two ordinary LCMAN meetings were held during 2022 on 19 July and 24 November and the AGM was held on 24 November. CCF had good representation at all meetings and was able to share their technical report with other LCMAN members during the ordinary meetings.

In February, LCMAN participated in the African Wild Dog United virtual conference, based in South Africa. With the assistance of CCF's Assistant Director for Ecological Research, Dr. Bogdan Cristescu, LCMAN gave a

short talk summarizing the African wild dog chapter from the Namibian Carnivore Red Data Book. This talk highlighted the African wild dog population trend in Namibia along with the threats and conservation actions to protect African wild dogs in Namibia. CCF also presented two posters at the same conference on their work with African wild dogs in the Eastern communal conservancies and their new publication on captive-rearing of orphan African wild dog pups.

2022 LCMAN Focus Areas

Red Data Book

LCMAN main focus for 2022 has been the finalization of the Namibian Carnivore Red Data Book, "*Conservation Status and Red List of the Terrestrial Carnivores of Namibia*". During the first half of the year, work on the Red Data book was focused on finalizing the *Forward* and *Introduction* in order for publication in August. The official launch of the Red Data Book was on 24 November 2022, which was held in Windhoek. Lauren Pfeiffer and Tim Hoffman represented CCF at the book launch where authors presented short chapter summaries from the book.

The publication of the Red Data Book represents five years of work between LCMAN, the Namibian Chamber of Environment (NCE) and the Ministry of Environment, Forestry and Tourism (MEFT) and comprises the 34 terrestrial Namibian carnivore species. For each Namibian carnivore species, historic and current distribution maps, conservation status and current research has been compiled, along with photographs of each species.

CCF staff members, Dr. Laurie Marker, Dr. Anne Schmidt-Kuentzel and Matti Nghikembua are co-authors for the chapter on cheetahs and Stijn Verscheren and Lauren Pfeiffer have been acknowledged for their contribution on the cheetah chapter for the Red Data Book. Nadja Le Roux, Lauren Pfeiffer and Dr. Laurie Marker are also co-authors on the African wild dog chapter. CCF's research has also been acknowledged in the leopard and caracal chapters.

Namibian Carnivore Working Group

During 2022, LCMAN along with help from NCE, a new working group was formed with the MEFT focusing on carnivore research and conservation within Namibia. The formation of this new working group will allow MEFT to work closer with carnivore stakeholders to better conserve Namibia's carnivores. The working group was officially launched in November during the two-day carnivore workshop (24-25 November) which was held in Windhoek. CCF's Lauren Pfeiffer, Tim Hoffman, Hanlie Winterbach and Johan Viljoen attended the first meeting in Windhoek, while Nadja Le Roux and Drs. Laurie Marker and Bogdan Cristescu attended virtually.

MEFT has been appointed as the Chairperson, while CCF has been appointed Vice-Chair and Naankuse was elected as Secretary.

Although this working group has similar aims to LCMAN, this new working group is interdependent from LCMAN and open to interested parties to join. A website has been created for NCWG however this website is still in draft format. Further development of the working group and the website will be discussed during the next meeting which is scheduled for April 2023.

2. The Ministry of Environment, Forestry and Tourism (MEFT)

During this reporting period, CCF continued to work with various stakeholders such as the Ministry of Environment, Forestry and Tourism (MEFT) and communities to find lasting solutions to HWC issues.

3. Communal Conservancy Development

Rabies Vaccination Campaign in the Greater Waterberg Landscape Communal Conservancies

The primary goal of this project is to vaccinate domestic pets (dogs and cats) against rabies to join in the World Organization for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO) and the Global Alliance for Rabies Control (GARC) in their Global Strategic Plan 'Zero by 30'. This Strategy aims to eliminate rabies death cases in humans by 2030.

CCF's One Health program assists in the health and development of the four communal conservancies in the Greater Waterberg Landscape (GWL). CCF helps remote communities with preventative veterinary care for livestock and domestic animals. For the past four years, CCF has conducted rabies vaccination campaigns for domestic dogs and cats in the Eastern Communal Conservancies of the GWL.

Additionally, CCF's farmers' training programs assist in reducing livestock farmer-carnivore conflict in the four communal conservancies of the GWL. CCF's Future Farmers of Africa (FFA) program teaches farmers rangeland management, along with livestock and wildlife management which has resulted in a reduction in the retaliatory or prophylactic killing of cheetahs and African Wild Dogs (AWDs).

The long-term impact is expected to reduce the cases of rabies in humans to zero, as well as reducing the number of rabies cases in domestic animals and wildlife. Furthermore, it aims to reduce livestock losses and therefore farmer-predator conflict, which ultimately reduces the killings of cheetahs and AWDs. In addition, the program aims to increase the income of farming families by not getting exposed to rabies, whilst having healthier livestock and pets, and thereby creating additional livelihood opportunities.

The team of the Rabies vaccination campaign in the GWL communal conservancies of 2022 was headed by Dr. Anahi Hidalgo (One Health Veterinary Advisor), as the Manager / Coordinator of the Rabies program; Vistoria Tuhemwe (Veterinarian Technician), as the vaccinator; Nadja le Roux (External Contractor) as the community communicator; and Modesta Fabianus (Kraal manager), as the translator.

The vaccination campaign ran from September - November. The team was able to complete four trips across the following dates:

- First trip: 2 September – 11 September
- Second trip: 29 September – 6 October
- Third trip: 19 October – 25 October
- Fourth trip: 2 November – 10 November

The team visited 76 communities and vaccinated a total of 1,306 animals. Thirty-nine assist 39 animals in need of medical attention were assisted and five villages were identified as having Human-Wildlife Conflict cases due to the presence of AWDs.

The total cost of the project was N$ 264 886.97, resulting in an approximate cost of N$171.00 (approx. USD12.00) per animal vaccinated.

Activity Summary

Rabies Vaccinations - new & boosters

- This year we were able to vaccinate a total of 1306 animals, comprised of 997 dogs and 309 cats.

- From that total,
    - The previous status of 798 was unknown
    - 104 animals had been previously vaccinated against rabies
    - 404 animals had not been previously vaccinated against rabies.
- It is worth noting that some puppies were vaccinated against DHPP and received their first Rabies vaccine shot this year.

Morbidity and Mortality of vaccinated animals

- At least five of the vaccinated dogs from 2019 and four from 2020, died from the following scenarios: intraspecies fighting while chasing a female in heat, snake bite (Puffadder), ground hole collapsing, as well as unknown reasons. These occurred in Omundongovineja, Okaruvahona and Otjitazuu communities.

- There was a report of the death of seven animals after vaccination, specifically five puppies, one adult dog and one cat in the community of Otjozonjusi. We visited the person in question, a woman who was really upset with us, and truly believes that the vaccination killed her animals. After talking with her, we gathered more information, the animals had died one and a half weeks after vaccination that they were lethargic, in appetence, had diarrhea with blood in feces (one animal), had run away into the bush and was found dead later. Unknown causes of death but differential diagnoses are: Parvovirus (present in all the area), Poisoning (Rat poison or ants poison), and toxic plants.

- A four-month-old puppy died three days after vaccination. He was lethargic, depressed, in appetence, had diarrhea but was not dehydrated. None of the other siblings presented any clinical signs. Cause of death unknown, possible diagnostics include poisoning, toxic plant ingestion or animal/insect bite.

Rabies surveillance in animals and people

- At Okanguindi a person was bitten by a dog around August 2022 and went to Okamatapati clinic. According to the man, the nurse did not clean the wound, did not give him antibiotics, nor did they give/send him to receive Rabies vaccination shots. They just sent him paracetamol tablets, and did not write anything on his health passport. He came back a second time due to pain and was still only given paracetamol. His wound was looking necrotic and we told him that he needed to go back to a hospital/clinic and report the case.

- A dog in Ominjerenjau, showed the following clinical signs - swollen neck, increased salivation (not drooling but sand stuck all around), lethargic, not eating, not drinking water, not trying to bite, not circling, just sleeping and moving slightly between shaded locations. All of this happened after 2-3 weeks when the dog was outside in the field and was bitten by something in the neck. The owners thought it was a venomous snake but nobody was present at the incident. This could be jackals or another small carnivore. The incident was reported to the State Vet as one of the differentials for the clinical signs described above as rabies.

Spay/Neuter interest and status

- A total of 350 owners were interested in spaying/neutering their animals, whilst 12 owners said that they would maybe be interested in these methods for their animals.

- The owners of 580 animals were not able to provide their opinions on their animals being spayed/neutered due to their absence during our visit (animals were handled by workers, neighbors or children).

- 580 animals were not answered for owners were not present (just workers or kids), or the person refused to answer.

- 15 animals were already spayed or neutered.

- There were a few owners not on this year database (as their animals were already vaccinated) who were interested in the sterilization of their animals.

Livestock Health Checks

- Several farms were advised on better livestock management to improve animal health.

- Assisted with some goats showing depression signs or bloated abdomen.

- Several farms were taught how to prevent toxicity from some toxic plants, making emphasis on *Drimia sanguinea,* as it was the most common complaint.

Adhoc treatment of wounds, dewormed and/or diagnosis of ailments

- Assisted 39 animals in need of minor wound cleaning and/or dewormed for internal parasites if needed.

- Provided detailed aftercare instructions for any other case, and suggested strongly visiting the state veterinary clinic in mild/severe cases. Taught farmers about parvovirus and distemper viruses, and how to prevent them and/or live with them.

Human Wildlife Conflict

- Conflict reports with jackals, caracals, cheetahs, leopards and AWDs were received in different communities visited this year.

- Reports of dogs attacking wildlife in order to protect their owners' animals. Such as in Okombungo, were a dog fight with a leopard resulting in the leopard being killed on September 2022.

- We observed dogs with hunting wounds on several farms (Otjitemunua, Otjekongo and Otjihuze).

- Reports of conflict with a "brown, small dog-sized animal that is suckling blood and attacking back legs of goats" in Otjiere. They called this animal "Onguirira". Apparently many animals have died and no blood has been observed on their carcass. The description given suggests that this is a caracal.

- People from different communities reported AWDs activities. These activities and lost animals have been in the following communities and dates:

    - Einde in July and they assured us that now that once the rains come, the AWDs will come back (Approx. Dec 2022 or January 2023)

    - Otjomumbonde in September and the first week of October 2022

    - Okaruvahona in August and September 2022

    - Okatjozongondi at the end of September 2022

    - Omsorakuumba in April 2022

    - People from Ondjamo 2 assured us that AWDs come to Okarongo (Grace Land) every year after the rainy season.

- All the other farms did not report any activity, nor conflict with AWDs for at least 1 year.

Results

CCF has conducted rabies vaccination campaigns for domestic dogs and cats in the Eastern Communal Conservancies of the GWL for the last four years. Below is a map of the different communities villages visited this year (Figure 47) and previous years (Figure 48).

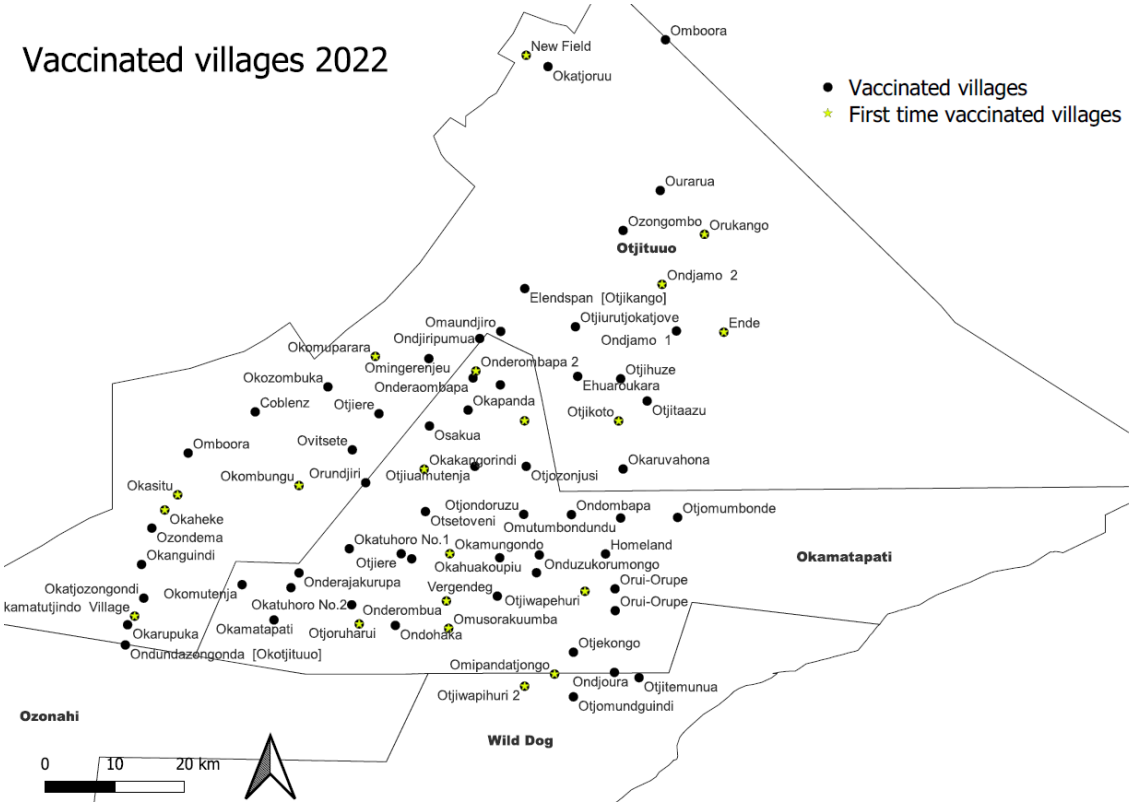


Figure 47: Map of the villages vaccinated in 2022

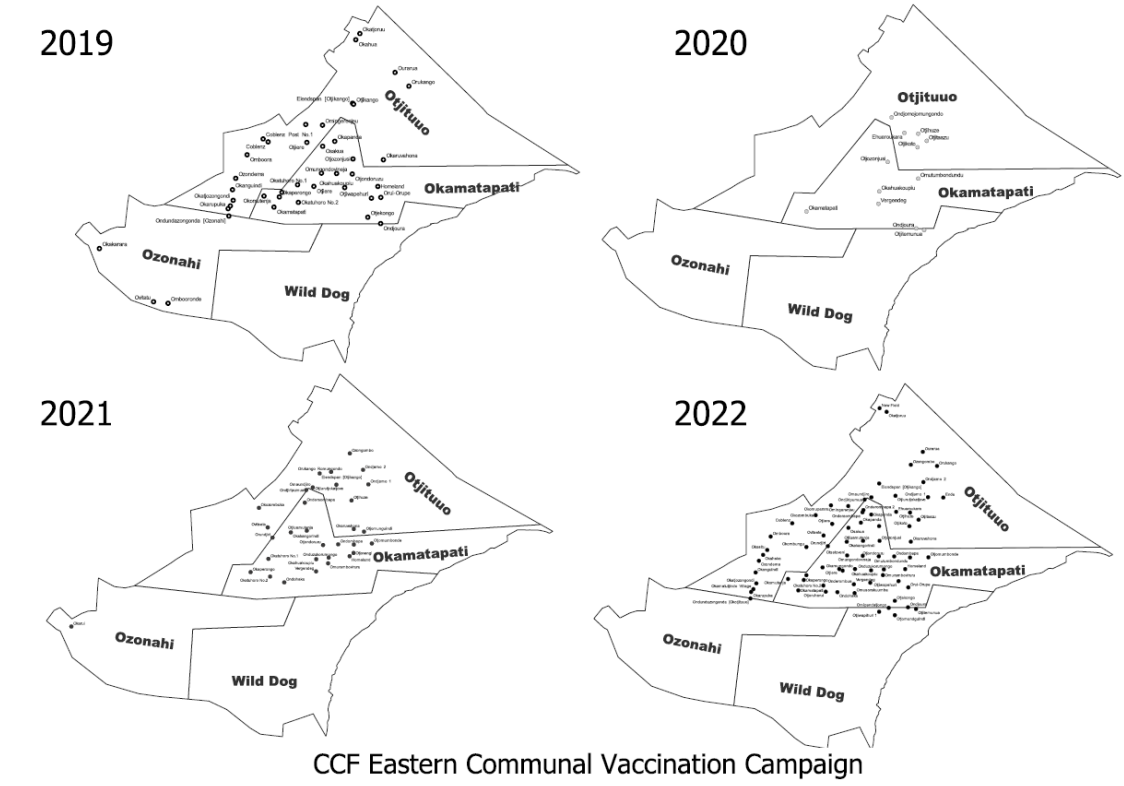


Figure 48: Maps from the vaccinated villages from the past 4 years.

A comparison from the different years has been made, where a clear effect of COVID is shown in 2020 and 2021, with a great improvement in 2022, even compared to the baseline from 2019 (Figure 49). Also, an increase in the proportion of cats vaccinated is observed during this year.

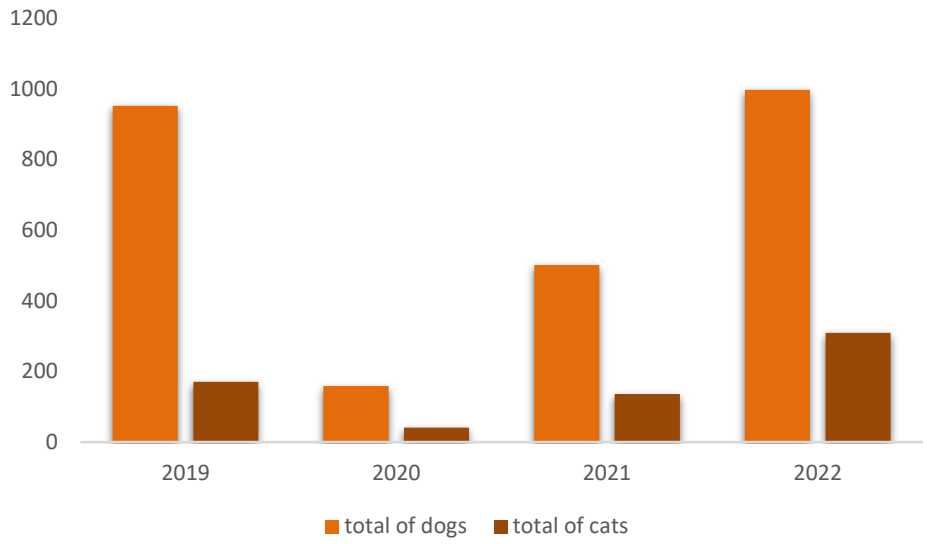


Figure 49: Comparison of the number of dogs and cats vaccinated from 2019 to 2022.

Below is a comparison of the number of villages visited for the first time and the number of villages revisited each year (Figure 50). There is a clear improvement in revisiting communities this year.

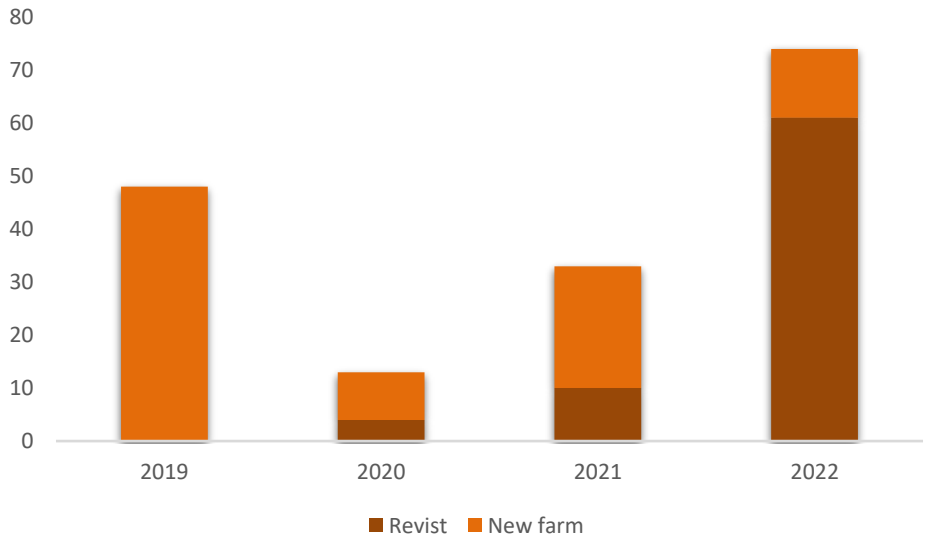


Figure 50: Comparison of the number of villages visited from 2019 to 2022

During the 2022 rabies vaccination campaign, we were able to vaccinate a total of 1306 animals, from 76 different villages, assisted 39 animals in need and identified 5 villages with Human- Wildlife Conflict because of the presence of AWDs (Table 34). This has been the best year for the above mentioned categories since we started the program

Table 34: Results from the rabies vaccination campaigns in the GWL conservancies from 2022.

Trip Number	Number of animals vaccinated	Number of dogs vaccinated	Number of cats vaccinated	Number of villages visited	Number of animals treated	Number of villages with HWC
1	406	321	85	25	26	1
2	268	212	56	23	8	2
3	343	244	99	14	3	1
4	289	220	69	14	2	1
Total	1,306	997	309	76	39	5

This year we vaccinated a total of 997 dogs and 309 cats, with dogs representing 76% of the vaccinated animals (Figure 51). This shows a possible preference for the farmers having more dogs than cats, as they can be used for more purposes than just being companion animals, such as livestock guardian dogs, house guardians, or even hunting animals. The higher percentage of vaccinated dogs to cats could also be due to dogs being easier animals to capture, restrain and vaccinate. On top of their roaming activities, cats are also more likely to move around freely without any supervision, and only come back to their house to be fed.

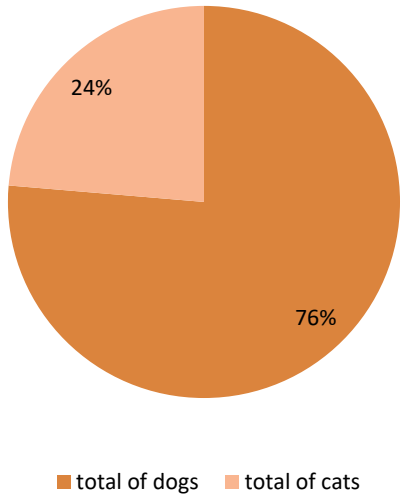


Figure 51: Percentage of dogs and cats vaccinated in 2022.

Also, we can observe that the proportion between sexes in dogs and in cats is very similar, being approximately 50% females and 50% males (Figure 52), although slightly more inclined towards males in dogs.

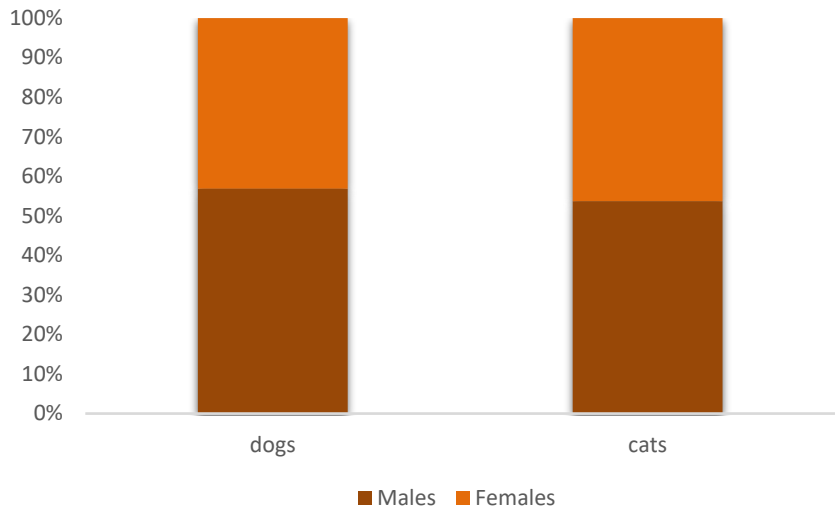


Figure 52: Proportion between the sexes of dogs and cats vaccinated in 2022.

We can observe the amount of animals vaccinated accordingly to their sizes (Figure 53), showing that the majority of them were from a medium size, and that there was a considerable portion of puppies. This may be interpreted as such due to the higher exchange rates of older animals for younger individuals, as well as high animal death, poor animal breeding, and lack of immunization.

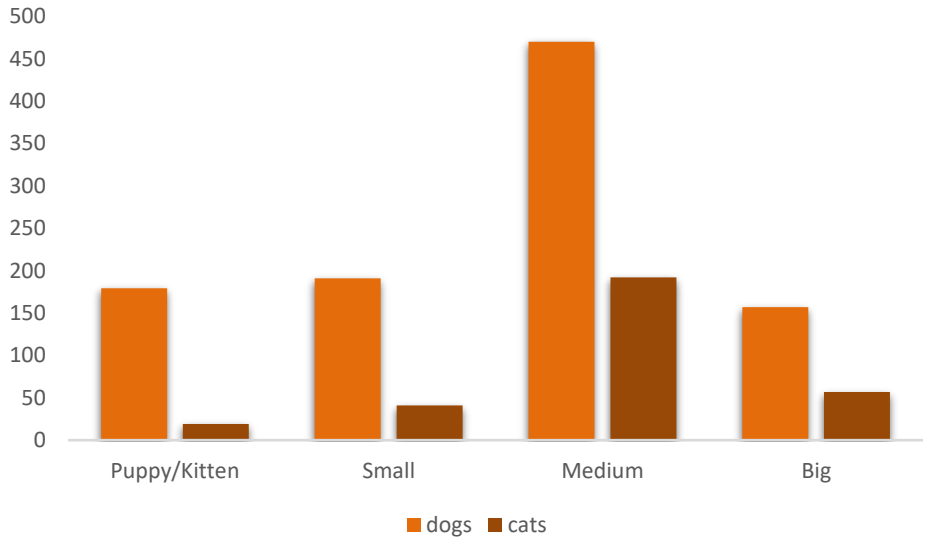


Figure 53: Number of animals vaccinated in 2022 accordingly to their sizes.

Observations

- Some vaccination cards from previous years are incomplete (no data about the animal or no data about the owner). The team performing the vaccinations must make sure that all of this information is filled.

- Certain communities received vaccinations last year but not their vaccination card. The team performing the vaccinations must make sure that they bring enough vaccination cards for each trip, at least 50+ from the estimated number.

- It is important to have a pool syringe or a dart gun for difficult, aggressive, or non-approachable dogs, or have the oral vaccination from Germany. The person in charge should contact the organization and see if the oral vaccine is a possibility.

- People need to be trained on how to use the new app GARC to collect data and have it downloaded on their mobile devices, at least 2 of them. It is better to have a CCF android device for this purpose.

4. CCF East Carnivore Conflict Field Station

Driven by the need to serve remote communities far from its International Field Research & Education Centre in Otjiwarongo, CCF established a field base in March 2020 in the eastern part of Namibia. Both CCF research and farmer reports indicate a decline of cheetahs in the country. CCF attributes this decline to multiple factors, including bush encroachment in the north central parts of the country, fragmented habitats and an increased number of leopards that dominate cheetah, pushing them out of their territories. Located in Gobabis, the main farming town in the Omaheke Region, the field station is strategically situated with accessibility to the surrounding farms as well as the Otjinene and Okakarara communal communities. The focal areas border one another and consist of freehold, resettled and communal farms. The new extension of CCFs presence in Namibia is known as CCF East – Carnivore Conflict Field Station.

The primary role of the CCF East Field Station is to build relationships with stakeholders, especially farmers, and assist them with human-wildlife conflict (HWC) matters, especially concerning cheetahs. CCF East works not only reactively to support farmers in mitigating conflict, but also proactively to minimize HWC, by continuously engaging with farmers who hold traditional and archaic paradigms toward conservation to bring about a paradigm shift and renewal of their understanding.

As part of the HWC mitigation efforts, the CCF East Field Station is responsible for the placement, monitoring and care of the Anatolian/Kangal dogs in the Livestock Guarding Dog Program in the Omaheke Region.

In March 2022, the CCF East Field Station also gained a permanent Education Officer for the Omaheke region, opening up many new possibilities to reach the schools in the region. The primary target group is Grades 8 and 9 learners, but when time allows, learners in Grades 6 and 7, and Grades 10 and 11, are included in the outreach. CCF East's educational effort in the region was warmly welcomed by the Regional Education office of the Ministry of Education, Arts and Culture.

Also in 2022, the CCF East Field Station presented training workshops for communal farmers using the Future Farmers of Africa program.

The CCF East team further assists the various departments of CCF Otjiwarongo with their projects. In early 2022, CCF East was central in their support during the Social Survey (Estimating Carnivore Occurrence and Density Using Multiple Non-Invasive Survey Techniques Project), by securing appointments with the farmers, providing translations in Afrikaans, and transport and accommodation of the intern conducting the survey.

In these endeavors the CCF East team, consisting of Dr. Hanlie Winterbach (Station Supervisor and Wildlife Researcher), Ms. Veisy Kasaona (Community Development Officer), and Mr. Johan Viljoen (Environmental Education Officer), travel throughout the Omaheke Region promoting Cheetah Conservation Fund's mission and vision; for the Year 2022, the CCF East team travelled a total of 25,354 kilometers, with a monthly average of 2,113 kilometers.

Predator Early Warning System Project (EWS)

The Predator Early-Warning System (EWS) Project was launched in in August 2021 when three cheetahs (two females and one male) were released on Farm Okatjongora (#236), after the farmer caught them in a Human-Wildlife Conflict (HWC) incident and agreed that the cheetahs could be collared and released back on his farm.

The EWS Project aims primarily to minimize the incidence of HWC interactions involving cheetahs on farms by helping farmers to minimize livestock losses and better coexist with cheetahs on their farmland. In order to do this, data on the distribution and movement of cheetahs on farmland is important to effectively understand their ecology in this habitat. More crucial though, information on cheetah movement is needed to help identify ways to minimize livestock losses by cheetahs and to reduce conflict between cheetahs and farmers.

Project Description

The collars used in the EWS Project are GPS satellite collars equipped with on-board geofencing functions that can act as an early-warning system. A geofence boundary (or virtual fence) around the farm boundaries are programmed into the GPS unit of the collar, and a sensor inside the collar detects when the collared cheetah crosses this boundary/fence (Figure 54). The collar then transmits this to the GPS satellites as a breach of the virtual fence, and a breach message is received via email, SMS or WhatsApp.

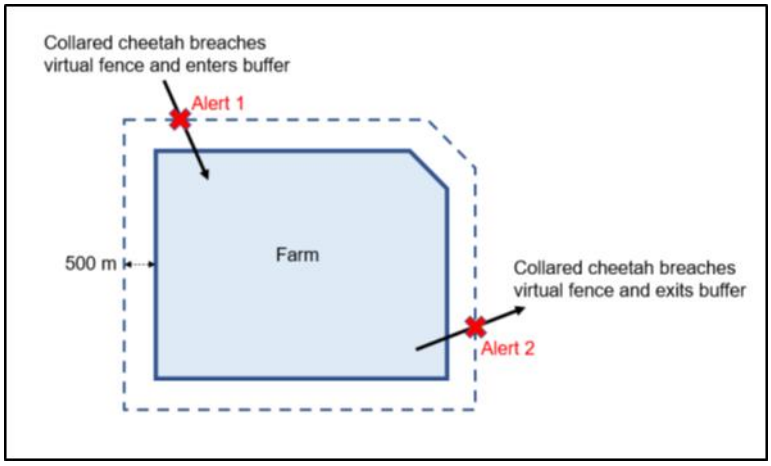


Figure 54: Simple schematic of breach alert notification in the early warning system.

Upon receiving the alert notification, the farmer can take non-lethal action to deter the predator and chase it away, for example by using noise, lights (at night) and human presence (visual, audible, and scent). Livestock in camps where collared cheetahs are near could also be placed in a safe kraal temporarily, or moved to a different camp. A guardian dog or other guard animals (donkeys) can be brought to the respective camp as well, to discourage the collared cheetah from potentially approaching livestock. The aim is to "teach" the collared cheetah that livestock is not easy prey and should be avoided. When response to the early warning system alert is prompt, the system can be effective at reducing livestock depredation and can decrease financial costs associated with losses, while enabling the collared cheetah to persist.

The battery life on the GPS collar is approximately 1 to 1.5 years depending on vegetation conditions that may interfere with the collar's connection to satellites, and the number of transgression events of the virtual fence. The collar will drop off on its own before the end of the collar's battery life, to ensure the cheetah is free of the collar without the animal having to be recaptured to remove it.

Farmers who participate in the EWS Project sign a Memorandum of Agreement (MoA) expressing their commitment to collaborate with CCF in regards to HWC issues involving cheetahs.

Progress

To date, 24 farmers have signed the MoA, which covers 57 farms (Figure 55). Three farmers, encompassing 5 farms, have refused to sign the MoA; one farmer because his game farm has a 21-strand game fence, and he deemed the EWS unnecessary, and two farmers refused because they didn't want to commit to contacting CCF before acting on conflict incidents.

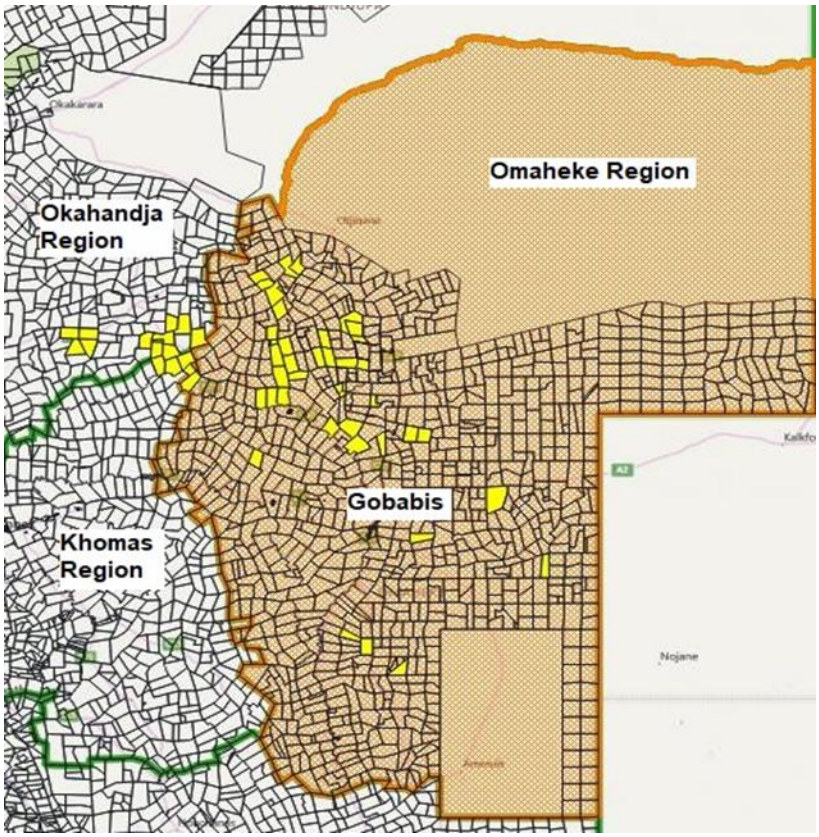


Figure 55: Map showing the 57 farms (yellow areas) participating in the Early Warning System Project in the three regions.

Cheetahs in the EWS Project

Calypso

Calypso was one of the first two females fitted with the EWS GPS collars, and was released on 30 August 2021 on Farm Okatjongora (#236), in the Omaheke Region. This female's movements were monitored for seven months (Figure 56), until March 2022 when she was found dead on Farm Sachsenwald (#186).

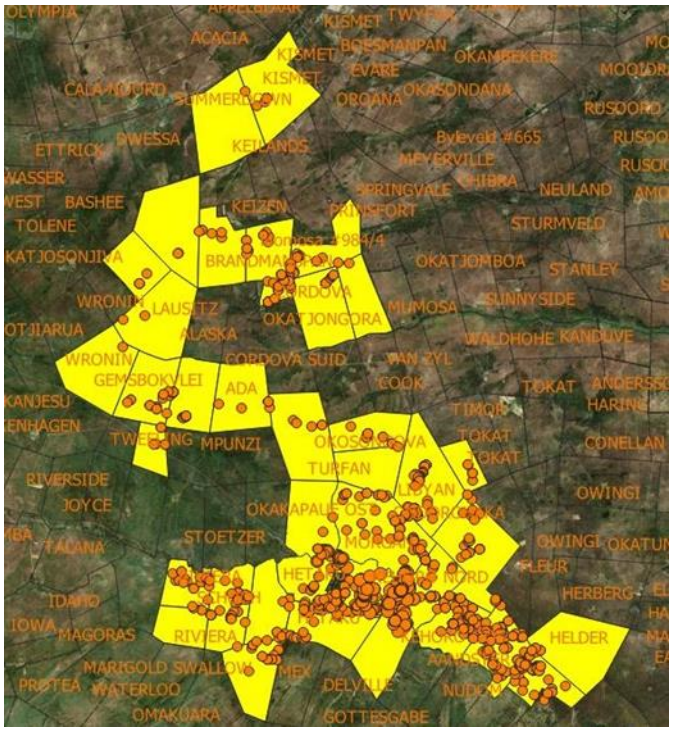


Figure 56: Map showing the movements (orange dots) and farms covered (yellow areas) Calypso from August 2021 – March 2022.

Calypso's movements during the last few days of being alive indicated some kind of distress, as she remained in a fairly small area for at least five days before succumbing. The rate of decomposition of the body seemed unusually fast taking into account the animal was dead for a maximum of 3 to 4 days before she was found and the weather was generally cool. Since no obvious signs of wounds or injuries could be found, it is surmised the animal could have died from a snake bite, a puff adder whose venom causes tissue necrosis and spontaneous bleeding.

Kike

Kike, Calypso's daughter, was also fitted with a EWS GPS collar (Tag 5069) and released on 30 August 2021 on Farm Okatjongora (#236). This female has been monitored for over 16 months now.

She moved out of the Omaheke Region, where she was initially collared, and seems to have settled in a core home range area on farms situated mostly in the Khomas Region, and some farms in the Otjozondjupa Region (Figure 57). No HWC incidents have been reported to the CCF East Field Station regarding this cheetah.

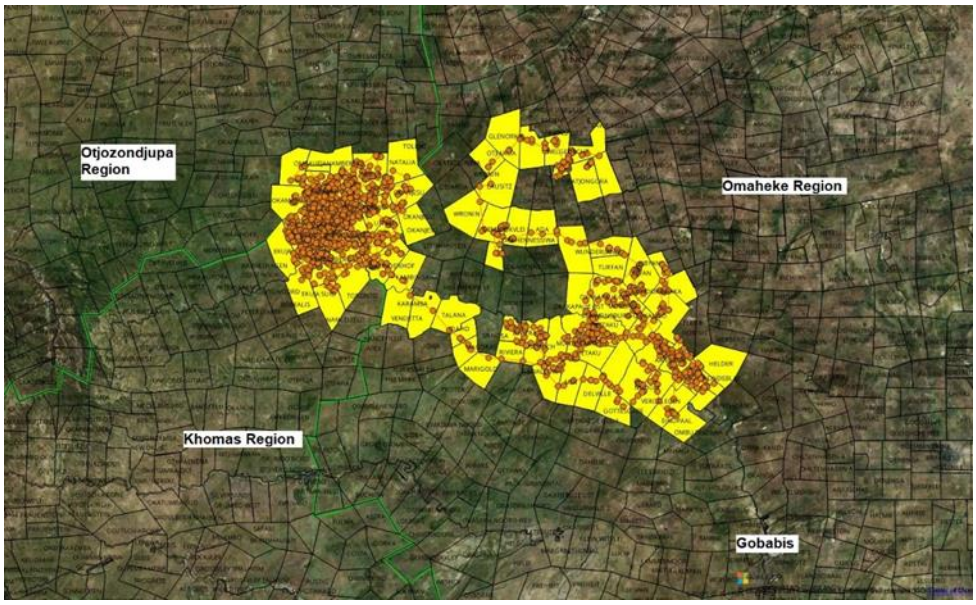


Figure 57: Map showing the movements (orange dots) and farms covered (yellow areas) by Kike, from August 2021 – December 2022.

Duma

Duma, who is the son of Calypso, was also fitted with a EWS GPS collar (Tag 5067) and released on 30 August 2021 on Farm Okatjongora (#236). This male has been monitored for + 16 months now (Figure 58).

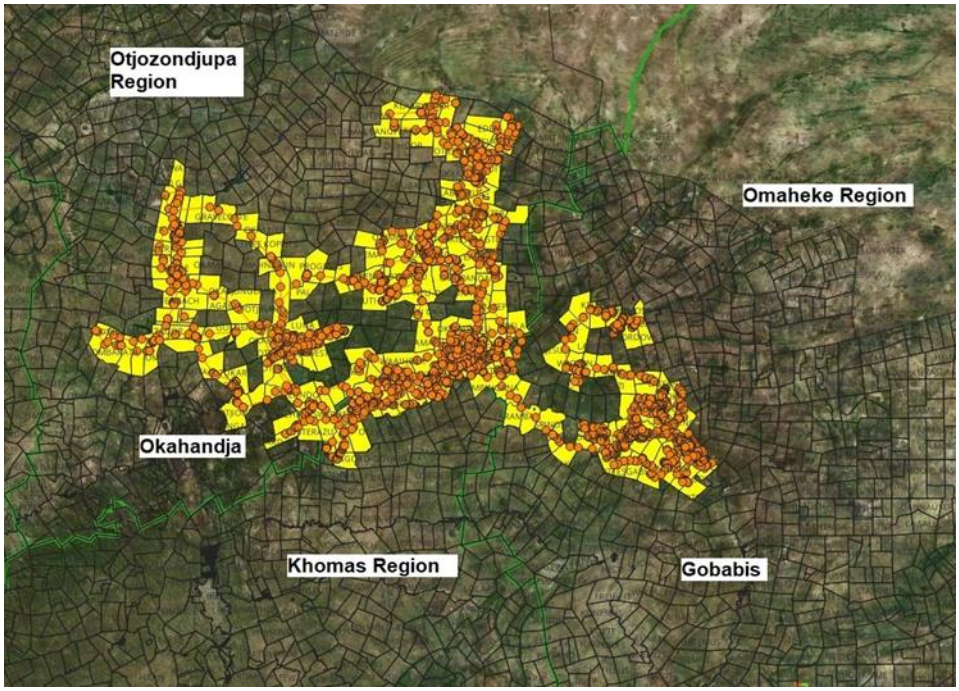


Figure 58: Map showing the movements (orange dots) and farms covered (yellow areas) by the male cheetah, Duma, from August 2021 to January 2023.

Cheetah Rescues

Three Cubs

A female cheetah (Calypso) was collared and released on 30 August 2021 on farm Okatjongora as part of CCF's Early Warning System project. In March 2022, the female was found dead, presumably from a snake bite. Tracking data for the radio collared female before her death showed her returning to the same cluster of thick vegetation on farm Morgan (#1048) (Figure 59). It was suspected that these clusters might be den sites where the adult female was hiding her cubs.

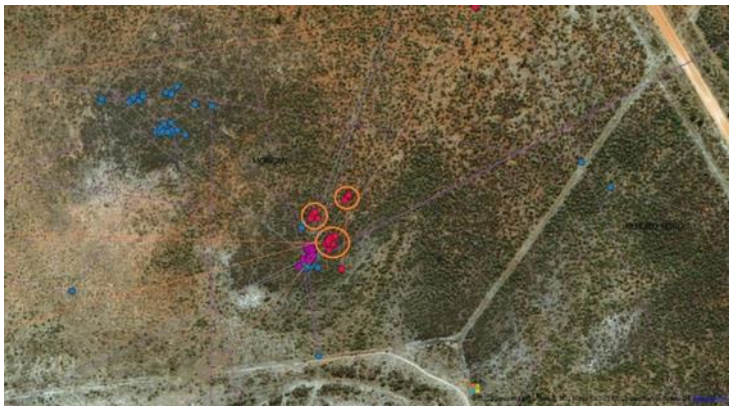


Figure 59: Map showing GPS location clusters on Farm Morgan #1048.

The CCF East team and the farmer of Morgan, Mr Christie Grobbelaar, went to the cluster locations together with Mr Grobbelaar's tracking dog, to search the area. The vegetation was extremely dense and wet with rain from the previous night. A number of potential denning areas underneath dense *Terminalia ciricea* bushes were observed. However, it was the tracking dog that eventually sniffed out three beautiful cheetah cubs from underneath thick brush (Figure 60).

Figure 60: Dr Hanlie Winterbach (CCF Carnivore Researcher), Mr Christie Crobbelaar (Farmer) and Mr Johan Viljoen (CCF Education Officer) with the three cheetah cubs found.

The cubs were kept warm and transported to Gobabis Veterinary Practice where they were treated by the veterinarian. A transport permit was granted to CCF by MEFT Windhoek (Permit no 131955) to move the cubs to CCF Otjiwarongo.

Two Adult Males

Two adult cheetahs (± 4 years old) were caught in trap cages at a play tree on Farm Quinta #976 in May 2022 (Figure 61). The farmer had previously reported losing 20 calves to cheetahs, and CCF had already removed two male cheetahs from this farm in December 2021.

Figure 61: Cheetah playtree where trap cage was set (left) and the two adult male cheetahs that were caught (centre and right).

Summerdown Male

An adult male cheetah (around 4 years old) was caught in a trap cage in July 2022. The farmer set the trap cage to prevent livestock losses – cheetahs used to move through his two farms within a week and never stayed around for long. However, for three weeks at least two sets of cheetah tracks were constantly observed on the farm, and the farmer became concerned about potential livestock losses as he had calves that were still vulnerable to predator attacks.

CCF East team was granted permission by MEFT Gobabis to pick up the cheetah. The cheetah had a cage trauma wound on its left hip (likely from an exposed wire or sharp edge inside the trap cage) and sustained a scuffed nose during transfer to the travel box.

CCF East team discussed the Predator EWS project with the farmer, who then agreed to participate in the project. The cheetah was fitted with a EWS GPS collar and released back on the same farm where he was caught, with the assistance of MEFT Gobabis, in July 2022 (Figure 62). Some of the neighbouring farms had already signed up to collaborate in the EWS project, and efforts continue to get more farmers in the area on board.

Figure 62: Releasing the Summerdown male back on the farm it was caught.

The male's movements have been monitored as part of the EWS project since his release in July 2022 for 5½ months now (Figure 63). No HWC incidents have been reported yet concerning this male.

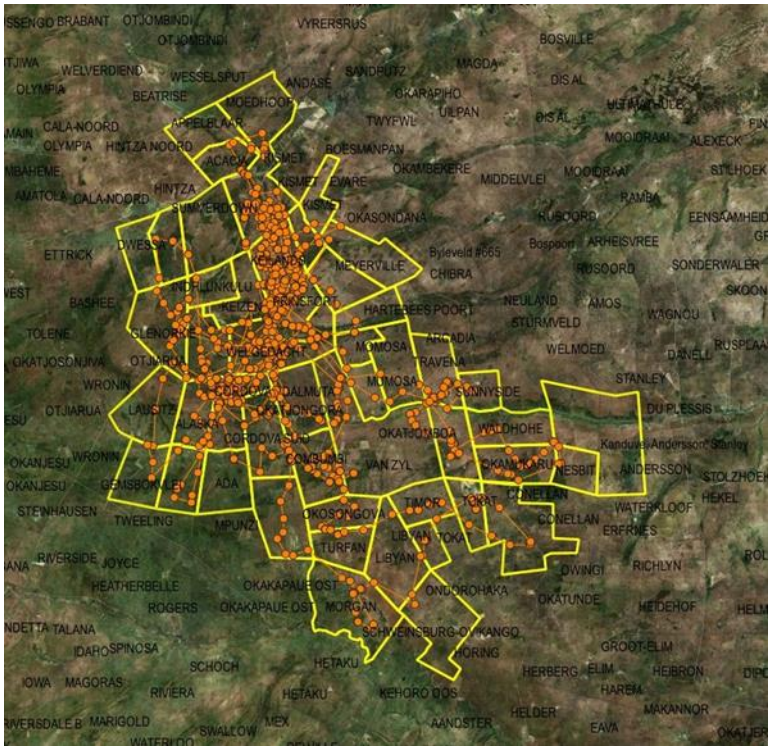


Figure 63: Map showing the movements (orange dots) and farms covered (yellow areas) by the male cheetah, Summerdown, from July – December 2022.

One Female Cub - Kavira

A farmer reported to CCF East he had heard his dogs barking, and on investigation he found an emaciated cheetah cub lying in the dirt road on his farm. According to the farmer, he did not see any adult cheetah tracks where the cub was lying, nor signs of other cubs. The CCF East team was granted permission by MEFT Gobabis to pick up the cub. It was a female and estimated to be around 2 months old (Figure 64). She was extremely emaciated and weak, and showed limited movement, particularly in the hind quarters.

Figure 64: Female cub, approximately two months old, and extremely emaciated.

The farmer had made a meat extract in water, which the cub drank voluntarily, and as it was winter, at night, and very cold, the farmer had put a warm water bottle inside a blanket in the box to keep the cub warm.

The cub was taken to Beukes Veterinary Consulting where it was treated overnight with an IV drip and antibiotics. The CCF East team eventually transported the cub to CCF Otjiwarongo, where the cub's treatment and care were continued.

The cub was named Kavira (Figure 65), and the farmer regularly asks the CCF Team about her health and well-being, which is kindly supplied by the Cheetah Team at Otjiwarongo, which the CCF East team then sends through to the farmer.

Figure 65: Kavira on her way to a good recovery at CCF Otjiwarongo.

One Adult Female and Four Cubs - Daylight

An adult female cheetah and four cubs were trapped in November 2022 (Figure 66), after the farmer lost four calves and the tracks of an adult cheetah and cubs were observed in the same camp.

Figure 66: Adult female and three of the four cubs trapped in November 2022.

The farmer was already participating in the EWS project, and initially agreed for the female cheetah to be collared and she and the cubs to be re-released on his farm. However, he requested CCF to commit in writing to assist him with removing the female cheetah and cubs if his calf losses continued where the female roamed. However, the letter from CCF Otjiwarongo was not acceptable to farmer and he requested the cheetahs be removed.

Dr Winterbach discussed with MEFT Gobabis the option of releasing the cheetahs on a farm in the Okahandja District as the farm owner offered on a previous occasion that cheetahs may be released on his farms if collared for the EWS. This farmer was contacted and immediately gave consent that the five cheetahs may be released on his farm.

The CCF East team was then granted permission by MEFT Gobabis to pick up the trapped cheetahs. However, only the female and three of the four cubs were still inside the trap cage, with the fourth cub chirping in the bushes. The CCF East team then modified the set-up of the trap cages with shade cloth and canvas in such a

way that the remaining cub outside was guided into the one trap cage when wanting to get close to the mother and other cubs (Figure 67).

Figure 67: Modifications to trap cages to ensure capture of the fourth cub.

The cub was heard chirping, and 40 minutes later entered the trap cage. The cubs were aged to be around 2 - 2½ months old.

The cheetahs were transported to Beukes Veterinary Consulting in Gobabis, where CCF's cheetahkeeper, Becky Johnston, and researcher, Stijn Verschuren, together with Dr Pieter Nel, veterinarian at Beukes Veterinary Consulting, proceeded to sedate the adult female to check her general health and condition, weighed her, fit the EWS radio collar, collect blood samples, and take body measurements (Figure 68). As the cubs were already under considerable stress after being trapped and transported, it was decided not to physically interact with the cubs and they were therefore not sexed.

Figure 68: The CCF team and the veterinarian measuring, weighing and fitting ther GPS collar on the adult female cheetah.

With the assistance of MEFT Gobabis, the female cheetah with her four cubs were successfully released on a farm in Okahandja, where there is plenty of game and no small livestock or calves are being farmed with (Figure 69).

Figure 69: Releasing the collared female and four cubs with the assistance of MEFT Gobabis.

The collared female, named Daylight, was monitored with the EWS (Figure 70). As she roamed, farmers' names were sourced and contacted by the CCF East team, to introduce the EWS project to the farmers and obtain their participation in the EWS.

As of 31 December 2022, this female is still surviving on this farm.

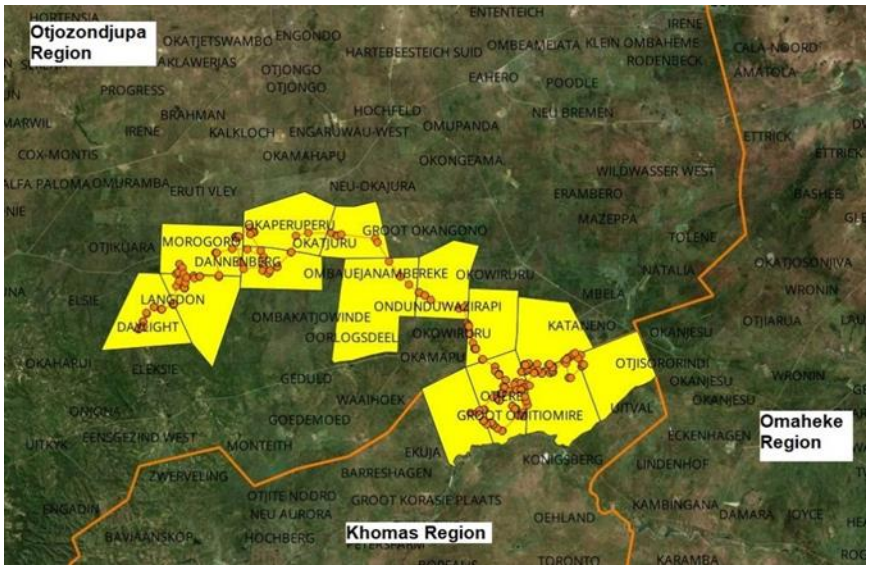


Figure 70: Map showing the movements (orange dots) and farms covered (yellow areas) by the female cheetah, Daylight, from November 2022 to January 2023.

Cheetah Killed in HWC

One Adult Male

A farmer reported to the CCF East team that a collared cheetah was killed on his farm in October 2022. The cheetah was an old male that had killed 2 rams and 5 ewes, close to the homestead.

The farmer did not know to whom the collar belonged, but sent photos, which showed it was a radio collar from the Leibniz Institute for Zoo and Wildlife Research (IZW) (Figure 71). This information was sent through to Dr. Joerg Meltzheimer of IZW.

Figure 71: GPS radio collar belonging to IZW removed from an old male cheetah shot in a HWC incident.

The CCF East team recovered the radio collar from the farmer, as well as the skull and skin. The collar was returned to the field researcher of IZW, and the skin and skull was prepared to be used for environmental education.

Collaboration with MEFT Gobabis

The CCF East Field Station continues with their good working relationship with the MEFT Gobabis office. In June 2022, the MEFT Gobabis office requested the assistance of the CCF East team to investigate the HWC incident reports involving cheetahs received from a resettlement farm in the Omaheke Region. The team visited the farm, and the farmer reported four cheetahs (one adult male and adult female with two young) killed 12 goats (10 ewes and 2 kids) and one lamb in May 2022, and one calf in June 2022 (Figure 72).

Figure 72: One of the livestock animals killed in May 2022 on a resettlement farm.

F. 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

Dr. Laurie Marker is the International Cheetah Studbook Keeper. The International Cheetah Studbook is a voluntary register of all cheetahs in the world held in both zoological and private facilities, and providing information about existing animals by publishing the studbook contents, thus creating the preconditions for selecting breeding animals. The Studbook records captive animals from around the world. It includes wild-caught and captive-born individuals alive in 1980 and after, as well as founders with live offspring since 1980.

Each registered animal has a studbook number. Bi-annual questionnaires are sent to all facilities holding cheetah and information is checked through the support of the Zoological Information Management System (ZIMS Species360) and personal communications.

The 2021 studbook was published in August 2022. In 2021, 259 (119.124.16) new animals were registered, representing births and newly imported wild-caught animals during this period, as well as animals that had been brought into the captive population prior to 1 January 2021 but had not been reported until after the publication of the 2020 Studbook. Captive-born cubs from known breeding facilities totaled 130 (50.67.13) born in 42 litters in 27 facilities in 13 countries. The captive cheetah population on 31 December 2021 was 1,838 (920.918) animals in 304 known facilities in 46 countries (Figure 73).

The 2022 studbook is still currently in progress. As of 1 January 2023, there have been 177 (84.80.13) new animals registered. Captive born cubs from known facilities totals 131 (63.55.13) at 23 facilities. There have been 143 (65.69.9) deaths reported at 66 facilities.

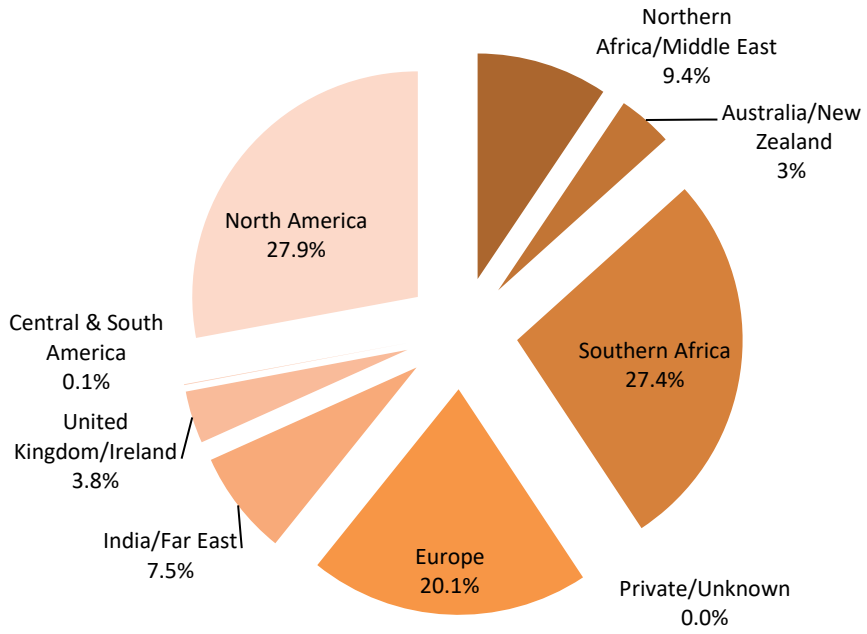


Figure 73: Captive cheetah populations by region, 2021: 1838 (920.918).

2. Illegal Wildlife Trade (IWT).

Confiscations

In 2022, CCF recorded 19 events related to cheetah poaching, trade, and trafficking involving at least 65 cheetahs. Of these events, 15 cases involved cubs confiscated by authorities and four were reports (by informants/government staff/media) where confiscations did not occur (Figure 74). In addition, there was one event where two caracals were confiscated.

The 15 cases involved 52 cheetah cubs confiscated by authorities;

- CCF was directly involved in 12 cases involving 48 cubs in Somaliland
- The Ethiopian Wildlife Conservation Authority was involved in three cases involving four cubs in Ethiopia.

The actual number of cheetahs reported may vary but the minimum was 13 cubs.

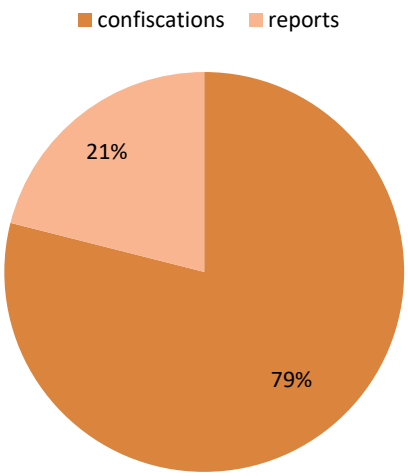


Figure 74: Confiscations vs reports from January – December 2022.

Confiscation of Cheetah Cubs

In all but two cases where CCF was involved that occurred in Somaliland (10 in total, 46 cubs), a clear motivation to sell the cubs was identified through interviews with detainees/farmers, though one case named human-wildlife conflict as an initial driver of poaching. The two cases, involving two cubs were the last two confiscation events of 2022, and were especially interesting as they involved local Somalilanders holding the cubs as pets for themselves. This is preliminary evidence that exotic pet ownership is something that local Somalilanders covet as well. CCF will need to monitor this motivation and revise messaging and anti-poaching work, to cover ownership and not only poaching for sale to overseas (Figure 75).

CCF does not know the exact details of the other three confiscation cases as they were conducted in Ethiopia where CCF is not involved in the retrieval of the cubs and interviewing of suspects. That being said, the third case was published in the media by Born Free describing a case of a cheetah that was held in private hands for entertainment purposes (Figure 75 and Figure 76).

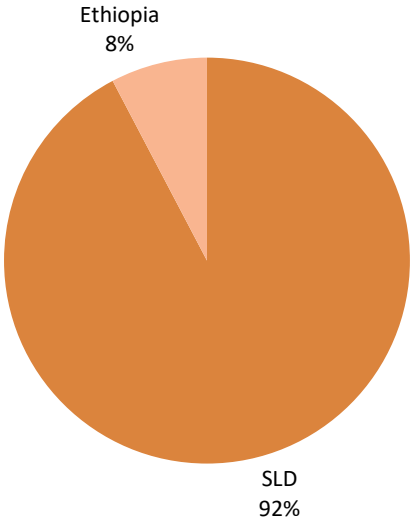


Figure 75: Confiscation events by location.

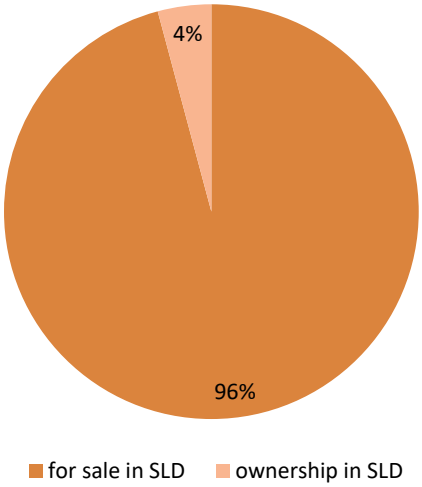


Figure 76: Confiscation events by motivation as revealed through interviews with involved persons (farmers, traders, MoECC officials).

Of the 12 confiscation cases occurring in Somaliland involving 48 cubs (21M, 21F, 6U) (Figure 77), seven were dead upon confiscation, bringing it to about 15% mortality rate at confiscation, down from the 18% observed by mid-year 2022. Even though this is a lower percentage, there is not enough data to determine statistical significance, and not enough background knowledge to learn of the reasons behind it at this point. CCF will continue to monitor this trend and make efforts to find the impact of our first-responder training.

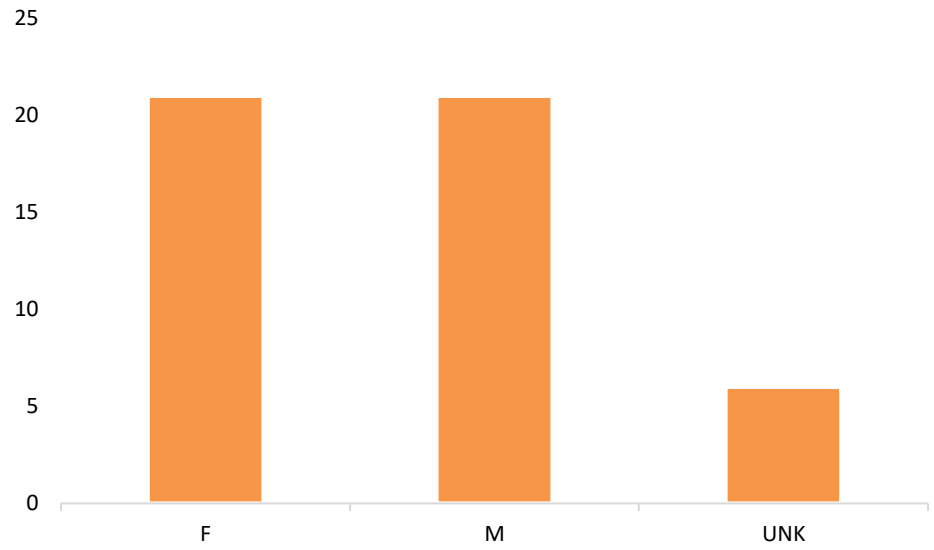


Figure 77: Sex of confiscated cheetahs in Somaliland.

As of the date of this report, of the 41 cubs confiscated alive and arriving at the CCF Safe House in 2022, 14 have since died (Table 35).

Table 35: Overview of IWT in Cheetahs for January – December 2022.

IWT Events	
Total IWT events	19
Total confiscation events	15
Total "reports only" events	4
Total cheetahs confirmed to be in trade (confiscated & reported but not confiscated)	65
Confiscations – a closer look	
Total confiscated	**52**
Confiscation location Somaliland	48
Ethiopia	4
Total in Somaliland – a closer look (n =48) *Status on Arrival to CCF*	
Alive	41
Dead on Arrival	7
Confiscations Mortality Rate upon confiscation (n=48)	15%
Died at CCF after confiscation during 2022	14
Confiscations Mortality Rate at CCF (n=41)	34%

Reports

The other five cases occurring in Somaliland were reported either to CCF or to authorities, but no confiscation occurred. The first involved four cubs, reported to CCF by an informant as being held in Ethiopia. These cubs were never retrieved by authorities, and further detail is lacking. Two other reports, one involving three and the other six cubs, were received by Dr. Laurie Marker as she was holding a socio-ecological survey in the Awdal Region in March 2022. The fourth event involved an unknown number of cheetahs (calculated as a minimum of 1 for this report) and was reported to a CCF staff member conducting a preliminary study for an upcoming field project in the Awdal region.

Analysis

The 2022 cases showed us a new motivation that was suspected in the past, but not reflected in interviews of individuals involved in the holding of cubs illegally – that of holding cubs for pets in Somaliland. This means that the exotic pet market is not only in the middle east but also local. CCF will continue to investigate this trend to learn if it is a true ongoing trend or anecdotal cases. In addition, at least one case from 2022 revealed the involvement of an anti-Somaliland government group. This might mean that in-country insurgent are involved in this illegal activity and hint at an organized crime connection.

CCF continues to monitor the trade and work against it through policy initiatives, enforcement training, network building, and offering veterinary support for confiscated cubs. CCF is also increasing its efforts in demand countries. While the plan to hold a CCF Cheetah Global Summit in Dubai was canceled in March 2022, it is now planned for May 2024.

Demand: Purchasing and Ownership

In the beginning of 2022, CCF signed an MoU with an internationally recognized entity that will join hands with CCF for online cheetah trafficking monitoring. The entity reviewed all past work conducted by CCF to learn of past trends and of any connections to current traffickers and sellers.

The amount of data provided by CCF was extensive and required over 6 months to assess in its entirety, a process which was followed by our partner's own survey for cheetahs online. The survey was conducted in English, Swahili, and Arabic, and included various platforms (Google, Instagram, Tiktok, Snapchat, Pinterest, Facebook, Twitter, and other various e-commerce trading platforms, etc.). The survey was a once-off survey which took about 3 months (October-December) to obtain a broader picture of cheetah ownership/trade online. The survey found adverts/posts in various countries including several in Africa, Middle East, Asia, Europe, and North America. This new data is now being analyzed considering CCF's past data and a final analytical report of current trends in online cheetah sales and/or ownership will be provided to CCF by our partner in early 2023.

Hand in hand with CCF's monitoring efforts, Dr. Marker made progress in her relations with leading countries in the Middle East. Recognizing the progress Saudi Arabia and UAE made in their legislation, including ownership laws, Dr. Marker is now working to promote regional cooperation with the countries of the Horn of Africa to stop the trade. These efforts were conducted through visits to Saudi Arabia and the UAE as well as through engagement with stakeholders from these countries' government and civil society organizations during the CITES CoP19 conference in Panama this year.

Research

Genetics

The CCF team continues to make every effort to collect genetic samples from cheetahs in the Horn of Africa. A DNA database might allow CCF to identify the geographic origin of some of the cubs confiscated, which could support trafficking investigations. Negotiations continue with Ethiopian authorities on CCF's application to collect samples from cheetahs in Ethiopia through the Ethiopian wildlife authorities. CCF is also

investigating opportunities to genetically sequence the Feline Coronavirus which affects the Somaliland cheetahs.

The CCF Genetics Laboratory, under the direction of Dr. Anne Schmidt-Kuentzel, has been able to extract DNA from several samples brought to Namibia from Somaliland. With this, a publication is currently being completed which shows that the samples collected from the cheetahs in Somaliland are all *Acinonyx jubatus sommeringi*.

Isotope Research

To discern the origin of confiscated cheetah cubs, CCF is partnering with Dr. Geoff Koehler, a Stable Isotope Expert from the School of Environment and Sustainability of the University of Saskatchewan. The study looks at samples taken from the Somaliland cheetahs to analyze and combine genetic data obtained at the CCF laboratory in Namibia and isotope data obtained by Dr. Koehler's lab. This process, triangulated with information collected through confiscation interviews with perpetrators can help identify the origin of trafficked cheetahs, aiding in the mapping of distribution, habitats, and illegal trade routes. The CCF Safe House team began collecting hair and faecal samples of all cheetahs at the facility and were prepared for shipment to Canada and Namibia, respectively. The study was due to commence in early 2021.

CCF-led Projects

LICIT - Legal Intelligence/Cheetah Illicit Trade

Launched in July 2019, the UK DEFRA-funded LICIT project wrapped up in November 2022 following an eight-month extension made necessary by continuing covid-related disruptions. LICIT outputs included:

- Analyzing wildlife legislation in Ethiopia, Somaliland, Somalia, and Yemen and proposing actions for strengthening these laws;

- Providing direct operational training to initial groups of wildlife law enforcement officers and producing guidebooks for expanding the scope of this training;

- Supporting establishment of national and regional networks for coordinating anti-trafficking efforts across governments and borders in the Horn of Africa Region;

- Training authorities and local caregivers in Ethiopia and Somaliland in knowledge and skills for emergency care of confiscated cheetahs;

- Conducting outreach campaigns and surveys in local communities identified as impacted by cheetah trafficking to raise awareness of the need to end illegal wildlife trade and conserve cheetahs and other community wildlife resources.

CCF was lead partner for the project, working with Legal Atlas (LA) and the International Fund for Animal Welfare (IFAW). Non-financial government partners included the Ethiopia Wildlife Conservation Authority (EWCA), The Somali Regional State (Ethiopia) Bureau of Environmental Protection and Rural Land Administration, the Somalia Ministry of Environment, the Somaliland Ministry of Environment & Climate Change (MoECC), the Ministry of Water and Environment, Environmental Protection Authority, of Yemen, and the Horn of Africa Wildlife Enforcement Network (HAWEN). All four target countries welcomed the project and, within their capacities, contributed political and operational support.

Principal LICIT activities in 2022 included training workshops and community awareness campaigns. After several pandemic-related postponements, CCF and partners were able to hold the final two of three project training/capacity building workshops in 2022. One workshop, which provided wildlife-specific law enforcement training for participants from Ethiopia, Somalia, and Yemen, was held in Addis Ababa, Ethiopia in February 2022. The second workshop, focused on building cross-border cooperation between Ethiopia and

Somaliland, took place in Jijiga, Ethiopia, in June, and followed up an initial cross-border meeting held in 2020.

The LICIT Project plan included seven community awareness tours to educate rural communities in Ethiopia and Somaliland about the negative impact cheetah trafficking has on their community wildlife resources and the need to conserve those resources, including cheetahs. Community visits typically involved presentations by CCF or government team leaders covering cheetah and other wildlife species trafficking, human-wildlife conflict, the role and value of wildlife, and the benefits of community action, followed by questions and discussion. Community leaders were asked for input and commitments of cooperation for IWT incidence reporting and network building. The survey teams also collected baseline information related to presence of cheetahs and other wildlife in the landscape, human-wildlife conflict, and poaching. The data gathered from LICIT surveys serves as an important reference point for community initiatives in current CCF projects.

Five community tours were conducted in Somaliland at earlier stages of the LICIT project. In September 2022, CCF carried out the final two tours in the Somali Regional State of Ethiopia (SRS) in cooperation with the regional wildlife authorities and Jijiga University. CCF and partner IFAW worked closely with SRS authorities to organize these events. During ten days in the field, the two survey teams traveled to 57 selected communities in five key zones (counties). The zones were selected based on existing knowledge of either cheetah presence or prevalence of poaching/illegal trade in cheetahs. In these communities the teams delivered awareness presentations and conducted focus group discussions for men and women as well as targeted interviews. The teams estimated that over 3,100 individuals were engaged in these outreach events.

As at end of this reporting period, LICIT project staff are winding down the last project activities, preparing an evaluation, and drafting a final report for DEFRA. Work on a number of LICT project elements, including legal strengthening, network building, and community level conservation, will continue, however, as further actions on these initiatives have been incorporated into current CCF IWT projects.

Community Awareness Tours

The LICIT Project plan includes seven community awareness tours to educate rural communities in Ethiopia and Somaliland to the negative impact cheetah trafficking has on their community wildlife resources and the need to conserve those resources, including cheetahs. These campaigns are carried out through field visits and face-to- face interviews and group meetings in selected communities. Visits typically involve presentations by CCF and government team leaders covering cheetah and other wildlife species trafficking, human-wildlife conflict, the role and value of wildlife, and the benefits of community action, followed by questions and discussion. Community leaders are asked for input on the topics presented and commitments of cooperation. Another key element of these visits is collecting baseline information on pressing concerns as they relate to wildlife, human-wildlife conflict, levels of and reasons for poaching, and prevalence of cheetahs on the landscape. These visits also allow for selection of community focal points for IWT incidence reporting and network building.

Somali Regional State Awareness Tours

Ethiopia is located between 3˚30' - 15˚00'N latitude and 33˚ - 48˚E longitudes in the horn of Africa, and is one of the wildlife biodiversity centers of the world. Despite most of the Somali region's land is lowland, it is part of the richest biodiversity lands in country where a lot of wildlife species live; among which endangered wildlife species are one of them; particularly cheetahs, which are currently under threat of extinction due to loss of habitat by human expansion and loss of genetic variation because of their diminishing number due to killing of the adult and illegal trade of its cubs.

To help counter the threat, CCF, with partners IFAW and SRS Environmental Protection and Rural Land Administration Bureau, cooperatively conducted this quick survey & community awareness tour in six administrative zones of the region, Siti, Fafan, Shabele, Jarar, Dollo and Korahay.

CCF project staff traveled to Jijiga, Ethiopia, the capital of the SRS, to coordinate with government counterparts. During ten days in the field, the two survey teams consisting of regional government and Jijiga

University personnel, traveled to selected communities in five key zones (counties). The zones were selected based on existing knowledge of either cheetah presence or prevalence of poaching/illegal trade in cheetahs.

The objective of this Quick survey and Awareness tour was to:

- Understand the status of cheetahs/wildlife in the border areas with Somali-land and Somalia as well as get the information about possible illegal trade of cheetahs.

- Understand the human-wildlife conflict in the target area.

- Raise the community awareness about the illegal trade, the extinction threat and loss of genetic variation of cheetahs as well as general wildlife and its habitat protection

- Strengthen the community network engagement in wildlife protectio

Discussions between the teams and the communities took place throughout this session. The communities believed predators to be destructive and interfering with their daily lives. They believed that the wildlife is not owned by anyone. The teams explained that it is better to protect the wildlife, because it can provide them with financial benefits.

The major challenges among wildlife and communities includes

- Lack of cell phone network coverage in most villages making difficult for communication and reporting

- Lack of road ways to accesses remote villages

- Low awareness level of the community about wildlife

- Low Human wildlife conflict Resolution

- Unclear boundaries between human and wildlife

- Wildlife is not owned by anyone

- Communities do not know the benefits of wildlife

LICIT-II Project (IWT-113) - Legal Intelligence and Community Governance for Cheetah Illicit Trade

Following the success of LICIT-1, UK DEFRA awarded CCF with a follow-up grant to deliver our project proposal named LICIT-II, or Legal Intelligence and community Governance for Cheetah Illicit Trade.

LICIT-II will run for 3 years from July 2022 to June 2025 and will be implemented with two partners – Legal Atlas and TRAFFIC. It will enhance national and regional capacity in the Horn of Africa to fight wildlife crime by leveraging gains made through LICIT1. Namely, it will work in three main areas:

1. Wildlife Crime Data Collection & Exchange Platforms:

- Working with TRAFFIC, develop the Ethiopian TWIX platform for wildlife crime information and intelligence exchange, thereby connecting Ethiopia with the already established East African TWIX. This will allow regional information exchange and collaboration on cross border wildlife crime.

- Develop a TWIX-compatible database for wildlife crime incidents for Somaliland

2. Legal:

- Working with Legal Atlas, Revise the Somaliland Forestry and Wildlife Law, as requested by the Somaliland government at the end of LICIT-1.

- Draft the IGAD-level, regional protocol on Environmental Crime Units (ECU, a.k.a. wildlife crime task forces), to follow up on gains made through the first stage of the CCF/CMS Legal Harmonization project.

3. Community CBNRM Governance Units:

- Build upon results of the IUCN project and develop a pilot governance unit in the Awdal region, training governing bodies in FFA and governance principles.

- Continue the work done through the EU-CCF project (SOM1058, see below) and develop the Somaliland Association of Civil Society Organizations supporting community-based natural resources management (CBNRM) governance units (or SACSO)

LICIT-II will work in partnership with government authorities, regional networks, and local communities to ensure community interests are respected. An important goal is to change community behavior to discourage participation in/tolerance of wildlife trafficking, and support law enforcement efforts to end it. The project began its governance-related and legal work in 2022, with database work commencing in February 2023.

European Union, "Engaging Somali communities to improve wildlife trafficking and forest crime control" (2022-2024)

In partnership with lead agency, Deutsche Welthungerhilfe e.V. (WHH), CCF will work to merge established anti-trafficking and protected area methodologies to reduce wildlife trafficking and forest crime. Awarded for the first time an EU grant in Somaliland, CCF views this is a groundbreaking partnership to build on for future endeavors. The project will run for two years, from June 2022 to May 2024.

The project focuses on 5 villages, chosen with support from MoECC, along the Somaliland-Ethiopia border. With WHH performing community infrastructure work around water systems as well as setting up bee keeping operations, CCF's work revolves around the wildlife trade aspect. CCF is delivering activities in nine different areas:

1. Building Somaliland's NGOs coalition to support nature conservation within the communities. This is a complimentary action to the building of the SACSO through LICIT-II and the two project will pool resources to achieve this

2. Supporting the operationalization of the Somaliland (SLD) Environmental Crime Unit (ECU)– declared in September 2021, the SLD ECU has not met or been active since. It is our aim, with the help of en expert consultant, to assess the capacity of proposed ECU member agencies and work towards operationalization of it

3. Introducing the SMART system for monitoring wildlife and wildlife crime/human-wildlife crime incidents in Somaliland, through working closely with the SMART team and training specialized Wildlife Observers (see point #8)

4. Publishing MoECC successes in fighting cheetah trafficking and raising awareness: CCF's expert media team is working closely with Somaliland's MoECC and Ministry of Information to develop media materials to disseminate throughout the project cycle

5. Legal: Partners Legal Atlas, will work on the revision of the Somaliland Wildlife and Forestry Law as well as conduct awareness sessions for parliamentarian on current laws, gaps, and needs relating to conservation needs

6. Eco-social Survey – continuing our work with the LICIT-1 project and other CCF-led projects, we are conducting baseline and endline eco-social surveys in the 5 project villages

7. Supporting MoECC in drafting environmental planning strategies

8. Identifying and training two wildlife observers from each of the five villages to conduct wildlife and wildlife crime monitoring and reporting activities

9. Delivering FFA programs to the five project villages

Project activities began with the deployment of the baseline eco-social survey, M&E baseline activities, and preparations for legal and SMART software work. These will be fully implemented in 2023-2024.

FWS: Creating systems to monitor and care for wild cheetahs and determine drivers of illegal trade in the Horn of Africa

Another first for CCF Somaliland, our Wildlife Crime Program received funding to conduct work through the US Fish and Wildlife Service Species Conservation Catalyst Fund opportunity. This 5-year grant brings together CCF's Wildlife Crime, Genetics and Research, and Ecology Programs in a joint endeavor. The project has three main areas of work:

1. Veterinary medicine training for Ethiopia's wildlife veterinarians, in partnership with BeWild Aid – the NGO chosen in Ethiopia to establish the National Wildlife Veterinary Service. Our project work will be focused on cheetah medicine (and specifically on cheetah cub medicine) and training for confiscation teams on emergency medicine and personal security.

2. Camera trap surveys in Somaliland, Ethiopia's SRS, and Puntland to learn of cheetah presence in these areas

3. Genetic sample collection and analysis of both wild populations and confiscated cubs to learn more about the two groups' origin and genetic makeup. This will also support wildlife crime prosecutions in the form of forensic evidence.

This project is a unique opportunity to work not only with US-FWS but also with fellow organization who received grants under this Catalyst Fund, namely: IFAW, African Wildlife Foundation, and Colorado State University. Spanning three jurisdictions – Somaliland, Puntland, and the SRS – this project will help solidify cooperation within and among jurisdictions and allow these governments to more effectively combat trafficking and conserve biodiversity in the HoA.

CMS-IGAD Legal Harmonization Project

Attending the 5th HAWEN Executive Committee meeting in November 2022 in Addis Ababa, CCF and Convention on Migratory Species (CMS) announced the second part of their collaborative project on legal harmonization in the Horn of Africa. The first part, completed in 2021, by CCF and Legal Atlas, conducted a comparative analysis of five areas of conservation-related legislation which are a priority for harmonization in the Horn. Funded through the EU "Cross-Regional Wildlife Conservation in Eastern and Southern Africa and the Indian Ocean" Program, the project was launched in late 2020, with most activities taking place in the first half of 2021. Expanding on the legal work conducted under LICIT-I, the analysis included IGAD member countries Djibouti, Ethiopia, Kenya, Somalia, the Sudan, South Sudan, and Uganda.

The five areas of focus, as chosen by the CMS in 2021:

1. Migratory Species Status

2. Trans-Frontier Conservation Areas Designation

3. National IWT Task Forces

4. Wildlife Repatriation Mechanisms

5. Wildlife Crime and Anti-Money Laundering

Stage II of the CCF-CMS project will see the development of an IGAD protocol on TFCAs, as approved by the HAWEN Executive Committee and CMS. It will officially begin in the first quarter of 2023. In addition, the 3rd area of focus will be developed into a protocol through CCF's work under a new project – LICIT-II.

IUCN

IUCN has provided financial support to CCF's project in the Horn of Africa to eradicate illegal trade in cheetah through a two-year grant. The objective of the proposed project is to "To mitigate human-wildlife conflict and eradicate illegal trade in cheetah while building resilience and creating better livelihoods for people in northwestern Somaliland". The approach adopted for fulfilling the objective is to assess the viability of adapting Namibia's Community Based Natural Resource Management (CBNRM) approach and conservancy model for Somaliland, which will help in decreased human-wildlife conflict and better livelihoods for people. The purpose of the project is to determine if these strategies can help rural communities mitigate conflict with wildlife and reduce wildlife crime while building local governance systems and increasing community resiliency. Somaliland will lend itself to the notion of a conservancy.

Consultants were hired to research and identify the best possible places to set up Conservancies in the proposed study area based on people's attitude, acceptability towards the CBNRM concept and communities with well- established structure and not nomadic in nature. Data on people's attitude and acceptability towards the CBNRM concept was collected through questionnaire surveys conducted by visiting communities in the proposed study area of Awdal and Zeila. Both government leaders of Somaliland with the MoECC including regional MoECC coordinators were involved in designing and conducting the survey. The other Somaliland organization that was associated with designing and conducting social studies survey was SOCCA. Moreover, community members including village elders, teachers and veterinarians were also involved in the project during the reporting period of January to June 2022 as CBNRM surveys were conducted in the villages of Awdal and Zeila regions of Somaliland. Brian Jones who was hired as the CBNRM consultant was involved in generating assessment report for the CBNRM model in Somaliland. He is one of the founders of NACSO in Namibia.

Forty-two surveys were completed across 15 villages in the Awdal region. A total of 63 people (2%) representing both males and females, as well as village elders participated in the survey. Although the percentage of people participating in the survey was comparatively low, we believe it is a good representation of the respective villages.

CCF conducted pre and post questionnaire surveys for assessing the attitudes of communities towards CBNRM model. The pre CBNRM model explanation surveys were conducted to assess the communities' knowledge about CBNRM. The CBNRM model was then explained to the communities and a post explanation survey were conducted to assess the attitude of the communities towards CBNRM model. Overall, we observed that communities have a positive attitude towards CBNRM approach.

Less than half (46%, n =16) of respondents had previously heard of CBNRM, but after hearing a short explanation of what CBNRM is, 97% (n = 33) indicated an interest in participating in such a programme. The number of households varied between 50 and 980 amongst the villages surveyed and the number of average people in each household varied between 5 and 10 people. Of the 63 participants of the survey 22 were males, 28 were females and 13 unspecified gender and 6 focused group. Through this rapid survey effort in the Awdal region of Somaliland, CCF gained insight on local wildlife presence, levels of human-wildlife conflict, and community attitudes towards wildlife. Perceptions of wildlife were overall positive, with a majority of respondents enjoys wildlife and considers wildlife important to have around. Communities also showed a great interest in learning more about wildlife-related topics and participating in programs to protect and conserve wildlife.

The survey conducted by CCF indicates that the local communities are greatly interested in learning more about wildlife-related topics and participating in programs to protect and conserve wildlife. Another assumption was that people in the project area will be willing to accept the concept of CBNRM despite them having very little knowledge or experience about wildlife or other natural resources. Again, the survey results show that people's attitude towards wildlife is overall positive, with a majority of respondents enjoying wildlife and considering them important to have around. The risk of heavy reliance on consultant has been addressed in the first quarter of the project as CCF was able to hire qualified individuals who delivered timely and detailed reports.

A formal report has been generated by the consultant documenting the attitude of people towards CBNRM concept and what will work best for setting up conservancies in the proposed study area of Somaliland.

CCF welcomed a delegation representing the Republic of Somaliland to Namibia July 25-Augut 3, 2022, to explore the link between rural development, tourism and cheetah conservation. Joining with local partner, the Namibian Association of Community Based Natural Resource Management Support Organizations (NACSO), CCF's Founder and Executive Director, Dr Laurie Marker, and NACSO's Executive Director Maxi Pia Louis, led the delegation on a tour of northcentral Namibia. The goal of the tour is to transfer institutional knowledge and experience about Community Based Natural Resource Management (CBNRM), eco-tourism, and the development of concessions around protected areas. The knowledge transfer between Namibia and Somaliland will assist the Somaliland government in developing their own model to meet the needs of nomadic pastoral communities.

Somaliland's Minister Shukri H. Ismail of the Somaliland Ministry of Environment and Climate Change (MoECC); Minister Mohamoud Hassan Saad, Minister of Trade and Tourism; Minister of Parliament Mubarak Musa Ismail, Chairman of the Committee on Environment, Natural Resources, Production and Energy at Somaliland House of Representatives; Head of Mission to the United States, Bashir Goth; and Fatima Saeed, CCF's Senior Advisor to Parliament, travelled to Namibia for the first time, representing Somaliland.

In mid-December, CCF led a similar delegation to Kenya on a five-day tour, together with Kenyan CBNRM consultant Fiesta Warwina and Mary Wykstra, the Executive Director of Action for Cheetahs Kenya (ACK). The goal of both tours was to transfer institutional knowledge and experience about CBNRM, eco-tourism, and the development of concessions around protected areas. The Somaliland government is developing their own model to meet the needs of nomadic pastoral communities while mitigating threats to wildlife, with a focus on the cheetah.

In Namibia, representatives from the Somaliland government learned about Namibian conservation policies and about the daily operation of CCF's world-renown Centre in Otjiwarongo. The Somaliland delegation also visited Erinidi Private Wildlife Reserve, Etosha National Park, Twyfelfontein, conservancies in the Kunene region and the CCF Centre. They met with representatives from the Namibian government, a conservation NGO consortium, NACSO, and trade groups in Windhoek. In Kenya, the delegation visited Amboseli National Park, Tawi Conservancy, Kalama Conservancy, the Save The Elephants Camp in Samburu Game Reserve and the BigLife Foundation (BLF) Headquarters.

"Finding Lost Cheetah in the Gardens of Eden"/Explorers Club grant project

From the 16th to the 25th of August 2022, Dr. Laurie Marker and Dr. Bogdan Cristescu of CCF led a social survey across the central and eastern regions of Somaliland: Marodijeh, Sahil, Togdheer, Sanaag, and Sool. This survey follows a similar methodology as was used in the western region of Awdal in February-March of this year. Drs. Marker and Cristescu travelled with: Abdihamid Mohamed Jama, Hamza Ahmed Yusuf, and Ibrahim Abdirahman Ismail from CCF Somaliland; and Abdinasir Hussein Saed, Bashir Omar Hassan, and Abdiqani Ahmed Jama from the Ministry of Environment and Climate Change (MoECC) Somaliland.

The purpose of this survey was to collect baseline data and local context on wildlife-related topics in Somaliland, in regions that are key to understanding and stopping the illegal trade of cheetah (Acinonyx jubatus) cubs in the Horn of Africa. This survey investigated village demographics, livestock ownership, wildlife presence, levels of human-wildlife conflict, and knowledge of and interest in the illegal wildlife trade,

protected areas, and community-based natural resource management (CBNRM). While driving along the survey route, the team also recorded all sightings of livestock, wildlife, and signs of human footprint.

Sixty-nine surveys were completed across 19 villages in four regions; a majority of surveys took place in the regions of Togdheer, Sanaag, and Sahil (Figure 1). 42 of these surveys were with individuals and 27 were focus groups. All surveys were conducted in Somali and translated to English. Detailed demographic information on the survey respondents can be found in Table 1. The surveyed regions have varying climates, including semi-arid, arid, and desert. Rainfall decreases on a West to East gradient. Water availability is scarce and mostly in man-made boreholes and dams. During the survey period all regions experienced an intensive drought. The area is predominantly plateaus and plains. There are also highlands and mountainous ranges, the latter present especially in Sahil and northern Sanaag. Habitat is primarily sparse shrubland (West) and bare ground with low vegetation cover (East), but northern Sanaag has some high elevation forest areas. All regions have livestock pastoralism, with Togdheer being the largest producer of livestock in Somaliland.

By talking to the pastoral farmers in this area, CCF is working to understand the current distribution of cheetahs and level of conflict with cheetahs. This information, combined with knowledge about local attitudes toward and acceptance of the CBNRM concept, will help CCF identify the best places that could be used to set up Conservancies in these regions.

Discussing the greatest daily challenges faced by people in their village, access to water, healthcare, and grazing (in that order) were the three most common needs identified by participants. Access to water was most commonly cited as the single greatest need in a village (n = 29), followed by access to grazing (n = 17). Access to education, veterinary care, and lack of income or employment were also cited as important daily challenges by some respondents. Access to stable infrastructure, such as roads and housing, was cited by only one respondent. Predators were identified as a daily challenge by four respondents, but were never named as the greatest challenge.

Of the 18 villages at which respondents answered questions about livestock, all 18 reported ownership of sheep, goats, camels, and donkeys (Table 2). Only nine villages reported cattle ownership (Table 2). Goats had the largest herd size at 189 animals per herd, followed by sheep at 162 animals per herd (Table 2). A large majority of respondents (94%, n = 58) stated that there is not enough grazing available within daily walking distance from the village for all of their livestock. 74% of participants (n = 46) reported that people from their village move yearly to find grazing, citing distances from just a few kilometres to over 100 kilometres in all directions. Lack of grazing, lack of water, disease, and predation (in that order) were the most commonly cited threats to livestock. Lack of grazing was most frequently identified as the highest threat (n = 33), followed by lack of water (n = 30). Theft and competition with wild herbivores were not selected at all as main threats to livestock.

Cheetah Public Policy

Multilateral Environmental Conventions: CITES and CMS

Defined globally as Vulnerable through the IUCN Red List of Threatened Species™, the cheetah has been included in CITES Appendix I since 19751. In 2009, it was listed also in Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), except for its populations in Zimbabwe. Populations of Botswana and Namibia are also not listed as the two counties are not Parties to CMS. CCF is therefore very active in both CITES and CMS.

CITES CoP19 - Panama

1 The CITES listing holds the following annotation: "Annual export quotas for live specimens and hunting trophies are granted as follows: Botswana: 5; Namibia: 150; Zimbabwe: 50. The trade in such specimens is subject to the provisions of Article III of the Convention".

From 14 – 25 November 2022, delegates from 184 countries joined deliberations on which species of wild animals and plants should be protected under the Convention regulating international trade in wildlife. CITES, or the Convention in International Trade in Endangered Species of Wild Fauna and Flora, was signed in 1973 with an aim of ensuring that international trade of wild animal and plant species does not threaten their survival.

Hosted by Panama, this 19th meeting of the Conference of the Parties (CoP) of CITES took place at a critical moment, following increasing concern on biodiversity loss world-wide. Together with habitat loss and climate change, overexploitation and trade are now recognized as serious threats to wild plants and animals.

Drs. Laurie Marker and Shira Yashphe joined more than 2,500 delegates, observers, and journalists in the two-week meeting. The issue of the illegal trade in cheetah cubs was our top priority, as was the CITES Big Cats Task Force.

Both issues were discussed on 21 November. With an aim to tackle illegal trade in big cats globally, the Big Cats Task Force (BCTF) had its proposed Terms of Reference (ToR) and Modus Operandi (MO) up for adoption during this meeting. It is to work on trade in big cats worldwide, looking for convergence of trade chains, similarities and differences, and pool resources together to support enforcement action. The Parties adopted the proposed ToR and MO, allowing the first meeting of the Task Force to now be scheduled. Date is to be announced by the Secretariat in early 2023.

While important, the BCTF is already delayed in its launch due to COVID-19, and having the first meeting planned for 2023, CCF was concerned that the cheetah issue would not be addressed in a timely manner. Therefore, CCF supported the discussion of the illegal trade in cheetahs separately, as presented by Ethiopia through Document 59. Ethiopia asked the Parties of the Convention to remain focused on the need to stop cheetah illegal trade and to move forward together, in a coordinated manner involving source, transit, and destination countries. The document was presented in Committee II on 21 November. While Somalia, Senegal, Tanzania, the US, EU, and UK supported Ethiopia's offer, Bahrain, UAE, Saudi Arabia, and Kuwait questioned some of the sources of information and offered that any trade in cheetahs be included in the work of the Big Cats Task Force. Concerned with the high number of cubs trafficked and the high mortality rates en route, CCF intervened on the floor pleading for both Arabian Peninsula and Horn of Africa countries to act now, and not wait for the BCTF to commence its work. Therefore, CCF supported the convening of a cross-regional meeting as proposed by the original Document 59 but proposed for deletion by the Secretariat.

Unfortunately, Parties did not agree to decide on a cross regional meeting. The CoP, did however direct parties affected by illegal trade in cheetahs to report to the Secretariat in advance of the 78th Standing Committee, which will then inform this committee of these reports as well as any outcomes from the BCTF, and thereafter develop recommendations for consideration at CoP20. CCF will now pursue work both within CITES, through the BCTF, and outside of it, through a planned Global Cheetah Meeting, to ensure action is done in a timely manner. This meeting is now planned for May 2023.

Drs. Marker and Yashphe also had multiple side meetings, in between sessions, with stakeholders from Parties and NGOs which could support our work going forward. In addition, they attended side events offering overviews and insights on the illegal trade in other big cats, namely tigers and jaguars. These offered valuable lessons to take into consideration in CCF's own work. On 17 November, Dr. Marker was part of a four-person panel discussion at the UK DEFRA side event to discuss the work to fight the Illegal Wildlife Pet Trade through CCF's LICIT program from a DEFRA grant. Then on the evening of 18 November, CCF helped coordinate a side event about the Illegal Wildlife Trade in Cheetah which was a panel discussion about issues facing the cheetah in the Horn of Africa and throughout the range states of cheetah.

In addition to CCF's efforts on the 'floor', we were joined by CCF LICIT grant lead, Edwin Brown, who attended a two- day Wildlife Enforcement Network (WEN) which has been held at CITES the past few years. Drs. Marker and Yashphe interacted with many of the delegates to learn more from their experiences. CCF has been actively supporting the Horn of African WEN (HAWEN), at first through LICIT 1 and CMS-1 and now through LICIT 2 and CMS-2.

CMS – Convention on Migratory Species

At CMS, three main issues are of concern to CCF: the new joint CMS-CITES African Carnivores Initative (ACI), listing of missing populations through the convention, and work done on the Asiatic cheetah.

1. The CITES-CMS ACI: During 2021, the CMS and CITES secretariats worked alongside range states to develop ACI's Program of Work (PoW). The PoW was approved by both conventions. The two Secretariats are now exploring long-term funding mechanisms for the ACI's next meeting and ongoing operations (through governments/Regional Economic Commissions; development and investment banks; public and private foundations; etc.). The governance structure for the ACI is also yet to be finalized and is to be discussed at the 2nd ACI Range State Meeting (date: TBD).

2. The CMS Intersessional Working Group on the Asiatic Cheetah established at the 5th Meeting of the Sessional Committee of the CMS Scientific Council, has a mandate to consider options for the recovery of the Asiatic and North-East African Cheetah. The terms of reference of the working group include considering assessments of the genetic status of the Asiatic cheetah, assessing its current population status, and determining whether supplementation from other cheetah populations is needed to secure its genetic viability. WG meeting date: TBD.

3. The Intersessional Working Group on reviewing the conservation status of Cheetah populations of Botswana, Namibia and Zimbabwe and their potential inclusion in Appendix I of CMS, was established by the CMS Scientific Council Sessional Committee at its 5th meeting with a set Terms of Reference. CCF will take part in its first meeting on 8 February 2023.

5th HAWEN Executive Committee Meeting

Held on 7 – 9 December 2022 in Nairobi, Kenya, the Executive Committee of the Horn of Africa Wildlife Enforcement Network (HAWEN) met for the 5th time. Having supporting it from its inception, CCF's Drs. Marker and Yashphe participated and heard updates about new country representatives to the HAWEN, efforts each HAWEN member state make to stop IWT, and support offered by UNODC and CITES. The CCF team liased with country representatives as well as with the HAWEN and IGAD Secretariats and discussed our plans for the region, seeking their support. CMS presented their joint project with CCF on legal harmonization, launching its second phase. CCF was warmly accepted as an Observer to this meeting and received assurance that we will get support for our project work from IGAD and HAWEN members.

Annex: Confiscated Cubs 2022

Date of Confiscation	Type of Event	Country of confiscation	Number of animals involved	Species	Sex	Age
03 Jan 2022	confiscation	Somaliland	1	Acinonyx jubatus	F	3-4m
12 Jan 2022	confiscation	Somaliland	1	*Acinonyx jubatus*	M	6m
19 Jan 2022	confiscation	ETH	1	Acinonyx jubatus	M	UNK
19 Jan 2022	confiscation	Somaliland	1	Acinonyx jubatus	M	3m
29 Jan 2022	report	ETH	1	Acinonyx jubatus	UNK	UNK
01 Feb 2022	confiscation	ETH	2	Acinonyx jubatus	UNK	UNK
28 Feb 2022	confiscation	Somaliland	16	Acinonyx jubatus	7M:8F: 1UNK	4w – 5m
01 Mar 2022	report	Somaliland	3	Acinonyx jubatus	UNK	UNK

01 Mar 2022	report	Somaliland	6	Acinonyx jubatus	UNK	UNK
12 Mar 2022	confiscation	Somaliland	4	Acinonyx jubatus	1M:2F:4UNK	UNK
Mar/Apr	report	Somaliland	Min 1	Acinonyx jubatus	UNK	UNK
June 2022	report	Ethiopia	1	Acinonyx jubatus	M	UNK
29 Jul 2022	confiscation	Somaliland	2	Acinonyx jubatus	2M	6w
6 Aug 2022	confiscation	Somaliland	1	Acinonyx jubatus	F	16w
14 Oct 2022	confiscation	Somaliland	4	Acinonyx jubatus	1M:2F:1UNK	10w:6w:UNK
7 Nov 2022	confiscation	Somaliland	1	Acinonyx jubatus	F	8w
21 Nov 2022	confiscation	Somaliland	1	Acinonyx jubatus	F	6m
28 Sep 2022	confiscation	Somaliland	2	Caracal caracal	2F	6w

3. CCF Somaliland

CCF expanded its knowledge about the illegal cheetah trade in Somaliland during 2022 through its rescue mission activities and the relationships the team has formed with local Somaliland entities and the international community. CCF now has solid evidence the trade exists, both in a professional, organized form and in an ad-hoc manner driven by community necessity and the desire to mitigate livestock predation. Despite initially thinking all cubs being confiscated in Somaliland are taken to supply the illegal pet trade, CCF now sees a new layer to this threat. Cheetahs and leopards in Somaliland and Ethiopia's border regions are threatened by conflict with rural farmers seeking to mitigate livestock predation. Removing predators is not the answer. Other animals will take their place, and the cycle will continue until there are no more cheetahs on the landscape.

CCF Somaliland has expanded its operations in 2022 to now include a set of grant-funded conservation activities that support wild cheetah populations while combatting illegal wildlife trade in the species. These include wildlife education, training for pastoralists, surveys and government exchange visits to promote the value of wildlife. We continue to nurture our relationship with various ministries and organisations throughout Somaliland in support of our mission.

At the end of the 2022, CCF was caring for 87 cheetahs, as well as one leopard and a caracal both of which were confiscated as cheetahs, and were cases of mistaken identities.

Facilities

The cheetahs under CCF Somaliland's care are in three Safe House facilities built and maintained by CCF in Hargeisa. Safe House 1 is the veterinary clinic and used as intake for new cubs coming in from confiscations.

As the number of confiscated animals grows, we are creating larger groups of animals to create more available space in anticipation of more cheetahs arriving at any time. This comes with its challenges and added costs, as we had to retrofit yards to allow for the increasingly larger groups.

Our food costs for both humans and wildlife have increased dramatically with the cost of living in Hargeisa constantly increasing. We use approximately one camel and 55 goats per week to feed the animals under CCF's care.

CCF made great progress in construction of its new facility to hold the cats in a better, more naturalistic environment.

Cheetah Rescue and Conservation Centre (CRCC) at Geed-Deeble

In December 2021, CCF began building the Cheetah Rescue and Conservation Centre (CRCC) at Geed-deeble. After a year, the new Centre is very close to being operational. During the past year, the water system has been developed after drilling a borehole and laying pipes about 3 km from the borehole to the main Centre as well as a 14 km electrified perimeter fence. In addition, buildings have been completed and include a manager's house, four 4-room staff houses, a staff kitchen/meal house, a Veterinary Clinic and cub nursery, meat room and barn, as well as a solar power system and batteries to run the operations. Over six cheetah compounds have been completed ranging in size from 2 ha to 8 ha. At the end of the year, two CCF international staff are living at the CRCC permanently, finishing the final cheetah enclosures. During the last couple months of the year CCF has had technical support from individuals and volunteers from various zoos.

It is anticipated that during February and March 2023, some cheetahs will be translocated to the new facility.

Staff

As of December 2022, CCF had 14 international staff working in the operations area with a view to down-size slightly after the move to Geed-Deeble. Local staff in operation remain around 10. Some will be relocating with us and any other requirements will be employed from the local community.

Project Manager Mark Natt resigned his position December 31, 2022, and Assistant Project Manager Chris Wade assumed his duties.

Local Staff

- Abdiriham Mohamed Diirye- CCF Book Keeper
- Khalif Hussein- Community Awareness Officer
- Xamse Ahmed Yusuf- Operations Manager
- Ahmed Yusuf Ibrahim- Lab Technician/Animal Care
- Farah Wali Awabdi- Meat prep/ Cleaner
- Jamal Wai Cabdi- Meat prep/ General Laborer
- Idris Ciise Axmed- Meat Prep /General laborer
- Abdirashid Maxamed Abdellah- Butcher
- Abdirahman Ismail Axmed- Part-time Butcher
- Faisa Xasan Yusuf- Staff house cook/Cleaner
- Biliso Mawad Saxardii cleaner/cook /staff laundry
- Mushak Hussein Ali- part time cleaner/training house/staff house

Project Managers

- Mark Natt – Manager
- Louise Ellis – Animal Care Manager (taken over for Stephanie Natt)

- Chris Wade – Assistant Project Manager
- Karlene Parrish – Staff Health Officer and Animal Clinic Manager

Veterinarians

- Dr. Ashely Marshall – Veterinarian
- Dr. Calum Cairns – Veterinarian
- Dr. Lyndsay Scott – Veterinarian
- Dr. Jullia Borba – Veterinarian

Animal care staff are from Canada, France, Australia, Netherlands, Nigeria and Kenya with most people staying for about six months. New staff members are being encouraged to stay for 12 months to assist with continuity of the project.

Two new veterinarians joined the program in August and September 2022 as the replacements for Dr. Marshall and Dr. Cairns, and Dr. Lyndsay Scott and Dr. Jullia Bora.

Volunteers

In 2022, 23 international volunteers supported CCF's efforts in Somaliland. Volunteers provide a lot of support for the program. Volunteers from zoos have also added a great deal of experience to the current staff. In December 2022, CCF signed a volunteer agreement with Taiwan to provide qualified volunteers from Taiwan in 2023.

Somaliland Resident Cheetah Health

Medical Examinations of Cheetahs

CCF Somaliland actively manages a growing resident population of juvenile, sub-adult and adult cheetahs, one leopard, and one caracal. These carnivores depend on and need daily intensive management and treatment, including nutrition, hygiene, biosecurity and clinical evaluations. Overall health evaluations can be performed at a distance or while interacting with the resident carnivores during their daily feeding or enrichment sessions. Evaluations are conducted daily on each and every animal, and especially those that were under treatment. As always, the carnivore's health, welfare and safety have always been top priority and numerous efforts have been made to finalise the construction of the conservation centre in Geed Deeble, in order to transport the animals' out into a more natural environment.

Resident Population

As of 31 December 2022, CCF Somaliland supports a population of 87 cheetahs (46M, 41F), one male leopard and one female (Figure 78).

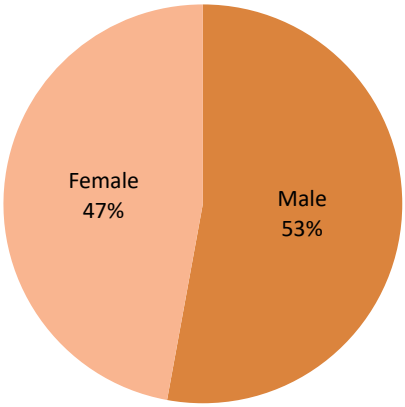


Figure 78: Gender distribution of CCF Somaliland resident cheetah population as of 31 December 2022.

New Arrivals

Between 1 January and 31 December 2022, CCF Somaliland – with the aid of the Somaliland Ministry of Environment and Climate Change (MoECC) - had been informed of and involved with 16 potential confiscations;

- 2 of these potential confiscations were unsuccessful – either it was too unsafe to confiscate the cubs or information was received from different communication channels than usual; cub number, age and status were unknown. Only one of these unsuccessful confiscations had photographic evidence of cubs – 4 live cubs were identified (approximate age 8 - 10 weeks)

- 14 of these potential confiscations were successful - CCF Somaliland safely obtained the confiscated animals

- 42 new cubs (21M, 21F) and 2 caracal kittens (2F) were obtained (Figure 79)

- Ages of cubs at the time of confiscation were estimated to be between 4 – 24 weeks

- Cub group number varied from 1 to 15 individuals, and not all of the cubs in the group were within the same age range - suggesting multiple poaching events and co-mingling of different sibling groups

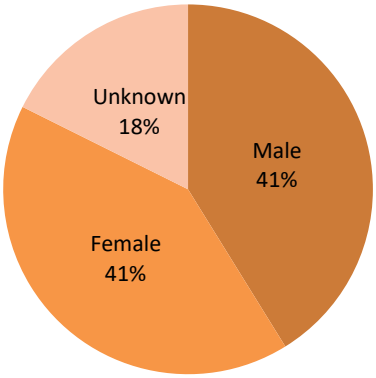


Figure 79: Gender ratio of confiscated cheetah cubs from 1 January - 31 December 2022.

At confiscation, 12% cubs were deceased and 88% were alive (Figure 80), and as of 31 December 2022 only 64% of these cubs are alive.

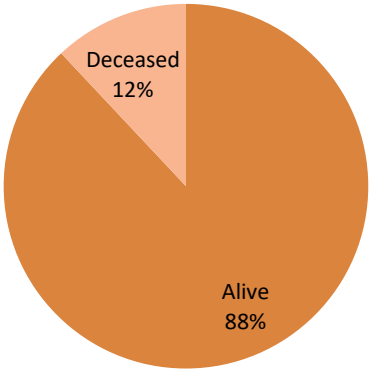


Figure 80: Living status of individuals at time of confiscation in 2022.

After confiscation, 3 days are allowed before any intake procedures are initiated to allow the cubs time to stabilise and adjust. Initial intake bloodwork indicates the following:

- Low Calcium (nutritional or metabolic disorders)
- Low Creatinine (young age but could also indicate some muscle wasting due to poor nutrition)
- Low blood urea nitrogen (BUN) (young age and malnutrition)
- Low Albumin or Total Proteins (young age, malnutrition, disease processes)
- Mild to moderate monocytosis (stress leukogram), moderate anisocytosis

The most common health issues at confiscation were:

- mild to moderate dehydration (5% - 10%)

- mild to severe malnutrition - presented clinically as underweight, poor body condition (typically BCS 2 or 3 out of 9), and varying degrees of muscle atrophy/muscle wasting
- mild to severe hypothermic
- mild to severe hypoglycaemia
- poor skin/hair condition (alopecia, lichenification)
- wounds/lacerations

The majority of the health issues and clinical symptoms were corrected within the first few days of arrival by intensive management and support – fluid support was administered as necessary (subcutaneous or intravenous depending on the severity of the symptoms), 7 to 10-day course of antibiotics was administered prophylactically since October (poor and weak immunity, unknown environmental contaminants), and Vitamin B-complex was administered to improve immune response. Additionally, a once off dose of glucocorticoid was administered on intake (Dexamethasone 0.5 mg/kg) as replacement of glucocorticoid activity for adrenal insufficiency (suspect some adrenal insufficiency due to severe stress). Parasiticides (oral and topical) and wound care (cleaning, administering antiseptic ointment) was also provided.

Malnutrition and nutritional disorders were corrected over a longer period (weeks to months), with mineral and vitamin supplementation, nutritious milk supplements, probiotics, and chicken and/or goat meat.

In addition, gastroenteritis is not uncommon in new confiscations. Intermittent diarrhoea, regurgitation or vomiting, and changes in appetite have been associated with diet change, stress and subsequent infections (bacterial, parasitic). Intensive appropriate support and treatments are started as soon as possible and include deworming (if not already administered), slowing food transitions, subcutaneous or intravenous fluids, antiemetics, gut protectants and probiotics - to which appropriate response to treatment has been appreciated. If indicated on faecal analysis and blood work – gut-appropriate antibiotics is included in the treatment plan too.

Medical Examinations under anaesthesia

During this reporting period, CCF Somaliland performed a total of 19 sedated examinations and/or anaesthetic procedures (Table 36). The primary reasons for these procedures were diagnostic, surgical and therapeutic.

Table 36: Examination under anaesthesia from 1 January - 31 December 2022.

ITAJU	NAME	Date of Procedure	Diagnostic vs Therapeutic	Reason
1940	MAX	10-Jan-22	Therapeutic	Anorexia. Placement of nasoesophageal tube
1936	ORION	13-Jan-22	Therapeutic	Free fluid in abdomen. Abdominocentesis, blood draw, found severe anaemia.
1935	STORM	13-Jan-22	Therapeutic	Blood donor. Phlebotomy
2028	AMIR	28-Jan-22	Diagnostic and Therapeutic	Loss of 104. Dental examination, dental radiographs and dental cleaning
1981	BAGHEER	20-Apr-22 21-Apr-22	Therapeutic	Blood donor. Phlebotomy
2034	MARS	28-Jun-22	Diagnostic	Exaggerated swallowing Oral exam, neck/abdominal radiographs, blood draw
2004	JALEELO	29-Jun-22	Diagnostic and Therapeutic	Dyspnea. Blood work, thoracic radiographs – patient died
2036	SATURN	13-Jul-22	Diagnostic	Acute onset of neurological signs and not responding to medical treatments; further diagnostics needed; unfortunately, she died under anaesthetic

2117	DHIB	12-Aug-22	Surgical and therapeutic	Surgical intervention necessary – penile amputation and placement of urinary catheter
2117	DHIB	26-Aug-22	Therapeutic	Replaced urinary catheter
1939	DUMA	28-Aug-22	Diagnostic	Presented with harsh upper respiratory signs and concern was a laryngeal foreign body; oral examination and radiographs done
1999	FREYA	4-Sep-22	Diagnostic and therapeutic	Presented with acute abdominal distention – peritoneal effusion; blood work, radiographs, ultrasound and abdominocentesis done
1984	DARTH	19-Sep-22	Diagnostic	Repeated follow up radiograph (monitoring)
1999	FREYA	30-Sep-22	Surgical and therapeutic	Surgical intervention necessary – foreign body removal; unfortunately, he died during recovery
2029	OLIVIA	9-Nov-22	Diagnostic	Worsening condition and necessity for more diagnostics – CSF tap and analysis; unfortunately, she died under anaesthetic
2087	BETTY WHITE	14-Nov-22	Therapeutic	Medical intervention necessary – presented with viral GIT and secondary bacterial infection; more fearful and not able to perform a conscious/voluntary examination or treatment administration
2009	ELBA	22-Nov-22	Diagnostic and surgical	Worsening condition and necessity for more diagnostics – exploratory laparotomy; unfortunately, she died after recovery
1984	DARTH	6-Dec-22	Diagnostic	Repeated follow up radiograph (monitoring)
2001	SIF	11-Dec-22	Therapeutic	Presented with a piece of cartilage stuck in mouth; not able to approach and remove voluntarily – sedated and removed

On 10 January 2022, MAX (ITAJU 1940) was sedated for the fourth time since 19 December 2021, to perform radiographs and place a second nasogastric feeding tube after 3 days of hyporexia, reduced activity, and increasing weakness (Figure 81). The anesthesia used was a combination of Midazolam, Butorphanol, and Dexmedetomidine, maintained with Propofol IV. MAX was receiving treatments of dexamethasone, enrofloxacin and GS-44 daily since 25 December 2021. Nasogastric tube placement and recovery were successful.

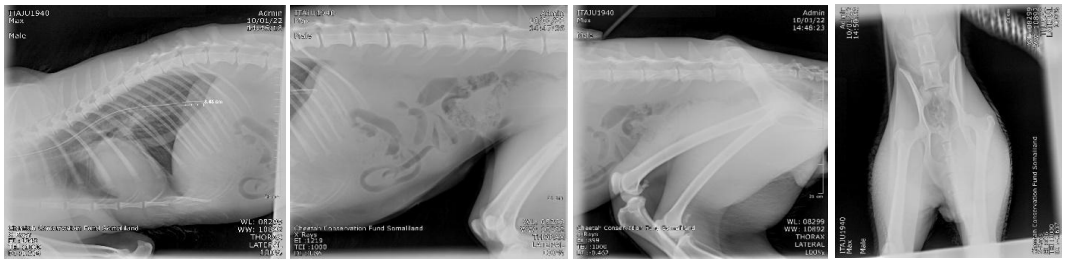


Figure 81: Sedated lateral thoracic (a), abdominal (b) and hindlimb (c,d) radiographs performed on MAX (ITAJU 1940) on 10 January 2022, one day prior to death.

ORION (ITAJU 1936) was sedated on 13 January 2022 at 8:05 am with Midazolam and Butorphanol, followed by Propofol IV. Yellow modified transudate was aspirated from his abdomen, which was Rivalta test negative. Blood was drawn which showed worsening anemia (HCT 11%). Later that day, he received a blood transfusion over 1.5 hours to which he responded well.

STORM (ITAJU 1935) was sedated on 13 January 2022 to donate blood. He was sedated with Midazolam, Butorphanol and Dexmedetomidine at 11:05 am and was reversed with Atipamezole at 11:55 am without incident; he was standing by 12:10 pm. During sedation, a low-grade apical heart murmur was noted (Grade 1-2).

On 23 January 2022 AMIR (ITAJU 2028) lost 204 (upper left canine) likely due to a tooth root abscess; the tooth was missing pulp and dentin. He was started on oral antibiotics (Amoxiclav) and nonsteroidal anti-inflammatories (Meloxicam). On 28 January 2022 he was sedated, without complication, with Dexmedetomidine, Butorphanol and Midazolam at 8:56 am. Dental examination and radiographs (Figure 82)

showed loss of 204 root with some inflammation and no evidence of osteolysis or infection. The socket was flushed where mild purulent material and granulation tissue was appreciated. 104 (upper right canine) was noted to have pulp exposure at the tip with some enamel damage. He was reversed with atipamezole at 10:04 am; he was standing by 10:12 am.

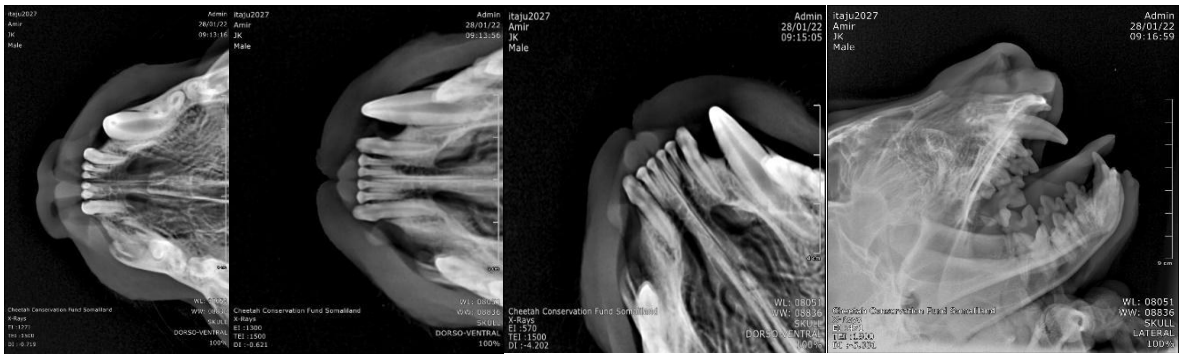


Figure 82: Dental radiographs of AMIR (ITAJU 2028) on 28 January 2022 demonstrating 204 fracture.

In April BAGHEER (ITAJU 1981) was sedated twice to donate blood for FOXTROT (ITAJU 2108), an anemic cub recently confiscated. He was sedated with medetomidine and butorphanol and reversed with atipamezole. No complications occurred and he recovered smoothly.

On 28 June 2022 MARS (ITAJU 2034) was sedated due to being "off" for 4-5 days and demonstrating exaggerated swallowing following the ingestion of the bottom of scrub pants by the group 12 days previously. He was sedated with Dexmedetomidine and Butorphanol which created adequate sedation for a physical examination including oral exam, blood assessment and neck, thoracic abdominal radiographs (Figure 83). Radiographs were not conclusive but material in the stomach lumen could not be entirely ruled out. Abdominal palpation was soft and pliant. He was reversed with atipamezole. No complications occurred and he recovered smoothly. The piece of material was noted in stool 10 days later, and the following day MARS was back to his energetic self.

Figure 83: Sedated neck, thoracic and abdominal radiographs, MARS (ITAJU 2034) performed on 28 June 2022.

On 30 June 2002, JALEELO (ITAJU 2004) was sedated due to acute onset dyspnea noted in the week previous, increasing in frequency and intensity. She was sedated with Dexmedetomidine, Midazolam and Butorphanol; this provided moderate but inadequate sedation and was topped up with Alfaxan IM which provided adequate sedation to place an IV catheter and sample blood. As she began to rouse, a repeat dose of Alfaxan was given slowly IV and she went into respiratory arrest. Ante and post-mortem radiographs were performed (Figure 84).

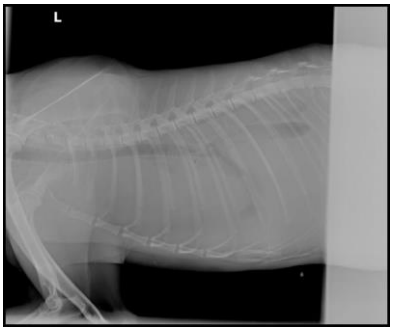


Figure 84: Lateral thoracic radiograph of JALEELO (ITAJU 2004) 29 June 2022.

On 13 July 2022, SATURN (ITAJU 2036) was sedated to perform further diagnostics after deterioration of her neurological symptoms – head tremors, ataxia and suspected seizure activity (Figure 85). Sedation used was a combination of Midazolam and Butorphanol. Blood work, ultrasound and radiographs were performed. Even though full reversal was administered, Saturn did not recover from the sedation and went into respiratory arrest. Emergency intervention was initiated but she did not respond and died naturally.

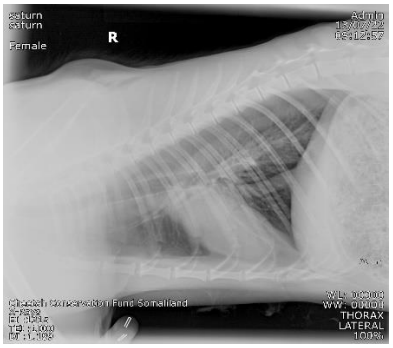


Figure 85: Thoracic radiographs, SATURN (ITAJU 2036), 13 July 2022.

During August 2022, DHIB (ITAJU 2117) was anaesthetised and sedated several times – once for surgical intervention and a couple of times after to replace the urinary catheter. Penile amputation and urinary catheterisation was necessary as the preputial inflammation and swelling lead to stricture formation and the inability to urinate appropriately. Anaesthetic used was a combination of Buprenorphine, Midazolam and Butorphanol as pre-medication, and Alfaxalone was used for induction and maintenance. Sedation used for re-catheterisation was a combination of Butorphanol and Dexmedetomidine.

On 28 August 2022, DUMA (ITAJU 1939) was sedated to perform further diagnostics following upper respiratory signs and suspected laryngeal foreign body. He was sedated with a combination of Butorphanol and Dexmedetomidine; Alfaxalone was used for induction. Oral evaluation, radiographs and blood work was done. Reversal was administered and recovery was uneventful.

During September 2022, FREYA (ITAJU 1999) was sedated for further diagnostics following the acute onset of abdominal distension (Figure 86). He was sedated with a combination of Butorphanol, Dexmedetomidine and Midazolam, and maintained with Propofol. Blood work, radiographs, ultrasound and abdominocentesis was performed. On 30 September, surgical intervention was necessary following the deterioration of his condition – pre-medication administered was a combination of Butorphanol, Dexmedetomidine and Midazolam; and he was induced and maintained on Alfaxalone. An exploratory laparotomy was performed as an unknown mass was noted in his abdomen; the mass turned out to be a foreign body in the stomach and a gastrotomy was done to remove the foreign body. During intubation, Freya experienced an anaphylactic reaction to the local anaesthetic (Lignocaine) used for intubation – he recovered after emergency intervention was initiated. Surgery was successful but during anaesthetic recovery he went into cardiac arrest – emergency intervention was started but was unsuccessful and he died naturally.

Figure 86: Abdominal radiographs, FREYA (ITAJU 1999), 22 September 2022.

Every 3 months, DARTH (ITAJU 1984) is sedated for diagnostic radiographs to monitor his right femoral head and monitor for degree of luxation (Figure 87). Sedation is done using a combination of Butorphanol, Dexmedetomidine and Midazolam. Once radiographs are done, reversal is administered and recovery is smooth and uneventful.

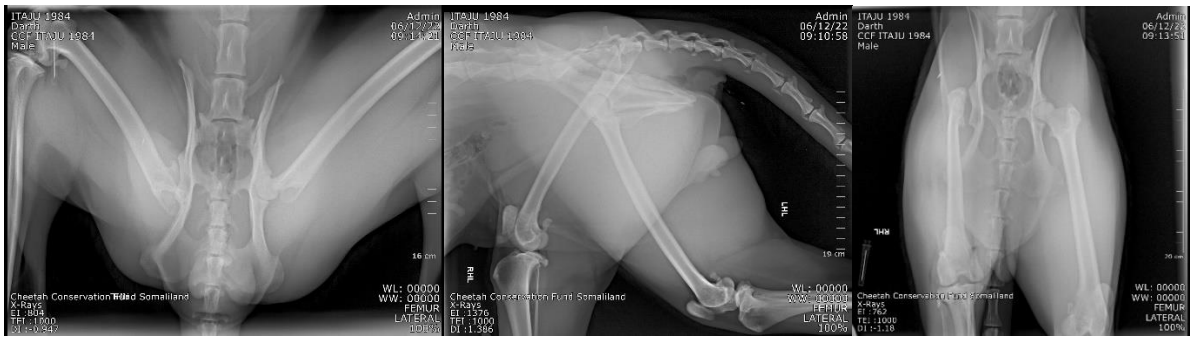


Figure 87: Pelvic radiographs, DARTH (1984), 6 December 2022.

On 9 November 2022, OLIVIA (ITAJU 2029) was sedated/anaesthetised for further diagnostics as her condition was deteriorating. A CSF tap and analysis was planned which necessitated pre-medication sedation and anaesthetic. Sedation used was a combination of Dexmedetomidine, Ketamine and Diazepam. Sedation was smooth but complete anaesthetic was needed for the CSF tap and Alfaxalone was used to induce anaesthesia and reach a deeper plane of sedation. Before the CSF tap was done, Olivia unfortunately went into respiratory arrest and died naturally soon after.

On 14 November 2022, BETTY WHITE (ITAJU 2087) was sedated for a proper clinical examination and injectable treatment following a disease process. Betty is not very friendly and cannot be approached or physically examined voluntarily, and had to be sedated. She presented with third eyelid protrusion and diarrhoea (suspected viral flare up) and needed injectable medical treatment as she became anorexic and would not eat the oral medication offered. Sedation was a combination of Midazolam, Ketamine and Butorphanol – unfortunately, the Midazolam did not have the desired effect expected (noted to be expired) and therefore she experienced more Ketamine effects during pre-medication; additional Diazepam was necessary once she could be approached to correct the unwanted Ketamine effects (muscle tremors, increased heart rate and respiratory rate). She was closely monitored throughout recovery and the following couple of days, but recovery was uneventful.

On 22 November 2022, ELBA (ITAJU 2009) was sedated following the deterioration of her condition and the plan to perform an exploratory laparotomy (Figure 88). Elba presented for upper respiratory tract symptoms, tachycardia and tachypnoea, and not responding to medical treatment or management. Sedation was a combination of Morphine and Dexmedetomidine, and induction and anaesthesia was maintained on

Propofol. Surgery was unproductive and only mesenteric lymph nodes looked abnormal (FNA samples taken); a naso-gastric tube was also placed to start frequent gastric feeding. Due to the abdominal surgical approach, she was on a MLK constant rate infusion (Morphine, Lignocaine, Ketamine) as multi-modal pain management, and was slowly weaned off this infusion over the course of the evening and next morning after surgery. Recovery from anaesthetic was smooth, slow and satisfactory. Unfortunately, follow up blood work after surgery indicated further deterioration – significantly elevated kidney and liver values, and worsening of infectious process – suspect sepsis. She went into respiratory arrest the next morning, and even after several attempts of emergency intervention, she passed away naturally.

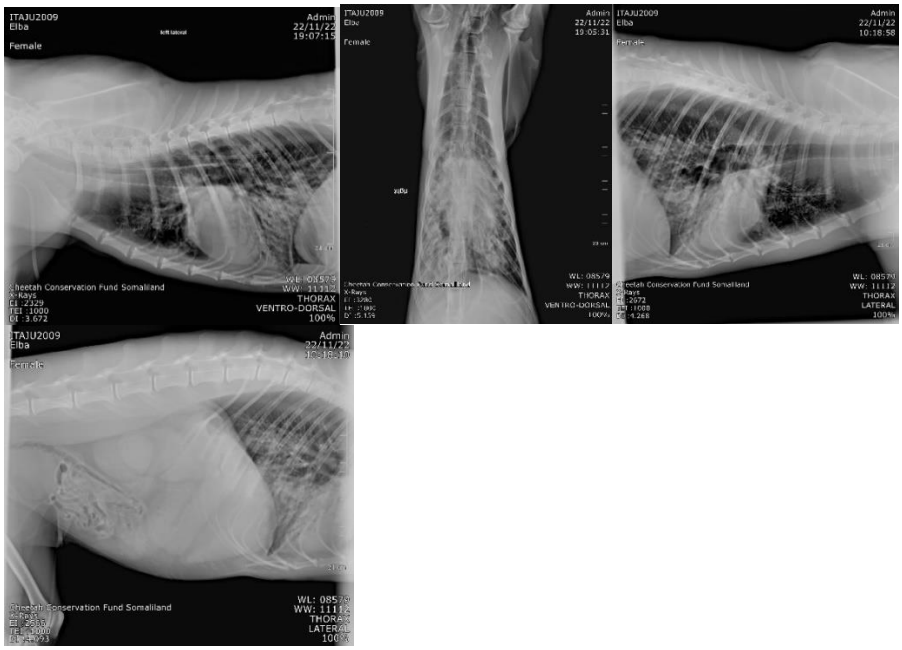


Figure 88: Thoracic and abdominal radiographs, ELBA (ITAJU 2009), 22 November 2022.

On 11 December 2022, SIF (ITAJU 2001) was sedated following the need for an oral foreign body removal – she presented with a piece of cartilage or ligament stuck in the maxillary palate. Sedation was done using a combination of Butorphanol, Dexmedetomidine and Midazolam. The piece of cartilage/ligament was easily removed and she was reversed with Atipamazole and Flumazenil. Recovery was smooth and uneventful.

Medical Examinations Without Anaesthesia

As part of the daily routine, the veterinary team (with the help of keepers) conducted visual evaluations of all animals from a distance. Most of the animals are approachable and will allow human contact, in turn allowing the veterinary team to perform basic close-up visual evaluations, hands-on clinical examinations, administer vaccines, give treatments and collect blood without the necessity of sedation/anaesthesia. Provided that the animals allowed it, hands-on physical examinations were performed on animals that were reported to have any clinical, physical or behavioural abnormality. These examinations were also carried out in sick individuals when close monitoring was required to adjust treatment plans or to perform any other diagnostic testing.

Depending on the individual temperament and the type of medical procedure, some of the animals that do not allow physical contact were examined and treated by using protected contact – through a fence, in a training crate or a squeeze cage. Keepers and the veterinary team are working hard to accustom and train individuals to undergo conditioning for medical purposes, such as physical examinations, voluntary blood collection, radiographs and voluntarily enter the squeeze cage. Cubs are regularly familiarised with being touched in the neck, shoulder area, pelvic area and base of tail while feeding in preparation for injections or medications needed to be administered in future.

During the period of January to December 2022, the following management procedures have been completed:

- monthly ectoparasite control – either topical Frontline, or injectable Ivermectin
- regular oral endoparasite control every three to four months depending on the pooled faecal sample analysis of each enclosure (endoparasite control products are alternated with each use in order to reduce the risk of resistance to one product)
- initial and booster vaccinations of FVCRP and Rabies for all new arrivals
- annual booster vaccinations of FVCRP and Rabies for all resident animals
- initial bloodwork and disease testing (FIV/FeLV) for all new arrivals
- annual bloodwork on all resident animals

Chronic conditions in resident population

Orthopaedic cases

DARTH (ITAJU 1984), YAKU (ITAJU 2042), PACHA (ITAJU 2044), DELPHINA (ITAJU 2047) and JASIRI (ITAJU 2121) all present with intermittent lameness or gait abnormality associated with the previously diagnosed absent right femoral head – suspected to be due to metabolic bone disease, nutritional imbalances and/or genetic component. Radiographs indicate varying degrees of luxation and deviation of right femur. Management includes daily supplementation of calcium, joint supplements and short courses of anti-inflammatories if limping is associated with inflammation and pain. Regular monitoring radiographs are taken every 4-6 months.

AMATERASU (ITAJU 2043), MARS (ITAJU 2034), DUMA (ITAJU 1939) and SIF (ITAJU 2001) all had previous pathological fractures that have healed. Traumatic fractures suspected to be due to metabolic bone disease and previous nutritional deficiencies/imbalances. Management includes daily supplementation of calcium and joint supplements.

JANET (ITAJU 1950) is currently on chronic management for a failed surgical implant (plate, screws and wires) and non-union of fracture fragments after a traumatic/pathological left hindlimb calcaneous fracture in September 2021 (Figure 89). She presents with continuous lameness/limping - severity of which depends on her activities during the day (the more active she is during the day – running/jumping – the more severe her lameness following the activity). She is still weight-bearing with mild "dropping of the hock". Regular conscious monitoring radiographs are being done every 1-2 months to monitor the loosening of the screws and wires. Persistent seroma formation over implant or wire is present on the lateral side of the fracture site. Her case report was sent to several wildlife surgeons for second opinions on the management plan for Janet – second opinions indicated the need for the removal of the implant, and the likelihood of osteomyelitis. Current chronic management includes daily supplementation of calcium, joint supplements, and short-term courses of anti-inflammatories when her lameness/limping worsens. Planned management for early next year (January 2023) is the removal of the plate/screws, bacterial culture and antibiogram of implant, and long-term antibiotic course (8 weeks). Alternatively, ankylosis or fusion of the joint is another management plan, if the fracture site does not heal appropriately following the removal of the implant and long-term antibiotic course.

Figure 89: Hind limb radiographs, JANET (ITAJU 1950), 18 November 2022.

In the middle of December 2021, different animals from different enclosures in Safe House 2 presented with varying neurological and orthopaedic clinical signs with possible multifocal involvement. Of the eight affected individuals, four died during the course of the disease or several months afterwards, ORION (ITAJU 1936) and KARIIR (ITAJU 2005) still show chronic neuromotor deficits, and the other two haven't shown any neuromotor deficits. Orion and Kariir demonstrate continued hyperreactivity, hypermetric gate and low carriage however this has significantly improved in both since initially noticed, Kariir markedly more than Orion. Chronic management includes daily supplementation of calcium and Vitamin B-complex. Significant improvement in gait and movement has also been noted during a multimodal pain management trial with Gabapentin and non-steroidal anti-inflammatories (Meloxicam). Therefore, both Orion and Kariir are on chronic Gabapentin, with the additional use of non-steroidal anti-inflammatories for Orion. Regular blood work is done on both to monitor chronic non-steroidal use, and no abnormalities have been detected.

Dietary/Digestion cases

HANUMAN (ITAJU 2011) has demonstrated occasional hyporexia, vomiting and diarrhea with undigested meat. Treatment with oral Toltazuril or Pantrusil subcutaneously, in conjunction with cerenia, has successfully treated this individual.

DARTH (ITAJU 1984) has occasionally shown firm cranial abdominal distention shortly after transitioning feeding chunk to slab meat. No other clinical abnormalities have been noted and a quick abdominal ultrasound was within normal limits. He continues to act normally, with a good appetite and normal score 3 stools.

CLOUD (ITAJU 1836) was noted to have significantly elevated liver values. Further investigation indicated a dietary cause and a diet trial concluded that the use of camel meat for daily meals would worsen the liver pathology. Diet plan was changed to include the use of goat only. Regular blood work is done to monitor liver values and a significant decrease in liver values have been noted on a goat-only diet. Chronic management includes daily supplementation of liver support – Essentials, Silmaryn and SAMe. Once liver values are back to normal, liver support will be decreased and liver values will be monitored every 3-4 months.

CHARLEY (ITAJU 2097) presented with chronic diarrhoea and varying degrees of inappetence during the course of a few months. Blood work and faecal analysis (flotation and smear) indicated no clinical abnormalities and therefore it is suspected to be dietary related. Currently he is on a diet trial where only goat is offered during meal times, and he is tolerating the new diet very well. Additional management includes daily probiotic and lysine supplementation.

BETTY WHITE (ITAJU 2087) has also recently presented with chronic diarrhoea, suspected to be dietary related. She will be started on a goat-only trial and monitored closely with repeat bloodwork and faecal analysis. Additional management includes daily supplementation of probiotics and lysine. Psyllium will be added if diarrhoea continues even after goat-only trial.

Chronic diarrhea of score 3-4-5 are seen in some enclosure groups of Safe House 2. These individuals have been put on 1 month course of metronidazole as well as a course of metronidazole, tylosin and psyllium fibre. No significant improvements have been noticed. It is suspected that this is associated with stress and/or enteric coronavirus.

Viral Cases

YAKU (ITAJU 2042) has been struggling with viral facial dermatitis (suspected to be de to herpes virus) for several months. At his worst, he had severe alopecia, crusting and erythema of his nose, muzzle and neck areas – leading to secondary bacterial infections and the need for additional antibiotics. Currently, his dermatitis is stable with new hair-growth and healing of previously crusted or infected areas – presenting only for the occasional viral flare-up (mild erythema, crusting, alopecia). Chronic management includes daily Famcyclovir (anti-viral), Omega 3, Vitamin E and Vitamin B-complex. Additionally, he receives daily cleaning of his muzzle and neck area with saline gauze (soft cleaning) and application of Acyclovir cream and Zinc oxide/acriflavine ointment.

Unspecified Cases

Syncope signs, especially associated during feeding, has been noted by keepers to have affected YAKU (ITAJU 2042), NASIIB (ITAJU 2071) and JABARI (ITAJU 2068). Each have presented at least once and according to keepers, the individual would start eating, fall over (become unconscious), have a small fit or short seizure-like episode (of very acute and ultra-short duration), and then recover and go back to eating before the keeper can intervene. Physical examination following these episodes show no abnormalities. Suspect vasovagal syncope? Cause unknown but these individuals are continued to be closely monitored.

Medical conditions in resident population

Daily check-ups and evaluations of all resident population animals are summarised below. Individual cases are also indicated – only medical conditions are mentioned, individual treatments or medical interventions are available on ZIMS under each individual profile and medical history since May 2022 and we are currently working on updating the older records.

January
SH1

- Amaterasu – weight bearing all 4 limbs, improved further since last update – now allowed supervised free roam/play with other cubs. Monitor as low-grade lameness has occasionally been observed after exercise

- Pacha – conscious radiograph taken of pelvis, V-D - reason for radiograph was due to tilted appearance of pelvis. Right femoral head absent, same as her brother YAKU. Does not present pain or discomfort in her gait.

- Delphina (Shoulder) – conscious radiograph taken of pelvis, V-D - reason for radiograph was after keeper observed unusual gait. Right femoral head absent. Currently on 7 day trial meloxicam to assess if gait improves. Requires long-term monitoringUpper respiratory infection signs affecting the majority of the house to varying degrees – suspected to be Calicivirus-related

SH2

- Improvement to faecal scores across all groups since stopping gastritis treatment on 01-Jan-2022 (amoxicillin, clarithromycin, omeprazole given for 10 days) and starting Protexin Soluble probiotics. Consistently producing faecal scores 3. Feeding to increase weight for all animals, to correct for weight loss experienced throughout December – gradually building diet up from mince and chunk

meat, aiming to return to meat on bone in the next 2-4 weeks, faecal scores being monitored. Continuing Protexin Soluble probiotics until the end of January minimum.

- Freya group, Mist, Moon and Star with bilateral protruding nictitating membranes improvements and sporadically diarrhoea.

- Orion – improving (moves around better, good appetite, skin lesions healing), blood results completely normalised; antibiotics stopped, Tramadol ongoing current dose, SAMe ongoing current dose, iron today last injection, EPO half dose from today, ointment perianal bid whenever possible; weekly blood examination every thursday, can have daily yard access for a short period of time

SH_3

- Ayaan, San, Zelda, Teresa, Olivia with bilateral protruding nictitating membranes and sporadically diarrhoea.

- Shamsi- abscess wound on R side neck healed, has completed 21 days amox/clav

- Pluto- lesion on elbow improving.

- Idris- lesion near right eye growing.

- Amir- Was anesthetize for an oral exam and dental x-rays (28-Jan-21.

February
SH_2

- Freya group most of bilateral protruding nictitaning membrane has improved but Soil still with diarrhoea very often.

- Janet. lateral x-ray of affected limb revealed non-union of calcaneal fracture, continuing restricted exercise in shift, weight bearing on affected hindlimb varies day to day. No sign of infectio

- Orion – slight deterioration observed in comparison to last week (moves less, slightly more painful when moving, not "running" as last week, light hyper sensibility?). Nevertheless, he is with good appetite, his skin lesions are healing and is recovering his hair loss, blood results completely normalized; Tramadol ongoing current dose, SAMe ongoing current dose, EPO discontinued (mucous ulcers in lips and noise was present). Decide to stop predator powder and supplement vit B and Calcium.

SH_3

- Ayaan, San, Zelda, Teresa, Olivia with bilateral improving nictitating membranes and sporadically diarrhoea.

- Darth limping

- Amir loss of canine 204

- Idris, Mars and Pluto with alopecia possible by fungi infection improving

March
Summary of necropsies (numbers).

- Hepatomegaly, rounded edges, abnormal coloration (fatty liver-yellow).

- Generalize enteritis
- Congested lungs were found (In two cases)
- Gastric ulcer (In one case)
- Encephalic vessels enlarged (In one case)
- Pericardial effusion (In one case)
- Peritoneal effusion (In one case)

Cub "D"

- Swelling larynx, including edema of the area. Cyanotic color found in several organs, especially the caudal part of the lungs. Not deformity of the trachea rings and not bruising nor hematoma found in the neck area. Liquid yellow-brownish content found in the stomach.
- Possible cause of death: asphyxiation

SH1

- Intermittent decreased appetite with Amaterasu, Delphina, Dhiriin (Mince and chunks have been given)
- Amaterasu – Low-grade lameness is present, no changes since last update.
- Pacha – Moderate alopecia on top of L eyebrow. Consider starting antifungal topical cream.
- Las - some vomiting and intermittent inappetence w/ faecal score 3-5. Treated with cerenia and metoclopramide as needed. Decreasing meal amounts and adding infacol to meals for the next couple days or so depending on response.
- Sool group. Some recent GI issues (3/4/5 faecal scores with mucous and blood few times, rare vomiting)- monitoring for continued or worsening issues, better today and yesterday
- Sanu- mild limp RF leg, group being closed in holdings at night and Sanu getting 5 day course of Meloxicam.
- 6 - 9, 10, 11, 13 intermittently inappetence, group with 3-5 BMs. Some vomit with undigested meat found in holdings the past two mornings. No vomiting observed throughout the day. 9, 10, 11, 13 being treated with SC fluids, Cerenia & Metoclopramide as needed. Group still on probiotics daily.

SH2

- All SH2- intermittent diarrhea improving. Mostly score 3's, with intermittent 4-5s (mostly in Storm & Andromeda groups)
- Kariir- improving, hypermetria still present.
- Orion- Showing improvement (mobility improving, appetite good, pain levels fluctuating- but improving overall, skin around perianal area healing nicely and fur growing back nicely.)
- Janet- stable, no changes. 0.3 Janet group moved to Apollo's old enclosure while construction work ongoing
- Emmet- wound on nose healing well, almost fully healed.

- FFSS & Plants- undigested meat seen in stool, plan to avoid chunk and feed more meat on bone.

SH3

- San- Protruding 3rd eyelid improving. Score 0. Wound on leg healing nicely.
- Teresa- Protruding 3rd eyelid improving, score 0. Wound is on healing process.
- Darth-monitoring mild limp on right hind limb. Joint supplements given daily.
- Mars- skin lesion on nose is stable, some fur growing back.

April
SH2

- All SH2- intermittent diarrhea improving. Mostly score 3's, with intermittent 4-5s (mostly in Storm, Andromeda and FFSS groups)
- Kariir- improving, hypermetria still present.
- Orion- Showing improvement (mobility improving, appetite good, no apparent pain
    - Small wound under left eye, suspect 2o to trauma – no tx, not bothersome, healing
    - Leaving out with group overnight - no issues so far
- Storm/Leo/Duma – on metronidazole trial, stools 3-4-5 score
- Andromeda/Libbu/Kurro – on metronidazole trial, stools 3-4-5 score
- Janet- started low impact walking, increased lameness to 8/10 for 4-5 days post exercise.
- increasing walking to every 3 days, seems to be tolerating well
- FFSS – ongoing d+ scores 3-5, continue metronidazole, psyllium and tylosin trial

SH3

- Upper respiratory infection signs affecting the majority of the house to varying degrees – suspected to be Calicivirus-related

May
SH2

All SH2- intermittent diarrhea improving; on probiotics daily longterm. Mostly score 3's, with intermittent 4-5s (mostly in Storm, Andromeda and FFSS groups)

Occasional sneezing noted in entire house, unclear who, no further upper respiratory signs

- Kariir- Improving, hypermetria still present.
- Orion- Showing improvement (mobility improving, appetite good, no apparent pain)
- Jaleelo - 1 day tachypnea, dullness, anorexia, v+ undigested food (r/o pyrexia 2o to URI) - unable to get diagnostics/fluids - gave oral cerenia, managing on half diet for two days - awaiting fecal sample

- Janet- continued daily monitored enclosure access with 5-10 minutes walking in afternoon without others in group to reduce risk of jumping/running/roughhousing

- Margarita - mild bilateral elevated nictitans OU (grade 1 / 4); doing well otherwise

- Faduma - some sneezing, no other c/s

- Hanuman - responded well to coccidia treatment, back to normal

SH3

- Upper respiratory infection signs accompanied with Hair loss, mouth and tongue ulcers affecting the majority of the house to varying degrees – suspected to be Calicivirus-Herpes virus related

June
SH3

- Upper respiratory infection signs accompanied with Hair loss, mouth and tongue ulcers affecting the majority of the house to varying degrees – suspected to be Calicivirus-Herpes virus related

- C4 Azaar group- yaku taking longer to recover, eyelids elevated

- C5 Idris group - chewed up scrubs 12 days ago. V+ noted Monday and immediately eaten by group. Sneezing in group noted, Lysine restarted

- Mars - exaggerated swallowing Monday evening, has been "off" for 4-5 days.

- C6 Bagheer group- Ongoing bullying of Serge - superficial wounds, no punctures

July
SH1

- Upper respiratory infection signs affecting the majority of the house to varying degrees – suspected to be Calicivirus-related

- C2 and C4 enclosures have healing oral ulcers

- CHARLEY: presented with bloating and diarrhoea

- ECHO and HANI: presented for inappetence and abdominal discomfort

- GAMMA, HALO, RUHI and HAKIM: presented for intermittent inappetence, diarrhoea and abdominal discomfort – suspect dietary-related

SH2

- MOONLIGHT and LITTLE STAR: presented for diarrhoea, inappetence and vomiting – suspected due to coccidial infection

SH3

- Upper respiratory infection flare-up affecting the majority of the house – suspected to be Calicivirus related

- C1 enclosure: presented with protrusion of third eyelids; OLIVIA also has serous nasal discharge; faecal scores poor – 4's and 5's; SATURN presented with neurological decline and subsequent death following sedation for further diagnostics

- C2 enclosure: poor faecals – 4's; Zero – third eyelid protrusion

- C4 enclosure: SERGE and SHAMSI presented for third eyelid protrusion and sneezing; also experiencing hormonal flare and numerous fights between enclosure mates

- C5 enclosure: large piece of material found in faeces; AMIIR – presented for facial erosions (suspected due to Herpesvirus); MARS and PLUTO: presented for bloating

- C6 enclosure: AZAAR presented with nasal discharge and facial erosions (suspected due to Herpesvirus); YAKU presented for third eyelid protrusion and facial erosions (suspected due to Herpesvirus)

- C7 enclosure: PACHA and DHIIRIN presented for third eyelid protrusion; AMATERASU presented for intermittent, transient lameness; faecal scores poor – 4's and 5's

August
SH1

- HATARI: presented for diarrhoea and bloating – suspect due to diet change

- DHIB: presented with prepuce swelling and inflammation, stranguria and probable urethral stricture – humanely euthanased

- MAROODI: presented for diarrhoea and became hypoglycaemic; died naturally

- GAMMA: presented for inappetence and diarrhoea

SH2

- FADUMA: presented with mild left hindlimb lameness

- MOONLIGHT and LITTLE STAR: chronic diarrhoea even after coccidial treatment – suspect coronavirus? Started psyllium but no improvement

- MIST: salivary stain on distal tail – suspected due to allogrooming or stress?

- DUMA: honking cough, exaggerated swallowing after eating – suspect oral/laryngeal foreign body; examined but nothing found

SH3

- Upper respiratory flare up still present – third eyelid protrusion, sneezing, and diarrhoea

- ELBA: diarrhoea still present even after coccidial treatment; starting metronidazole trial

- OLIVIA: flare up of viral meningioencephalitis

- SALIM, SAHMIYE, NASIIB and LORENZO: third eyelid protrusion

- JABARI: small superficial wound

- KAISE: presented for diarrhoea

- C7 enclosure: majority of group presenting with third eyelid protrusion and diarrhoea; DELPHINA presented with diarrhoea and on faecal analysis, coccidia was noted; coccidial treatment started on whole enclosure; BISHAARO – presented for protrusion of third eyelids

September
SH1

- Viral flare up encountered over majority of enclosure – sneezing, third eyelid protrusion and diarrhoea (suspected Toro virus?)

- HATARI: presented with constipation

- GAMMA: coccidia positive on faecal analysis

- BETTY WHITE: coccidia positive on faecal analysis

- RUHI, DELTA, ECHO, BADIA, BASIMAH: presented with third eyelid protrusion and diarrhoea of varying degrees

SH2

- FREYA: presented with abdominal distention and peritoneal effusion

- CLOUD: tapeworm noted in faecal analysis; also presented for inappetence of 3-4 days duration

- MICKEY: presented with bloating and inappetence

SH3

- Upper respiratory viral infection flare-up still present

- C3 enclosure: Dipylidium and coccidia noted in faecal analysis – treatment started

- C5 enclosure: fighting occurring between enclosure mates; ASTUR presented with diarrhoea and inappetence

- C6 enclosure: diagnosed with coccidia on faecal analysis; treatment started

- C7 enclosure: presenting with chronic diarrhoea and third eyelid protrusion; DHIIRIN and PACHA presented for facial lesions

October
Staff House cubs

- NEWTON, JOHN CHEETO, JASIRI: presented with diarrhoea and vomiting – Clostridium diagnosed on faecal analysis

SH1

- Viral flare up still present

- HATARI: presented for undigested meat in faeces and diarrhoea

- ABSAME, CHARLEY and HAKIM: presented for third eyelid protrusion and diarrhoea of varying degrees

SH2

- Poor faecal scores across majority of house – suspected to be cause of viral flare up
- DJ: presented with third eyelid protrusion and diarrhoea
- KURRO group: presented with diarrhoea; KURRO: suspected facial lesion
- KARIIR group: presented with diarrhoea
- ANDROMEDA group: presented with third eyelid protrusion and diarrhoea
- MARGERITA: presented with a suspected facial lesion

SH3

- Majority of the sub-adults presented for regurgitation/vomiting and diarrhoea (suspect dietary related and diet trial started)
- SERGE: presented with lameness/limping after an altercation with other enclosure mates
- AMIIR: presented with alopecia
- C6 enclosure: presented with alopecia of varying degrees; YAKU presented with bloating and worsening of his viral facial lesions
- C7 enclosure: presented with alopecia of varying degrees (especially BISHAARO); PACHA presented for lameness/limping

November
Staff house cubs

- FAYSA: presented with respiratory signs – coughing (suspect viral, but treated for possible secondary bacterial infection due to weak immunity before deterioration)
- SHUKRI: presented with diarrhoea and vomiting (suspect bacterial infection)

SH1

- Viral flare up still present but decreasing in severity
- C2 enclosure: last to present with third eyelid protrusion and diarrhoea; BETTY WHITE was the worst affected in the group and required more intensive treatment and intervention
- C4 enclosure: presented with diarrhoea – Clostridium diagnosed on faecal analysis (suspected due to goat meat fed; same meat fed that was fed to the Staff House cubs)

SH2

- Suspected facial lesions/alopecia in the following individuals or groups:
    - KURRO – still present but stable
    - MARGERITA - still present but stable
    - JANET - still present but stable

    - JOHNY and MICKEY
    - SERGE and MAJOR
    - MIST
    - STORM group
- Upper respiratory signs – third eyelid protrusion noted in the following individuals or groups:
    - SOL and KARIIR
    - MOONLIGHT and LITTLE STAR
    - FADUMA and JANET
- CLOUD: presented with elevated liver values

SH3

- Upper respiratory viral signs and symptoms noted spreading throughout whole house (different signs to Calicivirus infection – nasal discharge, sneezing and honking/laryngeal cough, no third eyelid protrusion); suspected another viral presence? Results pending (not COVID-19 or Corona virus)
- Undigested meat and diarrhoea still present – especially sub-adults; still on diet trial (including more goat and carcass in diet)
- OLIVIA: presented for deterioration of her neurological condition; died naturally following anaesthetic for further diagnostics
- ELBA: presented for deterioration of her condition following upper respiratory infection and suspected secondary bacterial infection; died naturally after not responding to intensive medical interventions and treatments
- AZAAR: presented for bloating

December
SH1

- NEWTON, JOHN CHEETO and JASIRI: presented for respiratory signs – sneezing and coughing; also presented for diarrhoea and bloating – Clostridial infection diagnosed on faecal analysis; JASIRI – presented with liming/lameness – right femur head absorption
- FAYSA and SHUKRI: presented for bloating, diarrhoea and vomiting – Clostridial infection diagnosed on faecal analysis
- CHARLEY: presented for diarrhoea and inappetence – suspected foreign body and a piece of undigested goat rib noted on radiographs; he vomited it up the next day and was back to normal appetite afterwards
- HAKIM: presented with inappetence – suspected due to over-eating
- LEYLO: piece of broken molar noted in enclosure; suspect LEYLO but no intervention yet as she is eating normally without any pain

SH2

- Suspected facial lesions and third eyelid protrusion improvement

- DJ group: presented with diarrhoea; no abnormalities on faecal analysis; suspect either viral flare up or dietary

- STORM group: presented with diarrhoea; no abnormalities on faecal analysis; suspect either viral flare up or dietary

- KURRO: facial lesion still present but stable; presented for regurgitation - associated with medication administration in meat

- MEEKO: presented for inappetence – diet related as he does not eat when goat offered, only camel; slowly introducing goat

- JANET, FADUMA and DUMA: facial lesions still present but stable

- SERGE and DUMA: presented with upper respiratory viral infection signs – nasal discharge, sneezing and honking/laryngeal coughing

- SIF: presented for piece of cartilage stuck in maxillary palate

- HANUMAN: presented for ocular discharge and blepharospasm

SH_3

- Some undigested meat and diarrhoea still present but much improved from previous months

- Sneezing heard over majority of house – no intervention necessary as no other respiratory signs noted

- DELPHINA: presented for lameness and limping – right hindlimb femoral area inflamed and painful on palpation

- SAHMIYE: presented for piece of cartilage/ligament stuck on canine – able to remove without sedation

- LORENZO: presented for diarrhoea and inappetence – Clostridial infection diagnosed on faecal analysis

- C7 enclosure: GASHAAN and JABARI presented with regurgitation – suspected due to over-eating as normal appetite present the next day; Jabari: wound present on left lateral abdominal area

Gastrointestinal conditions

Gastrointestinal (GIT) and GIT-related system conditions have been a common problem experienced throughout and has become concerning. All the different safe houses to varying degrees have presented with GIT and GIT-related issues – regurgitation, vomiting, diarrhoea, poor faecal scores (scores of 4's and 5's, mucous and/or blood present), undigested meat in faeces, bloating/abdominal distension, abdominal discomfort, inappetence/anorexia, and delayed gastric emptying. GIT-related abnormalities that have been noted recently are significantly increased liver values, especially from otherwise healthy animals, that indicate acute liver injury. All the mentioned clinical signs/symptoms can be ascribed to a gastritis diagnosis.

Causes of gastritis can be attributed to systemic disease (viral or bacterial), ulcerogenic or irritant medication, gastric foreign bodies, internal parasites, reaction to bacterial overgrowth, and/or dietary intolerance.

Several of the abovementioned causes have been investigated during the last couple of months and the following has been noted:

- Viral infections get special mention here because systemic viral infections can cause GIT abnormalities - these infections are usually accompanied by other systemic and/or mucosal infection signs and symptoms (ie. sneezing, nasal discharge, third eyelid protrusion, conjunctivitis, oral ulcers), and habitually follow a progression with individuals and/or groups showing recovery over a few weeks with improvement in faecal scores; out of interest, Coronavirus titers are done in Glasgow annually (Table 37 and Table 38).

- For the majority of the chronic diarrhoea cases - CBC, serum biochemistry and blood smear analysis are usually within normal limits suggesting that there is no systemic disease present.

- In the few cases where liver values (ALT, ALP, total Bilirubin) were considerably increased (ie. CLOUD), a change in diet from camel to goat-only produced significant decreases to those liver values and all values were decreased to within normal limits.

- Faecal analysis (faecal wet prep, faecal flotation and faecal smear) is performed on each abnormal faecal score or diarrhoea, and in the majority of cases, no internal parasites were noted – no worm eggs, larvae or coccidial oocysts.

- If internal parasites are diagnosed (ie. NEWTON, JOHN CHEETO, JASIRI – pooled sample, YAKU – live tapeworm proglottid noted on perineum), a parasiticide/dewormer is administered to the whole enclosure. If coccidia is diagnosed, anti-coccidials are only administered if the infection is accompanied with clinical signs such as diarrhoea over a couple of days duration, and if a significant number of oocysts are present on faecal flotation. To date, fortunately no other internal parasite infections (ie. Giardia, Trichomonas) has been diagnosed.

- In the cases where faecal smears diagnosed Clostridium infection (ie. NEWTON, JOHN CHEETO, JASIRI, CHARLEY, HATARI, LORENZO, VICKI, AYAAN), it was noted that goat was fed previously. A 7 to 10-day course of Metronidazole is administered and improvement in faecal score is noted almost immediately.

- Other than vitamin/mineral supplements and probiotics, no other irritant medication has been administered to these animals.

- If gastric foreign bodies are suspected (ie. FREYA, CHARLEY), abdominal palpation and radiographs are done to determine the presence. Fortunately, surgical intervention was only necessary in one of the gastric foreign body cases.

- Hay present in the faeces has been a common occurrence - presumed to be because of the already-present GIT discomfort, causing the pica.

- Several antibiotic and anticoccidial trials (ie. Metronidazole, Amoxycillin/Clavulanic acid, Toltrazuril) have been tested on groups with consistent/chronic diarrhoea or presence of undigested meat (ie. DJ GROUP, STORM GROUP and PACHA GROUP); unfortunately, if any change in faecal score was noted, it was of short duration.

This therefore indicated the need to review and correct the other causes of gastritis – especially those related to diet - dietary intolerance and reaction to bacterial overgrowth. Chronic gastritis affects the physiological function of the gut - disrupting the gastrointestinal microbiome and causing bacterial overgrowth (some producing toxins). This in turn affects absorption of nutrients from the GIT causing malabsorption/maldigestion. The gastrointestinal microbiome is also inextricably linked to general health and an effective immune system – an abnormal microbiome affects the immune system, leaving animals more vulnerable to other infections.

Diet management modifications were introduced where the current diet and vitamin/mineral supplementation was changed to a more suitable and sustainable cheetah diet – one that the cheetah is genetically programmed to handle and much more similar to the one for wild cheetahs.

The following modifications were introduced in order to ensure that the GIT had enough time to adapt appropriately to diet changes, and to ensure that no more dietary indiscretions, dietary intolerances and gut upsets are caused by these changes, the changes occurred over a 6-8 weeks transition period:

- Decreasing the feeding frequency and introducing lean days during the feeding week to allow the stomach time in between feeds to process the meal appropriately (especially after feeds where carcasses are offered); currently, a 7-day feeding week has 2 lean days and 5 days where feeding requirements are offered

- Lean days consist of offering 100-150 grams of organs (lungs, heart, liver, kidneys); because organs are vitamin/mineral rich, no other carnivore supplementation is offered on those days to try and prevent over-supplementation

- Increasing the amount of carcass/bone fed during the week and transitioning to a majority goat diet – 4 times a week goat carcass or bone is offered, and 1 day a week camel bone or meat is offered

- (to note: significant improvement in faecal scores have been noted by all safe houses after goat carcasses are offered)

- Adding more collagen to the diet – including and not removing ligaments, fascia, tendons, tracheas, lungs, diaphragm, blood vessels during meat preparation

- Addition of salt (NaCl) along with the daily supplementation of Predator Powder or Carnivit, to improve and benefit gastric acid production (gastric hydrochloric acid).

Table 37: Corona virus status of individuals (underlined individuals have presented previously with chronic diarrhoea of varying degrees).

Location	Name	ITAJU	Glasgow Coronavirus results		
			March 2022	April 2022	May 2022
SH1 C1	Absame	2082	-	Negative	Negative
	Charley	2097	-	-	Negative
	Hakim	2113	-	-	Negative
	Halo	2084	-	-	Negative
SH1 C2	Betty White	2087	-	Negative	Negative
	Calla	2089	-	Negative	Negative
	Dahab	2086	-	Negative	Negative
	Idil	2091	Negative	Negative	Negative
	Leylo	2088	-	Negative	Negative
	Myza	2090	Negative	Negative	Negative
SH1 C4	Badia	2094	-	-	Negative
	Basimah	2093	-	Negative	Negative
	Delta	2110	-	-	Negative
	Echo	2111	-	-	Negative
	Hani	2084	-	Negative	Negative
	Ruhi	2115	-	-	Negative
SH2 C2	Kariir	2005	Negative	Negative	Negative
SH2 C6	Major	1996	Negative	Negative	Negative
	Serge	1997	-	Negative	Negative
SH2 C7	Hanuman	2011	Negative	Negative	Negative
SH2 C10	Janet	1950	Negative	Negative	Negative

	Faduma	1958	Negative	Positive	Negative
	Margarita	1964	Positive	Positive	Positive
SH3 C2	Ayaan	2012	Negative	-	Negative
	San	2031	-	-	Negative
	Teresa	2015	Negative	-	Negative
	Vicky	1995	Negative	-	Negative
	Zelda	2033	Negative	-	Negative
	Zero	1994	-	-	Negative
SH3 C3	Amaterasu	2043	Negative	Negative	Negative
	Delphina	2047	Negative	Negative	Negative
	Dhiirin	2046	Negtive	Negative	Negative
	Pacha	2044	Negative	Negative	Negative
SH3 C4	Astur	2007	-	-	Negative
	Bagheer	1981	-	-	Negative
	Cizi	1980	-	-	Negative
	Darth	1984	Negative	-	Negative
	Shamsi	2000	-	Negative	Negative
SH3 C5	Amiin	2027	-	-	-
	Amiir	2028	-	-	-
	Idris	2008	Negative	Negative	Negative
	Link	2032	Negative	-	Negative
	Mars	2034	Negative	-	Negative
	Pluto	2035	Negative	Negative	Negative
SH3 C6	Azaar	2041	-	-	Negative
	LH	2048	-	-	Negative
	Lorenzo	2083	Negative	Negative	Negative
	Sahmiye	2049	-	Negative	Negative
	Salim	2075	-	Negative	Negative
	Nasiib	2071	Negative	-	Negative
	Yaku	2042	-	-	Negative
SH3 7	Bashir	2072	-	-	-
	Bilane	2069	-	-	Negative
	Boqor	2045	-	Negative	Negative
	Gashaan	2070	-	Negative	Negative
	Jabari	2068	-	Negative	Negative

Table 38: Corona status of individuals with chronic diarrhea in Safehouse 2.

Enclosure	Gender/Name	ITAJU	Glasgow Corona Results (Feb 2022)
C2	1.0 Frigga	1998	Positive
	1.0 Freya	1999	Positive
	0.1 Sif	2001	Positive
	0.1 Sol	2002	Positive
C6	0.1 Little Star	1838	Positive

	0.1 Moonlight	1839	Positive
C7	1.0 Johnny	1944	Positive
	1.0 Mickey	1945	Positive
C8	0.1 Janet	1950	Positive
	0.1 Faduma	1958	Low Positive
	0.1 Margarita	1964	Positive
C9	1.0 DJ	1949	Positive
	1.0 Meeko	1960	Positive
	1.0 Rajo	1961	Positive
	1.0 Emmet	1962	Positive
C10	1.0 Leo	1928	Positive
	1.0 Storm	1935	Positive
	1.0 Orion	1936	Positive
	1.0 Duma	1939	Low Positive
C11	0.1 Libbo	1926	Positive
	0.1 Kurro	1930	Negative
	0.1 Andromeda	1938	Positive

Other Nutritional conditions

Due to the frequency of suspected metabolic bone disease and previous nutritional imbalances (ie. right femur head resorption (probable genetic component implicated too) and pathological bone fractures) noted in the resident population, modifications to especially the calcium supplementation was made in conjunction with the above-mentioned diet management modifications.

Additional calcium is supplemented as listed below:

- Even though cubs are weaned from a milk-only diet and slowly transitioned to a meat-only diet, milk replacer powder is still added to their daily meat meals; this should be continued until the cubs are at least 6-8 months of age, and should allow for additional important vitamins/minerals necessary for growth

- At least 3-4 times a week, a goat leg or ribcage is offered to the cubs

- Once a week a whole chicken leg is offered to the cubs to make sure the whole leg is processed and ingested

- Daily calcium supplements are added to those individual orthopaedic cases (ie. YAKU, DARTH, DELPHINA, PACHA, JASIRI, DUMA, SIF, AMATERASU, MARS, JANET)

Oral/Dental conditions

EMMET (ITAJU 1962) and RAJO (ITAJU 1961) were assessed in 2021 for dental disease under anaesthesia. EMMET is missing 304, and 404 has an open dental canal, palate and tongue erosion fracture. RAJO's lower right canine unwrapped with moderate to severe enamel degeneration of several molars and 404 plus adjacent lingual erosion. No further action has been taken and all affected individuals are currently stable and eating well.

LEYLO (ITAJU 2088) is suspected to have a fractured premolar or molar – a piece of premolar/molar was noted in the enclosure and the keeper supposed it to be from Leylo. No further action has been taken as she is currently stable and eating very well.

Oral ulcers were present in many individuals affected by the suspected Calicivirus and Herpesvirus flare ups experienced previously due to their causative pathology. All oral ulcers healed on supportive and supplemental care and treatment. Oral ulcer scars have been noted during oral examinations in anaesthetised individuals (ie. JANET ITAJU 1950).

Third eyelid/Nictitating membrane protrusion

Bilateral protrusion of varying degrees has been seen in multiple individuals, especially during viral flare ups - suspected to be caused by Calicivirus, Herpesvirus or Torovirus (*sp Coronavirus*).

Dermatological conditions

MEEKO (ITAJU 1960) had a raised circular mass of approximate diameter of 1-2 cm on the left side of the chin – mobile firm consistency, within the subcutaneous layer, not attached to other structures noted in 2021. This mass has remained stable.

ABSAME (ITAJU 2082) had a ~3cm diameter circular, alopecic lesion with a crusted border that was presumed dermatophytosis. It was treated topically with Miconazole and resolved within 2 weeks.

YAKU (ITAJU 2042) has been struggling with viral facial dermatitis (suspected to be due to herpes virus) for several months. At his worst, he had severe alopecia, crusting and erythema of his nose, muzzle and neck areas – leading to secondary bacterial infections and the need for additional antibiotics. Currently, his dermatitis is stable with new hair-growth and healing of previously crusted or infected areas – presenting only for the occasional viral flare-up (mild erythema, crusting, alopecia). Chronic management includes daily Famcyclovir (anti-viral), Omega 3, Vitamin E and Vitamin B-complex. Additionally, he receives daily cleaning of his muzzle and neck area with saline gauze (soft cleaning) and application of Acyclovir cream and Zinc oxide/acriflavine ointment.

AZAAR (ITAJU 2041), BISHAARO (ITAJU 2073), DHIIRIN (ITAJU 2046), BASHIR (ITAJU 2072), NASIIB (ITAJU 2071), AMIIR (ITAJU 2028), and KURRO (ITAJU 1930) have presented with facial alopecia and/or facial erythema and/or crusting of varying degrees. Suspected to be due to Herpesvirus infection. All of the lesions improve with after several weeks of supportive treatment (supplementation of Omega 3, Vitamin E, Vitamin B-complex), and specific individuals need additional treatment with daily application of Acyclovir cream and/or Famcyclovir.

Traumatic injuries

SERGE (ITAJU 1997) presented with several superficial wounds in the first semester of the year and with left forelimb lameness and limping in the second semester of the year, following an altercation between him and one of his enclosure mates. Only inflammation was noted after evaluation and palpation of the limb (radiographs taken detected no abnormalities), and the limping got better after a few days of anti-inflammatories. Several altercations and fights have broken out between the males in C4 enclosure – getting more aggressive and serious – and the final decision was made to relocate Serge and Major to SH2.

JABARI (ITAJU 2068) presented with a large laceration/wound on the left lateral lumber spine. Wound was circular and cavitated – with crusting already present but debris noted under crust. Crust removed and wound cavity cleaned and flushed. Excess granulation tissue present, but growing smaller as the wound is healing and closing. Radiographs were taken to ensure that wound is only superficial and not attached to any deeper tissue. Daily cleaning/flushing and application of antiseptic ointment.

Various other little superficial erosions/lacerations have been noted in the resident cheetahs, often a result of rough play with enclosure mates or minor altercations over food. All have been resolved on their own with close observation and minimal intervention.

Infectious diseases in resident population

Feline Coronavirus and FIP

Control of Feline Coronavirus (FCoV) is a daily priority and an ever-present challenge in the handling and intensive management of the resident cheetahs. Biosecurity measures include disinfection of clothes, footwear and hands before and after entering enclosures, deep cleaning with bleach of enclosures at least once a week (this frequency is increased if active infection is suspected), and changing shoes and clothes before entering a different Safe House. Surveillance and monitoring of the animals with regular sampling and testing is essential and done as often as possible - samples for corona virus faecal PCR analysis is collected every second month, and serum has been collected at least once this year for corona virus titre testing.

As the resident population is faced with increasingly crowded housing and stress-related clinical diseases, we are very aware of the risk of the corona virus mutation to Feline Infectious Peritonitis (FIP). Despite all the efforts, one individual has succumbed to FIP. Her case is discussed in Death, Eutanasia and Necropsies section (INDIGO ITAJU 2112). Apart from this isolated case, we have not had any other suspect FIP cases in this year.

Calicivirus, Herpesvirus and Torovirus

Because of the intensive management and close proximity of enclosures to each other, the resident population actively deals with regular viral flare-ups across all enclosures and Safe Houses. These flare-ups are not always confirmed by serology or other diagnostic techniques, due to resource and time constraints (no local laboratories available to test for animal disease), therefore differential diagnosis is based on the clinical signs, presentations, spread and duration of infections. Biosecurity and control measures are in place, as mentioned above, however flare-ups are still expected and management is attempted by frequent supplementation with immune boosters (ie. Lysine, Vitamin B-complex, Probiotics).

The following suspected viral flare-ups occurred in the period of January to December 2022:

- April 2022:
    - SH1 – suspected Calicivirus (upper respiratory infection)
    - SH3 – suspected Calicivirus (upper respiratory infection, third eyelid protrusion, sneezing)
    - SH2 – suspected Calicivirus (upper respiratory infection)
- May 2022:
    - SH1 – suspected Calicivirus (upper respiratory infection)
    - SH3 – suspected Calicivirus (upper respiratory infection, third eyelid protrusion, sneezing)
    - SH2 – suspected Calicivirus (upper respiratory infection)
- June 2022:
    - SH1 – suspected Calicivirus (upper respiratory infection)
    - SH3 – suspected Calicivirus (upper respiratory infection, third eyelid protrusion, sneezing)
- July 2022:
    - SH1 – suspected Calicivirus (upper respiratory infection)
    - SH3 – suspected Calicivirus (upper respiratory infection, third eyelid protrusion, sneezing)

- SH3 C6 (AZAAR group) – suspected Herpesvirus (alopecia, facial erythema, facial crusting)

- August 2022:
  - SH3 – upper respiratory infection still present
  - SH3 C6 (AZAAR group), C7 (PACHA group) – third eyelid protrusion

- September 2022:
  - SH1 C1 (RUHI group): suspected Torovirus (third eyelid protrusion, diarrhoea, inappetence, dehydration)
  - SH3 C7 (PACHA group): upper respiratory signs still present but to a lesser extent

- October 2022:
  - SH1 C4 (CHARLEY group): suspected Torovirus
  - SH2 DJ group, KURRO group, ANDROMEDA group: suspect Torovirus or Calicivirus (third eyelids protrusion, diarrhoea)
  - SH2 MARGERITA group, KURRO group, JANET group: suspect Herpesvirus (alopecia, facial erythema/crusting)

- November 2022:
  - SH1 C2 (CALLA group): suspected Torovirus (last group to be affected)
  - SH2: third eyelid protrusion, facial alopecia still present but stable and improving
  - SH3: unknown viral flare-up? (upper respiratory infection, sneezing, nasal discharge, laryngeal inflammation, honking/dry cough)

- December 2022:
  - SH2 SERGE and DUMA: unknown viral flare-up? (upper respiratory infection, sneezing, nasal discharge, laryngeal inflammation, honking/dry cough)

Canine Distemper Virus

During July 2022, SH3 C1 enclosure experienced particular neurological symptoms that severely affected 2 of the enclosure mates – SATURN (ITAJU 2036) and OLIVIA (ITAJU 2029). Both presented with head tremors, muscle fasciculations, ataxia and seizures of varying degrees. Unfortunately, neither SATURN, nor OLIVIA survived - SATURN died naturally 2 days post presentation and OLIVIA died 4 months post presentation following chronic, intensive management for meningioencephalitis. SATURN's histopathology results are still pending, however OLIVIA's histopathology results diagnosed possible Canine Distemper Virus (CDV) – samples were sent to Onderstepoort Veterinary Faculty for immunoperoxidase staining, unfortunately results were inconclusive and CDV was not ruled in or out.

Even though CDV is primarily a canine viral infection, many other carnivores can become infected (ie. dogs, pole cats, mongoose, etc) and can therefore spread this virus to our resident population. Due to this potential diagnosis of CDV in our resident population, and the potential spread and infection by other carnivores to our resident population, CDV vaccinations and boosters will be added to the vaccination protocol.

Serum has been collected of over half the resident population and has been sent to South Africa for CDV titres – results are pending.

Clostridium (C. perfingens?)

During October and December 2022, NEWTON, JOHN CHEETO, JASIRI, CHARLEY, HATARI, LORENZO, VICKI, AYAAN was diagnosed with Clostridial enteritis on faecal smear after presenting with gastrointestinal signs such as diarrhoea, vomiting and inappetence/anorexia. An increased frequency of clostridial enteritis is suspected, especially now that more goat is fed. Unlike the camel, the slaughtered goats are received from the butcher/slaughterhouse with organs intact, and unfortunately during the skinning and processing of the carcasses, intestines are punctured, contaminating organs and meat with intestinal and faecal matter. Clinical cases respond very fast and recover well on a 7 to 10-day Metronidazole course, and supportive treatments such as anti-emetics, diarrhoea paste and Vitamin B-complex.

Efforts are made during the processing of the goat carcasses to keep organs and meat free from intestinal and faecal matter to prevent future infections.

Behavioural/Group issues

BAGHEER group (CIZI, SERGE, MAJOR, DARTH, SHAMSI, ASTUR, BAGHEER) have been increasingly demonstrating frustration and aggression within the group. This has been an ongoing issue and appears to be in conjunction with the hormone cycles of the female groups in in the same house. The last serious altercation left SHAMSI with left forelimb lameness. SERGE and MAJOR were removed from the group and relocated to SH2. No further altercations or fighting occurred after the translocation.

Increased pacing, vocalising and mating behaviour is noted from the males – especially when the females are in oestrus. Trying to separate the female enclosures from the male enclosures – keeping females on one section of the house and the males on another section of the house – has been successful in SH2 and has decreased the amount and frequency of pacing and vocalising among the males. Unfortunately, there is not enough space in SH3 to allow for these changes and behavioural issues due to hormone changes are frequent. Increased vocalising only is noted from females when they are in oestrus.

AZAAR (ITAJU 2041) presented once for what could be described as a "panic attack" – stressed, anxious, tachycardic and tachypnoic/dyspnoic. It occurred after he was left shifted during maintenance and repairs of the other shifts in his enclosure. According to the keeper, he was scared and tried to get out of the shift by running and jumping inside the shift; after the keeper let him out to prevent him hurting himself, he started coughing and gasping. Veterinary examination was soon after the episode but no abnormalities were detected and he calmed down during the evaluation – normal heart rate and respiration rate. If maintenance is expected in his enclosure, he is left outside the shifts to allow him more space to hide.

Introduction and Relocations

Numerous introductions and enclosure relocations were done during the this year 2022 (*see Table.1 in Annexure below for current group composition and enclosure locations*). Introductions and relocations are necessary to ensure single-gender groups are formed (approximately 6-8 per group), to ensure that all the animals in that particular group are bonded appropriately and no enclosure-aggression is present, and for preparations for the eventual final relocation to Geed Deeble.

Future plans and preparations for Geed Deeble introductions and relocations include:

SH1

- One of the first Safe Houses to relocate
- Introduce C2 females to C4 females

SH2

- Safe House to relocate last

- Introduction planned between Hanuman and a female instead (eg. MIST)
- Introduction planned between KURRO group and/or KARIIR group and/or JANET group
- Possible introduction between DJ group and JOHNY group?
- Possible introduction between CLOUD, MIST, MOONLIGHT and LITTLE STAR

SH3

- One of the first Safe Houses to relocate
- Introduction planned between VENUS and TERESA group after her quarantine period
- Introduction planned between TERESA group and PACHA group

Introductions

January 2022
SH1

- COLOURS (JABARI, BILANE, GASHAAN) and ELEMENTS (AZAAR, YAKU, AMATERASU, PACHA) were separated into two male and one female single-sex groups of 5-6 individuals in SH1.
- SAHMIYE and NASIIB were introduced to SALIM to create a male single-sex group.

February 2022
SH1

- BISHAROO, BASHIR and SANU were combined as a group in January and KAISE was introduced once he was big enough to create a mixed-sex cub group.
- GREMLINS, L.H. and COLOURS were then introduced as a mixed-sex cub group.
- DELPHINA and DHIRRIN were introduced to AMATERASU and PACHA to create a single-sex female group.
- AZAAR, YAKU and SAHMIYE, NASIIB, SALIM were introduced as a single-sex male group.

SH3

- LINK was introduced to the MARS group from the TERESA group.

March 2022
SH3

- The mixed-sex SERGE group was split up to create two larger single-sex groups. SERGE and MAJOR were introduced to the BAGHEER group; VICKI and ZERO moved to the TERESA group.

May 2022
SH1

- CHARLIE, DELTA and ECHO (MILITARY group), ABSAME and HANI (NUMBERS group), BADIA and BASIMAH (A-D group) were integrated into one mixed-sex group based on size.
- RUHI and HAKIM, GAMMA and HALO (MILITARY group) were integrated into a mixed-sex group based on size.

July 2022
SH1

- LORENZO introduced to AZAAR group

SH2

- KARIIR introduced to SIF and SOL

September 2022
SH3

- BASHIR and KAISE introduced to AZAAR group – BASHIR and KAISE was not being accepted into JABARI group and the decision was made to introduce to AZAAR group instead; introductions were well-accepted with good interactions between all males

October 2022
SH2

- FRIGGA was introduced to JOHNY and MICKEY following the death of his enclosure mate, FREYA; introductions were well-accepted with good interactions between all males

November 2022
SH1

- HATARI was introduced to ABSAME group – very slow introductions as HATARI was very reactive and stressed. Individual introductions was done with CHARLEY first in HATARI's enclosure, introducing the other enclosure mates over several days. HATARI bonded well with CHARLEY and became much less reactive

December 2022
Staff House

- FAYSA and SHUKRI started introductions with each other

SH2

- HANUMAN was introduced to JOHNY group; slow introductions in shifts or individual introduction with FRIGGA. FRIGGA handled the introductions very well and wanted to play with HANUMAN but HANUMAN is too reactive and scared, and doesn't allow any contact. Reactions became aggressive and introductions was stopped.

Group relocations

March 2022
SH3

- AZAAR group and L.H. group two male single-sex groups were moved from SH1 to SH3 to create more space in SH1 for incoming confiscations (NUMBERS group).

June 2022
SH3

- PACHA group was moved from SH1 to SH3 due to URI outbreak of clinical signs (see Infectious diseases section).

SH2

- HANUMAN was moved from SH2 Q1/Q2 to SH2 C1 following the move of JALEELO and KARIIRto SH2 C3.

July 2022
SH2

- HANUMAN moved from quarantine to C1 enclosure

SH3

- SANU and BISHAARO moved to PACHA group

August 2022
Creation of single-sex groups
Staff House

- HATARI moved to SH1

SH1

- CHARLEY and DELTA moved to C1 enclosure

SH3

- KAISE and BASHIR moved to C3 enclosure

October 2022

Relocations to try and separate males and females into different halves of the house (females on one half and males on the other half); hoping that it would help with some of the hormonal issues (pacing, vocalising)

SH2

- KURRO group to HANUMAN enclosure (C1)
- HANUMAN to JOHNY enclosure (C7)
- JANET group to KURRO enclosure (C10)
- JOHNY group to JANET enclosure (C8)
- KARRIR group to FRIGGA enclosure (C2)
- MOONLIGHT/LITTLE STAR to KARIIR enclosure (C3)

SH3

- SERGE and MAJOR relocated from SH3 to SH2 – several major altercations between SERGE/MAJOR and SHAMSI became worrying and the decision was made to relocate to another enclosure (only

open enclosure available was at SH2); relocation was stress-free and smooth and both settled in very well

November 2022
Staff house

- NEWTON, JOHN CHEETO and JASIRI relocated to SH1 cub room

December 2022
Staff house

- FAYSA and SHUKRI transition relocation to SH1 cub room

SH1

- NEWTON, JOHN CHEETO and JASIRI moved to C5 enclosure

- C1 (BADIA, BASSIMAH, HANI, RUHI, DELTA, ECHO) was relocated to C4 enclosure for introduction preparations with C2 enclosure (CALLA, IDIL, LEYLO, MYZA, BETTY WHITE, DAHAB)

- C2 (ABSAME, GAMMA, CHARLEY, HATARI, HAKIM, HALO) was relocated to C1 enclosure

SH3

- VENUS was relocated temporarily to quarantine enclosure in SH2 – 6-week quarantine period necessary as preparation for introduction to TERESA group

- JABARI group was relocated to C7 enclosure

- PACHA group was relocated to C3 enclosure for introduction preparations with C2 females

All these introductions and relocations were successful, except the introduction of Hanuman to another male group (see more detail below).

Vulture release: Frankie

Frankie, a young male hooded vulture presented to CCF SLD in 2021 after trauma and resultant contracture of the left wing apparatus. His conditions wouldn't allow him to fly, so a translocation for a breeding program with VULPRO in South Africa was intended but not successfully due to non-recognition of Somaliland as an independent country. The final decision was to release him near the Hargeisa Slaughterhouse in May 2022 where a large amount of carrion and a large hooded vulture population reside.

Deaths, Euthanasia, and Necropsies

A total of 23 (16M, 7F) cheetah deaths were recorded between January and December 2022 (Table 39) and 1 caracal:

- 65% (n=15) of the recorded deaths were cheetah cubs between 4 - 18 weeks of age

- The majority of the deaths – 56% (n=13) – was recorded between March and May 2022, coinciding with the large numbers of confiscated cubs received during the same period

- Of the 34 cubs confiscated during March and May 2022, 38% (n=13) died
- Of the 41 cubs confiscated during 2022, 37% (n=15) died

Table 39: Summary of cheetah deaths recorded in 2022.

	Name	ITAJU	Gender	Confiscation date	Died
1	James	1943	M	14-Oct-2019	2-Jan-2022
2	Max	1940	M	06-Sept-2019	11-Jan-2022
3	Cub #1	2077	M	01-Mar-2022	01-Mar-2022
4	Cub #3	2079	M	01-Mar-2022	05-Mar-2022
5	Cub #2	2078	M	01-Mar-2022	07-Mar-2022
6	Cub #4	2080	M	01-Mar-2022	08-Mar-2022
7	Cub #5	2081	M	01-Mar-2022	08-Mar-2022
8	Cub #8	2085	F	01-Mar-2022	09-Mar-2022
9	Male (DOA) [cub "D"]	-	M	12-Mar-2022	12-Mar-2022
10	B	-	M	12-Mar-2022	21-Mar-2022
11	Bravo	2096	M	19-Apr-2022	19-Apr-2022
12	Alpha	2109	F	19-Apr-2022	20-Apr-2022
13	Foxtrot	2108	M	19-April-2022	22-Apr-2022
14	Indigo	2112	F	19-Apr-2022	17-May-2022
15	Red	2114	F	13-May-2022	18-May-2022
16	Jaleelo	2004	M	1-Jan-2020	30-Jun-2022
17	Saturn	2036	F	12-Oct-2020	28-Jul-2022
18	Maroodi	2118	F	6-Aug-2022	14-Aug-2022
19	Dhib	2117	M	31-July-2022	10-Jun-2022
20	Freya	1999	M	24-July-2020	30-Sept-2022
21	*Indie*	*1820*	*M*	*6-Sept-2019*	*14-Oct-2022*
22	Olivia	2029	M	23-Sept-2020	9-Nov-2022
23	Elba	2009	F	1-Jul-2020	23-Nov-2022

A proportion of confiscated individuals did not survive beyond initial stabilisation and intake. Some, but not all, had hyporexia, vomiting and melena. Repeated episodes of weakness and uncontrollable hypoglycemia lead to episodes of seizures, opisthotonus, agonal breathing, obtunded mentation and eventual death (either naturally or by euthanasia). This is the suspected result of significant physiological stress from pre-confiscation through post confiscation assessment, examination and at times separation from cohorts if closer monitoring of certain individuals was deemed necessary.

- Numbers 1-5 and 8 (ITAJU 2077-81, 2085) and Cub B (ITAJU 2093) died within the first 8 days of arrival at CCF. All succumbed to the above clinical signs and post-mortem examinations suggested hepatic lipidosis; necropsy results are still pending.

- RED (ITAJU 2114) presented in adequate condition after being rescued by the Coast Guard. She presented with 2 other cubs (RUHI ITAJU 2115, HAKIM ITAJU 2113) that were significantly bigger than her, and 4 deceased cubs that were not presented to CCF. Although in good condition, she was separated from her group due to her smaller size for closer observation and monitoring at the staff quarters. This initial night alone was very stressful for her as she would not stop crying and required constant coddling. Two nights later, after subjectively doing well, she acutely broke with score 4-5 diarrhea and within four hours rapidly declined. Flow-by oxygen, active warming and oral dextrose

were supplied while unsuccessfully attempting to place an intravenous catheter. Red died from respiratory and cardiac arrest shortly thereafter.

- BRAVO (ITAJU 2096) and ALPHA (ITAJU 2109) died after experiencing similar hypoglycemia-associated clinical signs. BRAVO died four hours after presenting to CCF, weak and nonresponsive after receiving intensive care (IV fluids, IV dextrose) and CPR. ALPHA succumbed to this same process after 24 hours (antibiotics included for possible sepsis) when the team elected to humanely euthanize. Necropsy results are pending.

- FOXTROT (ITAJU 2108) declined 48 hours after initial presentation to CCF. She showed severe non-regenerative anemia and received two blood transfusions, along with the above treatments and iron/vitamin supplementation over the course of four days. She transiently improved after her primary transfusion, to which her PCV also increased from 11% to 22%, however this was not maintained and her appetite, demeanour and fecal quality declined. On day five, she also succumbed to the same hypoglycemic-like clinical signs as seen in the others and was humanely euthanized. Bloodwork throughout the week had shown nonspecific chemistry changes, no significant electrolyte abnormalities, and marked complete blood count changes consistent with sepsis. Post-mortem examination showed a possible gastric ulcer, that would be consistent with the cause of her anemia and melena, and endocarditis which is consistent with sepsis. Necropsy results are still pending.

- INDIGO (ITAJU 2112) was confiscated with the MILITARY GROUP on April 19, 2022. Three died within the first week (ALPHA, BRAVO, FOXTROT – see above). INDIGO survived 28 days in our care however was always considered a 'poor doer'. She experienced intermittent hyporexia to anorexia, lethargy, vomiting, score 4-5 fecal scores at times with blood, passed live tapeworms and was positive for coccidia on fecal flotation. She received a variety of treatments including supportive care (subcutaneous fluids, antiemetics, antacids), deworming (broad spectrum and coccidiocides) and nutritional supplements (probiotics, Diomec paste). Bloodwork run throughout this time was consistent with young age, malnourishment, poor body condition score, and electrolyte loss from vomiting and diarrhea. On May 17 after decreased appetite was noted throughout the day, physical assessment showed soft fluctuant abdominal distention and general dullness. Abdominal ultrasound showed moderate abdominal fluid and cystic appearing kidneys. An abdominocentesis was performed and thick yellow fluid was aspirated – this fluid was highly proteinaceous and positive on Rivalta Test for Feline Infectious Peritonitis (FIP). Blood work was also suspicious for FIP with an albumin:globulin ratio of 0.8. After a thorough discussion of the case, humane euthanasia was elected. Post mortem showed undigested food in the stomach, large tapeworms in the colon, prominent mesenteric lymph nodes, and subjectively enlarged adrenal glands. Necropsy results are pending.

- DHIB (ITAJU 2117), was euthanased on 10 June 2022, due to a urinary obstruction/urethral stricture and subsequent urinary retention and renal disease. Dhib presented with an inflamed prepuce and phimosis – suspected to be due to soothe-suckling from his sibling. After non-response to symptomatic treatment, surgical intervention was necessary and a distal penile amputation and preputial resection was performed. A distal urethral stricture was noted two weeks post-op; unable to pass a urinary catheter. Euthanased due to a quality of life concern.

- SATURN (ITAJU 2036), died naturally on 28 July 2022, following a grand mal seizure after reversal was administered for the sedated examination. Saturn presented with neurological signs a couple of days prior – muscle fasciculations, head tremor, ataxic and off-balance. She was also more quiet than usual, was inappetent/anorexic and had suspected diarrhoea. Vets could not perform a proper conscious assessment of her due to her aggression towards people and a sedated examination was necessary. Differential diagnosis includes primary neurological disease as a result of an infection (toxoplasma, parasitic, viral meningioencephalitis), acute toxicity and/or an intracranial lesion. Toxoplasma, blood culture and necropsy/histopathology results are pending.

- MAROODI (ITAJU 2118), was euthanased on 14 August 2022, following non-response to intensive management and treatment for a suspected hypothermic/hyoglycaemic seizure. Maroodi was confiscated approximately one week prior and was in a malnourished, poor body condition state

upon presentation. The vet team attempted to get her back to a positive plane of nutrition and prevent re-feeding syndrome by slowly introducing protein-rich and highly palatable/digestible nutrition. She started having diarrhoea, suspected to be due to the introduction of goat mince. In-house bloodwork after seizure and initial treatment indicated sepsis. Differential diagnosis includes malnutrition, cachexia/wasting syndrome (leading to poor/weak immune response and highly susceptible to infection). Necropsy/Histopathology results pending.

- SUGAR (IT-CCA 0018), died naturally on 29 September 2022, following non-response to medical intervention. Sugar presented comatose and unresponsive soon after confiscation. She was hypothermic, hypoglycaemic, and was malnourished/cachexic. Unfortunately, she did not respond to any medical treatments or interventions and died a few hours after presentation. Death suspected to be due to malnutrition/cachexia. Necropsy/Histopathology results pending.

- FREYA (ITAJU 1999), died naturally on 30 September 2022, following recovery from a foreign body/mass removal surgery. Freya was being treated for hepatic pathology for several weeks (elevated liver values and ascites). A hard mass was noted on abdominal palpation during one of his examinations – surgery intervention was necessary and a gastric foreign body was removed (hay). During surgery he had an anaphylactic reaction to the lignocaine used on his larynx before intubation, but recovered enough to continue with surgery. He died soon after anaesthetic recovery due to hypovolaemic shock and cardiac arrest (he did not respond to any emergency intervention). Differential diagnosis indicates disseminated intravascular coagulopathy as the cause of the hypovolaemic shock and subsequent death. Necropsy/histopathology results pending.

- OLIVIA (ITAJU 2029), died naturally on 9 November 2022, following anaesthetic for further diagnostics (CSF tap). Olivia was on chronic treatment for neurological symptoms (focal seizures, head tremors) and hepatic pathology (elevated liver values). She presented for worsening neurological symptoms and in-house bloodwork indicated an infectious process which was unresponsive to medical treatment. Further diagnostics were indicated and it was decided to do a CSF tap. Unfortunately, she died soon after anaesthetic induction (cardiorespiratory arrest). CSF analysis showed lymphocytic involvement, and bacterial culture specified *E.coli* pneumonia. Histopathology results diagnosed encephalitis (suspected canine distemper virus), mononuclear pneumonia and marked lymphoid necrosis. Immunoperoxidase staining for definitive diagnosis pending.

- ELBA (ITAJU 2009), died naturally on 23 November 2022 following recovery from surgery. Elba presented with tachycardia, tachypnoea and unresponsive to medical treatment and intervention – medical treatment for suspected viral upper respiratory tract infection and ensuing secondary bacterial pneumonia. Bloodwork indicated renal pathology (suspected to be acute kidney injury) and increasing infection unresponsive to different antibiotic interventions. There was a concern that she might have an abdominal abscess and an exploratory laparotomy was performed as her condition was worsening. Ex lap was negative and she recovered well from the anaesthetic. Bloodwork was worsening still (renal and hepatic values significantly increased) and she went into respiratory arrest – died even after several emergency intervention attempts. Differential diagnosis includes sepsis and multiple organ failure (bacterial culture specified *E.coli* pneumonia). Histopathology results diagnosed generalised systemic infection.

Cheetahs housed at Gunthers compound

INDIE (ITAJU 1820), died naturally on 14 October 2022 following a grand mal seizure. Unfortunately, the CCF team has no involvement with the cheetahs housed at Gunthers' compound and the only history available was what we received from Gunther. According to him Indie presented that afternoon with a seizure and died soon after. He approached CCF and asked the team to perform a necropsy and collect samples for diagnosis. A necropsy was performed and samples were collected. Necropsy/histopathology results pending.

Butchery/Carcass processing inspections

During the goat and camel butchery and meat processing, inspections of the carcasses and organs are performed by the veterinarians to assess the potential for disease transmission and zoonotic risk. The majority of the carcasses and organs are considered healthy and safe for animal consumption. Organs or meat that do pose a threat of disease transmission are discarded.

The most common pathology findings in the goat carcasses were (Figure 90):

- Caseous lymphadenitis abscessation of lymph nodes, lungs and liver
- Liver abscessation
- Lung abscessation
- Parasitic cysts in lungs, liver, kidneys, diaphragm
- Black/metallic discolouration of renal medulla
- Contamination of organs with tapeworm from gastrointestinal tract

The most common pathology findings in the camel carcass were (Figure 13):

- Liver abscessation
- Parasitic cysts in lungs, liver, kidneys, heart, diaphragm
- Calcified lesions in liver
- Fibrotic lesions (scar tissue) in liver, kidney
- Hepatic vascular congestion
- Aspirated blood, haematomas and congestion of lungs and trachea (results of slaughtering process)

Figure 90: Common pathological findings during butchery/processing.

Specific attention is assigned to lung/pulmonary and bone joint inspections – especially for tuberculosis and brucella lesions. Fortunately, no suspect lesions have been noted in the last 6 months of butchery inspections. In general, the majority of the animals presented to butchery have been in acceptable health conditions.

During September - October 2022, keepers reported camel meat being off or having a rotten smell and having to be discarded. Investigation followed and it was noted that the freezers were not freezing the meat and organs properly that were not making contact with the walls of the freezer, leading to the meat becoming old and unusable a few days later. Changes made to prevent this was daily changing of the meat containers to ensure even and overall freezing of all containers, especially those freezers that are overstocked, and switching on empty freezers a couple of days before butchery to allow the freezer to be adequately cold to allow for faster freezing. No more old/rotten or unusable meat issues have been reported.

Recording data

The veterinary and animal care teams currently use the internationally-recognised computerised data collection system – ZIMS, for all detailed medical, behavioural and dietary records. Physical records, such as vaccination and bloodwork results, are continued and maintained in the clinic for physical reference. Google Drive is also continued and maintained to access documents such as protocols, diet calculations and case reports.

As of July 2022, Karlene Parrish (assistant project manager and clinic manager), with the assistance of vets, vet technicians, has been responsible for backlogging historical data from physical records into ZIMS. Progress is satisfactory and over half the historical data have been successfully added and completed.

Protocols and Developments

Current protocols that have been reviewed and updated, include:

- Cub Care Protocol
- Vaccination and Deworming schedule
- Sample collection and inventory
- Cleaning and Biosecurity
- Veterinary Manual
- Volunteer Handbook
- Volunteer Safety Guidelines

- Staff Handbook

Furthermore, in order to ensure a constant and readily available supply of certain necessary medications and clinic supplies, contact was made with a local human doctor and pharmacy – Dr Luqman; through this contact, CCF supports local suppliers and has a regular supply of the following:

- Lysine supplementation
- Calcium supplementation
- Omega 3/Vitamin E/Vitamin B-complex
- Antibiotics (eg. Amoxycillin/Clavulanic acid, Doxycycline, Ceftriaxone)
- Supportive treatments (eg. Ondansetron, Furosemide, Metoclopramide)

Summary of Cheetah Confiscations in Somaliland (2005-2021)

Cheetah Confiscations

A total of 42 (21 M, 21 F, 9 unknown) cheetah cubs were confiscated between January and December 2022 (Table 40).

Cheetah cub ages are estimated at the time of arrival, and of the cheetah confiscations recorded (Figure 91 and Figure 92):

- 39% (n=16) were between 4 and 8 weeks of age
- 22% (n=9) were between 8 and 12 weeks of age
- 61% (n=25) were 12 weeks and younger
- 20% (n=8) were between 12 and 16 weeks of age
- 66% (n=27) was estimated to have been born between November 2021 and February 2022
- 83% (n=34) of cheetah cubs confiscations occurred during March and May 2022 (Figure 93)

Table 40: Confiscation cub confiscations in 2022.

	Confiscation date	Name	ITAJU	Gender	Estimated age (w)	Estimated birth date	Died
1	3 Jan 2022	Sanu	2074	F	16 w	Oct 2021	-
2	13 Jan 2022	Salim	2075	M	24 w	Jul 2021	-
3	20 Jan 2022	Kaise	2076	M	10 w	Nov 2021	-
4	1 Mar 2022	#1	2077	M	4 w	Feb 2022	1 Mar 2022
5	1 Mar 2022	#2	2078	M	4 w	Feb 2022	5 Mar 2022
6	1 Mar 2022	#3	2079	M	4 w	Feb 2022	7 Mar 2022
7	1 Mar 2022	#4	2080	M	4 w	Feb 2022	8 Mar 2022
8	1 Mar 2022	#5	2081	M	4 w	Feb 2022	8 Mar 2022
9	1 Mar 2022	Absame	2082	M	7 w	Jan 2022	-
10	1 Mar 2022	Lorenzo	2083	M	20 w	Oct 2021	-

11	1 Mar 2022	Hani	2084	F	7 w	Feb 2022	-
12	1 Mar 2022	#8	2085	F	7 w	Feb 2022	9 Mar 2022
13	1 Mar 2022	Dahab	2086	F	18 w	Nov 2021	-
14	1 Mar 2022	Betty White	2087	F	12 w	Dec 2021	-
15	1 Mar 2022	Leylo	2088	F	18 w	Nov 2021	-
16	1 Mar 2022	Calla	2089	F	18 w	Nov 2021	-
17	1 Mar 2022	Myza	2090	F	18 w	Nov 2021	-
18	12 Mar 2022	Cub B	-	M	18 w	Nov 2021	21 Mar 2022
19	12 Mar 2022	Cub D	-	M	12 w	Jan 2022	12 Mar 2022
20	12 Mar 2022	Basimah	2093	F	14 w	Dec 2021	-
21	12 Mar 2022	Badia	2094	F	14 w	Dec 2021	-
22	19 Apr 2022	Bravo	2096	M	4 w	Mar 2022	19 Apr 2022
23	19 Apr 2022	Charley	2097	M	6 w	Mar 2022	-
24	19 Apr 2022	Gamma	2098	M	16 w	Dec 2021	-
25	19 Apr 2022	Halo	2099	M	16 w	Dec 2021	-
26	19 Apr 2022	Foxtrot	2108	M	12 w	Jan 2022	22 Apr 2022
27	19 Apr 2022	Alpha	2109	F	12 w	Jan 2022	20 Apr 2022
28	19 Apr 2022	Delta	2110	F	6 w	Mar 2022	-
29	19 Apr 2022	Echo	2111	F	10 w	Jan 2022	-
30	19 Apr 2022	Indigo	2112	F	16 w	Dec 2021	17 May 2022
31	13 May 2022	Hakim	2113	M	18 w	Jan 2022	-
32	13 May 2022	Red	2114	F	12 w	Feb 2022	18 May 2022
33	13 May 2022	Ruhi	2115	F	14 w	Jan 2022	-
(4 dead cubs brought to MOECC; CCF has no more information)							
34	31 July 2022	Hatari	2116	M	6 w	Jun 2022	-
35	31 July 2022	Dhib	2117	M	6 w	Jun 2022	26 Aug 2022
36	6 Aug 2022	Maroodi	2118	F	16 w	Apr 2022	14 Aug 2022
37	16 Oct 2022	Newton	2119	M	10 w	July 2022	-
38	16 Oct 2022	John Cheeto	2120	M	6 w	Aug 2022	-
39	16 Oct 2022	Jasiri	2121	F	6 w	Aug 2022	-
40	7 Nov 2022	Faysa	2122	F	8 w	Sep 2022	-
(7 Nov 2022 – Minister notified of 2 alive cubs; only one confiscation successful)							
41	22 Nov 2022	Shukri	2123	F	6 w	Sep 2022	-
(31 Dec 2022 – Minister notified of 4 alive cubs; confiscation unsuccessful)							

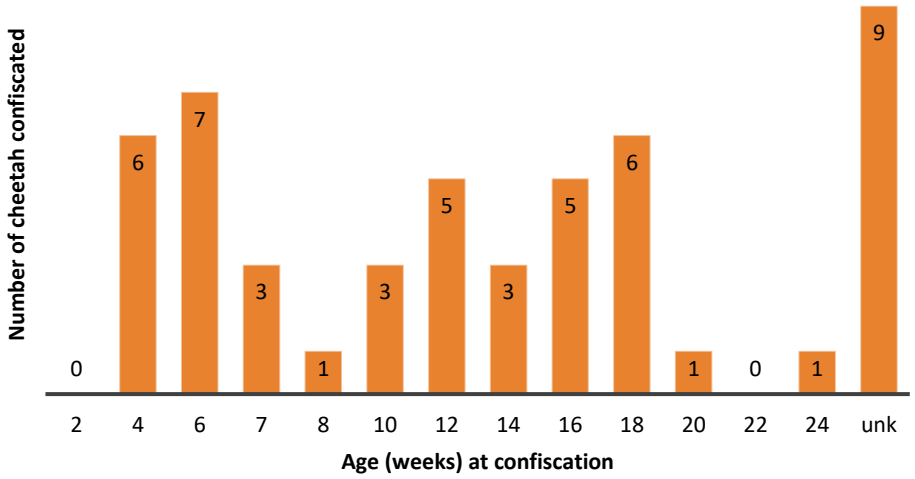


Figure 91: Age of cheetahs at time confiscation (2005 – 2022).

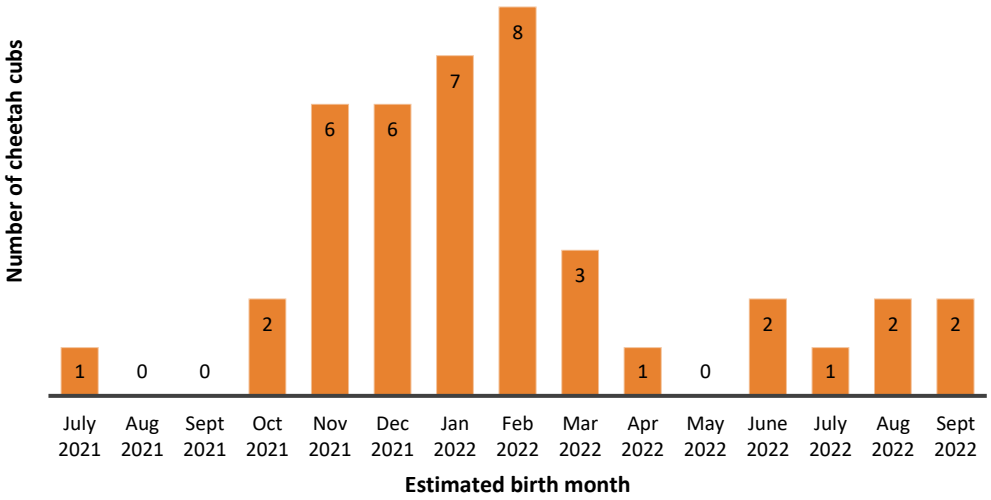


Figure 92: Estimated birth month of new cheetah cub confiscations (July 2021 – December 2022).

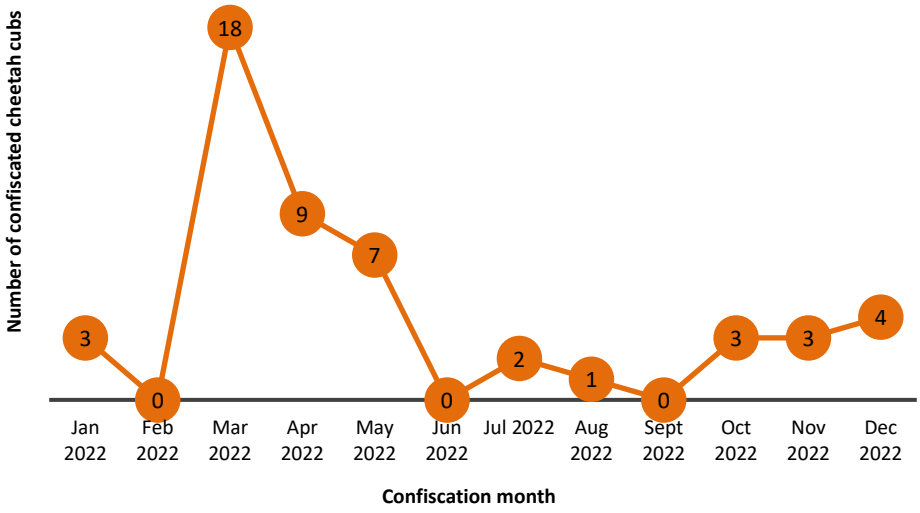


Figure 93: Summary of cheetah cub confiscations in 2022.

V.Education

Public education and the development of an active grassroots constituency are integral components of CCF's overall cheetah conservation programmes. CCF educates farmers, students, educators, public-policy makers, and the public in general 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 both critical to its survival, and other natural resources in Namibia.

A. Future Conservationists of Africa

During this reporting period, CCF's Education department engaged 10,855 Namibian students from primary and secondary school levels, as well as 428 teachers in both its outreach and centre-based programmes.

1. Outreach Programme

The outreach programmes are tailor made for specific audiences and run for approximately 45 minutes covering CCF's research, conservation, and education efforts. They also cover cheetah behaviour, ecology, and its conservation. The presentations and talks go further into; different predator ID's, rangeland management, biodiversity as well as HWC mitigation strategies, collaborative management tools to sustainably live with wildlife, and the economic and environmental benefits of having healthy, and balanced ecosystems.

The Education Department visited 59 schools, one cultural centre, and one community project centre during this reporting period, reaching a total of 10,382 students and 279 teachers (Table 41).

Table 41: Namibian schools reached with CCF's school outreach program from 1 January – 31 December 2022.

Date	Namibian School Outreach Groups	Students	Adults	Total
04 Apr 22	Nossobville Primary School	261	10	271
12 Apr 22	Wennie Du Plessis Secondary School	917	18	935
12 Apr 22	Eudeli Private School	120	4	124
13 Apr 22	Ben Van der Walt Primary School	311	8	319
22 Apr 22	Rakutuka Primary School	270	7	277
22 Apr 22	Khoandawes Primary School	428	10	438
22 Apr 22	Light of the Children	25	3	28
26 Apr 22	Gobabis Gymnasium	170	6	176
27 Apr 22	Gobabis Primary School	230	8	238
11 May 22	Gobabis Primary School	260	7	267
09 May 22	Peri Naua Cultural Centre	50	3	53
17 May 22	Gobabis Gymnasium	170	6	176
28 Jul 22	Izak Buys Junior Secondary School	70	2	72
29 Jul 22	Roots Gymnasium	60	1	61
02 Aug 22	Gobabis Gymnasium	168	6	174

05 Aug 22	J. Dohren RCC Junior Secondary School	420	4	424
10 Aug 22	Mokganedi Tlhabanello High School	791	30	821
10 Aug 22	Hippo Primary School	72	2	74
11 Aug 22	Drimiopsis Primary School	219	4	223
12 Aug 22	Hippo Primary School	69	1	70
16 Aug 22	Epukiro Primary School	51	3	54
16 Aug 22	Gcquina Primary School	95	3	98
29 Aug 22	Rehoboth Secondary School	136	5	141
29 Aug 22	Vooruitsig Combined School	40	2	42
29 Aug 22	Dr. Lemmer High School	205	5	210
29 Aug 22	M&K Gertze High School	46	2	48
30 Aug 22	PJ Tsaitsaib Combined School	29	2	31
30 Aug 22	WJD Cloete Combined School	17	2	19
30 Aug 22	Pionier Secondary School	31	1	32
30 Aug 22	Anna Maasdorp Combined School	26	2	28
31 Aug 22	C //Oaseb Secondary School	81	2	83
31 Aug 22	Rooiduin Secondary School	131	2	133
31 Aug 22	PI Groenewaldt Junior Secondary School	53	2	55
31 Aug 22	C. Kandjii High School	980	33	1013
01 Sep 22	Daweb Junior Secondary School	40	2	42
01 Sep 22	Mariental Gymnasium Private School	25	3	28
01 Sep 22	Danie Joubert Combined School	81	3	84
01 Sep 22	Empelheim Junior Secondary School	93	2	95
01 Sep 22	Wennie Du Plessis Secondary School	268	0	268
02 Sep 22	Mariental High School	266	5	271
07 Sep 22	C. Ngatjizemo Primary School	222	7	229
07 Sep 22	U. Ndjavera Primary School	260	8	268
09 Sep 22	Gobabis Gymnasium	144	1	145
12 Sep 22	Okahenge Combined School	61	2	63
12 Sep 22	Oshawapala Combined School	50	2	52
12 Sep 22	Oshaango Combined School	37	2	39
12 Sep 22	Nanghonda Combined School	106	2	108
12 Sep 22	Sakaria Shikudule Combined School	77	2	79
13 Sep 22	Okatope Junior Secondary School	41	2	43

13 Sep 22	Ondobe Secondary School	44	2	46
13 Sep 22	Ongena Secondary School	72	2	74
13 Sep 22	Omungwelume Secondary School	108	2	110
13 Sep 22	Eengedjo Secondary School	250	5	255
14 Sep 22	Eembaxu Combined School	88	2	90
14 Sep 22	Elakalapwa Combined School	55	2	57
14 Sep 22	Udjombala Secondary School	75	2	77
14 Sep 22	Ponhofi Secondary School	323	2	325
15 Sep 22	Epembe Combined School	69	2	71
15 Sep 22	Oupili Combined School	42	2	44
25 Oct 22	C. Heuba High School	298	2	300
25 Oct 22	Traugott Kandorozu Primary School	185	5	190
Total Namibian School Outreach Groups:		**10,382**	**279**	**10,661**

2. Centre-based Programme

Organised education programmes at CCF during this reporting period involved nine Namibian groups totaling 473 students and 149 teachers (Table 42).

Depending on the length of stay and the group focus, activities included cheetah runs, museum tour, guarding dog and goat kraal talks, predator-kill identification exercises, ecological talks, and game drives.

Table 42: Namibian school groups participating in centred-based programmes at CCF, 1 January – 31 December 2022.

Namibian Day Visiting School Groups				
Date	**School**	**Students**	**Adults**	**Total**
02 Apr 22	Learning Center Group	14	2	16
04 May 22	Peri Naua Cultural Center	7	3	10
05 May 22	De Duine Secondary School	14	6	20
17 Aug 22	Pionierspark Primary School	23	3	26
28 Sep 22	Miss Teen Otjivarongo	11	7	18
01 Oct 22	Kayec Trust Otjiwarongo	26	8	34
01 Oct 22	Moses Van Der Byl	40	11	51
02 Oct 22	Paradise Private School	13	6	19
02 Oct 22	Oshikunde Combined School	64	10	74
03 Oct 22	Schlip Primary School	17	12	29
07 Oct 22	Kuvukiland P.S	59	11	70
Total Day Visit:		**288**	**79**	**367**

Overnight Namibian School Groups					
Date In	**Date Out**	**School**	**Students**	**Adults**	**Total**
02 Apr 22	04 Apr 22	Wild Kids Academy	23	4	**27**
15 Apr 22	17 Apr 22	Kavango East CTMP Participants	23	9	**32**
22 Apr 22	24 Apr 22	Kavango West CTMP Participants	41	9	**50**
29 Apr 22	01 May 22	Oshana & Kunene CTMP Participants	33	10	**43**
04 May 22	05 May 22	Oshekasheka Combined School	0	28	**28**
16 Sep 22	18 Sep 22	Otjikondo Primary School	32	3	**35**
03 Oct 22		Rundu Afrikaans Private	33	7	**40**
Total Overnight Namibian School Groups			**185**	**70**	**255**

3. Distance Learning on Edmodo

In an effort to continue delivering our outreach programmes amidst the COVID-19 pandemic, CCF's Education Department shifted focus to Distance Learning to reach both learners and teachers. In 2020 CCF created an online learning account on a platform called Edmodo.

The Edmodo platform however closed in September 2022 and the Education Department was forced to come up with other ways to reach the school children virtually. WhatsApp was used to virtually engage the learners in the Conservation Training and Mentorship Project during the second half of the year 2022.

4. Ambassador Animals

The Education Department continued to work with some of the kraal animals to serve as Ambassadors for the different school groups that came in. Kiri, our 10-year-old female breeding dog retired from her role as Livestock Guarding Dog (LGD) Programme ambassador at the beginning of the year (Figure 94). Brooks, a 5-year-old male took over as ambassador for the LGD programme. By allowing children to meet Kiri and the other animals, the children can have a hands-on experience, touch a dog, and a livestock animal, which in many rural areas are not well taken care of or in which many children are not always taught to take good care of. Interactive experiences have always left a big impact on children, and CCF's ambassador animals work well together to represent the farming and livestock management programme as they are comfortable with small children and

Figure 94: Kiri meeting some of the young students during an outreach school visit.

5. Camp Lightfoot

CCF Senior Educator, Ignatius Davids revamped the 1km Lighfoot trail (Figure 95). The trail was levelled with a skid Steer Loader which helped with closing up of holes in the middle of the trait that could be hazerdous to children and adults. Thorn bush branches that grew into the trail were trimmed. The Education Department wanted to provide interactive learning experiences for visiting school groups on the trail and new information metal plates were therefore added to the trail. Metal plates included pictures and information on native plant species found in this area, which outlined local medicinal and food, as well as their importance in the ecosystem. This will give school groups and visitors educative as well as a memorable walk on the trail in helping them better understand native plant and tree species and the importance of whey they should be conserved and used sustainably.

Lightfoot huts used to house education groups were also revamped by closing cracks in walls with plaster and repainting the interior of the huts to give them a newer look.

Figure 95: Senior Educator, Ignatius Davids revamping and restoring the Lightfoot trail.

6. Higher Education and In-Service Training

CCF is committed to empowering Namibians in 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 in-service training programmes for students from the Namibia University of Science and Technology (NUST),

Vocational Training Centres (VTC) and the University of Namibia (UNAM). These students conduct research projects with the goal of producing a research paper at the conclusion of their internships. Several former interns have gone on to work at conservation organisations or for MEFT.

In addition to the in-service training students, CCF welcomes groups from Namibia's higher-education institutions to participate in programmes aimed at enriching their skills in various study areas. CCF did not host any overnight groups from tertiary institutions during this reporting period.

B. Other Collaboration with Educational Institutions

During this reporting period, CCF Centre hosted the University of Nebraska for a night stay (Table 43). The Earth Expeditions course resumed this year, after a two-year hiatus imposed by COVID-19 travel restrictions. The group participated in educational programmes, including lectures on HWC, cheetah runs, and tours of CCF's Centre.

Table 43: International groups attending educational programmes at CCF 1 January – 31 December 2022.

Overnight International School Groups					
Date In	**Date Out**	**School**	**Students**	**Adults**	**Total**
06 Jun 22	07 Jun 22	University of Nebraska - USA	18	2	20
01 Jul 22	10 Jul 22	Earth Expeditions	20	2	22
21 Jul 22	30 Jul 22	Earth Expeditions	18	2	20
Total Overnight International School Groups			**56**	**6**	**62**

C. Working Guests and International Interns

Working Guests are the backbone of CCF and vital in daily operations. They play an extremely important role with CCF's student interns, as they bring experience and skills with them and through daily interactions help to share and develop skills in our students. Integrating the Working Guests with student interns allows for sharing of knowledge, life experiences, cultures, and traditions. During this reporting period, CCF hosted 12 working guests.

In addition to 26 Namibian student interns, CCF welcomed 24 international student interns from the USA, UK, France, Italy, Germany, Denmark, Netherlands, Canada, Belgium and Sweden. The interns were trained in veterinary medicine, zoology, ecology, wildlife science, animal science, environmental studies, international development, and genetics.

D. Future Farmers of Africa

CCF's Future Farmers of Africa (FFA) programme is crucial in CCF's mission to educate farmers about coexistence with predators. Human-wildlife conflict (HWC) and wildlife management training are among the most important aspects of this programme. This training covers topics such as predators in the ecosystem, kill identification, negative effects of poaching, and livestock health.

CCF visited 17 villages identified as HWC areas by conservancy committee and traditional leaders during the consultancy meeting. During this reporting period, 225 farmers and community members participated in the FFA programme in the last quarter of the year (Table 44).

Table 44: Farmers engaged in the FCA Programme CCF 1 January – 31 December 2022.

Date	Name of Village	Attendees
11 Oct 22	De-Hoek/De-Hoek Pos	20
12 Oct 22	Paradys/Leeudrink	20
13 Oct 22	Otjorutjandja/Wildskrag	19
24 Oct 22	Otjongarangombe/Ondimba	15
25 Oct 22	Okarupuiri/Okeniha	24
26 Oct 22	Erindiromungondo	22
27 Oct 22	Otjozombaka	23
28 Oct 22	Okatumba	17
09 Nov 22	Kanaan/Steenboklagte	26
10 Nov 22	Okoutjove	29
11 Nov 22	Ourundu	10
Total farmers/community members in attendance		**225**

As part of the FFA training, CCF also works closely with community game guards, who play an integral role in sharing information about HWC and conservation in their communities.

Other FFA engagements were through collaboration between CCF and Agribank. This collaboration has helped CCF to engage an additional 200 farmers and community members in the FFA programme from the Leonardville, Aminius, Ben Hur, Corridor 13, and Vergenoeg in the Gobabis District with limited resources.

E. Conferences, Workshops and Other Activities

Namibia Environmental Education Network (NEEN)

The NEEN Conference was cancelled for this reporting period.

Environmental Education Association of Southern Africa (EEASA) Conference

The EEASA Conference took place from 23 August – 25 August in Windhoek, Namibia. Annetjie Pöntinen and Ignatius Davids attended the conference and presented on CCF's Conservation Training and Mentorship Programme.

Various organizations, institutions, and ministries presented on their work in environmental education/education for sustainable development (EE/ESD). Regional presentations included those of the Wildlife and Environment Society of South Africa (WESSA) in which they outlined their work in initiating and supporting high impact environmental and conservation training projects for young professionals, helping them gain skills and understanding on how to design and implement EE lessons and projects in their respective NGOs.

National presentations included that of the University of Namibia (UNAM) Green Hydrogen who outlined the implementation of a National Green Hydrogen Research Institute in Namibia. The Institute will serve as a national research and capacity building hub under UNAM with the aim to conduct local research and development and provide innovative solutions. This development comes at a time when Namibia develops into a hub of Green Hydrogen in Africa, a prospect made possible by Namibia's 1,500 km of coastline desert

with sunlight exposure totaling over 3,500 hours a year, ideal for producing solar and wind power at high availability.

Other Conferences, Workshops & etc.

EE/ESD Policy Launch

Annetjie Pöntinen and Ignatius Davids attended the launch of the Namibian Environmental Education/Education for Sustainable (EE/ESD) Policy, in Windhoek on 29 March 2022. Both Annetjie and Ignatius participated in the development of this policy through a stakeholder workshop held in Windhoek in October 2021.

International Cheetah Day

International Cheetah Day (ICD) was celebrated on 4 December after promoting the day on local TV show Good Morning Namibia, and on National FM, Energy 100 FM and 99 FM radio (Figure 96).

Figure 96: Matti Ngikembua, Annetjie Pöntinen and Mona Hamunyela on TV and various radio platforms promoting ICD.

The CCF center was open to the public at no cost, and 91 people from different towns around Namibia (Okahandja, Okakarara, Otjiwarongo, Grootfontein, Windhoek, and Etosha) joined us in the celebration. Many tourists who visited the centre on this day felt honored to have been at CCF on such an important day, some of whom participated in ICD activities. Only two guest stayed overnight at Lightfoot camp for ICD.

Each of the CCF departments had booths set up, showcasing and demonstrating their work in different ways. These included different educative and fun activities such as, games, face painting, scat detection dog demonstration, and quizzes. Participants who completed activities at all the booths could win one of three prizes; cheetah drive (first prize), goat cheese hamper (second prize), or a bag of bushblok offcuts (third prize). Eighteen people completed all activities and were entered into the draw. Figure 97 below shows the three winners, pictured with CCF Education Manager, Mona (left).

Figure 97: ICD prize winners with Mona (left) the Vet Team (middle), and Ignatius with some of the young people (right).

Biding Annetjie Pöntinen Farewell

CCF's Research and Education Manager, Annetjie Pöntinen left our Field Centre in Namibia for Finland to join her family. She will be greatly missed by everyone! Annetjie was an inspiration to us and to all the students she met. She will always be part of our cheetah family. Dr Bruce Brewer, CCF staff and interns bid her farewell over coffee and cake (Figure 98).

Ndamonenghenda Hamunyela took over from Annetjie as Education Manager in November 2022.

Figure 98: Dr Bruce Brewer (middle) biding Annetjie Pöntinen (right), Becky Johnston (far right), Michelle Magliolo (left) and Lauren Pfeiffer (far left) farewell.

VI. Structural Activities

A. Namibian Facility Developments

1. Existing Structural Projects and New Projects

This reporting period saw continued investment in the CCF Namibia infrastructure. Improvements include:

- The upgrade of campus electrical system was saving monies. There were many days wherein there was not a need for diesel generation of electricity for the main campus. Overall, a 50% reduction in annual generator usage even though a 15% increase in demand. Cumulative uptime was 99.995%.

- Components of the retired Elandsvruegde system were moved to Padberg to provide a 30KVA three phase system with a 62 kWh FLA battery capacity and 20kW of PV installed. The system has achieved about 95% solar powered operation.

- The power system at Boskop was reprogrammed to operate autonomously, increasing overall efficiency, and reducing generator run time by more than 60%.

- The multi-purpose annex was altered to convert some unclaimed storage rooms into offices.

- One chip bunker shed in support of the EU-supported STEAMBIO torrefaction project was completed and late in the year components arrived for the major shed that is nearer the torrefaction plant. The large gantry to house the torrefaction plant was completed and work was well underway on the 300kw powerplant for the factory. A perimeter fence was installed around the entire BTDC.

- More renovation of the goat yards was completed, including new goat enclosures and their associated rain shelters.

- At Cheetah View Lodge the waterhole was re-sealed. Two new housing units were added. They include ensuite bathrooms, kitchenettes, a shared dining room and a raised viewing deck.

- The Depot was completed. This shed is a receiving area for shipments from Otjiwarongo, storage of some equipment and supplies, and a staging area for disbursement of BUSHBLOK®. The Depot yard and barn adjacent throughway were paved.

- Extensive roadwork and firebreaks were undertaken by the heavy equipment (bulldozer, roadgrader). This included de-bushing the entire road perimeter from the Cheetahview/Padberg gate to the campus. The North Staff entry drainage was improved to direct water off the main entrance road.

- The four cabins at Light Foot were expanded to each include a dedicated bedroom, new porch, and kitchenette. This increases their usability to not only house visiting groups but staff and long-term guests as well.

- An addition was constructed at the south staff rondavel staff house. This included a porch expansion and kitchenette.

- Security camera systems were installed at the multi-purpose annex (commissary) and the new milking parlor and attached offices.

- The Security cameras system was renovated and expanded at BTDC in anticipation of the SteamBio operation.

- We completed an extensive Wi-Fi Network upgrade at the main campus; increasing coverage and speed to all residents.

- ISP distribution was rearranged so all farms receive internet through the main campus, providing better network management capabilities and improved network security.

- The remote sensing LoRaWAN network was expanded, and sensors implemented for water tank levels, diesel tank levels, vehicle location, and temperature monitoring. This network can support thousands of remote sensing devices and hundreds of types are available.

2. Automotive

CCF must operate and maintain a large fleet of vehicles and construction equipment to service the 58,000ha reserve, support the Biomass Technology Demonstration Center, and conduct outreach and related activities.

Vehicles and tyre repair continue to be an expensive and time-consuming problem at CCF. Table 45 lists CCF's vehicles and their condition at the end of December 2022.

Table 45: CCF's vehicle fleet and each vehicle's status at the end of December 2022.

Vehicle	Status
Safari vehicles	
Safari Green cruiser	Running
Safari Small white cruiser	Running
Safari white ford	Running
Safari White Toyota cruiser (new)	Running
Allocated Vehicles	
Toyota GD6 D/cab (Bruce & Laurie)	Running
Toyota GD6 C/cab (Scat dog)	Running
Toyota GD6 C/cab (Gebhard)	Running
Toyota GD6 s/cab (Facilities Engineer)	Running
Toyota Land cruiser s/cab Farm manager	Running
Toyota Land cruiser d/cab (clinic)	Running
Toyota Land cruiser s/cab (APU)	Running
Toyota Land cruiser s/cab (Assistant Farm Manager)	Running
Toyota legend c/cab Education outreach	Running
Toyota legend c/cab Husbandry	Running
Nissan N5947OT (EU)	Running
Nissan N4456OT (Tika)	Running
Nissan N7025OT (CCF East/ Gobabis)	Running
Nissan N7032OT (Education)	Running
1997 Toyota 22R (Tracking)	Running
1987 Toyota 4Y (ecology)	Running

White Isuzu KB (used by Bush Block in town for Pickups)	Running
Farm Vehicles	
Brown Toyota D4D d/cab (Farm vehicle)	Running
White Landover Defender (farm vehicle Jan helpman)	Running
Green Landover (Recycling)	Broken
Tata s/cab (farm vehicle)	Broken
Silver Toyota D4D (farm vehicle)	Broken
White Toyota 3F land cruiser (mechanics vehicle)	Running
Toyota 4y (old scat Dog vehicle)	Runing
Mazda s/cab (Jan Helpman farm)	Broken
Toyota raider Petrol Rebuild (Uri) (Jan Helpman farm)	Running
Silver Isuzu Kb Single cab (Jan Helpman farm)	Broken
Toyota Raider (Jan helpman farm)	Running
Staff Transporters	
Quantum Minibus #1 (staff transport)	Being repaired
Quantum Minibus #2 (staff transport)	Broken
Isuzu Truck (staff transport)	Running
Trucks	
Mercedes- Benz Truck (Jan Helpman Farm) (old)	Running
Isuzu Truck (Jan Helpman Farm) (Transport of material)	Running
Mercedes- Benz Truck (Material transporter from and to town)	Running
Electric Golf carts	
Tourism	Running
Kitchens	Running
LSGD program	Running
Clinic	Running
Bruce	Running
John Deer UTV/Gator (petrol operated)	Broken
Skid steers	
Gehl V400	Running
Gehl R150	Running
John deer 332 (Builders)	Running
CAT 289D (Bruce)	Running
CAT 289D YV8N57	Broken

Heavy Machinery	
D6 Bulldozer	Running
12K Road grader	Running
Tractors	
Big John deer 6603	Running
Small John deer 5775E	Running
Messy Ferguson 290 4x4 (Padberg)	Running
Messy Ferguson 290 4x4 (CCF)	Running
Messy Ferguson 290 4x4 (Jan Helpman)	Running
Messy Ferguson 6711 (Jan Helpman)	Running
Old small Messy Ferguson 135 (Bynadar tractor)	Running
Old small Messy Ferguson 135 (Jan Helpman)	Running
Big Messy Ferguson 680 4x4 (Bush block)	Running
Trailers	
Skid steer Trailer	Working
Diesel Trailer	Working
Clean water 2500l Trailer	Working
Grey water 2500l Trailer	Working
Grey water Trailer (old)	Working
3x Tractor tipper Trailers	Working
Manure spreader Trailer	Working
4x old Bush tipper Trailers	Working
Others	
Blue V-Mac Bush Harvester	
2x Hay Baler	Working
Hay grass rake	Working
3x Bush Movers	Working
Big butterfly grass mower	Working
Seed planter	Working
Gandini woodchipper	Working
Heizohack woodchipper	Working
Morbark woodchipper	Working
Forklift (Bush Block Otjiwarongo)	Working
Husqvarna ride on Mower	Working

B. Staffing

1. CCF Namibia Staff

As of 31 December 2022, CCF Namibia employs technical staff as follows. Additionally, CCF employs 4 cooks, 46 farmhands, tourism and housekeeping staff, and 33 Bushblok project workers.

- Laurie Marker, DPhil – Founder and CEO
- Anne-Marie Bekker – Business Manager
- Bruce Brewer, PhD - General Manager
- Johan Britz – Farms & Biomass Manager
- Tanya Britz – Controller
- Cameron Carver – Facility Engineer
- Bogdan Cristescu – Asst. Director Ecological Research
- Ignatius Davids – Education and Tourism Officer
- Karin Falk – CCF Accountant
- Raul Carlos – Executive Chef
- Tim Hofmann – Scat Detection Dogs
- Job Iyambo – Tour Guide & Cook
- Bianca Jacobs – Tourism Manager
- Ruan Jacobs – Tourism Assistant
- Becky Johnston – Studbook Keeper
- Himeezembi Kuhanga – Tourism Assistant Manager
- Matti Nghikembua – Forest Steward & Chief Ecologist
- Gebhardt Nikanor – Education and Tourism Officer
- Lauren Pfeiffer– Personal Assistant to the Director
- Anne Schmidt-Küntzel, DVM, PhD - Research Geneticist & Asst. Director for Animal Health and Research
- Tryves Shivolo – Tour Guide
- Anastasia Turenko – Genetics Lab Technician
- Heike Stackmann - Volunteer Co-ordinator and Public Relations Officer
- Carolina Torres - Ecologist

- Paul Visser – Estate Manager
- Eli Walker – Ecologist
- Ndamonengenda Hamunyela – Education Manager
- Johan Gibson - Assistant Farm Manager
- Calum O'Flaherty – Livestock Guarding Dog Program Manager
- Veisy Kasaona - Community Programs Assistant
- Vistoria Tushemwe – Veterinary Technician
- Johanna Lukas – Veterinary Technician
- Mercelin Gawanas – Veterinarian
- Anna Basto – Veterinarian
- Anahi Hidalgo - Veterinarian
- David Shipingana - Forestry and Safety Officer
- Hanlie Winterbach – Carnivore Research
- Mike Mikael– Small Stock Assistant
- Emma Reasoner – Ecology Assistant

2. CCF Global Staff

Jj Muehlhausen, CCF's Development Manager - Grants and Designated Giving, retired in January. Lori Ducy began working part time in January to manage the transition, and began full time on 1 April , as Development Manager - Corporate Giving and Development Processes. In addition, Dr. Indrani Sasmal was hired on 1 May , as Development Manager - Grants and Designated Giving.

United States of America

- Brian Badger – Director of Conservation and Outreach
- Lori Ducey - Development Manager (Corporate Giving)
- Susan Kauffman - Constituent Relationship Manager
- Paula Martin – Executive and Development Assistant
- Heather Ravenscroft - Digital Media and Graphic Design Manager
- Dr. Indrani Sasmal – Grants Program Director
- Robert Skidmore - Director of Operations and Finance
- Dionne Stein – Development Manager (Events and Special Projects)

- Susan Yannetti - Senior Advisor (Strategic Initiatives)

Israel

Shira Yashphe, DVM - Illegal Wildlife Trade Lead

VII. Organisational activities

A. Fundraising

1. Namibia

Board of Governance

CCF Namibia was saddened by the unexpected death of founding Board Member and Vice-Chairman Jane Katjavivi in 2022. She was the wife of International Patron, Hon. Professor Peter Katjavivi, Speaker of Parliament.

The Annual General meeting was held on 1 February 2022. In March the annual financial audit was performed by the Namibian firm of Grant Thornton and Neuhaus. In August the Forest Stewardship Council conducted the annual surveillance.

Fundraising

Annual Gala Dinner

The Annual Gala Dinner was again cancelled due to the COVID-19 pandemic.

Grants

CCF Namibia was fortunate to receive direct contributions from partner organizations in Germany, United Kingdom, Australia, Italy, Canada, and France.

2. International

CCF has registered charitable organisations in the US, Australia, Belgium, Canada, Italy, Japan and the UK. CCF also has fundraising partners in France, Germany and the Netherlands. All CCF's partner organisations promote education, fundraising and conservation awareness.

CCF USA

Board Governance

During this period, the USA Board of Directors and Advisory Board of Trustees met twice: in Washington, DC, for in-person meetings over two days on 30 September and 1 October, and via teleconference on 9 December. Three resolutions were passed during these meetings. Resolutions and Dates are listed in Table 46 below.

Table 46: Fundraising goals versus actual funds (USD) in 2022.

Number	Date Passed	Resolution Title
1106	1 Oct 2022	Resolution to Recognize Restricted and Designated Funds (2nd quarter 2022)
1107	1 Oct 2022	Resolution Accepting 2021 Audited Financial Statements
1108	9 Dec 2022	Resolution to Recognize Restricted and Designated Funds (3rd quarter 2022)

All committees of the board are meeting regularly and have been reporting at board meetings.

Operations

CCF continues to rent an office at 200 Daingerfield Rd., Suite 200, Alexandria, VA 22314. Most CCF employees do not work within commuting distance of the office, so remote work has been a part of the CCF culture even prior to Covid-19.

Finance

CCF's annual 2021 audit completed in October 2022; it was conducted by Rogers & Company, CPAs.

The CCF investment accounts at First Republic continue to be managed by Mary Hayes. These accounts saw significant unrealized losses earlier in 2022 due to the downturn in the overall markets, but appear to have stabilized.

Fundraising

CCF USA set the goal of raising US$4,000,000 for 2022 including revenue from all sources. The total revenue raised towards reaching that goal at Year-End was US$4,056,908.41 (unaudited - Table 47).

Table 47: Fundraising goals versus actual funds (USD) raised in 2022.

Campaign	2022 Goal	Actual	Difference
Bequest		$88,581	$88,581
Book Sales	$10,000	$2,606	-$7,395
Chapter Events	$50,000	$15,006	-$34,994
Chewbaaka	$725,000	$586,757	-$138,243
Designated	$600,000	$984,324	$384,324
Endowment	-	$20,000	$20,000
Fall	$110,000	$50,501	-$59,499
General Merchandise	$15,000	$919	-$14,081
Gift In Kind			
Fall Tour	$425,000	$237,970	-$187,030
Spring Tour	$265,000	$185,473	-795,26.71
Namibian Merchandise	$5,000	$5,905	$905

Newsletter	$70,000	$85,620	$15,620
Recurring	$120,000	$132,414	$12,414
Sponsorship	$120,000	$101,194	-$18,806
Spring	$130,000	$147,775	$17,775
Volunteer Fees Namibia	$70,000	$8,527	-$61,474
White	$400,000	$280,973	-$119,027
Year End	$885,000	$1,122,363	$237,363
Total	**$4,000,000**	**$4,056,908**	

Campaigns

The CCF's Annual Fund Campaign includes four direct mail appeals: the Spring Appeal, the Chewbaaka Memorial Challenge, the Fall Appeal, and the Year-End Challenge. Each direct mail appeal includes several mailing components to targeted audiences during the time period of the appeal and supported with e-mail solicitations. In addition to these major campaigns, several smaller, independent e-blast efforts are incorporated throughout the year, as well as two printed newsletters, two electronic newsletters, and two electronic 'Notes from the Field'.

Appeals

Spring Appeal

An initial mailing to 11,293 USA subscribers was sent in March 2022 that included various levels of the high, medium, low and non-donors segmentations (Table 46). Spring Campaign letters were sent and targeted to annual and recurring donors. The campaign raised US$147,776.

Chewbaaka Memorial Challenge

An initial mailing to 11,294 USA subscribers was sent on 1 July 2022 that included high, medium, low and non-donors. A second effort was mailed to 2,020 USA subscribers and sent on 10 August 2022. The campaign raised US$586,757.48.

Fall Appeal

An initial mailing to 10,086 USA subscribers was sent on October 2022 that included high, medium, low and non-donors. The campaign raised US$50,501.28.

Year-End Challenge

An initial mailing to 9,915 USA subscribers was sent on 16 November 2022 that included high, medium, low and non-donors. A second effort was mailed to 4,012 USA subscribers on 15 December 2022 that included high, medium, low and non-donors. The campaign raised $1,122,362.55 (Table 48).

Table 48: Number of donors giving year-end in each stage in 2021 versus 2022.

Donation Amount in US Dollars	Number of Donors Year-End 2021	Number of Donors Year-End 2022
1 - 49	1,462	1,298
50 - 99	937	834
100 - 249	1,101	1,085
250 - 499	474	423
500 - 999	282	298
1,000 - 2,499	274	281
2,500 - 4,999	74	78
5,000 - 9,999	58	51
10,000 - 19,999	42	50
20,000 - 49,999	24	28
50,000 - 74,999	2	4
75,000 - 99,999	3	1
100,000 and above	6	6

Cheetah Sponsorships

Total revenue from cheetah sponsorships in the USA for 2022 Year-End was US$101,194.00. Bi-annual video updates on 32 of CCF's resident cheetahs as well as CCF's releasable cheetahs and Livestock Guard Dogs were sent out in early July and late December 2022. Many of our appeals and Facebook posts promote cheetah sponsorships.

Newsletters and e-Blasts

Cheetah Strides

Two 'Cheetah Strides' newsletters were mailed in Year-End 2022. Issue no. 23 was mailed in March 2022 to 10,540 people in the USA, generating $50,229.44. Issue no. 24 was mailed in September 2022 to 15,853 people in the USA, generating $35,390.32. Both generating $85,619.76

Dr Laurie Marker's 'Notes from the Field'

Alternatively, with 'Cheetah Strides', CCF sent out three 'Notes from the Field' e-letters worldwide. The Mid-Year and Year-End e-letters were sent in the months of February, April, and June to between 22,489 to 30,776 subscribers. The number of subscribers in the mailing lists has fallen due to the new General Data Protection Regulation (GDPR) rules for the European Union (EU) that requires consent given from the constituents that are in the database that allows CCF permission to send communications to them.

Welcome Series e-blasts

Welcome Series e-blasts are sent to new constituents that are added to the database each month. The Welcome Series includes a total of four emails that focus on these topics: Welcome to CCF, Educational Programming at CCF, Human-Wildlife Conflict Solutions and Research Program at CCF.

Management of Constituent Information

CCF continues to track more information on each constituent record in our donor database system, Raiser's Edge. All email blasts, mailing campaigns, and phone calling campaigns are tracked through Raiser's Edge. Each individual record shows the communications sent and the responses received from that constituent. All web donations, events registration and Email marketing are processed and managed now through Blackbaud's Online Express (OLX) that fully integrates with the Raiser's Edge. There are 100,158 constituent records in the Raiser's Edge database. There are 18,745 USA email subscribers and 14,233 USA subscribers on the appeal mailing lists. The creation of our online auctions remains hosted through OneCause.

Designated Giving/Grants/Awards

CCF has been successful in procuring gants ranging from $5,000 to $1,000,000 from several government and non-government agencies between January to June of 2022. Moreover, CCF was also able to secure funding from some new funders including One Earth Foundation, Columbus Zoo Foundation and submitted Department of Environment, Food and Rural Affairs (DEFRA) UK Government's Illegal Wildlife Trade Program - Extra Grant preproposal based on which DEFRA invited a full proposal for a funding amount of 1,500,000 British Pounds. These grants will support different project activities in both the centers of CCF in Namibia and Somaliland. Some of these are very prestigious funds and CCF's strategy is to fulfill the funders requirement and execute the grants successfully to build a reputation as one of the world's leading organizations in cheetah conservation. All these grants in the Horn of Africa are intended to help stop the illegal wildlife trade of cheetahs in the Horn of Africa.

The 2-year grant that CCF received in January 2022 from **International Union for Conservation of Nature (IUCN)** Save Our Species Funds in the amount of €246,500 for the project "Assessing Community Based Natural Resource Management (CBNRM) and Conservancies in Somaliland" from January 2022 to December 2023 is to assess the viability of adapting Namibia's CBNRM approach and conservancy model for Somaliland and to determine if these strategies can help rural communities mitigate conflict with wildlife and reduce wildlife crime while building local governance systems and increasing community resilience. We were able to collect the community data and produce a preliminary report about the understanding and attitude of people toward CBNRM and conduct Somaliland delegates' visitation to Namibia and Kenya for the Somaliland Government to understand the CBNRM concept and importance of Community Conservancy to protect cheetahs and conserve the biodiversity of the country.

The 3-year grant that CCF received from **Department of Environment, Food and Rural Affairs (DEFRA) UK Government's Illegal Wildlife Trade Program** in May 2022 in the amount of £593,587 for the project "LICIT-II: Legal Intelligence and Community Governance for Cheetah Illicit Trade" from July 2022 to June 2025 in Somaliland will enhance national and regional capacity in the Horn of Africa to fight wildlife crime by leveraging gains made through the LICIT project (IWT-066). In addition, proposed community conservation governance will increase community capacity and ownership over wildlife resources, thereby tackling human wildlife conflict driving IWT. Developing new capacity and ownership over wildlife resources, thereby tackling human wildlife conflict driving IWT. Developing new wildlife crime information and intelligence exchange platforms, and strengthened national and regional level legal capacity will allow national enforcement agencies to work better together and, with neighboring jurisdictions, to stop IWT. The project has been launched and activities conducted include identification of Somaliland based NGOs to form Somaliland Association of CBNRM Social Organizations (SACSO) that will help with the Conservancy Model establishment.

CCF received another 5-year grant in June 2022 from the **United States Fish and Wildlife Service** in the amount of $1,000,000 for the project "Creating systems to monitor wild cheetahs and determine drivers of illegal trade in the Horn of Africa "from September 2022 to August 2027. We proposed to develop an intensive, multidisciplinary monitoring and analyses strategy for cheetahs to understand the source of

cheetah cubs and drivers of the cub trade in the HoA. Our project will provide robust scientific data to governments in Somaliland, Somali Regional State (SRS) of Ethiopia, and Puntland (Somalia) to enable development of data-driven National Conservation Plans to reduce cheetah trafficking, poaching, and human-wildlife conflict, and to improve animal care, welfare, and law enforcement practices in the HoA. In Objective 1, we will conduct camera trap surveys to estimate population density and occupancy of cheetahs, their prey, and competitor carnivores in the Awdal Region, Somaliland. We will determine the density-occupancy relationship for cheetahs in Awdal and apply it to other regions in the HoA where less intensive camera trap surveys will be conducted to gather occupancy data. We will build the capacity of Somaliland, SRS of Ethiopia, and Puntland governments by training their staff to conduct occupancy surveys for long-term monitoring of cheetahs and other wildlife, which they will then implement in their own jurisdictions with local community engagement. We will work with Dr. Angela Fuller, Cornell University and Leader of the New York Cooperative Fish and Wildlife Research Unit, who will mentor a postdoctoral researcher in deriving the occupancy-abundance relationship for the first time in cheetahs, and in developing a user- friendly Graphical User Interface (GUI) tool which will be used by HoA government staff to enter and analyze survey data. This GUI will allow governments to not only model the data collected through this project with hands-on training by Cornell scientists, but also to create new datasets and obtain updated models, thus building their capacity for long-term trend monitoring of cheetahs. We will also obtain genetic data on cheetahs in the HoA from cheetah scat collected in the same areas as the camera trap surveys to estimate genetic structure at the landscape level. This genetic data will help us identify the sources of cheetah cubs that are trafficked. In Objective 2, we will analyze cheetah scat with a new molecular technique to understand their diet and therefore actual versus perceived human- wildlife conflict. We will also train Masters' students from Amoud University (Somaliland), Puntland State University (Puntland) and Jijiga/Haramaya Universities (SRS Ethiopia), thus building capacity. In Objective 3, we will build the capacity of local veterinary doctors and students to care for confiscated cheetah cubs and to collect forensic evidence to assist conservation planning and law enforcement. In summary, the intensive ecological, genetic, and veterinary work will provide a comprehensive understanding of the cheetah population and drivers of trafficking, as well as build capacity with governments, academia, and rural communities in the HoA. This project will further solidify cooperation within and among jurisdictions and allow these three governments to more effectively combat trafficking and conserve biodiversity in the HoA. The project has been launched with the respective government of three countries in the Horn of Africa that include Somaliand, Ehiopia and Somalia.

CCF has also received a 1 year grant from the **Rainforest Trust** in the amount of $96,716 for the project "Somaliland Geed-Deeble National Park creation for the cheetahs in Somaliland" from January 2022 to December 2022, the agreement for which was signed on December 2022. The purpose of this grant is to help create the first officially recognized, properly legally gazetted and fully operational National Park Protected Area (PA) in Somaliland in line with international standards, Geed-Deeble National Park. Official recognition of the protected area that aligns with international standards will enable it to be developed and managed with funds from international granting agencies, world bodies and foreign governments. Properly developed and managed protected areas will provide critical habitat for cheetahs and Somali wild ass. Cheetahs are threatened by human-wildlife conflict with farmers and trafficking in the region. Somali wild ass, which are rare and possibly locally extinct, but still persist nearby in Djibouti and Eritrea, would find a safe home in Geed-Deeble National Park under the watchful eye of Somaliland Park rangers and CCF staff. Thus, the objective of this project is to create and operationalize Geed-Deeble National Park, to protect and enhance Somaliland's biodiversity along with providing a safe place for cheetah and Somali wild ass release and reintroduction. The camera trapping survey for this grant has been planned to be conducted during March 2023. After which a free, prior, informed consent survey of the communities around the National Park will need to conducted to legally demarcate the boundary of the National Park.

CCF in partnership with Deutsche Welthungerhilfe e.V. (WHH), a German Organization with a branch office in Somaliland, has received an **European Union** grant in the amount of €235,452 for the project "Engaging Somali communities to improve wildlife trafficking and forest crime control" from June 2022 to May 2024. The proposed project action will, for the first time in Somaliland, merge established anti-trafficking and area protection methodologies to achieve sustainable reduction of wildlife trafficking and forest crime and mutual reinforcement of rural livelihoods and conservation in Somaliland (the overall objective). The action will 1) build on previous efforts by CCF and WHH and 2) provide targeted support to fill capacity gaps that will enable progress toward the overall objective. The project has been launched and activities like baseline survey data

collection has already been conducted and farmers training workshops in the identified communities have been planned to be conducted.

The list below (Table 49) provides information on other grants that CCF has received. The list also provides information on grants that have been submitted and are pending decisions including a British Office of Hargeisa grant and the DEFRA IWT Challenge round 9 grants.

CCF's future strategy is to continue searching for grant opportunities and funders to apply for more grants relevant to the CCF project needs for achieving CCF's strategic goals. Some of the potential funders we are planning to target are National Science Foundation, Biodiversity and Protected Area Management, African Parks and Foundation that are giving funds for conservation works. We will continue seeking funds from IUCN, Rainforest Trust, European Union, and other Government and Non-government agencies all over the world.

The list below also provides designated funds that were raised through targeted campaigns and asked by the development team in the USA.

Table 49: Awarded Strategic Ask/Designated Giving and Awarded Grants/Proposals in 2022.

Recipient	Donor	Designation/Notes	Value	Date Notified/Received
CCF USA	IUCN-SOS	Community Based Natural Resource Management Model for Somaliland	$144,095	11/3/2022
CCF USA	Department for Environment Food & Rural Affairs (DEFRA)	LICIT II	$81,185	8/9/2022
CCF USA	DEFRA	LICIT II	$76,505	10/7/2022
CCF USA	Rainforest Trust	Awarded Somaliland Geed-Deeble National Park creation for cheetahs in Somaliland	$69,016	12/13/2022
CCF USA	US FIsh and Wildlife Services	Awarded Creating systems to monitor wild cheetahs and determine drivers of illegal trade in the Horn of Africa (Referred to in letters of support as: Ecological and social surveys, and genetic sample collection to reduce illegal trade)	$100,000	11/3/2022
CCF-USA	DEFRA	Preproposal Accepted and Full Proposal submitted STOPIT: Stopping Illegal Trafficking of Cheetah in Horn of Africa	£1,500,000	Pending Decision
CCF-Namibia	Wilhelma Zoo	Livestock Gaurding Dog Enhancement Program	$50,830	Pending Decision
CCF-USA	Bruce Brewer	Designated for 'General Managers Discretion at CCFNAM' (IRA distribution)	$100,000	12/16/2020
CCF-USA	Arabian Leopard Fund	Designated for Somaliland Ops	$9,500	12/27/2022
CCF-USA	Foundation for Human Rabies Education & Eradication (FHREE)	Rabies Program	$10,000	11/3/2022

CCF-USA	Foundation for Human Rabies Education & Eradication (FHREE)	Rabies Program	$4,000	12/5/2022
CCF-USA	Arabian Leopard Fund	Somaliland Operations	$8,529	11/8/2022
CCF-USA	Arthur L. and Elaine V. Johnson Foundation	Designated for cheetah confiscation efforts in Somaliland	$9,000	12/8/2022
CCF-USA	Eye of the Eagle Wildlife Sanctuary	Designated for Somaliland Construction	$250,000	08/90/2022
CCF-USA	Steven H. Eklund	Designated to fund the 2023 scholarship to kick start the scholarship fund for the Teresa Delaney Scholarship Endowment Fund	$5,000	10/13/2022
CCF-USA	Helen Tyree	Helen R. Whitson Tyree - Designated for GPS Collars	$40,000	7/1/2022

Corporate Giving

The database of record, Blackbaud, continues to be refined for better data mining to better inform the Corporate Giving strategy. Corporate Giving database processes are reviewed biannually and updated to improve reporting (Table 50).

Standard Strategic Asks have been designed based upon existing ongoing programs. We have begun developing template proposals with basic CCF information, allowing for Fund a Need type content based upon feedback from the field and strategic program plans. We are seeing good success with the Professional Fellows program - provides opportunity for our zoo and animal organization partners to send and cover costs of their trained staff (vets, vet techs, keepers, etc) to spend extended time at one of our facilities, Somaliland in particular, supporting care and upkeep of the cheetahs. The lack of trained staff in the area necessitated a novel approach, at no cost to us to fulfill the daily needs to run the center.

Challenges continue with all CCF affiliates coordinating messaging efforts aligned with the Global Calendar. With global messaging themes allowing for creative cultural and target audience content would have a greater impact instead of competing messaging; would help have a greater reach which potential and existing corporate donors find valuable. Because of this lack of synergy, Corporate Giving strategy is a bit siloed. However, we strive to collectively target and cultivate support based upon who is best positioned to approach and manage relationships globally.

The first half of the year saw more opportunities to connect with the field staff to coach and support staff on in-kind solicitation. Through those interactions, getting a better understanding of ongoing needs and limitations of access inform companies to target based on needs in a more proactive way, lessening reactionary actions. Capacity building for affiliates and some field staff continues to improve efficiencies and effectiveness, including internal communications.

Corporate Giving is working very closely with Grants to identify the best prospects for which identified projects and needs.

It is important to note that we are receiving discounts from many companies that are reducing our costs, therefore improving our bottom line. We are working on a process to quantify the true valuation of their support.

Lastly, we will increase our communications about matching opportunities through employers. And evaluate how best to leverage existing matching relationships with businesses to potentially engage the business directly, where appropriate, cultivating for growth opportunities.

Table 50: Corporate donors during reporting period 1 January – 31 December 2022.

Recipient	Donor	Value (Funds and Inkind)	Notes
CCF USA	African Safari Wildlife Park	$656	Donor
CCF USA	Allied-Locke Industries Incorporated	$1,000	Donor
CCF USA	Amazonsmile	$2,576	3rd Party
CCF USA	ArtShadow Media	$60	Donor
CCF USA	Aspen Business Center Foundation	$5,500	Donor
CCF USA	Bank of America Matching Gift Program	$30	Donor
CCF USA	Benevity - Adobe	$477	3rd Party Matching gifts
CCF USA	Benevity - Apple	$1,650	3rd Party Matching gifts
CCF USA	Benevity - ATT	$39	3rd Party Matching gifts
CCF USA	Benevity - Booz Allen	$50	3rd Party Matching gifts
CCF USA	Benevity - Cambia	$50	3rd Party Matching gifts
CCF USA	Benevity - CBRE	$1,000	3rd Party Matching gifts
CCF USA	Benevity - Fox	$500	3rd Party Matching gifts
CCF USA	Benevity - Gartner	$275	3rd Party Matching gifts
CCF USA	Benevity - Gates Foundation	$300	3rd Party Matching gifts
CCF USA	Benevity - Google	$2,685	3rd Party Matching gifts
CCF USA	Benevity - HPI	$1,100	3rd Party Matching gifts
CCF USA	Benevity - Humana	$110	3rd Party Matching gifts
CCF USA	Benevity - ICF	$200	3rd Party Matching gifts
CCF USA	Benevity - Indeed	$88	3rd Party Matching gifts
CCF USA	Benevity - McKinsey	$200	3rd Party Matching gifts
CCF USA	Benevity - Mircosoft	$465	3rd Party Matching gifts
CCF USA	Benevity - NIKE	$50	3rd Party Matching gifts
CCF USA	Benevity - Oracle	$1,047	3rd Party Matching gifts

CCF USA	Benevity - Clorox	$50	3rd Party Matching gifts
CCF USA	Benevity - Hartford	$25	3rd Party Matching gifts
CCF USA	Benevity - Toyota	$135	3rd Party Matching gifts
CCF USA	Benevity - Travelers	$200	3rd Party Matching gifts
CCF USA	Benevity - UGH	$88	3rd Party Matching gifts
CCF USA	Benevity - Vanguard	$180	3rd Party Matching gifts
CCF USA	Big Cats NFT	$25,000	Donor
CCF USA	Biomimicry for Business	$50	Donor
CCF USA	Bright Funds Foundation	$25	3rd Party Matching gifts
CCF USA	Brown & Brown, Inc.	$15,000	Donor
CCF USA	Cassidy's Cheetah Preserve	$10	Donor
CCF USA	Chantecaille	$2,100	Donor
CCF USA	Charities Aid Foundation America (CAF America) - Disney match	$1,420	Donor
CCF USA	Cherrydale Primary School	$915	Donor
CCF USA	Chubb Charitable Foundation	$250	Donor
CCF USA	CyberGrants Inc. - Target and US Bank Foundation	$478	Donor
CCF USA	Dallas Zoological Society	$10,000	Donor
CCF USA	Denver Zoo	$80	Donor
CCF USA	Elmwood Park Zoo	$150	Donor
CCF USA	Etsy, Inc	$1,802	3rd Party
CCF USA	Extraordinary Journeys Inc	$2,500	Donor
CCF USA	Facebook	$17,626	3rd Party
CCF USA	Feisty Gal Inc.	$150	Donor
CCF USA	First Source Auto Finance Inc	$50	Donor

CCF USA	Flamingo Fencing PtyLtd	$1,000	Donor
CCF USA	Fort Worth Zoo	$36	Donor
CCF USA	Foundation for Human Rabies Edu & Eradication (FHREE)	$10,000	Donor
CCF USA	Fusion Graphics Inc.	$25	Donor
CCF USA	Give Lively Foundation, Inc.	$539	3rd Party
CCF USA	Global Impact	$39	3rd Party
CCF USA	GlobalGiving Foundation	$1,368	3rd Party
CCF USA	Goldman Sachs Matching Gift Program	$9,750	3rd Party Matching gifts
CCF USA	Greater Sacramento AAZK	$200	Donor
CCF USA	Hamerton Zoo Park	$734	Donor
CCF USA	Honeywell International Charity Matching	$108	Donor
CCF USA	Honolulu Zoological Society	$165	Donor
CCF USA	Infinite Safari Adventures	$1,080	Donor
CCF USA	Jewish Communal Fund	$1,200	Donor
CCF USA	Johnson & Johnson	$1,719	Donor
CCF USA	Kayne Anderson Capital Advisors Foundation	$1,000	Donor
CCF USA	Knights Templar	$25	Donor
CCF USA	Law Offices Of Julia E. Burt, APC	$20	Donor
CCF USA	Learning & Decision Neuroscience Laboratory	$28	Donor
CCF USA	Lee G. Simmons Conservation Park & Wildlife Safari	$2,000	Donor

CCF USA	Magma Heritage Pte. Ltd.	$512	Donor
CCF USA	Moon Joggers	$35	3rd Party
CCF USA	MyUS	$3,000	Donor
CCF USA	Nashville Zoo	$26,135	Donor
CCF USA	Network For Good	$1,121	3rd Party
CCF USA	Novartis	$200	Donor
CCF USA	Omaha's Henry Doorly Zoo	$645	Donor
CCF USA	One4All Charitable Fund at Cauze	$135	Donor
CCF USA	Pasadena Community Foundation	$1,177	Donor
CCF USA	PayPal Giving Fund	$2,392	3rd Party
CCF USA	Pueblo Zoo	$85	Donor
CCF USA	Pyatok Architecture + Urban Design	$100	Donor
CCF USA	Remembering Wildlife	$15,000	Donor
CCF USA	Rice Wealth Management Group, Inc.	$50	Donor
CCF USA	Roer's Zoofari	$100	Donor
CCF USA	Safari Game Search Foundation	$96	Donor
CCF USA	Scovill Zoo AAZK Chapter	$2,000	Donor
CCF USA	Sherpa House	$100	Donor
CCF USA	St. Patrick Catholic School	$109	Donor
CCF USA	Tajiri's Barn Pals	$575	Donor
CCF USA	Texas Instruments Foundation	$200	Donor
CCF USA	The Baltoro Trust	$1,000	Donor
CCF USA	The Estate Jewelry Collection	$3,000	Donor
CCF USA	The Explorers Club	$13,038	Donor

CCF USA	The Kong Company	$250	Donor
CCF USA	The Seattle Foundation - Microsoft Alums	$400	Donor
CCF USA	The Walt Disney Company Foundation	$80	Donor
CCF USA	The Zoo Foundation, Inc. DBA: Alabama Gulf Coast Zoo	$20	Donor
CCF USA	Thomson Reuters	$100	Donor
CCF USA	Timken Co Charitable and Ed Fund Matching Gifts	$100	Donor
CCF USA	TisBest Philanthropy	$70	Donor
CCF USA	U.S. Charitable Gift Trust	$400	Donor
CCF USA	United Way of Northeast Florida	$101	Donor
CCF USA	WePay	$26	Donor
CCF USA	Wez Wildlife	$9	Donor
CCF USA	WILD Foundation	$280	Donor
CCF USA	Wildlife Conservation Network (WCN)	$31,078	3rd Party
CCF USA	Wildlife Conservation Society (WCS)	$1,750	Donor
CCF USA	Wildlife Protection Solutions (WPS)	$1,212	Donor
CCF USA	Wolfchase Animal Hospital	$4,200	Donor
CCF USA	YourCause LLC	$1,899	3rd Party
CCF USA	Zoological Association of America	$333	Donor

Events

Dr Laurie Marker's Tours

CCF Mid-Year Report, Spring 2022: Let's Keep the Wild, Wild Fundraising Tour

Dr. Marker's North American fundraising tour for 2022 was the first in-person tour since 2020 following the Covid pandemic. Dr. Marker traveled from Namibia and Somaliland to the USA to support the endangered cheetah with numerous VIP events celebrating the theme, "Let's Keep the Wild, Wild." The national tour started on April 10 and lasted for five weeks ending on 14 May. Dr. Marker flew from East Coast to West Coast visiting seven states and 12 cities.

The VIP fund raising events were hosted by CCF Board of Directors and Trustees in the following major cities: Washington, DC. Nashville, New York, Colorado Springs, Denver, Seattle, Portland, Los Angeles, and San Francisco. Each sponsoring host of the respective areas donated a special amount ranging from $5,000 to $20,000 to be matched by the CCF attending guests. This VIP challenge match was very successful with each fundraising event reaching its goal for the spring tour challenge.

In conjunction with the spring tour, CCF also fundraised through the annual CCF Online Auction raising over $40,500, the Spring Appeal and Cheetah Strides in which all donations captured supports CCF's ongoing research and conservation programs in Namibia for the endangered cheetah.

The *Let's Keep the Wild, Wild* fundraising revenue totaled $279, 779.16.

CCF Annual Report, Fall 2022: Let's Keep the Wild, Wild Fundraising Tour

Dr. Marker's fall fundraising tour 2022 finally opened up with her travel to the USA after being shut down since March 2020 from the Covid 19 pandemic. Dr. Marker traveled first to San Francisco on 25 September to kick off her fundraising tour with a special event on the Empress Yacht before flying to Washington, DC to host the first in-person CCF Annual Board meeting on September 30 at the Cosmos Club. The turnout from CCF's Board and Trustees was exceptional with over 40 attendees at the weekend events and meetings.

Dr. Marker's national tour lasted six weeks ending on 31 October 31 2022. Dr. Marker traversed the USA flying to nine states and visiting 19 cities to raise awareness of the endangered cheetah and illegal wildlife trade.

During Dr. Marker's visit, CCF Directors and Trustees hosted in-person fundraising dinner and luncheon events in the cities of Los Angeles, San Francisco, Chicago with special cheetah fundraisers hosted in Washington, DC, the Bronx Zoo, Safari West, and Portland's annual Big.Cat Big Party. Dr. Marker also had major speaking engagements at Wildlife Conservation Network, the Omaha Zoo, Nova University, the Miami Zoo and the Living Desert. She also had the pleasure of a cheetah showcase fundraiser at Wild Wonders as well as a sold out lecture series hosted at the Phoenix Zoo.

During the fall tour, CCF also raised funds through its annual online auction raising almost $10,000.

The *Let's Keep the Wild, Wild* fundraising revenue for fall totaled $237,969.90.

Chapter Events

Complementing Dr. Marker's visits to the US, regional chapters have been encouraged to support events. This includes events and speaking tours under Brian Badger. These are events that support CCF in communities. In 2022 some of these events were supported with multiple e-blasts targeted to specific people based on regional areas and have also been posted to Facebook. The total revenue for these events for Year-End 2022 totalled $15,006.46, which includes Brian Badger speaking tours.

2022 Chapter Reporting

Arizona

- 23 March 2022 - Chapter 1st Anniversary.
- 22 April 2022 - Earth Day at Phoenix Zoo, educational booth, staffed by 2 volunteers (chapter member) and supported by chapter members (Phoenix zoo employee).
- 30 October 2022 - Fall tour '22 w/Dr. Laurie Marker.

<u>Phoenix Zoo</u>

  - Approx. 140+ attendance/majority new people
  - Staffed by 8 volunteers (chapter members & Cheetah Kids') & supported by all active chapter members (first time we've been together in person ☺)
  - Monies raised: $22,500 (donations & merchandise)

- 29 October 2022, Tucson donor dinner (5 people)
- 30 October 2022, Phoenix chapter lunch (14 people) & Phoenix donor dinner (18 people)
- 4 December 2022, ICD: Planned educational booths at Phoenix Zoo & REID Park Zoo (Rained out)
- Monthly Meetings: 7-10 active members
- All Inner Chapter Meetings

Colorado

- Virtual Running Wild 5K - Regis College
- Spring Tour - Pikes Peak Community College, Merchandise ($1,200)
- All Inner Chapter Meetings

Indiana Chapter

- 5 – 6 May 2022 - 500 Festival Mini-Marathon Expo (Merchandise & Education booth) Indiana, The 500 Festival Mini-Marathon Expo, education/fundraising, 200 stopped to talk or shop, but 1000s walked by, ($572.95), two chapter volunteers worked plus staff over the course of the two days.
- Restaurant Fundraiser
- 1 Active Volunteer

Michigan Chapter

- REx Sense Technology - developing millimeter waves (think Wifi) to sense changes in motion and applying software to distinguish what that means - in our case, motion deriving respiratory rate & specific animal motion (or lack thereof) and, in future development, heart rate.

- 7 Non-Active Volunteers

New York Chapter

- 24 April - Laurie Marker (in-person) Chapter Brunch
- 30 April - Run for the Wild at the Bronx Zoo. CCF team set up to support Trustee - Kathleen LaMattina. Raised almost $1,000 for the Wildlife Conservation Fund.
- 1 June to 31 July 2022 - Juried Kids Art Competition
- 15 June - Giraffe Day at the Bronx Zoo. First of the summer camp classes. Canceled
- 25 June - OrangeTheory Fitness, Poughkeepsie, 5k run to raise money for CCF. The winner gets a wildlife encounter with a cheetah at the Bronx Zoo.
- 29 June - Live event at Bronx Zoo. Second of the summer camp classes. Canceled
- Active with 7 chapter volunteers who attend the All Inner Chapter Zooms & hold monthly meetings
- 13/14 July - Cheetah Ecosystems. The third summer camp class.
- 27 July - Livestock Guarding Dogs. Forth and final class of summer camp.
- 31 July - Conclusion of the Juried Kids Art Competition
- 15 September - Paint and Sip fundraiser. Canceled due to poor enrollment. .
- 2 October - Bronx Zoo fundraiser. This was scheduled to coincide with Laurie's fall tour. Total raised was $11,325.
- 4 December - Cheetah Polar Plunge. Participated with the Coney Island Polar Bears. Total raised $2,960.

Northern California Chapter

- Non Active volunteers with Chapter members who have attended monthly All Inner Chapter Zoom.

Southern California Chapter

- Cheetah Hotel Partnership created
- 27 March 2022 - Heart of Gold, Fundraiser, Appx. 40+ in attendance, ($5,000+) (majority in donations w/raffle and some small merchandise sales), 1 volunteer.
- USA Merchandise: ($100.80)
- Namibian Merchandise: ($150)
- Raffle Tickets: ($380)
- Donations: ($4,634.20), which includes ($3,000) from the gold buyer.
- December Palm Desert and San Diego Blaze Pizza Fundraiser ($ 22.23 Palm Desert and $19.08 San Diego)

- Hosted Laurie Marker for Fall Tour in October at Wild Wonders (4 members volunteered)

- Attends Monthly All Inner Chapter Zooms, 3 to 10 Active Volunteers

Tennessee Chapter

- ICD at Memphis City Zoo, FaceBook Birthday Fundraiser ($236), New startup Chapter in 4th quarter 2022, one active member, attending monthly zoom meetings. Actively seeking volunteers to kick off 2023.

Texas Chapter

- 15 January 7:00 PM - CSThttps://fb.me/e/1sJ07hY2H, CCF Texas Chess Online Rapid, virtual game event, 15 people ($525)

- Cheetah Kids Chapter with ten active members

- Acquired one new planning member.

- Held monthly meetings on Zoom.

- December 3 – Tabled at Dallas Zoo. Got a new lead for a possible 2023 event.

International Affiliates

Aktionsgemeinschaft Artenschutz (AGA) e.V.

Exhibition and Info Booths

At the beginning of 2022, due to COVID-19 restrictions, it was still not always possible for AGA to set up information booths at fairs and festivals throughout Germany.

In February, everything slowly started to normalize, and AGA was able to show the conservation and cheetah exhibition at schools. In March the exhibition was also part of the 2nd International Meeting on Zoo Research, Conservation and Biodiversity at Serengeti Park.

Later, in April, the cheetah exhibition was shown at the Dog Spring Fair in Switzerland.

In September, AGA was able to not only show the exhibition but also to inform about cheetah conservation in Namibia and Somaliland with an information booth at the Wilhelma Zoo´s conservation day.

The same was possible on 4 December 4 for International Cheetah Day. Visitors at the zoo were very interested in cheetahs, also due to five cheetah babies born this year. That made a great opportunity to inform people about cheetahs in Namibia and Somaliland and CCFs work.

Special Fundraisers

Through a matched fundraiser at the online-fundraising platform betterplace.org in May, AGA was able to raise about 3,500 Euro. A second matched fundraiser by the end of October helped raise another 2,600 Euro.

AGA was also able to secure another donation of 2,000 Euro from the Serengeti-Park Zoo. The donation was used to hold a snake awareness course for CCF staff. Serengeti-Park Foundation is interested in donating again towards a special project in cheetah conservation in 2023.

AGA still has a good cooperation with Wilhelma Zoo and their support towards CCF will continue. In April AGA helped organise the transport of Jenny, a puppy donated by Kristina Peez, from Germany to Namibia, where she´ll work as a LGD and breeding dog. Transport costs for Jenny and Tim Hofmann, who travelled with her, were also sponsored by Wilhelma Zoo.

Moreover, AGA has held some auctions with Europe´s largest online auction platform "United Charity" throughout the year and especially for International Cheetah Day. It was possible to raise 2,000 Euro for cheetahs and CCF.

AGA has once again received a donation of 12,300 Euro from the Konrad Mayer & Peter Scheufler Stiftung.

Together with other donations, we were able to send 91,000 Euro for cheetah conservation in Namibia and Somaliland.

Last but not least, AGA was able to secure a grant of the 24-good-deeds Advent calendar. The project "care for cheetah babies in Somaliland" made it into the 2022 advent calendar and will receive a grant of approximately 50,000 Euro.

Birgit Braun Awarded

In April, Birgit Braun was awarded with the Order of Merit of the federal state of Baden- Wuerttemberg. Birgit received the award from the prime minister of the federal state of Baden-Wuerttemberg, Mr. Winfried Kretschmann, not only for her ongoing and outstanding efforts and success in protecting endangered species, but also for her pathbreaking work to introduce wildlife detector dogs at relevant enforcement authorities, like Customs, to detect wildlife contraband.

At the reception after the ceremony, Birgit used an opportunity to talk to the prime minister of the federal state of Baden-Wuerttemberg about cheetah conservation and about the fact that keeping cheetahs as pets is still legal in the federal state of Baden-Wuerttemberg. Although there are not many cheetahs being held as pets in Germany in general, it is still an important subject which we thought should be addressed. The prime minister was quite surprised to learn about it and promised to look into it.

Email and Snail Mail Newsletter

Throughout the year AGA used mail newsletters, the homepage and e-mail newsletter to inform its donors and raise awareness and donations for CCF.

Social Media

AGA used its social media channels to inform about cheetah conservation and CCFs work throughout the year. In December AGA promoted the CCF Year-End-Matching campaign and the International Cheetah Day on social media and highlighted it on AGA´s website. Lara Loft, a German actress, voice artist, and video gamer supported AGA with an Instagram story on 4 December. She´s got more than 237,000 followers.

Cheetah Conservation Fund Australia (CCFA)

Cheetah Conservation Fund Australia has continued to receive regular donations from The Henry and Cecilia Foundation and Goodwill Wine during 2022, along with the annual donation from ZOOSSA. In addition, CCFA continues to receive regular donations from a number of private donors. These donations allowed CCF to send AU$8,000 to CCF Namibia during the first half of 2022, while still maintaining an adequate balance in Australia. There were a number of donations made by private donors around the end of the financial year (30 June), and by the end of the year, there were enough funds raised to send more funds to Namibia in the new year.

Cheetah Spots #12, CCFA's newsletter was sent to all Australian donors and supports in June and it highlighted the work done by CCF in Somaliland, while celebrating the new cheetah cubs born at ZOOSSA's Monarto Safari Park. The team at ZOOSSA is definitely working on ensuring a successful breeding program in Australia! Monarto's twin cubs have been named after two cubs (Hani and Absame) in Somaliland to help strengthen the relationship between ZOOSSA and CCF and hopefully increase the awareness to Australians about the illegal wildlife trade in the Horn of Africa.

Work is continuing to ensure the cheetah is not forgotten, despite the troubling times in which we live. The Executive Board has welcomed Glenys Chinery to the Board of Directors after Jaimee Button resigned during the year. This brings renewed enthusiasm and new ideas to help grow the organisation. The Executive Board are still holding regular monthly meetings with regular attendance from Lauren Pfeiffer. CCFA is continuing to work with CCF to ensure the smooth transfer of a financial contribution left in a legacy to CCF Namibia

CCFA is also in the process of developing a new partnership with Wild Cat Conservation Centre, based in New South Wales with the hopes this organisation will be able help raise awareness about cheetahs and CCF, while also supporting CCFA financially. There is the potential for Lauren Pfeiffer and a couple of CCFA Directors to visit the center in Sydney next year, to meet with the Director of the Wild Cat Conservation Centre to discuss the next steps of developing this partnership. There is also the potential for setting up "Zoo Tours" between the Wild Cat Conservation Centre and CCF Namibia in the coming years.

CCFA makes regular posts to our Facebook page and website to keep fellow Australians informed about the work that is happening in Australia, Namibia and Somaliland to save the cheetah. During the December Directors' meeting, Karlene Parish from CCF Somaliland joined the meeting to help build the relationship between CCFA and CCF Somaliland. Karlene is from Perth and is currently working in Somaliland with her husband Chris Wade.

International Cheetah Day was celebrated in Australia via our zoo partners. The Wild Cat Conservation Centre hosted their first open day to the public on 4 December and special events took place at Monarto Safari Park.

Cheetah Conservation Fund Canada (Cheetah Canada)

In 2022, we raised C$183,000 (CDN) and transferred C$179,568 to CCF Namibia, CCF Somaliland and Mara-Meru Cheetah Project - Kenya for various initiatives/programs. This has been our best year to date.

Funds Transferred

In addition to our support of four key programs in Namibia, we also provided support for cheetah care & rehabilitation in Somaliland.

B2Gold continued their third year of funding (C$50,000) for the project on restoring wildlife-livestock balance in the rural lands in east-central Namibia.

Funding from a Canadian foundation (C$12,000), the first of three installments (January 2023 and 2024 to follow) to rebuild the Silver Pens, encompassing a four hectare area.

C$16,560 was transferred directly to Mara-Meru Cheetah Project in Kenya to support field research and conservation as well as community education work. They work in affiliation with CCF Namibia.

Events and Outreach

We held an online town hall in April with a group of donors to update them on the activities of CCF Canada and CCF Namibia. We also had Vanier College representatives speaking about their new initiative to support students in gaining wildlife management experience abroad.

We conducted our third on-line auction in June and raised close to C$2,000.

Our second annual Cheetah Fit Challenge, (17 September 17 – 1 October), raised nearly C$25,000 to provide care for the cheetah cubs in Somaliland. We have made initial plans for the third annual event in autumn with an increased goal of C$35,000.

We held a cross-Canada Zoom meeting with Dr. Marker in October, which focused on the work that CCF is doing in Somaliland and the re-introduction of cheetahs into India.

We collaborated with the Toronto Zoo, on the occasion of International Cheetah Day, with an online event including a large group of the Zoo's volunteers and staff, featuring a Q&A with Dr. Ashley Marshall and Ms. Nathalie Santerre, both of whom had recently completed more than six months at CCF's safe houses in Hargeisa.

We issued our twice-yearly "Cheetah Tracks" newsletter in May and November, with highlights of Canadians who are engaged in CCF programs.

We ended the year by doing a fundraising specific to Emergency Medical Care for cheetah cubs in Somaliland raising C$4,095 for the purchase of equipment and drugs. https://cheetah.org/canada/2022/11/29/emergency-care-for-cheetahs-insomaliland-supplies-are-needed/

Research in Canada

The CCF Genetics team is undertaking a project with a Canadian government isotopic lab to analyze the hairs of the Somaliland cheetahs to identify their provenance. CCF Canada has assisted in the process; contacting the CITES Secretariat in Ottawa, and engaging the Toronto Zoo (with their ample cheetah population) to provide hairs for comparative purposes. The results of the analyses will be a collaborative report to be released in a forthcoming scientific journal.

Education - Canadian students

The Vanier College will be moving ahead with an internship program at CCF Namibia providing hands-on experience to students in Ecology and Vet Tech. A total of 10 students, in groups of 2-3 at a time, will be at CCF between 6 February and 2 June.

A delegation from the College, including the Dean, several professors and program administrators will visit CCF in April, to see firsthand the comprehensive aspects of CCF's work.

After a three-year hiatus, the vet students from Guelph University's Ontario Veterinary College (OVC) will be returning to CCF Namibia in August, as part of the College's Global Vets international program. Three students will spend a month at CCF Namibia.

OVC ranks 5th in the world in veterinary science, with a stated mission to be considered a world leader in advancing veterinary science, learning and research to improve the lives of animals, people and our planet.

Cheetah Conservation Fund United Kingdom (CCF UK)

Funds raised and sent to CCF

£273,767 (USD342,209) was sent to Namibia and Somaliland in 2022, the most we have sent in one year. CCF UK raised £135,000 in 2022 from campaigns, grants, corporate partnerships, individual giving and legacies.

Namibia

£127,000 (USD157,750); £21,600 for FFA, £5,000 for education outreach, £1,769 for cheetah collars, £10,022 for cheetah sponsorships and £650 for LGDs. The remaining £87,996 was unrestricted.

Somaliland

£153,767 (USD192,209): £30,350 for cheetah care, £20,000 for FFA, ranger training and community awareness, £25,000 for a 4-wheel drive and £8,767 for veterinary products which were hand carried to Hargeisa by UK vets and volunteers. The remaining £69,650 was unrestricted.

Events and Campaigns, Grants, Digital

1. April/May: Under "Keep the Wild, Wild" banner, a Big Give matched fund campaign raised funds for FFA and ranger training in locations around the Cheetah Rescue and Conservation Centre in Somaliland. With £5,000 matched funds from a Conservation Circle member, we doubled the target and raised over £20,000.

2. May/June: Race for Cheetahs in May/June raised over £4,000 from supporters, volunteers and Cheetah Cubs running, walking, swimming for cheetahs.

3. November/December/ICD: Campaign for the LGD programme, including a Name the Puppies drive, raised over £20,000.

Grants

a. UK Grants: £6,135 from UK Charitable Trusts

b. International Grants: Trustee Dr Jane Galton is part of CCF's IWT team and was integral to writing the proposal for UK DEFRA IWT Challenge Fund Round 8, in Sept 2021 and March 2022. CCF was successful and won £600,000. A 2nd submission to the IWT Main Grant of £1.5million was submitted on 19 December, results pending. CCF UK does not receive funds from these grants but much time is spent supporting proposal writing and advising on project implementation.

Digital

Followers

- Instagram: 1,972 -> 2,879 (+45%)
- Facebook: 4524 -> 5835 (+29%)
- LinkedIn: 246 -> 533 (+117%)
- Twitter: 1362 -> 1570 (+15%) UK Registered Charity: 1079874

Engagement

- Average across all platforms: 10.98%
- Instagram: 13.32%
- Facebook: 8.82%
- LinkedIn: 11.87%
- Twitter: 9.34%

Conservation Circle

The Conservation Circle comprises 13 members, some of whom donated matched funds for the campaigns. We hosted a lunch in May to meet the CC members, with Dr Jane Galton and Ambassador/Trustee Giles Clark, TV presenter and wildlife conservationist, also attending.

Corporate partnerships

Anglo American Foundation: Funded CCF UK for the 3rd year for £5,000 to support FCA school education work in hard to reach locations in Namibia.

Fauna Brewing (Cheetah Lager): donated £1K with increasing amounts promised for 2023. Fauna hosted a fun run at Arundel Castle (owned by the Duke of Norfolk, the father of Fauna's owner) and CCF UK had a stand, supported by 8 of our volunteers and a budding Cheetah Cub!

Unicorn Ingredients: £1,500 to the LGD programme in memory of the CEO's daughter, Jenny. One of the new breeding dogs has been named after her.

Super League Triathlon Team Cheetah: MoU signed for CCF UK to receive a % of membership fees but there have been no donations to date.

Partnerships with Zoos

CCF UK is building partnerships with zoos and sanctuaries and will grow these relationships post Covid.

1. Hamerton Zoo: A cheetah day is held every August and CCF UK provided merchandise, raising over £2,000

2. Exmoor Zoo: This is a new partnership worth £5,000 per year plus funds raised through events and donations. We are developing signage for the cheetah enclosures.

3. Dartmoor Zoo: CCF was the chosen charity at a recent EAZA dinner and money was raised (£450) for the LGD programme. A more formal partnership is being explored.

4. Big Cat Sanctuary: Donate annually to CCFUK, £2000 in 2022.

Volunteers and Cheetah Cubs

Active volunteers (19), participated in face to face and virtual fundraising events. All volunteers on our database (35) received a monthly Cheetah Chit Chat newsletter and were invited to 2 virtual events throughout the year, with guest speakers such as CCF's LGD Manager and Giles Clark, and participated in 3 face-to-face fundraising events. We are developing fundraising packs to support individual fundraising endeavours with training planned in Q2, 2023.

Cheetah Cubs (34). This is CCF UK's programme for young cheetah supporters. They received a bespoke monthly newsletter and attended 5 workshops in February, April. July, August and October to educate them about conservation, wildlife and cheetahs. They also took part in a 30-day challenge in April and raised over £1,168.

Other Projects

Cheetah (the movie): This is a drama based on the Iranian cheetah, script developed by a UK screen writer and being produced by Bedlam Productions (who produced the Kings Speech, Oscar winner best picture, 2010). Dr Marker and Dr Galton are members of the Science, Conservation and Education committee. Jane

has been advising on script development and managing the relationship between CCF and the producers for over 2 years. Filming is due to start in India in October 2023.

Non-Fungible Tokens Wild Cat Initiative: CCF UK developed the offer and worked closely with the team behind the initiative, designed to raise millions for 4 big cat charities. However, due to the collapse of cryptocurrency Ethereum in 2022, the team closed the project in January 2023.

Organisational Update

Our Fundraising Consultant left in June after 4 years with CCF UK and a Development Director Consultant started in July with a focus on building Major Donor, grant and corporate portfolios. Due to family issues, he stood down in November but a replacement (currently Fundraising Manager, Big Cat Sanctuary) will start in February 2023. We also hired a parttime Individual Giving (IG) consultant end October to build our IG donations, improve donor retention and increase donor recruitment (he worked for Born Free for 10 years). He and our excellent Digital and Volunteering Leads worked closely together in November and December to co-ordinate campaigns, fundraising and social media, and he is off to an excellent start.

Three new Trustees joined the board in June with a variety of new skills and experience to help CCF UK access more networks and broader connections. CCF UK now has 9 Trustees, with 4 Trustee meetings held throughout the year. The Senior Management Team, comprising volunteers and consultants, held 4 meetings to discuss and implement fundraising and awareness-raising opportunities.

Cheetah Conservation Fund France (CCF France)

Ambassadors

- Olivier ANRIGO, Photographer
- Quentin URBAN, Kayak World Champion

Events

- In November 2021, CCF organized a course at BIOPARC.
- In September 2021, CCF participated in the International Union for Conservation of Nature (IUCN) event in Marseille.
- In March 2022, Laurie Marker and Shira Yashphe gave a conference at the Ecole Vétérinaire in Lyon.
- In April 2022, CCF France participated in Planète Sauvage, organizing conferences and setting up a stand.
- In August 2022, CCF France set up a stand at BIOPARC.
- In December 2022, CCF organized a cheetah day at Safari de Peaugres, during which a donation of 5000 euros was made.

Partners

In 2022, partners donated 93 euros to Tyger, 160 euros to One For Us, which later went bankrupt, and 656 euros to Hundred Gin, which ended its contract.

Zoos that donated to CCF are Beauval, BIOPARC, Safari de Peaugres, and Planète Sauvage.

- As part of our collaboration with the BioParc, which regularly donates to the CCF, we participated in the Biodiversity Days on August 24. One of the creators of the BioParc, Pierre Gay, has published a book that honors the work of the CCF

Network Animation and Projects

Project:

CCF mission in Monaco with O Anrigot.

- Network development: CCF is working with the School Vet-agro of Lyon and following up with young people met at the IUCN Congress in Marseille.

- Sport and Cheetah: CCF is collaborating with individuals in the sports industry, including sports physiotherapist and writer Michel Dufour and French rugby player Pascal Pierre, to promote cheetah conservation. CCF is also a candidate for a donation in 2023.

- Entreprises: CCF is collaborating with Tratel, an unknown company.

- Ministry of the Environment in France: CCF is planning to work with the Ministry of the Environment in France to relaunch a project in 2023.

CCF (Cheetah Conservation Fund) Namibia and CCF France are collaborating with the Veterinary **School VetAgro Sup of Lyon**.

- In March 2002, Dr. Laurie Marker and Dr. Shira Yashphe, who were responsible for combating the illegal trafficking of cheetahs for CCF, participated in the 74th session of the CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) Standing Committee in Lyon. On this occasion, CCF France and the Club Yaboumba*, dedicated to the study and preservation of wildlife, organized a meeting between Laurie, Shira, and the students of VetAgro Sup, a veterinary school in Lyon. This was an opportunity for CCF France to expand its contacts, and for CCF Namibia and VetAgro Sup to strengthen their ties in view of internships and scientific exchanges.

Planète Sauvage is an organization that invited CCF France to animate (organize) two days around the cheetah on April 22 and 23, 2022, on the occasion of World Earth Day.

The intention of the event was:

- To make the exceptional abilities of the cheetah known to visitors and partners.

- To collect donations to support CCF Namibia's programs to save the species from extinction.

Despite capricious weather on the second day, the animations, the cheetah race, the stand-exhibition at the foot of the cheetahs' enclosure, the conferences, and the sales of handcrafted jewels made by the local communities of Namibia and other items, allowed CCF France to gain more than 30 new supporters and raise €6,000 in donations. This amounts were transferred to CCF in August and December 2022 during the campaigns of doubling the donations by the partner sponsors of CCF, as and when the effective payments by Planète Sauvage are made.

Cheetah Conservation Fund Italy (CCF Italia)

The first 8 months of 2022 have seen a big commitment by CCF Italia to organize different activities starting in 2021.

During the first three months of 2022, people (members and non-members of the association) asked for calendars. All 150 were sold.

CCF Italia organized the contest DRAWINGFORCHEETAH and received applications for 8 different Art High Schools from a11 over Italy who applied for it. Instructions were sent including all technical details and participants were asked to send all works not later than 30 June. A panel of five jurors voted for the best works by 30 September.

The Jury: Honorary President of the Jury: Dr LAURIE MARKER, Cheetah Conservation Fund

Jurors:

- SARA POZZOLI, Editor in Chief of Focus, Wild, Focus Jr. and Focus School at Mondadori Scienze SP A (Publisher)
- ANNA RITA CENTURA, artist and graphic designer
- GIANNI MAITAN, CEO at GEMATA SPA and passionate wildlife photographer
- EMANUELE BIGGI, biologist and anchorman at GEO 3, RAI (Italian National TV)
- RAFFAELE DI PLACIDO, Marine biologist and anchorman at TV programs La7 etc.

Votes were be closed on 30 September, and CCF Italia proceeded to the organization of the event which took place on 4 December, International Cheetah Day, where the best were awarded and received prizes.

More than 180 works were received.

Betty von Hoenning O'Carroll worked with Dr. Valentina Rossi to prepare documents to be sent to the government to change the charitable registration of the association. Official recognition was given by the Ministry of Labour on 16 March 2022, as a Charity and taking immediate effect.

Three educational events occurred in schools starting on 28 March. Betty introduced CCF at the Primary School of Campiglia Cervo, where presentations were done in 2016. Because of the pandemic, education outreach was paused in 2021. They met with all 5 classes on 28 March and had a second meeting on 16 May.

On 28 April – Ornago, Kindergarden School of Ornago with volunteers Valentina Rossi, Elisa Fimiani both Education CCF Italia Members. The meeting and the cheetah run organized on 19 May were a great success, and other schools want to host us next year.

Secondary School in the Biella Area : Presentations about the cheetah hosted by the Director of the Schools.

2 May – Pralungo Secundary School

11 May - Tollegno Secundary School

12 May – Andorno Secundary School

The students were very interested and the same experience will be repeated in other schools. At the same time, the partnership with TERRESOLIDALI will continue and CCF Italy will participate in a call for financial resources about conservation, sustainability and environment.

On 15 May – Event at Palazzo Gromo Losa, Biella, during the SELVATICA FESTIVAL. The attendance was not as big as we hoped for, even if the venue was beautiful, but the communication was not well organized (Fondazione Cassa di Risparmio di Biella).

On 19 May, there was a second meeting at the Kindergarden in Ornago (near Milan) with Cheetah Run by the children. CCF Italy was referred to by a former student of Betty's and is now mother, Anna PARADISO, who made a wonderful work preparing the cheetah run bushes, antelopes, preys, etc. to reproduce the savannah.

On 17 May Betty had a meeting on Webinar with a Primary School in Umbria, Center Italy. Again, big success with follow up.

During the second half of the year, we concentrated on the Contest DRAWINGFORCHEETAH and organised, together with Parco Natura Viva, the event on December 4, where we were joined by our Board and many members and students (parents and friends) of the contest.

We organised a sale of items (raised 730€) and had the speech of the Director of the Park, Dr. Cesare Avesani Zaborra, a biologist of the Park, our Vicepresident Dr. Maurizio Ritorto, the SL vet tec Alessia Uboldi who made a report about her experience in Somaliland, and showed a video about the situation in Somaliland.

All the drawings have been given to us for any purpose for one year, we sent them to Heather and made some mugs and t-shirts to sell.

Before the end of the year, we wired a donation of 3,000€ to CCF Namibia, and the following items have been shipped to Somaliland by container:

- 4 kennels (plastic size XXL 80x120x120 cm) for transport of cheetahs;
- 5000 surgical masks;
- 5000 blue Nitrile gloves (strong);
- 60 plastic boxes for meat;
- 800 sterile Beroject syringes ml.1;
- 800 sterile Beroject syringes ml.2;
- 800 sterile Beroject syringes ml.20;
- 150 cannula needle Jelco 22G blue;
- 150 cannula needle Jelco 24G yellow;
- 300 sterile hypodermic needle G18X1/2 pink;
- 300 sterile hypodermic needle G20X1 Yellow short;
- 300 sterile hypodermic needle G23X1;
- 750 surgical masks ;
- 6 walkie-talkies MIDLAND GPRO equipped with batteries and chargers;
- 40 new blades for bonesaw (by DHL);
- Daninject CO2 cartridges 16gr - 3 boxes of 10X

- 1 stainless steel vet table for Geed Deeble.

B. PR, Marketing, and Media

1. Social Media

CCF's social media has a total audience of 350,14 users across its main accounts @ccfcheetah. During 2022, the total net social media audience growth across these platforms increased by 2,076 (+545.5%) as compared to 2021.

Impressions

The number of times content was displayed to viewers: 2,884,527 (-2.3%)

Engagements

Reactions, Comments, Shares, Clicks etc…: 250,263 (-10.3%)

- Post Link Clicks: 15,040 (+134.5%)
- Engagement Rate (per Impression): 8.7% (-8.4%)
- The type of posts within the highest engagement were evenly split between photo and video
- The subject matter of posts with highest engagement rates per impression during this reporting period:
    - The relocation of cheetahs from Namibia to India
    - International Cheetah Day
    - IWT and confiscations in Somaliland
    - Volunteer event promo/thanks(5K race)

CCF Facebook @CCFCheetah

Facebook Net Page Likes: 707 (+157%)

Facebook Impressions: 2,516,503 (+12.2%)

Facebook Engagements: 200,891 (-7%)

- Facebook Engagement Rate: 8.0% (-17.2%)

Twitter @CCFCheetah

Twitter Net Follower Growth : 25 (+219%)

Twitter Impressions: 125,836 (-41.8%)

Twitter Engagements: 7,122 (-19.4%)

- Twitter Engagement Rate: 5.7% (+38.5%)

Instagram @CCFCheetah

Instagram Net Follower Growth: 279 (-53.3%)

Instagram Impressions: 153,950 (-68.6%)

Instagram Engagements: 25,764 (-52.3%)

- Instagram Engagement Rate: 16.7% (+52%)

Pinterest @CCFCheetah

Pinterest Net Follower Growth: -1

Linkedin @CheetahConservationFund

LinkedIn Net Follower Growth: 1,114 (+465.5%)

LinkedIn Impressions: 88,238 (+2,062.7%)

LinkedIn Engagements: 15,836 (+9,107%)

- LinkedIn Engagement Rate: 17.9% (+325.7%)

YouTube

YouTube Net Subscriber Growth: -48

YouTube Engagements: 650

Website

Google Search Console and Google Analytics

Search by device from 1 January 2022 - 31 December 2022:

- 141 thousand Clicks on CCF's content from Google's search engine results across all platforms (desktop, mobile, and tablet)
- 13.8 million Impressions of CCF's content from Google's search engine results, across all platforms (desktop, mobile, and tablet)
- CCF's average position in Google's search results for desktop users is 9.6
    - Desktop position is 12
    - Mobile position is 8.1
    - Tablet position is 7.7

Site traffic by device from 1 January 2021 - 31 December 2022:

Total pageviews: 467,421

Unique pageviews: 379,321

- 111,459 Desktop users visited CCF's site
- 85,674 Mobile users visited CCF's site
- 6,443 Tablet users visited CCF's site

Bounce Rate from 1 January - 31 December 2022 is 69.45%

For nonprofit websites, the industry average bounce rate is between 60% – 70%.
https://www.williamswhittle.com/

Navigation

Focus on promoting the three main desirable actions for users to the website: donation, visitation, and volunteerism. The kids' page and learn about cheetahs page are also desirable destinations on the website. The top performing pages accurately reflect our target focus areas for this reporting period.

Total Pageviews Across Website: 1 January - 31 December 2022 - 467,421 pageviews

- /learn/about-cheetahs: 1 January - 31 December 2022 - 97,469 pageviews
- /kids/cheetah-facts: 1 January - 31 December 2022 - 48,249 pageviews
- /get-involved/visit-ccf: 1 January - 31 December 2022 - 15,209 pageviews
- /get-involved/volunteer: 1 January - 31 December 2022 - 11,748 pageviews
- /donate: 1 January - 31 December 2022 - 12,360 pageviews

Donation page tracking

CCF's Donation Page: 1 January – 31 December 2022

- Donate Once: 12,665 unique pageviews
- Donate Sponsor: 4,002 unique pageviews
- Recurring: 608 unique pageviews

Google Ads

CCF's advertising on Google Search Engine is provided by a Google Ad Grant that supports up to $10,000 USD in ads per month. The information below is from the reporting period: 1 January - 31 December 2022

Across all campaigns

Total clicks - 1,464

Total cost - $6,450.88

Campaign breakdown (top 5)

- Publications: 494 clicks ($1,148.30)
- Conversion pages: 361 clicks ($384.23)
- Donate - Raikes: 359 clicks ($4,151.08)
- Donate: 215 clicks ($416.29)
- Cheetah Sponsorship: 21 ($18.14)

Media

CCF issued 2 press releases between 1 January - 31 December 2022.

- LICIT workshop in Addis Ababa builds capacity and cooperation between Ethiopian, Somali and Yemeni authorities to address illegal wildlife trade in cheetahs - 23 February 2022
- Cheetah Conservation Fund Hosts Delegation from Republic of Somaliland on 10-Day Tour of Namibia - 23 July 2022
- Cheetah Conservation Fund and Namibian government to send eight cheetahs to India for introduction on 17 September - 14 September 2022
- Namibian 'rockstars' adapting to India, cheetahs make four kills in 10 days - 17 November 2022