



2021 Annual Progress Report

Reporting Period

January-December 2021

By

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I. Executive Summary

The third COVID-19 wave, characterised by the Delta variant, hit Namibia in May 2021. We are fortunate that CCF staff were able to continue most of the research, education, conservation and capacity building programmes during this difficult year.

In our local captive population, we sadly lost a total of 13 long-term resident cheetahs; due to mostly organ failure, which comes with old age, yet 11 were released.

In 2021, CCF continued working towards achieving its research objectives and strengthening collaborative efforts. Research continued in health and genetics, ecological surveying, cheetah releases, and ecosystem research.

The Life Technologies Conservation Genetics Laboratory continued under Dr Anne Schmidt-Küntzel. In April 2021 laboratory work had to be slowed down and finally put on hold completely as the old analyser broke down. After long delays mostly caused by COVID-19 lockdowns and supply chain issues, a new analyser, purchased from Thermo Fisher Scientific as part of a major laboratory upgrade, was finally up and running in mid-November. The laboratory 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. 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. Furthermore, Benny Munyandi from NUST, who had joined CCF as rotation student at the end of 2019, followed by a 12-month internship in 2020, pursued his Honours degree at the CCF genetics laboratory with NUST in 2021.

Our Scat Detection team covered 806 km on and offsite, collecting 782 scat samples from potentially 12 different species, and 138 of those scat samples were identified as cheetah in the field. In addition, the Scat Detection team conducted the first large scale systematic cheetah presence survey. The project takes place in the Omaheke District and will serve as basis to evaluate and optimise the current study design prior to replicating it in other areas. Collaboration involving Dr. Ezequiel Fabiano (UNAM) and CIBIO (Centro de Investigação em Biodiversidade e Recursos Genéticos) from the University of Porto in Portugal is still ongoing. In October, the Scat Detection team surveyed 164 km in Angola and found 450 scat samples, with a high probability that several samples were from the two target species, cheetah and African wild dog. The first article on ‘Detection success of cheetah (*Acinonyx jubatus*) scat by dog-human and human-only teams in a semi-arid savanna’ was published in a peer reviewed journal, The Namibian Journal of Environment.

The Ecology team continued to monitor the weather and game on CCF property. The wet season this year once again surpassed the median average of 412.75 mm for the last 10 years, at 478.60 mm. The annual waterhole count was conducted in September on four consecutive days, instead of one day in July as per the tradition. This was done through direct observation by volunteers/intern/staff and by camera trap. A total of 1,077 individuals from 25 different species were counted, most of which were observed at farm Osonanga.

CCF continues to monitor the giraffe population on its property. During this reporting period, there were 312 giraffe captures on camera traps placed at three waterholes and in the reserve.

Due to the COVID-19 pandemic, most visiting researchers and scientists who were scheduled to visit CCF to continue their research work either cancelled or postponed their trip to next year. Professor Manuel Martin-Vivaldi from the Universidad de Granada along with his two students visited CCF in September to study hornbills and hoopoes. One of his students, Lola Baron, stayed for a further three months to continue the project.

Nine journal papers were published by CCF staff and collaborators during this reporting period, one of which is part of Matti Nghikembua’s PhD studies – CCF Senior Ecologist and Forest Steward.

One of the most effective programmes we have is the Livestock Guarding Dog (LGD) program which started back in 1994. In that time, we have placed 677 dogs on farms across Namibia and currently have 168 dogs out on farms. Of the 677 dogs we have placed we have had 97.7% success rate with them working. We have found that farms who have our dogs have noticed an 80-100% reduction in livestock losses once receiving a puppy. This year, 50 puppies were born to CCF’s onsite breeding females, and were placed on various farms.

Tourism continues to be one of the hardest hit industries due to COVID-19, and CCF was no exception. CCF's eco-tourism did start to grow a little again from beginning of April 2021. CCF hosted a total of 2,512 visitors, which represents 30% increase from 1,926 visitors in 2020. This reporting period also saw an increase in revenue of 42% on centre activities, accommodation (Cheetah View Lodge and Babson House) and sales from the Cheetah Café and Gift Shop.

Our human-wildlife conflict teams continued their work in the communal conservancies, as we are an essential service in the communities we work in. CCF's new workstation in eastern Namibia was officially established in March 2020, now known as CCF East Carnivore Conflict Field Station. Community outreach work in the communal conservancies focused on mitigating the conflict between African wild dogs and communal livestock farmers, while work at the field station focused on mitigating the conflict between cheetahs and commercial farmers in the Gobabis area.

The Future Conservationist of Africa (FCA) and Future Farmers of Africa (FFA) programmes continued at CCF. A total of 4,245 Namibian learners and 100 teachers participated in CCF's distance, outreach and centre-based programmes. An international group from the Ross School (USA) was hosted at Camp Lightfoot.

Work in Somaliland has also continued and expanded. For the first time since CCF has been working on the ground in Somaliland, there were no confiscations reported in the first eight months of 2021. Instead of cub intake, CCF directed its energy to stopping the cubs from leaving the landscape in the first place, addressing illegal wildlife trade and human-wildlife conflict by engaging with local communities where prior incidents took place and venturing into the eastern regions of the country for the first time. Infrastructure development included re-building Safe House 1 and the completion of a residential compound which was used as a training facility for the first time, bringing in two groups of livestock veterinarians for training in wildlife care with special focus on cheetahs. We are pleased to share that in December 2021, CCF signed a Memorandum of Understanding for the development and operations of the Cheetah Rescue Conservation Centre with the Somaliland Ministry of Environment and Climate Change, and then broke ground at the site on 16 December 2021.

CCF's work is funded through donations, grants and eco-tourism. I hope you will continue to support our successful research, education, and conservation programmes.



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 works with stakeholders throughout the current and historic range of cheetah. Facilities are operated in Namibia and Somaliland.

An International Scientific Board of Advisors consults 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.

NAMIBIA

CCF's International Research and Education Centre in Namibia is the primary base for all CCF global activities. In operation since 1991, in 2002 CCF Namibia 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. The CCF Namibian Centre includes ten adjoining farms totalling 58,067 hectares. The Centre is 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. The campus is licensed as a Namibian Research Institute.

CCF Namibia is an active member of the Namibian Waterberg Conservancy, which encompasses over 175,000 hectares of adjacent 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 sits on the Steering Committee of the Greater Waterberg Landscape, an area comprising 16,000 km² (1.6 million hectares) around the Plateau and the Eastern Communal Lands.

SOMALILAND

Since 2011 CCF has been supporting Somaliland authorities in efforts to curtail the trade in live cheetah cubs. As cubs are confiscated by authorities in dire physical conditions, they require urgent medical care and, eventually, a place where long-term care and housing can be provided. CCF provides the expertise necessary to deal with the multiple issues affecting these confiscated cubs at a complex of Safe Houses in the capital city of Hargeisa. Cheetah Conservation Fund Somaliland is an authorized international NGO as certified by Government of the Republic of Somaliland, Ministry of Planning and National development, 1 January 2019.

The Somaliland Ministry of Environment and Rural Development has set aside many square kilometres of land in the region of Maroodi Jeeh, approximately 25 kilometres northwest of Hargeisa for establishing Somaliland's first national park and a wildlife sanctuary. Development of an improved complex of facilities is underway. When complete, operations will transfer from the current facilities in Hargeisa to this Somaliland Cheetah Rescue & Conservation Centre.

CCF will consult on development of the adjacent park. The area is semi-desert and dominated by mountains (Ogo Mountains) and wadi course carved valleys, dotted with rural villages and homesteads. Flatter areas and vegetated swaths make it a promising region for establishing a wildlife sanctuary.

III. Research

During 2021, 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 December 2021, the number of CCF's resident captive cheetahs has decreased to 32 individuals (16M, 16F), compared to December of 2020, 40 individuals (24M, 16F).

Throughout 2021, there were 13 deaths (8M, 5F), 15 transfers in (9M, 6F), and 11 transfers out (9M, 2F).

The 13 (8M, 5F) deaths were:

- Phoenix (AJU 1565) was euthanised on 16 February 2021 due to critical organ failure due to old age
- Bella (AJU 1578) was euthanised on 8 March 2021 due to organ failure due to old age
- Nico (AJU 1750) died on 24 March 2021 due to a possible snakebite
- Phil (AJU 1583) died on 29 April 2021 due to an infection and organ failure
- Harry (AJU 1474) was euthanised on 1 May 2021 due to neurological decline and organ failure due to old age
- Daniel (AJU 2051) died on 6 May 2021 due to an obstruction in his throat
- Smartman (AJU 1548) was euthanised on 9 August 2021 due to organ failure and old age
- Little C (AJU 1532) was killed by wild male cheetahs on 21 August 2021
- Rohini Tallala (AJU 1591) was euthanised due to severe kidney failure on 28 August 2021
- B2 (AJU 1646) was euthanised due to organ failure on 30 August 2021
- Darwin (AJU 1516) died due to heart failure and old age on 25 September 2021
- Hermione (AJU 1475) was euthanised due to organ failure due to old age
- Kayla (AJU 1514) was euthanised due to neurological decline and organ failure due to old age.

The 15 (9M, 6F) transfers in were:

- Daenerys (AJU 1669) on 18 February 2021 from Erindi Private Game Reserve after she broke her leg
- Daniel (AJU 2051) on 22 February 2021 from a farm in the Kamanjab District
- Scarface (AJU 2056) on 22 May 2021, Old Lady (AJU 2057) on 8 July 2021, Al Pacino (AJU 2058) on 12 July 2021 and Marisa (AJU 2059) on 13 July 2021, all from Brakputz Farm #114
- Arandis (AJU 2060) on 29 May 2021 from Namib Plaas Farm #93
- Josh (AJU 2061) and Nefertiti (AJU 2062) on 12 June 2021 from Auheib Farm #408/1
- AJU 2063-2065, an adult female with two subadult cubs on 19 June 2021 from Okatjongora Farm #236
- Jev (AJU 2100) was transferred to CCF from farm Freiheit Ost #80/01 on 24 November 2021
- AJU 2101-2102, two wild males were transferred to CCF from Farm Quinta #976 on 28 December 2021.

The 11 (9M, 2F) transfers out were:

- Dax (AJU 2010) and Lauw (AJU 2050) were released on Erindi Private Game Reserve on 25 January 2021
- Max (AJU 1779), West (AJU 1780), Mike (AJU 1783), Thor (AJU 1786) and Ben (AJU 1898) were transferred to Erindi Private Game on 10 July 2021 to await release
- Arandis (AJU 2060) was released on Erindi Private Game Reserve on 10 July 2021
- AJU 2063-2065, adult female and two subadult cubs were released on Okatjongora Farm #236 on 30 August 2021.

B. Medical Examinations

In 2021 CCF performed a total of 100 medical examinations on 47 individuals (29M, 18F). Forty-six examinations were performed under anaesthesia (Table 1); nine of these individuals (5M, 4F) and an additional female received medical examination under physical restraint.

Twenty-six (14M, 12F) of the 47 individuals examined during this reporting period were captive individuals, eight (5M, 3F) were either release cheetahs, offspring of release cheetahs, or received examinations in preparation of a release, and 13 (10M, 3F) cheetahs were of wild origin and were or will be released back into the wild as soon as their age and condition allow.

Seventeen cheetahs (10M, 7F) died during this reporting period and necropsies were performed. Non-cheetah carnivore examinations and necropsies were also performed.

Overall health evaluations can be done from a catch cage. These were conducted weekly on the elderly cheetahs and on animals that are under continuous treatment for chronic conditions.

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 and sample collection. Male examinations include semen collection and female examinations include the collection of vaginal swabs. The semen is analysed and sperm stored in the Genome Resource Bank (GRB) (See Genome Resource Bank under section C. Health and Reproduction). In 2021 CCF performed a total of 100 examinations under anaesthesia on 46 individuals (29M, 17F; Table 1).

Table 1: Summary of exams performed on wild and captive cheetahs in 2021. The exam type is indicated; exam types include: 'predator' (wild animal on initial arrival to CCF); entry (arrival of a captive cheetah from another facility or a wild cheetah remaining at CCF after examination); annual (routine health check); EEJ (an electroejaculation procedure was performed); dental; and medical (treatment of any injury or illness, medical procedures not including dentistry & oral surgery).

AJU	Sex	Name	Exam date	Reason for exam
2010	M	Dax	25-Jan-21	Collaring
2050	M	Lauw	25-Jan-21	Collaring
1516	M	Darwin	3-Feb-21	Medical
1516	M	Darwin	8-Feb-21	Medical
2016	M	Kabaka	12-Feb-21	Medical
1565	M	Phoenix	16-Feb-21	Medical
1669	F	Daenerys	17-Feb-21	Medical
1669	F	Daenerys	17-Feb-21	Medical
1669	F	Daenerys	20-Feb-21	Medical

1669	F	Daenerys	21-Feb-21	Medical
1669	F	Daenerys	23-Feb-21	Medical
1578	F	Bella	26-Feb-21	Medical
1646	M	B2	26-Feb-21	Medical
1669	F	Daenerys	27-Feb-21	Medical
1646	M	B2	1-Mar-21	Medical
1669	F	Daenerys	3-Mar-21	Medical
1669	F	Daenerys	6-Mar-21	Medical
1669	F	Daenerys	9-Mar-21	Medical
2051	M	Daniel	10-Mar-21	Entry/EEJ
1669	F	Daenerys	13-Mar-21	Medical
1923	M	Rocket	21-Mar-21	Medical
1669	F	Daenerys	23-Mar-21	Medical
1669	F	Daenerys	31-Mar-21	Medical
1785	F	Hella	8-Apr-21	Collaring
1583	M	Phil	9-Apr-21	Routine
1669	F	Daenerys	14-Apr-21	Routine
2052	F	Khaleesi	14-Apr-21	Procedure
2052	F	Khaleesi	21-Apr-21	Procedure
1669	F	Daenerys	23-Apr-21	Medical
1669	F	Daenerys	3-May-21	Medical
1475	F	Hermione	5-May-21	Medical
1581	M	Mischief	6-May-21	Medical
2052	F	Khaleesi	7-May-21	Medical
1669	F	Daenerys	13-May-21	Medical
2056	M	Scarface	22-May-21	Entry
1900	F	Savannah	23-May-21	Medical
2056	M	Scarface	3-Jun-21	EEJ
2060	M	Arandis	3-Jun-21	Entry/EEJ
2061	M	Joshua	18-Jun-21	Entry
2062	F	Nefertiti	18-Jun-21	Entry
2063	F	Calypso	20-Jun-21	Entry
2064	M	AJU2064	20-Jun-21	Entry
2065	F	AJU2065	20-Jun-21	Entry
1669	F	Daenerys	22-Jun-21	Injury
2063	F	Calypso	30-Jun-21	Dental
2060	M	Arandis	30-Jun-21	Dental/EEJ
2056	M	Scarface	30-Jun-21	Dental/EEJ
1475	F	Hermione	30-Jun-21	Dental
1591	F	Rohini	30-Jun-21	Dental
1646	M	B2	30-Jun-21	Dental/EEJ
1532	M	Little C	30-Jun-21	Dental
1473	M	Ron	30-Jun-21	Dental
1581	M	Mischief	30-Jun-21	Dental
1548	M	Smartman	30-Jun-21	Dental
1582	F	Polly	1-Jul-21	Dentals

1516	M	Darwin	1-Jul-21	Dentals
1514	F	Kayla	1-Jul-21	Dentals
1898	M	Ben	1-Jul-21	Dentals/EEJ
1786	M	Thor	1-Jul-21	Dentals/EEJ
1783	M	Loki (Mike)	1-Jul-21	Dentals/EEJ
1780	M	West	1-Jul-21	Dentals/EEJ
1779	M	Max	1-Jul-21	Dentals/EEJ
2060	M	Arandis	9-Jul-21	Collaring/EEJ
1898	M	Ben	9-Jul-21	Collaring/EEJ
1786	M	Thor	9-Jul-21	Collaring/EEJ
1783	M	Loki (Mike)	9-Jul-21	Collaring/EEJ
1780	M	West	9-Jul-21	Collaring/EEJ
1779	M	Max	9-Jul-21	Collaring/EEJ
1670	F	Georgia	10-Jul-21	Re-collaring/US
2058	M	Al pacino	12-Jul-21	Entry
2057	F	Old Lady	12-Jul-21	Entry
2064	M	Calypso's male cub	12-Jul-21	Medical
2059	F	Marissa	12-Jul-21	Entry
2066	M	Freddie	12-Jul-21	Entry/collaring
2066	M	Freddie	13-Jul-21	Management
2067	M	Elton	13-Jul-21	Entry/collaring
1669	F	Daenerys	23-Jul-21	Medical
1776	M	Dominic	1-Aug-21	Medical
2065	F	Calypso's female cub	18-Aug-21	Collaring
2064	M	Calypso's male cub	18-Aug-21	Collaring
2063	F	Calypso	18-Aug-21	Collaring
1532	M	Little C	21-Aug-21	Medical
1473	M	Ron	21-Aug-21	Medical
2067	M	Elton	24-Aug-21	Management
1591	F	Rohini Tallala	25-Aug-21	Medical
1669	F	Daenerys	8-Sep-21	Medical
1669	F	Daenerys	6-Oct-21	Medical
1581	M	Mischief	19-Oct-21	Medical
1641	F	Aurora	25-Oct-21	Medical
1475	F	Hermione	28-Oct-21	Medical
1669	F	Daenerys	30-Oct-21	Medical
1475	F	Hermione	01-Nov-21	Medical
1600	F	Senay	04-Nov-21	Medical
1910	F	Jaya	13-Nov-21	Medical
2100	M	JEV	25-Nov-21	Entry
1669	F	Daenerys	02-Dec-21	Medical
1669	F	Daenerys	22-Dec-21	Medical
1910	F	Jaya	28-Dec-21	Medical

2101	M	AJU2101	29-Dec-21	Entry/EEJ
2102	M	AJU2102	29-Dec-21	Entry

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 exam and blood collection without anaesthesia. Sometimes CCF receives small cubs for which an examination under anaesthesia is neither required nor desirable. Depending on the individual and the type of medical problem some of the animals are examined and treated without anaesthesia.

In 2021 CCF performed 30 examinations (including blood draws, health evaluations, wound treatment) without anaesthesia on 10 (5M, 5F) individuals.

3. Health-Related Medical Examinations: Captive Cheetahs

In 2021, 26 captive cheetahs (14M, 12F) received a health-related medical examination. Of these, 17 received a dental check-up. Details of on- and off- site procedures are provided hereafter in order of ascending AJU numbers.

- Resident male AJU1473 (Ron)'s enclosure was invaded by two wild males (AJU2066 and AJU2067) and he and his pen mate AJU1532 were attacked. AJU1473 had a check-up, and his wounds were treated on 21 August 2021 under anaesthesia and then after, cleaned daily without need of anaesthesia.
- Resident female AJU1474 (Harry) was 15 years old, showing several signs of neurological degeneration: she was blind and ataxic, needing extra husbandry care, including daily fluid administration and assistance to drink water and eat. She allowed physical evaluations without need of anaesthesia and was checked by the veterinarians twice a week. She had a few wounds and myiasis treated in the period, without need of anaesthesia. To prevent further suffering she was euthanised on 30th of April.
- Resident female AJU1475 (Hermione) had a full workup on 5 May 2021 to check on a broken claw, the wound was sutured, and she received a course of pain killers and antibiotics. After, the wound was cleaned daily without need of anaesthesia. On 28 October she was sedated for a medical evaluation as she didn't eat for 3 days. A gastric volvulus was diagnosed and an orogastric tube placed to remove the gas and allow the stomach to return to the natural position, at the time the blood results also showed she had kidney disease. She received treatment for the next 3 days and started eating again. On 1 November she became very apathetic and weak, and she had not defecated in days, a workup was done and an intestinal volvulus was diagnosed. Due to her kidney disease and old age (16.5 years old), it was decided to spare her an intensive surgery with uncertain outcome, and she was euthanised.
- Resident female AJU1514 (Kayla) started to show neurological signs in June 2021, initially only signs of blindness were seen but disease progressed and by December she was blind and ataxic, needing extra husbandry care by receiving fluids daily. She could not find her bowls to eat or drink water, could not enter the catch cage or walk without hitting herself and was losing proprioception and the ability to control her limbs. To prevent any suffering and keeping in mind her quality of life, she was euthanised on 13 December 2021.
- Resident male AJU1516 (Darwin) had a large wound on the base of his tail that developed into myiasis (flystrike). He was placed under anaesthesia on 3 and 8 February 2021 to clean the wound in depth; the wound was treated daily without anaesthesia by the keepers and veterinarians for two months. While treating his wounds in February keepers noticed he was starting to show signs of blindness, during the next months he developed neurological signs, such as ataxia, difficulties to stand up, proprioception, went completely blind and was struggling to eat. He died on September 25, 2021.
- Resident male AJU1532, (Little C)'s, enclosure was invaded by two wild males (AJU2066 and AJU2067) and he and his pen mate AJU1473 were attacked. AJU1532 had a check-up to treat his

wounds on 21 August 2021. His skull was fractured and due to the severe brain damage caused, he was euthanised.

- Resident male AJU1548 (N'Dunge) was treated for chronic gastritis for the past 10 years. During an evaluation in July, ultrasound and radiograph imaging showed that his digestive system was severely compromised. He had a wound on his tail on June 16 2021 and allowed cleaning in the catch cage, without need of anaesthesia. Due to the deterioration in his quality of life, he was euthanised on 9 August 2021. Necropsy findings showed that the glandular mucosa of his stomach was mostly gone and a fibrous scar tissue was in place.
- Resident male AJU1565 (Phoenix) was 13 years old, and was diagnosed and treated for chronic kidney failure in the past year. However, his quality of life continued to deteriorate and upon workup for evaluation of his organs it was decided to euthanise him on 20 February 2021. Amyloidosis was diagnosed from the histopathology results.
- Resident female AJU1578 (Bella) was 13 years old, her health was deteriorating rapidly and had a workup on 26 February 2021, showing signs of systemic organ failure that led to suffering, due to her poor life quality and the results from the workup she was euthanised on March 8.
- Resident male AJU1581 (Mischief) was castrated on 6 May 2021 for him to be introduced into a larger enclosure with female cheetahs. He had a workup on 19 October 2021 to remove a foreign object that was penetrating his palatine erosion into his sinuses. Object was removed and he was given antibiotics. In November he had a wound on his leg, after a fight with AJU2059 and it was treated in the catch cage.
- Resident male AJU1583 (Phil)'s condition was deteriorating in April 2021. He was losing weight, stopped eating and presented signs of pancreatitis and kidney failure; his health was evaluated under anaesthesia on 9 April 2021. He stayed in the clinic under intensive treatment for 10 days until his overall condition was stabilized. He died on 29 April 2021
- Resident female AJU1591 (Rohini Tallala) had chronic kidney disease and developed pneumonia in August 2021 for which she was put on antibiotics. She was taken to the clinic for intensive care on 20 August as her condition deteriorated rapidly. She had stopped eating for over 5 days and was presenting signs of hepatic lipidosis. A nasogastric feeding tube was placed on 25 August 2021 to provide her with sufficient calories to reverse the hepatic lipidosis. However, the pneumonia and kidney failure were too severe and she passed away on 26 August 2021. Her histopathology showed signs of renal amyloidosis.
- Resident female AJU1600 (Senay) had a general workup on 4 November 2021, to determine the cause of her not eating large pieces of meat, but only minced meat and small pieces. A thorough physical exam was performed to rule out dental problems, ultrasound her abdomen (stomach, kidneys, liver, spleen, bladder) and collect samples for haematology and biochemistry.
- Resident female AJU1641 (Aurora) Had a wound on her neck and a work up to clean it on 26 October 2021, the wound was cleaned daily in the catch cage after and she received anti-inflammatory and antibiotics.
- Resident male AJU1646 (B2) was chirping continuously and stopped eating following the death of his pen mate AJU1569 (Phoenix). During a workup on 26 February 2021, lesions were noticed in his mouth and tongue, which were treated with pain killers, antibiotics and anti-inflammatories. He was also started on medication to improve serotonin production and modulate behaviour. Following a brief improvement, he declined again and on 1 March 2021 when he was diagnosed with pneumonia, gastritis and pyelonephritis. He improved after 20 days in the clinic pen under intensive care receiving antibiotics and corticosteroids, with veterinarians and keepers maintaining him on Oxygen and fluids continuously. His kidney values continued to be concerning and medication was continued, until he was euthanised in August 2021 as his quality of life had deteriorated further. Histopathology indicated renal and hepatic amyloidosis.
- Resident male AJU1776 (Dominic) had a small wound on the inside of his front left leg on 1 August 2021. He was anaesthetized and the wound was thoroughly cleaned and sutured closed.

- Resident female AJU1900 (Savannah) had a full workup on 23 May 2021 to evaluate her paw, after the claw was ripped off during a fight with another female. The wound was sutured, and cleaned in the catch cage for the days after, and she received pain killers and antibiotics.
- Resident female AJU1910 (Jaya) had a surgery for an abdominal hernia correction on 13 November 2021, she was spayed and had a hernia mesh placed on her abdominal wall on 28 December 2021.
- Resident male AJU1923 (Rocket) was limping from his back left leg, which was positioned in a non-anatomic angle. Radiographs performed on 21 March 2021 confirmed dislocation of the tibia; the bone was returned to the correct position, he received pain killers, and was placed in a smaller enclosure to restrict movement for 3 weeks.
- Resident male AJU2016 (Kabaka) was coughing. During the workup on 12 February 2021, radiographs showed signs of pneumonia. He was treated with antibiotics and recovered completely in two weeks.
- Resident male AJU2051 (Daniel) was 10 years old, he was confiscated by MEFT and entrusted to CCF. He received a routine entry examination to assess his overall health, collect measurements and samples and perform sperm collection on 10 March 2021.
- AJU2052 (Khaleesi), offspring of release cheetah AJU1669, was born at CCF on 18 March 2021 due to her mother's leg injury. AJU2052 had to be hand raised as she only had 1 sibling (AJU2053), which died 5 days after birth and as cheetah females with singletons are known to struggle to sustain sufficient milk production for the remaining cub. As such, AJU2052 will unfortunately remain a captive cheetah as she is too young to be rehabilitated for release. An entropion of the upper eyelid was detected after a couple of weeks and was corrected using three temporary corrective procedures (eyelid tacking) under anaesthesia on 14 and 21 of April 2021 as well as 7 of May 2021.
- Cheetahs AJU2056-9 (Scarface, Old Lady, Al Pacino, and Marissa) were confiscated by MEFT from a farm on 22 May 2021. AJU2059 was darted for the capture. Routine entry examinations were performed on 3 June 2021 (AJU2056) and 12 July 2021 (AJU2057-9). Entry examinations were performed to assess overall health, collect measurements and samples, and perform sperm collection on the males. AJU2058 had a wound on his left shoulder on 20 November and AJU2059 had a wound under her chin on 1 December 2021, both could be treated and cleaned without need of anaesthesia.

4. Released Cheetah Examinations

In 2021, eight release related examinations were performed. Details of on- and off- site procedures are provided hereafter in order of ascending AJU numbers.

- Release female AJU1669 (Daenerys) was seen limping at Erindi private reserve. Upon exam, veterinarians confirmed she had broken her fibula and dislocate her tibia-tarsus articulation. After three unsuccessful surgical procedures, orthopaedic specialist, Dr D. Marggraff performed an arthrodesis and placed an external fixator. She was anaesthetised weekly to clean the surgical wound, for a total of 22 times (17 February twice, 20 February, 21 February, 23 February, 27 February, 3 March, 6 March, 9 March, 13 March, 23 March, 14 April, 23 April, 3 May, 13 May, 22 June, 23 July, 8 September, 6 October, 30 October, 02 December and 22 December). A broken pin was removed on 23 July and then one was removed every month from September to November, and the last two were removed on 22 December 2021.
- Males AJU1779 (Max), AJU1780 (West), AJU1783 (Loki), AJU1786 (Thor) and AJU1898 (Ben) arrived at CCF in 2018 as part of 3 groups. They had a thorough check-up, including semen collection and collar placement on 9 July 2021, and were taken to Erindi Private Reserve on 10 July 2021 to await release.
- Female AJU1785 (Hella) arrived at CCF in 2018 with her 2 male siblings (AJU1783 and AJU1786) she was transferred to a boma in Erindi private reserve in 2020 for adaptation. She was collared on 8 April 2021 in the boma on Erindi Game reserve prior to being released into the reserve.

- Release female AJU1670 (Georgia) was recollared on 10 July 2021. During the check-up, a pregnancy was diagnosed via ultrasound (this was her second litter in the wild). Unfortunately, she and her cubs were killed by predators on 18 October 2021 and their bodies never retrieved.

5. Wild Cheetah Examinations

In 2021, CCF performed examinations on 13 (10M, 5F) wild cheetahs. Details of on- and off- site procedures are provided hereafter in order of ascending AJU numbers.

- Wild males AJU2010 (Dax) and AJU2050 (Lauw) were collared and translocated to Erindi private reserve on 25 January 2021.
- Wild Male AJU2060 (Arandis) was captured by a farmer, had an initial workup for health evaluation and sample and measurement collection on 3 June 2021. He was collared on 9 July 2021 and released back into the wild on 10 July 2021. He was killed in the wild on 17 October 2021 and only his collar returned to CCF by MEFT.
- Two 8-month-old cheetah cubs AJU2061, 2062 (Joshua and Nefertiti) were captured by a farmer, had an entrance workup for health evaluation and sample and measurement collection on 18 June 2021. They will be raised at CCF until they reach the appropriate age to start the rehabilitation process and eventually be released back into the wild.
- Wild female AJU2063 (Calypso) and her 2 sub-adult cubs AJU 2064 and AJU 2065 were captured by a farmer; they had a workup for health evaluation and sample and measurement collection on 20 June 2021. She underwent a surgical procedure to remove an intestinal obstruction on 17 August 2021. She was collared with the cubs on 18 August 2021 and released back onto the original farm where they were captured. Wild male cub AJU2064 had a surgery to correct a penile-preputial adhesion that would not allow him to reproduce in the future and could harm his health in the long-term on 12 July 2021.
- Wild males AJU2066 (Freddie) and AJU2067 (Elton), were captured on CCF's property on 12 and 13 July 2021, respectively. Both males were collared on their capture date, prior to being re-released; AJU2066 was anaesthetised a second time on 13 July 2021 due to initial collar failure. AJU2067 was re-captured on 24 August 2021 to assess his injuries after the coalition broke into an enclosure and attacked two captive cheetahs, AJU1473 and AJU1532.
- Wild 5-month-old male AJU2100 (JEV) was trapped by a farmer in Gobabis area and sent to CCF. His first work-up was on 25 November 2021 for health evaluation, disease screening, and taking samples and measurements. Due to his young age and extent of human contact, he will not be able to be released in the future and will be reported as captive cheetah subsequently.
- Wild males AJU2101 and AJU2102, are 4-year-old siblings that were trapped by a farmer in Gobabis area and sent to CCF. The first work-up was performed on 28 November 2021 for health evaluation, disease screening, and taking samples and measurements. Due to the of extent of human contact, they will not be able to be released in the future and will be reported as captive cheetah subsequently.

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

In 2021, check-up and cleaning were performed by veterinary dentists, Dr Redecker and Dr Jeserchek on 30 June and 1 July, on 18 cheetahs (Table 1). Three cheetahs (2M, 1F) required dental procedures:

- Captive female AJU1514 (Kayla) had a broken upper left canine removed and treated.
- Captive male AJU1516 (Darwin) had a broken upper right canine removed and treated.
- Captive male AJU1581 (Mischief) had a broken upper left and both lower canines treated. His focal palatine erosion was completely perforated.

7. Deaths, Euthanasia, and Necropsies

In 2021, 14 (9M, 5F) resident cheetahs, two release-related females and one wild male died (Table 2). Animals that were found dead without case history are also described here, as well as 3 cheetahs that died the previous year and were only necropsied in 2021. The median age at death was 12.2 years old, with the youngest being 5 days and oldest 16.5 years old (Figure 1).

Table 2: Summary of cheetahs that died (natural mortality and euthanasia) and/or were necropsied in 2021.

AJU	Name	Death	Necropsy	Age at death	Cause of death
1664	Kamin	26-Jul-20	7-Jul-21	4 years	Died in the wild, unknown causes.
1778	Miers	Sep-19	7-Jul-21	3 years	Died in the wild, predator attack.
1969	Gracie	29-Dec-20	7-Jul-21	7 years	Died in the wild, predator attack.
1569	Phoenix	16-Feb-21	17-Mar-21	13 years	Euthanasia - Chronic kidney failure and pyelonephritis.
1578	Bella	8-Mar-21	9-Mar-21	13 years	Euthanasia - Multiple organ failure.
2053	Daenerys' little dragon	23-Mar-21	23-Mar-21	5 days	Found dead/ no case history - Hypothermia and newborn-hydronephrosis.
1750	Nico	24-Mar-21	24-Mar-21	4 years	Found dead/ no case history - Snake bite.
1594	Phil	29-Apr-21	29-Apr-21	12 years	Lymphoma.
1474	Harry	30-Apr-21	30-Apr-21	16 years	Euthanasia - Hepatic encephalopathy.
2051	Daniel	6-May-21	6-May-21	10 years	Found dead/ no case history - Choke.
1548	N'Dunge	9-Aug-21	9-Aug-21	13.5 years	Euthanasia – Severe gastritis, loss of stomachal function.
1899	Adina	10-Aug-21	11-Aug-21	3 years	Found dead/ no case history - Accidental lead poisoning.
1532	Little C	21-Aug-21	21-Aug-21	14 years	Predator attack.
1591	Rohini Tallala	26-Aug-21	26-Aug-21	12 years	Pneumonia and renal amyloidosis.
1646	B2	29-Aug-21	29-Aug-21	8 years	Euthanasia – Renal and Hepatic amyloidosis.
1516	Darwin	25-Sep-21	26-Sep-21	15.5 years	Heart arrest. Had Hepatic encephalopathy.
2060	Arandis	17-Oct-21	Body not retrieved	4 years	Died in the wild, no body - Depredated due to potential human-wildlife conflict situation or perceived threat.
1670 and cubs	Georgia	18-Oct-21	Body not retrieved	5.5 years	Died in the wild, no body - predator attack.
1475	Hermione	1-Nov-21	1-Nov-21	16 years	Euthanasia – Gastric volvulus
1514	Kayla	13-Dec-21	13-Dec-21	15.5 years	Euthanasia - Hepatic encephalopathy.

- Released male AJU1664 (Kamin), was 4 years old and living on Erindi private reserve. He was found dead due to unknown causes on 26 July 2020. His necropsy was performed on 7 July 2021, and revealed poor body condition; post-mortem changes didn't allow for a precise cause of death.
- Release female AJU1670 (Georgia) was 5 years old and living on Erindi private reserve. She and her cubs died on 18 October 2021 (according to collar data), after their den was attacked by predators, potentially hyaenas.
- Resident male AJU1750 (Nico) was 4 years old and was found dead in his enclosure on 24 March 2021. Necropsy indicated signs of a snake bite.
- Released male AJU1778 (Miers) was 3 years old and living on Erindi private reserve. He was attacked by a lion on September 2019 and necropsied on 7 July 2021.
- Released female AJU1899 (Adina) was 3 years old and living inside a boma in Erindi private reserve, prior to being released she ingested lead components from a carcass and passed due to lead poisoning on 10 August 2021.
- Released female AJU1969 (Gracie), was 7 years old and living on Erindi private reserve. She was attacked by crocodile on 29 December 2020 and necropsied on 7 July 2021.
- Resident male AJU2051 (Daniel) was 10 years old, when he was found dead in his enclosure on 6 May 2021. Necropsy showed he choked with pieces of meat, that were stuck in his trachea. An incidental finding was a plastic trash bag in his stomach.
- AJU2053 (Daenerys' little dragon), offspring of a released cheetah AJU1673, was born with hydronephrosis and passed at 5 days old, on 23 March 2021.
- Wild male AJU2060 (Arandis), was 4 years old and collared (due to prior capture); he was killed by humans on 17 October 2021.

Figure 1 shows the age at death of cheetahs at CCF between 1 January and 31 December 2021, as well as the cause of death. The box-plots indicate the lower and higher quartile as well as the mean age of death in each category, quartile calculation via exclusive median.

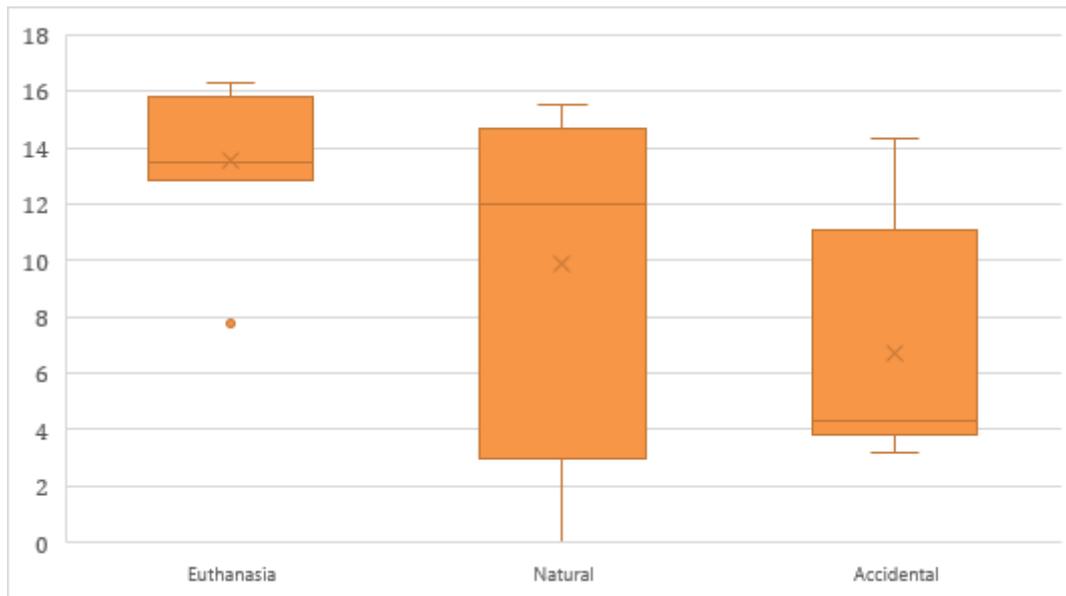


Figure 1: Cause of death and age of cheetahs in 2021.

8. Non-cheetah Carnivore Examinations and Necropsies

African Wild Dogs

In May 2021, the African wild dog LPI0001 (Zebra Legs) had a wound on his left torso. He was examined and treated daily inside the catch-cage. Both African wild dogs, LPI0001 (Zebra Legs) and LPI0002 (White Collar), were vaccinated and dewormed in May 2021.

During this reporting period, four necropsies were performed on African wild dogs that were living in Erindi Private Reserve.

- LPI0014 and LPI0015 were released at Erindi private reserve and died after being attacked by a different pack of African Wild dogs in 2020. Necropsied on 7 July 2021.
- Wild male and female LPI, no transponder, were living at Erindi private reserve and died after being attacked by a different pack of African Wild dogs in 2020. Necropsied on 7 July 2021.

C. Health and Reproduction

1. Genome Resource Bank

Since 2002 CCF has been collecting, evaluating, and freezing cheetah sperm. In 2021, collections were performed on 20 cheetahs, which produced seven 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. Since then, the most important addition to the CCF genetics laboratory was the donation and installation of a refurbished 4-capillary genetic analyser in July 2014 by Thermo Fisher Scientific. The new instrument has greatly increased the capacity of the laboratory. In 2015 the genetics laboratory moved to the new Visitor Centre. This laboratory was designed with forensic laboratory standards and is larger in order to be able to host visiting scientists and university interns. In April 2021 laboratory work had to be slowed down and finally put on hold completely as the old analyser broke down. After long delays mostly caused by COVID-19 lockdowns and supply chain issues, a new analyser, purchased from Thermo Fisher Scientific as part of a major laboratory upgrade, was finally up and running in mid-November.

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.

Monika Nanghama and Hafeni Hamalwa, who started as interns in the laboratory in the first half of 2017, both remained at CCF after that: Monika held the position of Laboratory Assistant from January 2018 until December 2020; Hafeni pursued his MSc at CCF with the University of Namibia (2018-2021), and accepted a position as Laboratory Technician in October 2021. Julia Zumbroich (MSc) and Francois Jenkins (MSc) started as Laboratory Technicians in December 2018 and September 2019, respectively; Francois left in September 2021, at the end of his two-year contract. Nerea Sanchis (MSc) and Michelle Magliolo (MSc) started as Laboratory Technicians in October and November 2021, respectively.

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. Furthermore, Benny Munyandi from NUST, who had joined CCF as rotation student at the end of 2019, followed by a 12-month internship in 2020, pursued his Honours degree at the CCF genetics laboratory with NUST in 2021.

Genetics Projects

Cheetah genotypes of known individuals (blood/tissue samples)

As part of CCF's on-going research in the genetics laboratory, DNA is extracted for all individuals of 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 optimise 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 190 Namibian cheetahs have been extracted and an extended genotype was obtained. In 2021, 67 new cheetah samples were added to the sample collection.

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, Isha, and

Tiger, and now Enya and Ole. Other samples were obtained from collaborators from other conservation organisations, taxidermists and the farming community. A set of microsatellite markers have been redesigned and optimised for scat samples and are used routinely in the laboratory. The sex of the individual is also determined genetically (Zn-Finger).

- Coalition of two wild males: 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 the two wild male cheetahs was used to identify AJU 1542 and AJU 1543 scat samples. To date 400 samples have been finalised, of which 383 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.
Since August 2021 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). To date 63 suspected cheetah scat samples were collected.
- 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 could be assigned to other carnivore species using a barcode sequencing approach. In 2020, 187 suspected cheetah scat samples were added to the sample collection. The samples will be analysed within the year.
- 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 scat samples found by the dogs and suspected to be cheetah is routinely verified using molecular markers.

Illegal trade

- 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.
- Pet trade of cheetah cubs: Between 2004 and December 2020, CCF has received 1,249 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, and 29 months. 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 optimised 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 full genotypes of the 172 samples and is pursuing his MSc degree 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 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 Hyena 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 finalised 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.
- **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.

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 22km 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. CCF's current team consists of Tim Hofmann (MSc) who joined CCF in 2018 as scat dog researcher, his Weimaraner Ole, and CCF's two Belgian Malinois 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. 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. Ole is still very energetic which is outstanding given that he is over 9 years of age.

The regular scent line-up exercises to evaluate the dog's precision, implemented in 2020, 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 to (Figure 2). 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 scents 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.



Figure 2: Enya inspecting 'sniffer' boxes in a scent line-up.

This year the scat dog team was equipped with a lot of new equipment reaching from glasses to store the training scents, camping gear for the trips around Namibia and a new scat dog car. To make the car fully functional we installed a custom build kennel system that allows safe and comfortable transport for the dogs, together with a water tank and a big storage compartment.

During this reporting period, the dogs covered a total of 806 km while the team collected 782 scat samples from potentially 12 different species, and 138 of those scat samples were identified as cheetah in the field.

While searching on CCF farms the scat dogs covered a total of 224 km to find 52 scat samples, of those, 16 were identified as potential cheetah, and 36 as general carnivore samples.

This year the scat detection dog team did the first large scale systematic cheetah presence survey. The project takes place in the Omaheke District and will serve as basis to evaluate and optimise the current study design prior to replicating it in other areas. The survey was planned together with the ecology department, who will pursue a camera trap study in the same area. The overall goal of this project is to understand patterns of carnivore distribution on a large landscape, to assist conservation and management planning by providing information for mitigating human-wildlife interactions. To allow for statistical analysis of the findings, the study area is gridded into cells of 8 x 8 km (Figure 3). In each cell the scat dog team will walk 2 random road transects

of 2 km length. Additionally, 'Points of Interest' like dry river beds, clearings, areas around cheetah tracks, kills and of course playtrees, will be surveyed to increase the number of cheetah scat samples found. So far, the scat dog team surveyed 62 cells and was able to detect cheetah presence in 31 of them. Enya walked 410 km to help find 281 carnivore scats, of which 117 were identified as cheetah in the field. Most of those scats were found around the 43 playtrees searched by the team but the 8 found on transects could potentially derive from non-territorial males or females, not defecating at playtrees and therefore are of great value to us.

We calculated that the handler had to walk 14.9 km of transect for the dog to find either a random cheetah scat or a playtree. In addition to the valuable genetic material collected on these trips, the team also mediates in potential human-wildlife conflict situations when on the farms. Often several days are spent with a farming family and solutions can be discussed on the spot, to reduce the loss of livestock to predators. This challenging task is often difficult but we are happy to get positive feedback from people that implement changes suggested from our side, resulting in a higher tolerance toward predators from the farming community. One family allowed us to collar a group of three cheetahs and release them back on their land. Those animals are being monitored by CCF to allow early warnings to the farmers when they are entering an area where vulnerable livestock is kept. To reach more farmers from different areas and backgrounds, Tim and other CCF staff from various departments attended several farmers' meetings. Here talks were given to introduce CCF's work and offer help to reduce losses due to predators by adapting farming practices.

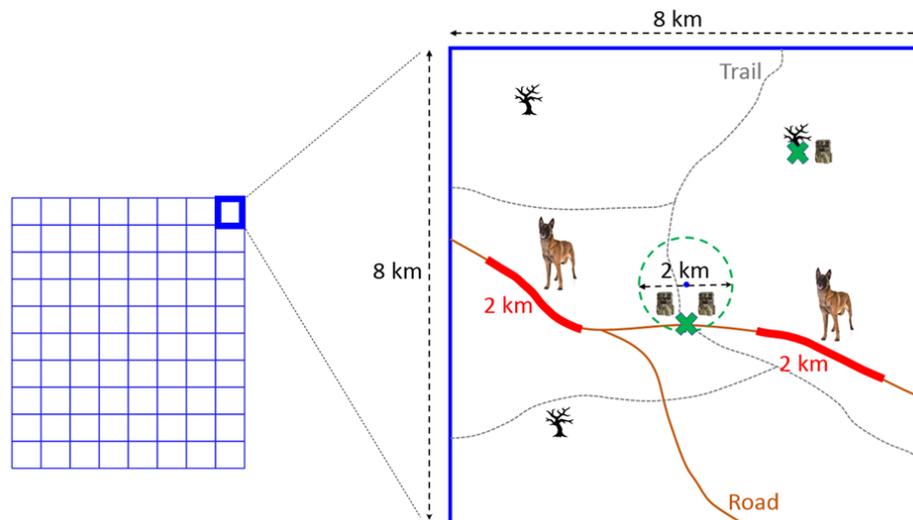


Figure 3: The sampling strategy, including 2 x 2 km scat dog transects and ‘points of interest’.

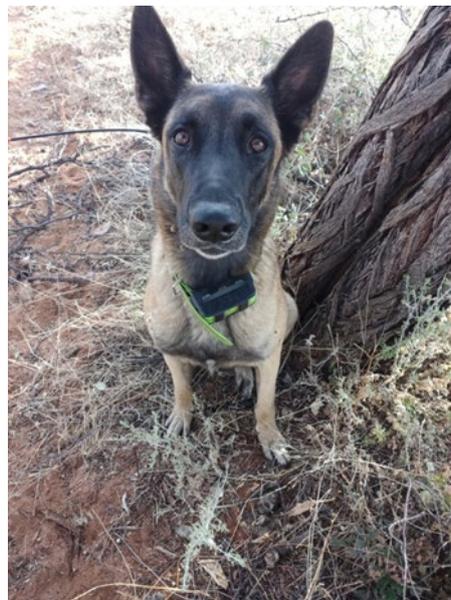


Figure 4: Enya indicating scat hidden under vegetation.

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 2-3 weeks to find predator scat in two national parks. Unfortunately, a trip planned to Angola in early July failed as the team was stopped at the border due to new Covid-19 related travel restrictions. The October trip successfully took place with additional paperwork. Enya walked 164 km to find 450 scat samples and for the first time indicated several samples which make us suspect that we successfully detected our two target species, cheetah and African wild dog.

Early this year the scat dog team published the first article in a peer reviewed journal, The Namibian Journal of Environment. The article was based on the findings from Tim’s MSc thesis, ‘Detection success of cheetah (*Acinonyx jubatus*) scat by dog-human and human-only teams in a semi-arid savanna’. Here, we looked into environmental factors potentially influencing the detection success of a scat detection dog team like vegetation, weather and size of search area. Additionally, we evaluated the performance of human searchers compared to a dog team.

CCF supported Tim to start a course at the beginning of the year to gain a formal qualification as a dog trainer with the ‘International School for Canine Psychology and Behaviour’. In this course Tim was able to intensify his handling skills with the dogs but also increase his knowledge in the theory of learning and dog training. We are very happy that Tim gained his diploma as Certified Dog Trainer earlier this year and can now carry the title ISCP.Cert.Dog. Trainer and help our dog unit to keep improving next year.

E. Large Carnivore Research and Ecology

1. Cheetah Releases and Monitoring

Dax (AJU2010)

Dax is an adult male cheetah, approximately six years old who was released into Erindi on 25 January 2021 after a short period at CCF. He was in excellent body condition when he was released and is doing well at Erindi (Figure 5).

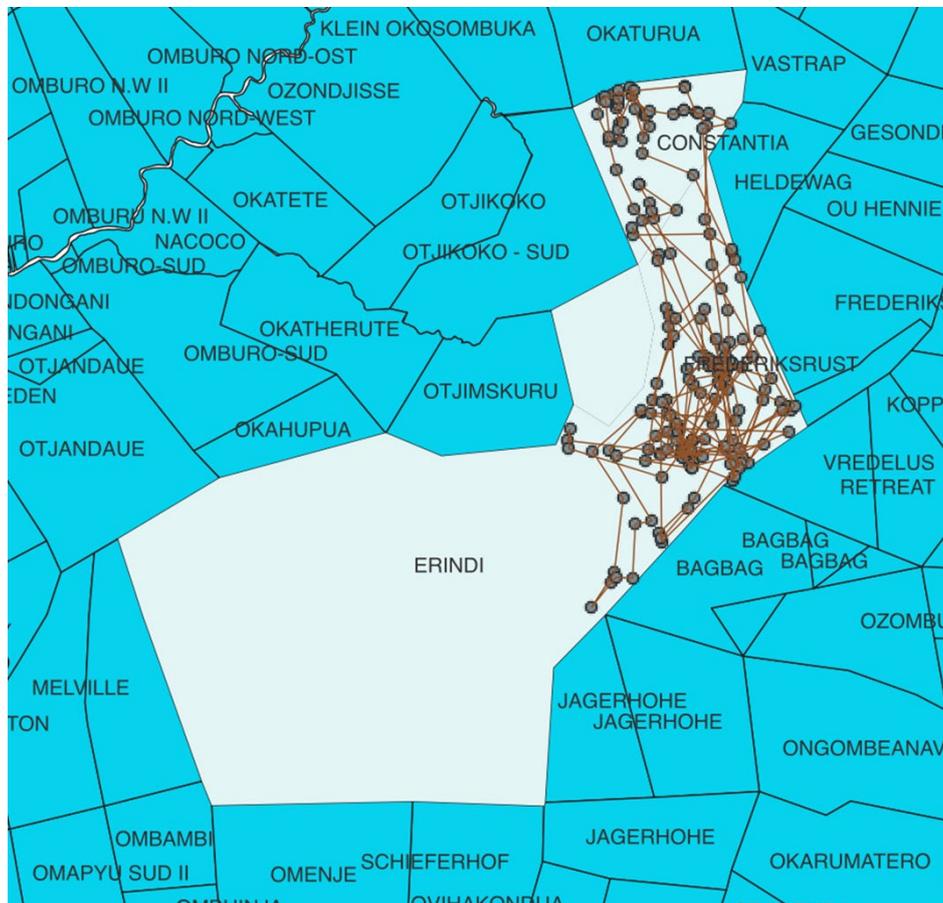


Figure 5: Dax’s movement from January – December 2021.

Georgia (AJU1670)

The GPS component of Georgia’s collar malfunctioned in January 2021. The team tracked her with VHF until July, when the CCF field team recollared her with a functioning satellite collar. Georgia’s two cubs that survived into 2021 were raised to subadult stage and were still with Georgia at the end of June 2021. A few weeks later, she left her two youngsters (Atlanta & Tbilisi) most probably because she was expecting a new litter. She gave birth in the mountain at Erindi around the 2 September 2021 but died a few weeks later around the 18 October 2021 (Figure 6). Due to difficult terrain the Erindi field guides were delayed in reaching the

mortality site and the cause of death could not be determined. Only her collar was found with major bite mark damage. Unfortunately, the new litter of cubs did not survive.

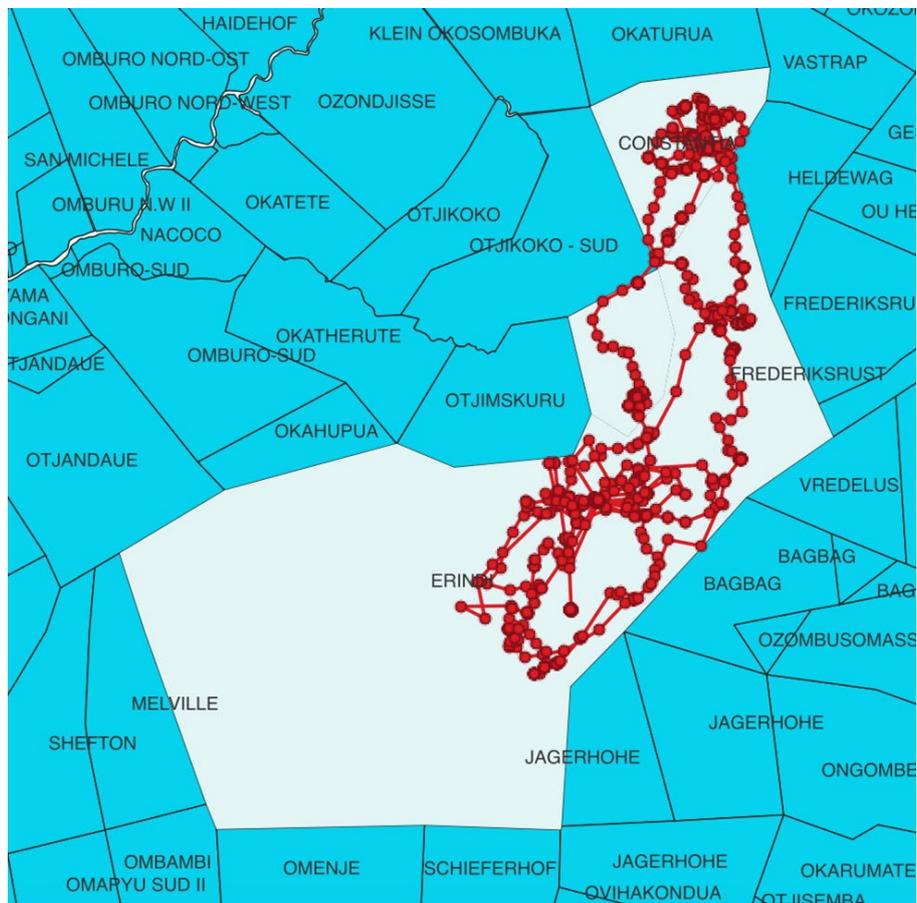


Figure 6: Georgia's movements from July – September 2021.

Hella (AJU1785)

After nine months in the wild, Hella is still doing fine. She is not totally independent and still needs monitoring and sometimes supplemental feeding. She is killing on a regular basis, essentially small prey like steenbok and dik-dik. During the calving season, she has been observed feeding on impala lamb as well (Figure 7). We plan to replace her collar which is on low battery at the beginning of 2022.

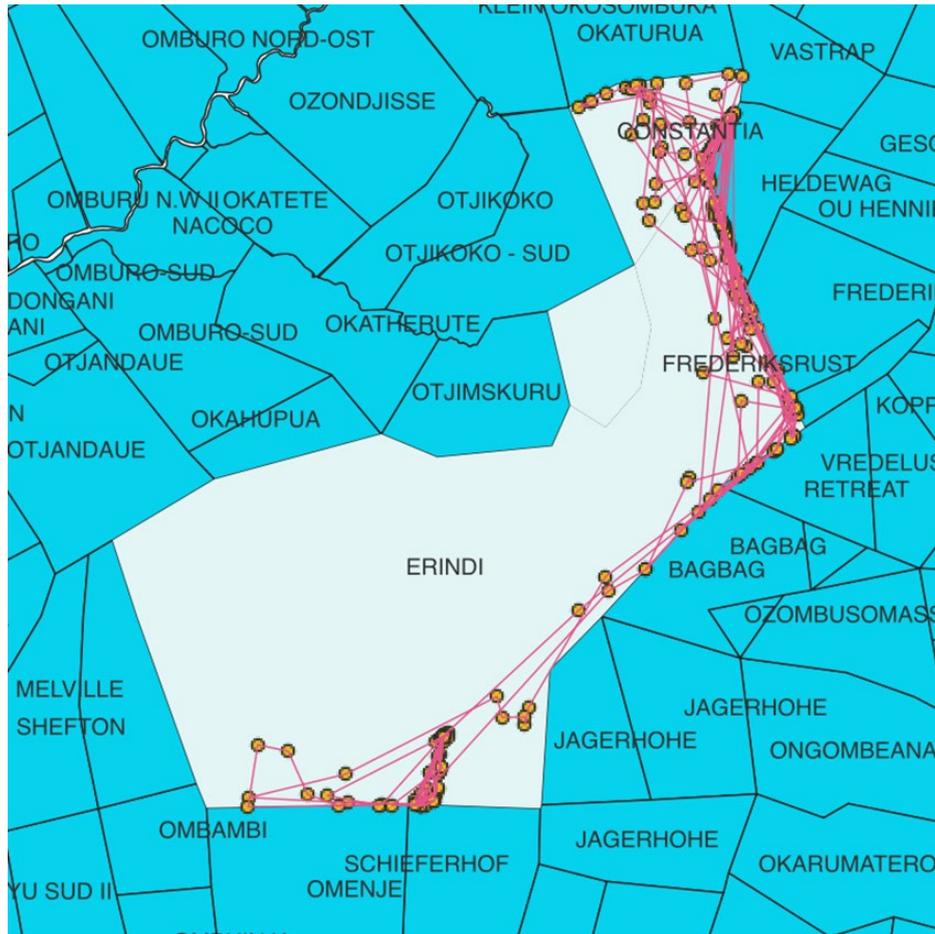


Figure 7: Hella's movement from April – December 2021.

Lauw (AJU2050)

Lauw is an adult male cheetah, approximately four 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 8). The VHF component of his collar malfunctioned, but the GPS is still working.

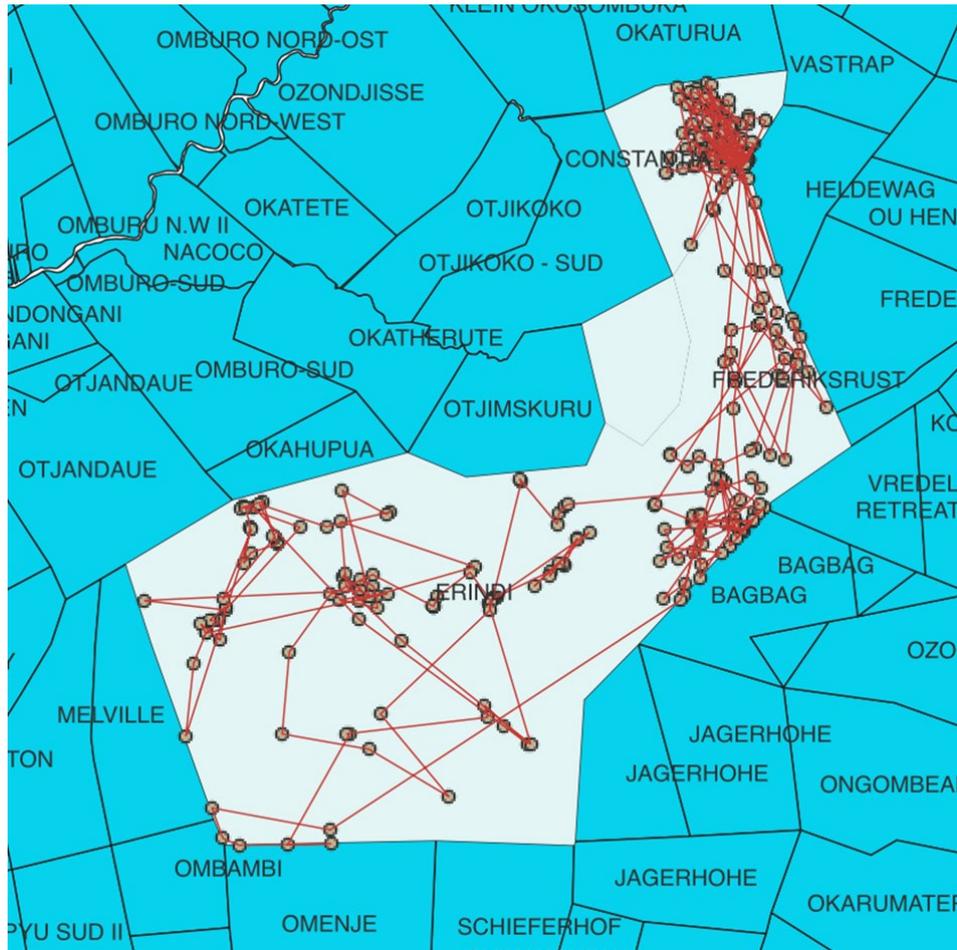


Figure 8: Lauw’s movements from January – December 2021.

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 is fitted with a GPS/VHF radio-collar, but the GPS component failed prior to 2021 and only the VHF is working. Oban’s collar has not been changed yet. We plan to replace Oban’s collar at the beginning of 2022.

Atlanta and Tbilisi

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 they were both collared with AWT VHF collars in November. According to Erindi team at that stage they were too small to be equipped with satellite collars.

Arandis (AJU 2060)

Arandis is a wild male that was captured by a farmer near the town of Arandis in western Namibia, which we relocated to Erindi on 10 July 2021. After only 12 hours he escaped Erindi and travelled back towards his original home range area. He was active West up to Uis before moving South towards Arandis. His GPS locations started clustering indicating that the collar was stationary (Figure 9). Our MEFT contacts were able to travel to the site and found his collar in a farm building. Based on the proximity of the cluster to farm buildings,

Arandis was most probably killed end of September by a farmer as it would not be possible for the collar to fall off. We were never able to locate and inspect his body.

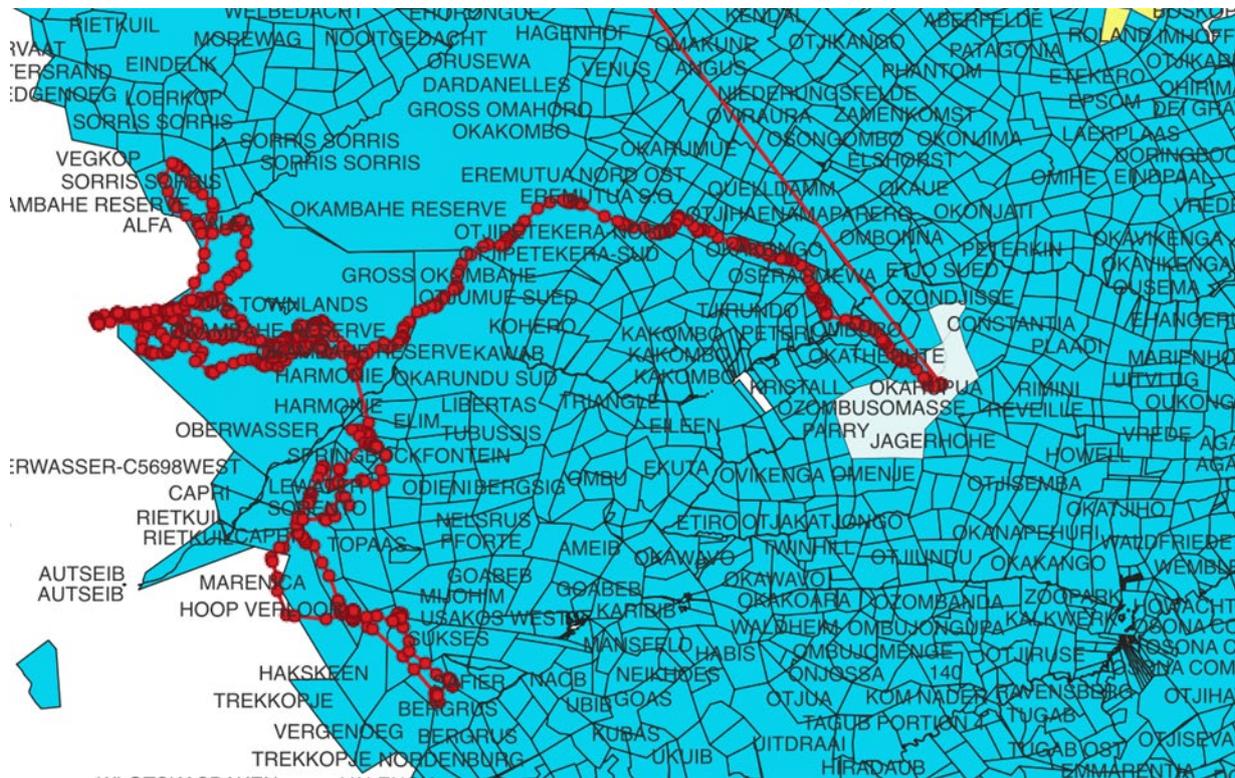


Figure 9: Arandis' movement from July 2021 - December 2021.

Adina (AJU1899)

Adina was sent to Erindi end of 2020. After almost one year in captivity due to logistics and communication challenges, she died in Erindi's holding boma on the 12 August 2021 before release. She ingested a bullet that was stuck in the meat she was fed and based on the laboratory analysis it was confirmed that she died of lead poisoning.

The 5 Boys

Max, Ben, West, Loki and Thor are five males that we brought to Erindi at the beginning of July 2021. They are still in a boma and are doing fine but need to be released to the main reserve as soon as possible in early 2022. Plans are underway for their release.

The Rockstars (Elton AJU2067 & Freddy AJU 2066)

Elton and Freddy are two wild brothers. They have been roaming around the CCF centre 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 10).

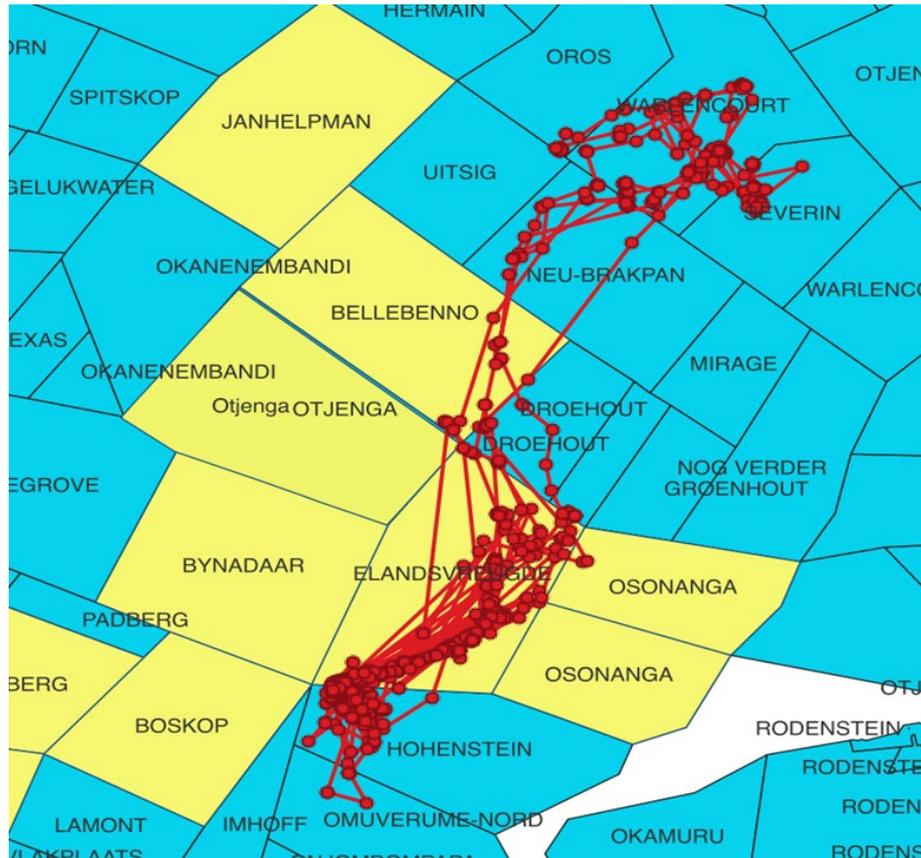


Figure 10: The Rockstars’ movement from July – December 2021.

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 collecting rainfall data on CCF farms and daily high and low-temperature readings at the CCF Centre throughout 2021 (Figure 11 & Figure 12). Between January and December 2021, CCF received on average across all rain gauges a total of 478.60 mm, with a total rainfall of 821 mm at the CCF Centre, approximately twice the median (412.75 mm) rainfall for the last 10 years (Figure 11). The first drops in the summer fell on 12 October 2021 (3.7mm) and the first significant rain event was on 11 November 2021 (73 mm at the CCF Centre). During the wet season 2020 - 2021 (October – April), CCF received a total of 731.3 mm.

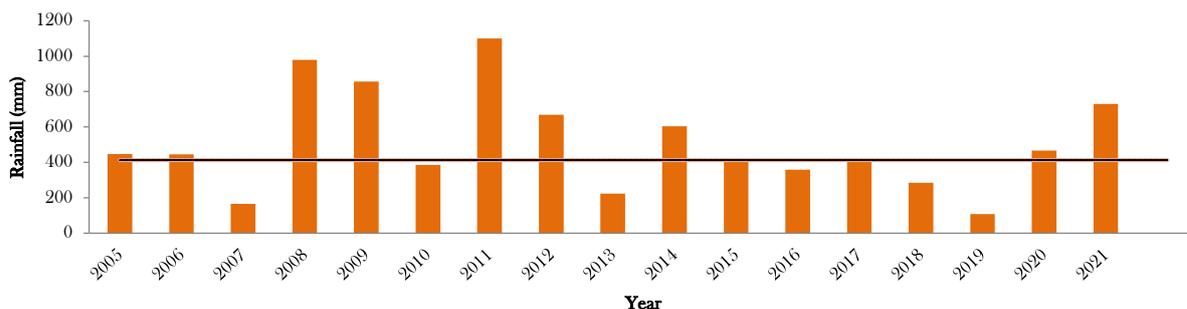


Figure 11: Annual seasonal rainfall from 2005 to 2021. Each rainy season comprises the precipitations occurring between October (previous year) and July (year shown). Dotted line represents the median of the last 10yrs (412.75mm).

The lowest temperature in 2021 was recorded on 15 June at 5°C, and the highest temperature was recorded on 28 September and 14 October at 32°C. In comparison to 2020, average monthly temperatures were considerably lower in 2021 (Figure 12).

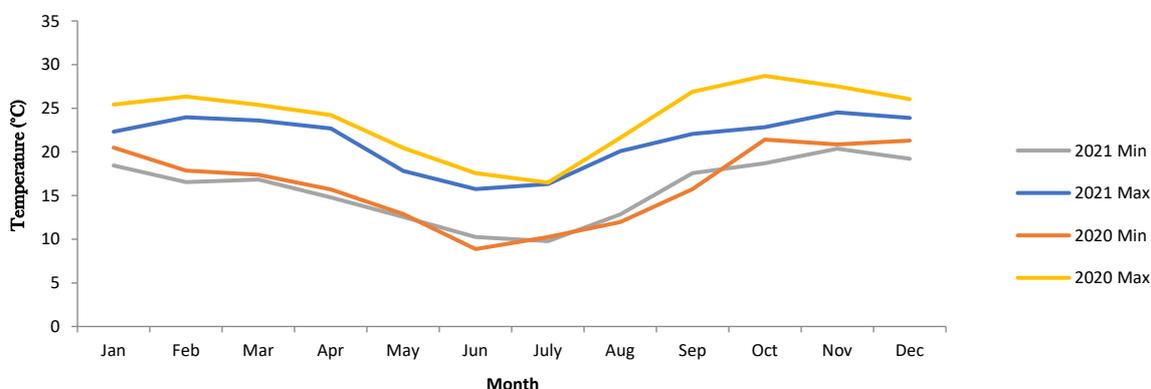


Figure 12: Monthly average minimum and maximum temperatures (°C) from January to December 2020 and 2021.

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 km². 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 sampled daily for 3 days) 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 13). The total distance travelled by three teams is 16.48km per day and 49.44km per month.

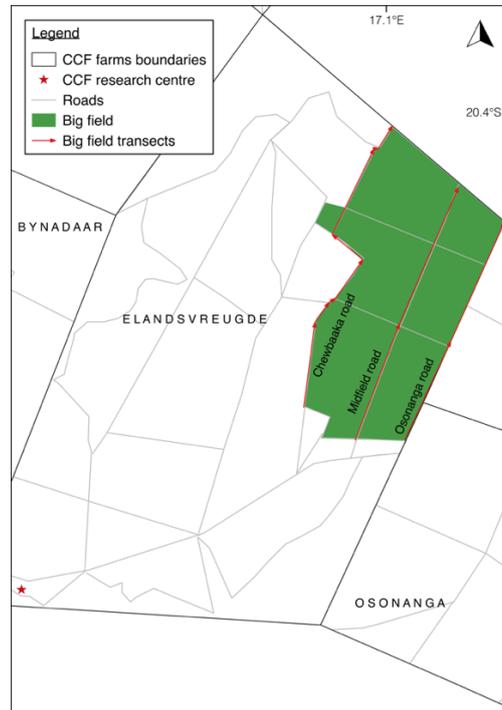


Figure 13: Map of CCF land and location of the Big Field showing the three transects driven monthly for game counts.

All data from these surveys were entered into the main database (File Maker 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 3). Densities were estimated using Distance 7.2 Software in the R package. The current period was compared to the same period in 2020, showing an overall decrease in density estimates in all species, except eland (Table 3, Figure 14).

Table 3: Density estimates (individual/km²[BC1]) with 95% confidence interval of the most common species seen on Big Field in 2020 and 2021.

Species	2020			2021		
	Mean	Lower CI	Upper CI	Mean	Lower CI	Upper CI
Warthog (<i>Phacochoerus africanus</i>)	3.84	3.11	4.73	0.10	0.03	0.32
Springbok (<i>Antidorcas marsupialis</i>)	8.18	0.47	141.7	0.04	0.03	0.04
Red hartebeest (<i>Alcelaphus buselaphus caama</i>)	1.99	0.87	4.51	0.01	0.00	0.01
Oryx (<i>Oryx gazella</i>)	5.9	1.91	18.23	0.02	0.02	0.03
Eland (<i>Taurotragus oryx</i>)	0.45	0.06	3.34	0.01	0.01	0.04
Kudu (<i>Tragelaphus strepsiceros</i>)	2.75	0.49	15.37	0.02	0.01	0.06

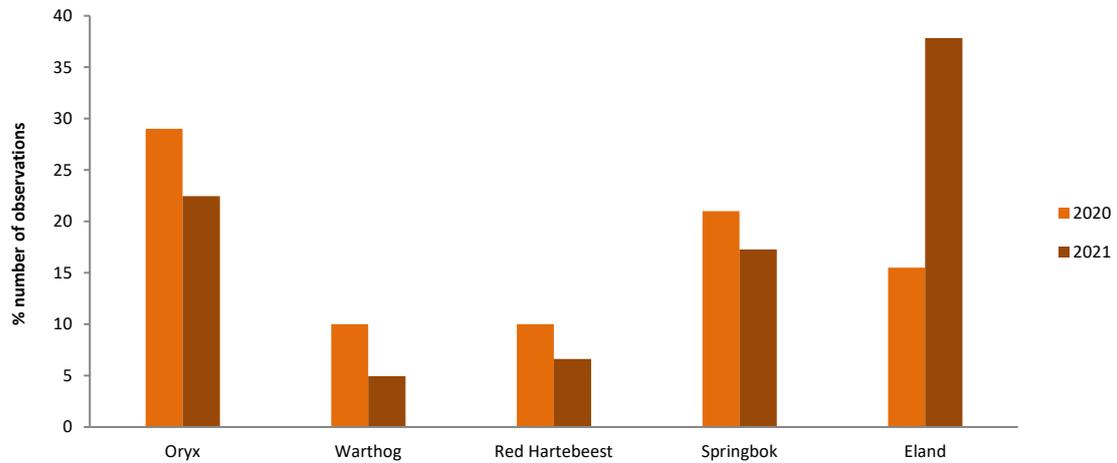


Figure 14: Frequency of sightings for the most common species during the Big Field counts in 2020 and 2021.

Night counts - Circuit B

The night count (also known as Circuit B) was also driven on 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 15). The night count focuses on nocturnal species. Therefore, while all species seen were recorded, we report here only the nocturnal species.

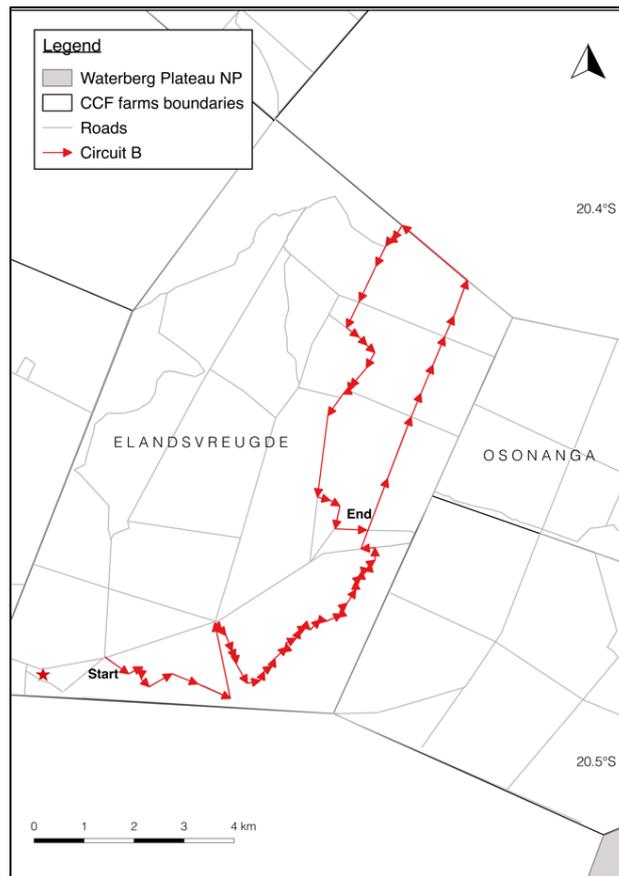


Figure 15: Location of Circuit B on farm Elandsvreugde.

During the reporting period, due to logistical constraints with the Covid-19 pandemic, 11 night counts [BC1] were conducted throughout the year (no night counts were conducted in January). Figure 16 shows a comparison of the current period to the same period in 2020. African wild cat, leopard, porcupine, small-spotted genet, scrub hare and spring hare counts had increased in 2021. There was a notable decrease in the counts of black-backed jackal and bat-eared fox. The most frequently sighted species during the night count were scrub hare, spring hare, black-backed jackal, bat-eared fox, small spotted genet and African wild cat.

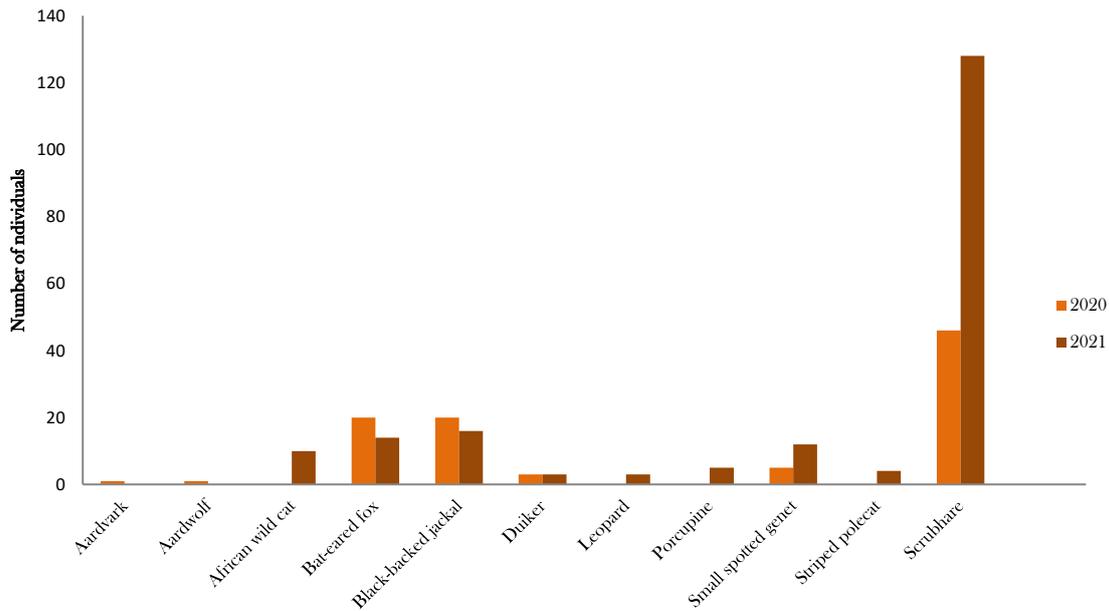


Figure 16: Sightings of nocturnal species during night counts in 2020 and 2021.

Bellebenno 12-hour Waterhole Counts

To assist in developing a management plan for the 4,000-ha game-fenced Bellebenno camp, CCF started 12-hour waterhole counts in 2008. These counts are conducted at four waterholes every second month from 6 am to 6 pm by CCF interns and staff members. Species, group size, sex, and age classes are recorded. For each animal/group visiting the waterhole, we also record if they drink and/or make use of salt blocks.

In 2021, camera traps were placed at the four Bellebenno waterholes (Figure 17) which are monitored on a bi-weekly basis due to logistical constraints and observer availability for direct observations. Camera trap data provide a more cost and time effective method to monitor the animal usage of waterholes at Bellebenno, also yielding more data. An average of 10,426 individuals of 24 species were captured monthly in the dry-cold (for four months) and 9,797 individuals of 26 species in the dry-warm season (for 2 months). The monthly average shows high abundance (i.e. intensity of usage of waterholes) in the dry-warm season compared to the dry-cold season (Figure 18). Warthog and zebra visited the waterholes more frequently in the dry-cold season compared to the dry-warm season. The Shannon Diversity Index shows a slightly more diverse community in the dry-warm as compared to the dry-cold season (2.28 and 2.07 respectively).

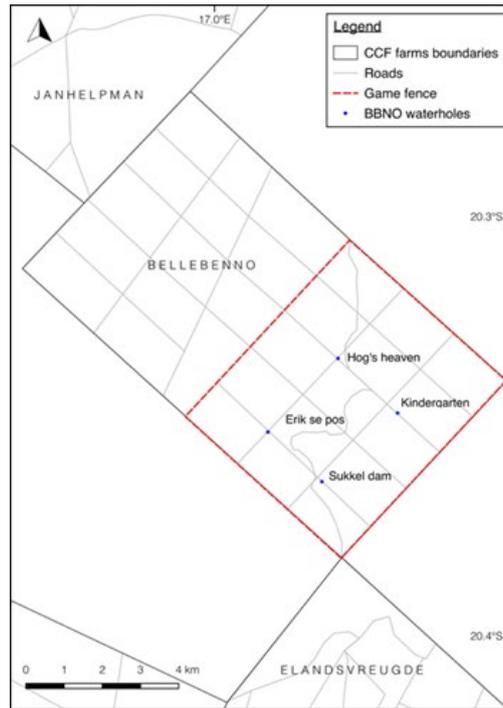


Figure 17: Bellebenno game-fenced camp.

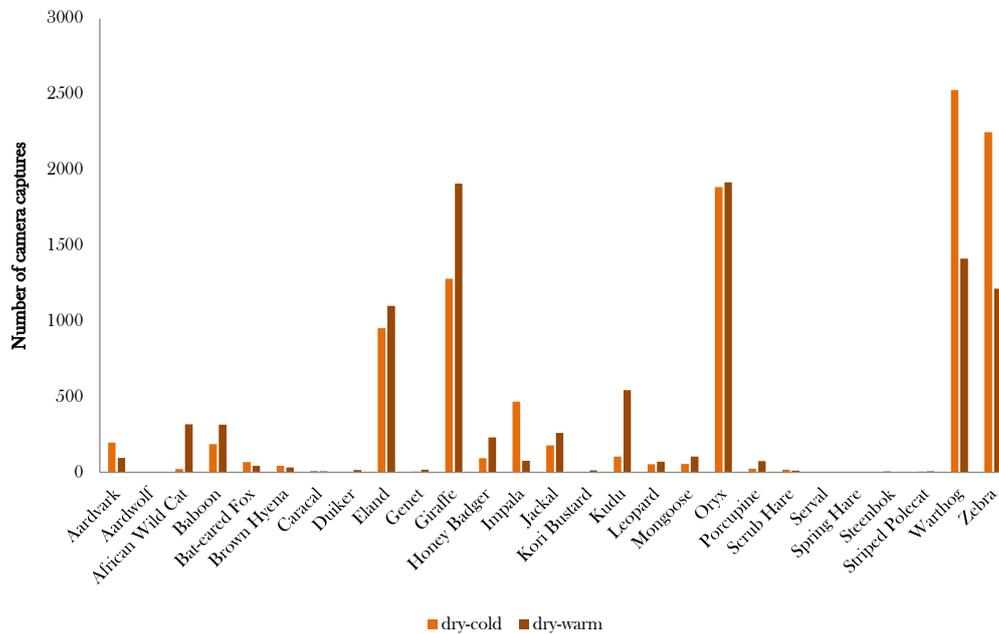


Figure 18: Frequently sighted species during the Bellebenno waterhole count in 2021.

Annual waterhole counts

In 2021 the annual 12h waterhole count was conducted from 8 – 11 September. A total of 39 waterholes were counted during a 12-hour period (6:30 am 18:30 pm) (Figure 19), of which 20 were sampled through direct observation by volunteers/interns/staff, and the remaining 19 by camera trap.

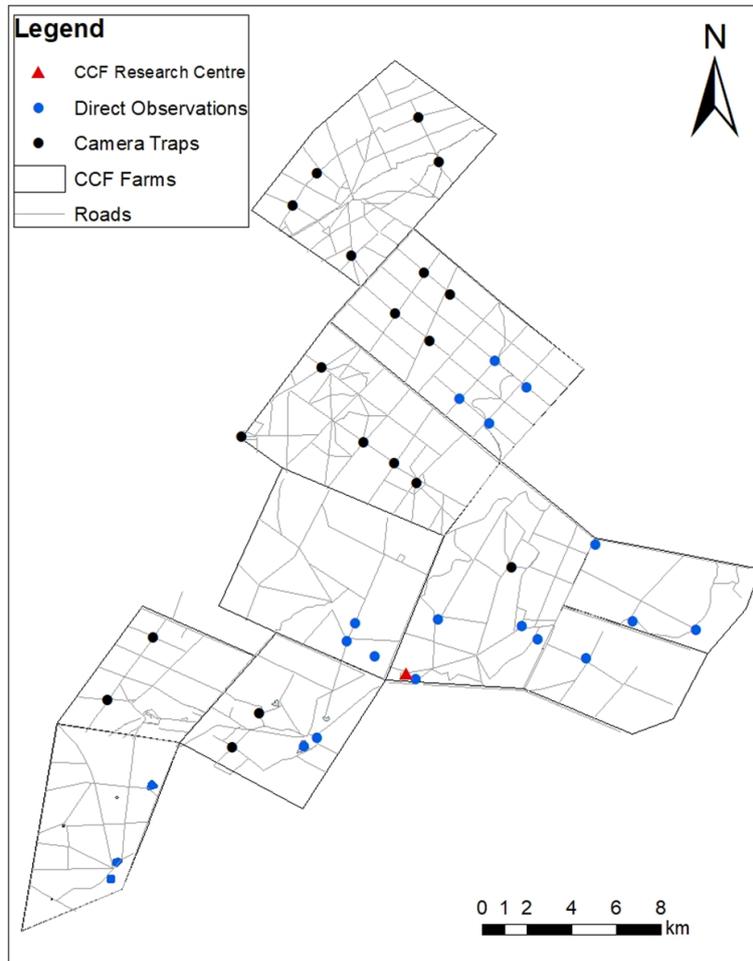


Figure 19: Location of waterholes surveyed during the 12-hour annual count in 2021.

A total of 1,077 individuals from 25 different species were counted, of which 21 were mammals, three bird and one reptile species. The most frequently observed prey species were warthog, kudu, eland, oryx, impala, plain zebras, steenbok and red hartebeest (Table 4). Three leopards were sighted (one at Elandsvreugde and two at Padberg). Most individuals were observed at Osonanga, followed by Bellebenno and Elandsvreugde. Padberg had the least frequency of species observed (Table 4).

Table 4: Frequency of species observed and recorded during the annual count in 2021.

Species	Farm									Total
	BBNO	BV	BOS	BND	ELVDE	JHPM	OSO	OTJG	PAD	
Banded mongoose <i>(Mungos mungo)</i>			6		16		33			55
Black Backed Jackal <i>(Canis mesomelas)</i>	2	4	2	7	1		1			17
Brown hyena <i>(Hyaena brunnea)</i>							1			1

Cape Vulture <i>(Gyps coprotheres)</i>					5	1		1		7
Chachma baboon <i>(Papio ursinus)</i>	48	51			9	1	46	11		166
Common duiker <i>(Sylvicapra grimmia)</i>		1	4	1	3		1			10
Common Warthog <i>(Phacochoerus africanus)</i>	110	7	8	19	45	10	78	18	1	296
Eland <i>(Taurotragus oryx)</i>	31			25	10		1	1		68
Gemsbok / Oryx <i>(Oryx gazelle)</i>	16	7	6	8	14	1	11	2		65
Giraffe <i>(Giraffa camelopardalis)</i>	4						5			9
Greater Kudu <i>(Tragelaphus strepsiceros)</i>	7	26	15	64	20	19	58	32	1	242
Honey Badger <i>(Mellivora capensis)</i>	3				2		1			6
Impala <i>(Aepyceros melampus)</i>		14			11					25
Lappet-face Vulture <i>(Torgos tracheliotos)</i>							8			8
Leopard <i>(Panthera pardus)</i>					1				2	3
Monitor Lizard <i>(Varanus albigularis)</i>					1					1
Plain zebra <i>(Equus quagga)</i>	14									14
Red hartebeest <i>(Alcelaphus buselaphus)</i>			2		11					13
Scrub Hare <i>(Lepus saxatilis)</i>					1					1
Secretary Bird <i>(Sagittarius serpentarius)</i>					1					1
Slender mongoose <i>(Galerella sanguinea)</i>	7	6	5		11	4	1	3		37
Small spotted genet <i>(Genetta genetta)</i>	1									1
Steenbok <i>(Raphicerus campestris)</i>	2	2	1	2	1	1	7			16
Waterbuck <i>(Kobus ellipsiprymnus)</i>							2			2
Yellow mongoose <i>(Cynictis penicillata)</i>			1		4		2	1	5	13
Total	245	118	50	126	167	37	256	69	9	1,077

Figure 20 shows overall trends in the densities of the main ungulate species from 1995 - 2021 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, which could be the result of variation in rainfall. The density of the main species decreased in 2021 despite the high rainfall. It could be that they are still recovering from the 2019 drought.

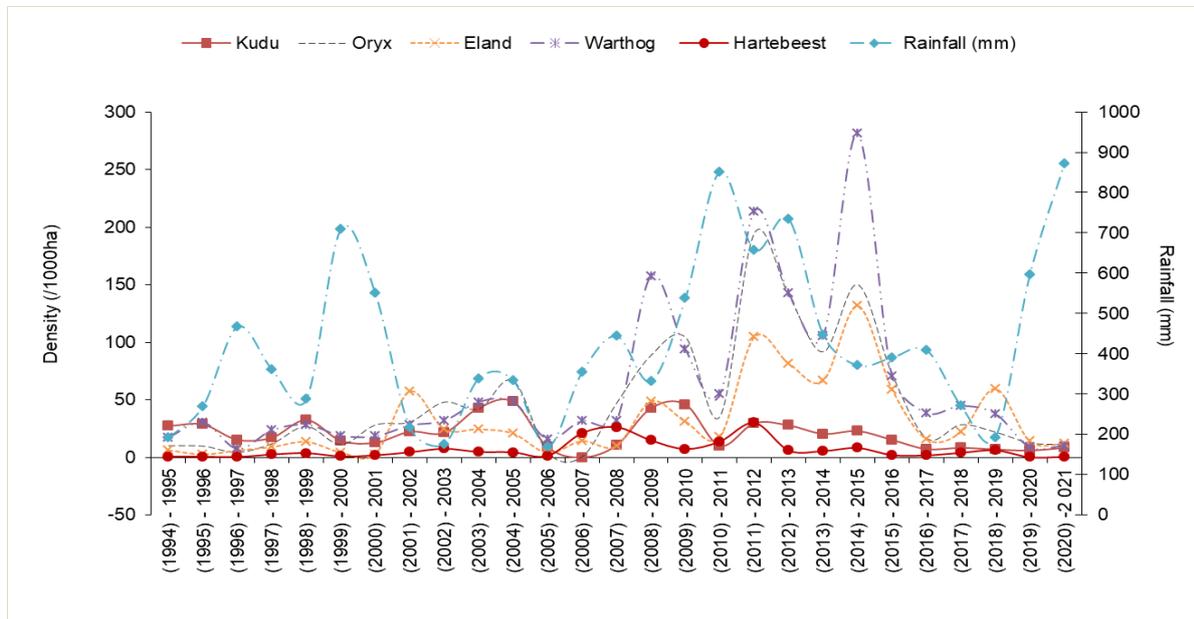


Figure 20: Density estimates of species in relation to rainfall from 1994 – 2021.

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 21). 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). We estimated densities for the most commonly observed species following the same methods as for Big Field counts.

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

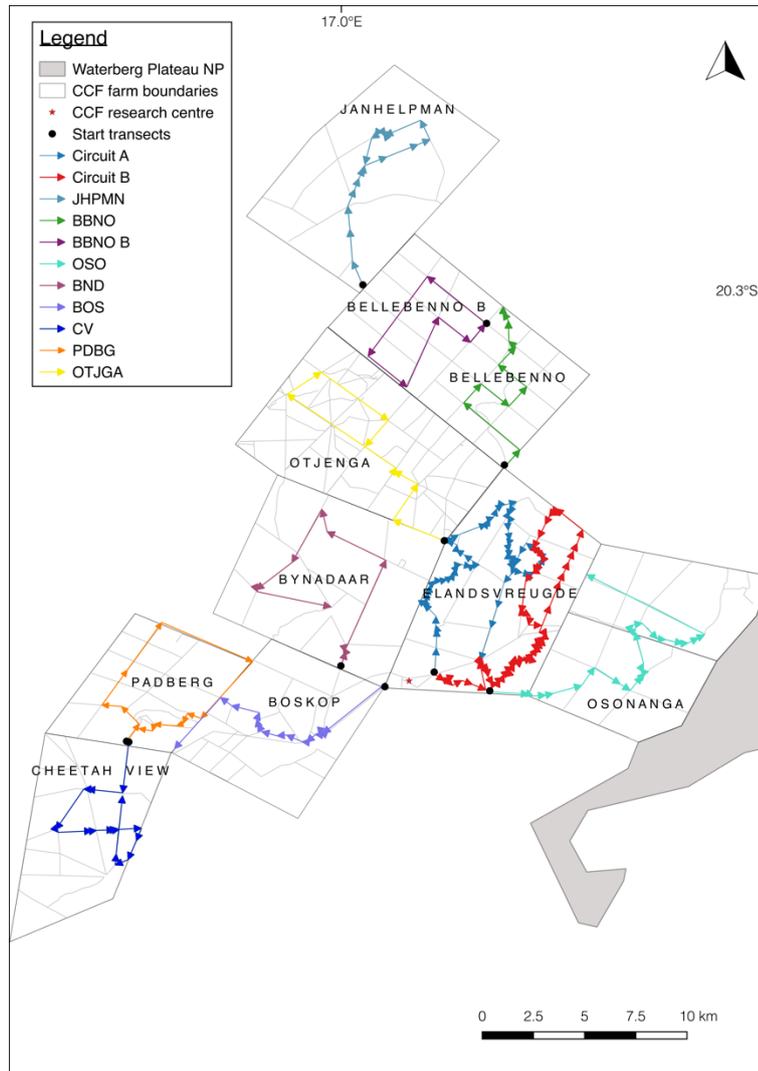


Figure 21: Map of seasonal strip count transects on CCF land.

Based on the density estimates in Table 5, eland, steenbok, kudu, oryx, giraffe, warthog, and duiker are the most abundant species on CCF land. Red hartebeest and impala have relatively low densities as they are largely restricted to Cheetah View and Boskop. Plains zebra are only found in the game fenced portion of Bellebenno, Padberg, and parts of Boskop and thus their densities are based on only these three farms. Springbok have relatively high densities as they are largely restricted to Elandsvreugde and sightings are frequent on that farm.

Compared to 2020 for the wet season in 2021 during the same reporting period, giraffe, kudu, oryx, springbok, steenbok and red hartebeest show a decrease in densities, whereas duiker shows a potential increase. Due to fewer observations, densities could not be estimated for some species such as eland, red hartebeest and Plains zebra.

High species densities were observed during the hot dry period in 2021, whereas high species densities were observed during the wet season in 2020. Oryx and impala had high density estimates in the hot wet season, whereas density estimates of red hartebeest remained relatively the same between the hot wet and cold wet season. Increased abundances in the hot dry season could be due to high rainfall during the wet season resulting in good reproduction and survival rates. Further studies need to be conducted to better understand the seasonal shifts in population densities and abundances.

Table 5: Density estimates of main species counted during seasonal strip counts, by season during 2020 and 2021. Cells marked with * had fewer observations to run the Distance analysis.

Density estimate (individual/km ²)						
Species	2020			2021		
	Hot Wet	Cold Wet	Hot Dry	Hot Wet	Cold Wet	Hot Dry
Duiker (<i>Sylvicapra grimmia</i>)	*	1.35 (1.04-1.75)	1.84 (1.42-2.4)	0.05 (0.02-0.16)	0.14 (0.05 - 0.38)	0.38 (0.10 - 0.56)
Eland (<i>Taurotragus oryx</i>)	*	0.06 (0.0005-8.25)	0.12 (0.008-1.85)	0.18 (0.03 - 1.17)	1.14 (0.21 - 6.17)	7.21 (0.35 - 146.65)
Giraffe (<i>Giraffa camelopardalis</i>)	0.29 (0.14-0.6)	0.24 (0.07-0.78)	0.41 (0.12-1.45)	0.08 (0.02 - 0.29)	0.37 (0.13 - 1.05)	0.44 (0.11 - 1.78)
Kudu (<i>Tragelaphus strepsiceros</i>)	0.87 (0.41-1.84)	1.63 (0.78-3.37)	1.73 (1.08-2.77)	0.25 (0.10 - 0.60)	0.56 (0.25 - 1.29)	0.79 (0.44 - 1.43)
Oryx (<i>Oryx gazella</i>)	1.59 (0.63-4.05)	0.92 (0.11-7.6)	1.98 (0.34-11.33)	0.81 (0.41 - 1.57)	0.43 (0.19 - 0.98)	0.34 (0.17 - 0.69)
Red hartebeest (<i>Alcelaphus buselaphus caama</i>)	0.23 (0.001-44.9)	0.46 (0.15-1.37)	0.23 (0.05-0.98)	0.03 (0.01 - 0.15)	0.04 (0.01 - 0.21)	0
Springbok (<i>Antidorcas marsupialis</i>)	0.28 (0.001-73.8)	0.74 (0.01-62.03)	0.74 (0.001-76)	1.16 (0.12 - 11.23)	3.25 (0.21 - 49.60)	4.80 (0.24 - 95.14)
Steenbok (<i>Raphicerus campestris</i>)	1.18 (0.58-2.38)	7.97 (6.43-9.88)	10.94 (9.58-12.5)	0.53 (0.29 - 0.96)	0.72 (0.41 - 1.27)	2.23 (1.39 - 3.59)

Warthog (<i>Phacochoerus africanus</i>)	1.08 (0.36-3.27)	0.68 (0.02 - 22.49)	2.27 (0.11-44.75)	0.31 (0.14 - 0.68)	0.20 (0.05 - 0.73)	0.55 (0.26 - 1.17)
Plains zebra (<i>Equus</i> Sp)	*	*	*	0.35 (0.06 - 2.16)		2.13 (0.41 - 1.10)
Impala (<i>Aepyceros melampus</i>)	0	0	0	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.

Research continued around CCF's Bushblok project in 2021. During this reporting period, a manuscript titled: Restoration thinning reduces bush encroachment on freehold farmland in Namibia was published in the Forestry: An International Journal of Forest Research (<https://doi.org/10.1093/forestry/cpab009>).

CCF, the University of Hamburg in Germany, and UNAM entered into an agreement to study the impacts of bush encroachment and bush clearing 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's 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.

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 CCF's Senior Ecologist and Forest Steward, Matti Nghikembua's PhD research.

As part of our ongoing research activities here at CCF, the Biomass programme together with other local and international partners have acquired an EU grant from Germany (grant agreement No 101036401) aimed to fund a SteamBio energy generation scheme. This project scheme will be set up and modelled at the CCF Biomass Centre with all stakeholders involved. Some research activities included in the grand scheme and forms part of the SteamBio energy generation includes preliminary soil sampling (data collection), in order look at its carbon content following bush thinning. Soils were collected in early November here at CCF, in plots where bush thinning has taken place at different ages. This sampling process was conducted by the SteamBio Project coordinator from Spain, Heike Knicker together with CCF's Senior Ecologist, Matti Nghikembua and David Shipingana, CCF's Forest and safety officer (Figure 22). A total of 90 samples were collected from nine different plots over a period of 3 days.



Figure 22: Soil sampling process by Heike Knicker and the CCF team out in the field.

4. Playtree research

Cheetahs are known to frequent scent-marking posts (‘playtrees’) 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 the first initial survey in 2005, CCF has been monitoring playtrees on its land on a permanent basis. Throughout 2021, a coalition of two male cheetahs has been frequently observed at the monitored play trees (Figure 23). The coalition has been sighted since August 2020 indicating that these males survive well on CCF property.





Figure 23: A few camera trap photos of cheetahs and leopards at play trees during 2021.

5. Giraffe Monitoring

Since 2003, CCF has been recording and identifying Giraffes. A total of 130 individual giraffes have been identified on CCF's land in the past years using camera traps, waterhole counts and opportunistic photos taken by CCF staff and visitors.

During this reporting period, there were 245 giraffe captures on camera traps placed at three waterholes from May – October, and an additional 67 sightings were captured on four camera traps in the reserve.

7. Visiting Researchers

Professor Manuel Martin-Vivaldi: hornbill and hoopoes researcher

Professor Manuel Martin-Vivaldi from the Universidad de Granada along with his two students visited CCF in September to study hornbills and hoopoes. One of his students, Lola Baron, stayed for a further three months to continue the project.

G. Scientific Publications and Papers

1. Published Papers

Marker, L., Pfeiffer, L., Siyaya, A., Seitz, P., Nikanor, G., Fry, B., O'Flaherty, C. and Verschueren, S. (2020). Twenty-five years of livestock guarding dog use across Namibian farmlands. *Journal of Vertebrate Biology*, 69(3): 20115, DOI: 10.25225/jvb.20115

Hofmann, T., Marker, L. and Hondong, H. (2021). Detection success of cheetah (*Acinonyx jubatus*) scat by dog-human and human-only teams in a semi-arid savanna. *Namibian Journal of Environment*, 5A: 1-11.

Nghikembua, M.T., Marker, M.L., Brewer, B., Leinonen, A., Mehtätalo, L., Appiah, M. and Pappinen, A. (2021). Restoration thinning reduces bush encroachment on freehold farmlands in north-central Namibia. *Forestry: An International Journal of Forest Research*, 1 – 14, doi:10.1093/forestry/cpab009

Siyaya, A., Hughes, C., White, W.R., Nitsche, C.M. and Marker, L. (2021). Impacts of human-dimensions of wildlife training on participants. *Human Dimensions of Wildlife*, <https://doi.org/10.1080/10871209.2021.1937754>

Stanback, M., Millican, D., Versfeld, W., Nghikembua, M., Marker, L. and Mendelsohn, J. (2021). Double-brooding in Southern Yellow-billed Hornbills *Tockus leucomelas*. *Ostrich*, 1 – 8. <https://doi.org/10.2989/00306525.2021.1891479>

Tricorache, P., Yashphe, S., Marker, L. (2021). Global dataset for seized and non-intercepted illegal cheetah trade (*Acinonyx jubatus*) 2010-2019. *Data in Brief*, 35: 106848.

Verschuieren, S., Briers-Louw, W.D., Cristescu, B., Fabiano, E., Nghikembua, M., Torres-Uribe, C., Walker, E.H., and Marker, L. (2021). Spatiotemporal sharing and partitioning of scent-marking sites by cheetahs and leopards in north-central Namibia. *African Journal of Ecology*, 1 – 9, <https://doi.org/10.1111/aje.12878>

Verschuieren, S., Briers-Louw, W.D., Monterroso, P., Marker, L. (2021). Local-scale variation in land use practice supports a diverse carnivore guild on Namibian multiple-use rangeland. *Rangeland Ecology and Management*, 79: 64 – 76.

Verschuieren, S., Torres-Uribe, C., Briers-Louw, W. D., Fleury, G., Cristescu, B., Marker L. (2021). Flashing lights to deter small stock depredation in communal farmlands of Namibia. *Conservation Evidence Journal*, 18, 50-51.

2. Accepted Papers

Walker, E., Verschuieren, S., Schmidt-Küntzel, A., Marker, L. Recommendations for the rehabilitation and release of wild-born, captive-raised cheetah: the importance of pre- and post-release management for optimising survival. *Oryx*.

3. Submitted Papers – In Revision

Aslam, A., O’Flaherty, C., Marker, L. and Rooney, N. Factors affecting livestock guarding dog’s proximity to their herd and association with perceived effectiveness. *Journal of Veterinary Behavior Clinical Application and Research*.

Mangiaterra, S., Schmidt-Küntzel, A., Marker, L., Di Cerbo, A., Piccinini, R., Guadagnini, D., Turba, M.E., Berardi, S., Galosi, L., Prezioso, S., Cerquetella, M. and Rossi, G. 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*.

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*.

Verschuieren, S., Briers-Louw, W.D., Monterroso, P., Marker, L. Seasonal resource availability and management regime determine predator diversity and occupancy on Namibian multiple-use rangelands.

4. Submitted Papers

Atkinson, H., Cristescu, B., Marker, L., Rooney, N. Habitat thresholds for apex predators under landscape change.

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

Ruble, D.B., Verschuieren, S., Cristescu, B. Marker, L. Rewilding apex predators has effects on lower trophic levels.

5. Papers in Preparation

Fabiano, E. C., Bonatto, S. L., Anne Schmidt-Küntzel, A., O'Brien, S. J., Marker, L. L., Eizirik, E. Inferring the historical demography of Namibian cheetahs (*Acinonyx jubatus*) using Bayesian analyses of molecular genetic data. *Genetics and Molecular Biology*.

Reasoner, E.M., Verschueren, S., Torres-Urbe, C., Briers-Louw, W. D. Nghikembua, M., Siyaya, A., Cristescu, B., Marker, L. Activity overlap of ungulate species on freehold farmland in the Greater Waterberg Landscape, Namibia.

Marker, L., Pfifer, L., Shipingana, D., Fleury, G., Siyaya, A., Nghikembua, M. T. Human-Carnivore Conflict in the Eastern Communal Conservancies.

Marker, L., Walker, E., Nghikembua, M., A., Richmond-Coggan, L., Schmidt-Küntzel, A., Cristescu, B. Spatial and feeding ecology of rewilded cheetahs.

Nghikembua, M.T., Marker, L.L., Brewer, B., Leinonen, A., Mehtätalo, L., Appiah, M. and Pappinen, A. Assessment of woody vegetation structure and response to bush thinning on freehold farmlands in north-central Namibia.

6. MSc. Papers

No MSc. Papers were written during this reporting period.

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 677 (348M, 329F) Livestock Guarding Dogs with farmers throughout Namibia and other parts of Africa. As of 31 December 2021, there were 209 (104M, 105F) dogs alive in the programme (Table 6), of which 168 (85M, 83F) are working dogs and 41 (19M, 22F) are retired or housed as pets.

Table 6: Dogs alive as of 31 December 2021. The dogs in South Africa and one female in Tanzania are now pet dogs.

Location	M	F	Total
Commercial	28	24	52
Commercial (CCF Working)	4	14	18
Commercial (CCF Puppies)	21	15	36
Communal	19	18	37
Emerging Commercial	6	5	11
Resettled	6	6	12
Tanzania	1	1	2
Total Working	85	83	168
Retired/Pet (breeding)	19	22	41
Total dogs alive:	104	105	209

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 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 which 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 19 (5M, 14F) intact dogs in CCF's breeding programme (Table 7), of which 15 (3M, 12F) reside at CCF as working dogs, two (1M, 1F) reside on commercial farms, and two (1M, 1F) reside in South Africa. One dog changed location and one dog was removed from the programme during this reporting period. !Us (SB#498), an outside breeding female died from snakebite on 2 January 2020.

- Kuvvet (SB#799), Lady's (SB#535) puppy was kept intact as an outside breeding female, however, was confiscated by CCF due to the breaches in the contract with Mr. Stanley Njembo, a communal farmer from Otjituuo. Kuvvet now resides at CCF as a working and breeding dog.
- Witvoet (SB#812), was removed from CCF's programme due to the breach in contract with Kuvvet (SB#799) by Mr. Stanley Njembo.
- Dionne (SB#825), a future breeding female imported from Colorado, USA arrived at CCF on 21 July 2021.
- Bowie (SB#832), a Bella (SB#788) puppy kept at CCF to become a breeding and working female.
- Nahaani (SB#833), a Bella (SB#788) puppy kept at CCF to become a breeding and working female.
- Oonkondo (SB#837), a future breeding male imported from Texas, USA arrived at CCF on 17 September 2021.

Table 7: Intact livestock guarding dogs as of 31 December 2021.

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
707	Delarey	8/1/2017	M	Pet	N/A	South Africa
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
832	Bowie	7/9/2021	F	Working (CCF)	Commercial	Namibia
833	Nahaani	7/9/2021	F	Working (CCF)	Commercial	Namibia
837	Oonkondo	5/14/2021	M	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 Likondja has taken over from Stella Emvula in assisting to manage the programme since January 2021.

2. Breeding and Puppy Placements

Since the programme’s inception, 94 litters have been born at CCF for a total of 763 (375M, 372F, 16U) puppies. From January to December 2021, a total of 50 (27M, 22F, 1U) puppies were born to CCF’s onsite breeding females. Of these 2021 litters, four females were still born, one female died from asphyxiation, one female died under anaesthetic and one male died from internal issues (Table 8).

Table 8: Puppies born and type of placement as of 31 December 2021 (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	660/788	814/709	660/789	847/810	814/772	660/728	Totals		
DOB:	20Dec20	09July21	25Oct21	23Nov21	28Nov21	05Dec21	22Dec21	M	F	U
Sex:	M F	M F	M F	M F	M F	M F U	M F	M	F	U
K	2 0	5 0	0 0	0 0	0 0	0 0 0	0 0	7	0	0
C	0 0	0 0	0 0	0 0	0 0	0 0 0	0 0	0	0	0
EC	0 0	0 0	0 0	0 0	0 0	0 0 0	0 0	0	0	0
R	0 0	0 0	0 0	0 0	0 0	0 0 0	0 0	0	0	0
P/B	0 0	0 2	0 0	0 0	0 0	0 0 0	0 0	0	0	0
D	2 0	1 1	0 0	0 2	0 0	0 2 1	0 0	3	5	1
NP	0 0	0 0	6 3	5 5	3 4	6 1 0	1 2	21	15	0
Total	4 0	6 3	6 3	5 7	3 4	6 3 1	1 2	31	22	1
IP	0 0	0 2	0 0	5 5	3 4	6 1 0	1 2	15	14	0

- April (SB#709), was bred with our Anatolian male, Brooks (SB#814), for the first time in October 2020. She gave birth to 4 (4M, 0F) puppies on 20 December 2020. Two males passed away due to internal issues. Both of these puppies were placed on commercial farms.
- Bella (SB#788) was bred with our Kangal male Bolt (SB#660) for the first time in May 2021. She gave birth to 9 (6M, 3F) puppies on 09 July 2021. One male passed away at a few days old due to internal issues, and a female passed away during the spay procedure. Five of her male puppies were placed on commercial farms, and her two remaining females (SB#832 and SB# 833) were kept at CCF to be future working and breeding dogs.

- 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. All puppies will be placed in January 2022.
- 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 will be placed in February 2022.
- 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 will be placed in February 2022.
- 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 stillborn (SB#875), and another female was rolled on by the dam (SB#876). Her 7 (6M, 1F) remaining puppies will be placed in February 2022.
- 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 who will be placed in March 2022.

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 problems.

In 2021, CCF staff visited 70 (38M, 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 70 dogs, nine (6M, 3F) 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

- Storm (SB#562), a working dog on a communal farm, choked to death on 24 November 2020, although CCF was not informed until 2021.
- Tsiblatse (SB#776) a working dog on a commercial farm, died from a snakebite on 31 December 2020. CCF was only informed in January 2021 when scheduling their annual visit.
- Pingo (SB# 513), a working dog on an emerging commercial farm, died from a snakebite on the 01 January 2021.
- Cheetah (SB#791), a working dog on a communal farm, died from a snakebite on 7 January 2021.

- Manguire (SB#754), a working dog on a communal farm, died, from a snakebite on the 20 January 2021.
- Meiriza (SB#627), a working dog on a communal farm, died from a snakebite on 26 January 2021.
- Mbuku (SB# 466), a working dog on an emerging commercial farm, died from a snakebite on 1 April 2021.
- Sheperd (SB#599), an onsite working dog, was euthanised due to a rapid decline in health on 16 April 2021. See section, Dog Health, for more information.
- Ben (SB# 609), a working dog on a commercial farm, died from a deep puncture wound in the chest on 16 April 2021. See section, Dog Health, for more information.
- Tjevera (SB# 680), a working dog on an emerging commercial farm, died from a snakebite on 12 May 21.
- Robyn (SB#568), a retired working dog who was placed as a pet was confiscated due to her poor condition. She was found dead in her pen on 12 May 2021. Necropsy results showed she died of a Hemangiosarcoma which they found numerous tumours of on the lungs and spleen.
- Maria (SB# 682), a working dog on a commercial farm, died from a snakebite on 10 June 21.
- Maya (SB#683), a working dog on a commercial farm, died from a car accident on 17 June 2021.
- Tex (SB#603), a working dog on a commercial farm, was euthanised on 17 June 2021 due to numerous internal cancerous tumors.
- Murize (SB#797), a working dog on a resettled farm, died from unknown causes on 17 June 21.
- Tjevera (SB#785), a working dog on a commercial farm is presumed dead as she never came back with her herd on the 27 June 2021.
- Unnamed Dog (SB#819), a working dog on a communal farm, died at 9 months of age from a snakebite on 7 July 2021.
- Unnamed Dog (SB #831P), a puppy from Bella's (SB#788) litter, died on 10 July 2021 from internal issues at 1 day old.
- Sarafina (SB#782), a working dog on a communal farm, died from a snakebite on 14 July 2021.
- Ranger (SB#623), a working dog on a communal farm, was euthanised on 18 July 2021 due to squamous cell carcinoma present in his tongue. See section, Squamous Cell Carcinoma, for more information.
- Boy-Boy (SB# 690), a working dog on a communal farm, was euthanised due to squamous cell carcinoma on 03 August 2021. See section, Squamous Cell Carcinoma, for more information.
- Bully (SB#702), a working dog on a communal farm, was euthanised due to squamous cell carcinoma on 19 August 2021. See section, Squamous Cell Carcinoma, for more information.
- Unnamed Dog SB#834, a puppy from Bella's (SB#788) litter, died on 14 September 2021 during her spay procedure.
- Boetie (SB#727), a working dog on an emerging commercial farm, died from a car accident on 3 November 2021.
- Unnamed Dog (SB#858), a puppy from Mia's (SB#789) litter, died on 24 November 2021 from internal issues at 1 day old.

- Unnamed Dog (SB#859), a puppy from Mia's (SB#789) litter, was stillborn on 24 November 2021.
- Unnamed Dog (SB#874), a puppy from Koda's (SB#772) litter, was stillborn and not fully formed on 5 December 2021.
- Unnamed Dog (SB#875), a puppy from Koda's (SB#772) litter, was stillborn on 5 December 2021.
- Unnamed Dog (SB#876), a puppy from Koda's (SB#772) litter, was rolled on by the dam and died on 7 December 2021.
- Leeu (SB#701), a pet dog at CCF, was euthanised due to a black mamba bite on 31 December 2021 after extensive treatment. See section, Dog Health, for more information.

Rehomed dogs

- Defender (SB#756), a working dog on a resettled farm, was returned due to health reasons on 8 December 2020. The dog had been injured in March 2020 and was originally taken to the state vet. The owner kept the dog until the wound had nearly closed, however, due to a prolonged healing period the dog was returned in December. CCF re-evaluated the dog and it was decided to retire him as a working dog. Once his condition improved, he was placed as a pet dog on 11 September 2021. See section, Dog Health, for more information.
- Rex (SB#736), a working dog on a commercial farm, was returned on 8 December 2021 due to complaints from her farmer that she was not working. She was re-evaluated with CCF's herd and found to work extremely well and so was placed on a new communal farm on 8 February 2021.
- Bravo (SB#653), a pet dog on a communal farm, was confiscated due to neglect. She was originally brought in for veterinary care as she had gotten into a fight with baboons on the farm, but the farmer had not informed CCF that she had moved back to their farm (originally at a townhouse in Otjiwarongo) and that she was put to work. She was brought in very poor condition. She was treated and rehomed as a pet dog on 20 January 2021. See section, Dog Health, for more information.
- Cheetah (SB#720), a working dog on a communal farm, was confiscated on 10 December 2020 due to severe neglect. 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 22 January 2021.
- Mweneni (SB#713), a working dog on a communal farm, was brought in originally for a tongue biopsy and treatment in November 2020. He was brought in very poor condition and thus was confiscated due to neglect. He was re-evaluated with CCF's herd and works extremely well. After recovery at CCF he was rehomed as a working dog on a freehold farm on 28 January 2021. See section, Dog Health, for more information.
- Basil/Lady (SB#795), a working dog on a communal farm, was returned to CCF for refusing to go out with the herd on 6 February 2021. She was re-evaluated with CCF's herd and found to work extremely well. She was re-homed as a working dog on 17 February 2021.
- Owca (SB#765), a working dog on a commercial farm, was confiscated on 9 February 2021 due to her apparent poor work ethic, and her farmer trying to sell her on social media. She was re-evaluated with CCF's herd and found to work extremely well. She was rehomed as a working dog on a communal farm on 18 February 2021. However, she was again returned on 20 July 2021 due to her apparent poor work ethic. She was re-evaluated with CCF's herd and again found to work extremely well. She was rehomed as a working dog on a commercial farm on 22 July 2021.
- Wagter (SB#759), a working dog on a commercial farm, was returned on 11 February 2021 due to her apparent poor work ethic. He was re-evaluated with CCF's herd and found to work extremely well. He was rehomed as a working dog on 28 February 2021.

- Maria (SB#682), a working dog on a resettled farm, was confiscated on 28 January 2021 due to persistent neglect after multiple warnings with little to no improvement. Her condition was improved and was re-evaluated with CCF's herd and re-homed as a working dog on 22 March 2021.
- Lady (SB#487), an outside breeding and working dog on a commercial farm, was confiscated on 26 February 2020. She delivered her first and last litter on 7 September 2020 and was spayed during an emergency c-section. She was placed as a pet dog on 27 November 2020. However, was returned on 21 January 2021 as she did not bond with her new family. She was then placed as a pet with a CCF staff member on 28 March 2021.
- Boethos (SB#539), a working dog on a commercial farm, was returned on 19 February 2020 due to new management and the farmer no longer needing the dog. He had been re-evaluated with CCF's herd and was re-homed as a working dog on 26 May 2020. Unfortunately, he was returned due to a poor work ethic on 23 July 2020. He was rehomed as a pet dog on 28 November 2020. He was then re-trained to work with cattle and found to work very well. He was then rehomed on 24 March 2021 as a working dog.
- Kuvvet (SB#799), an offsite breeding dog on a communal farm, was confiscated on 19 May 2021 due to a breach in contract by Mr Stanley Njembo. Upon arrival, she was malnourished with poor coat condition and on further investigation was experiencing a pyometra. She was treated and her condition continues to improve. She will now remain at CCF as a working and future breeding dog when she reaches a suitable age as per our breeding protocol.
- Fluffy (SB#732), a working dog on a commercial farm, was confiscated on 5 April 2021 due to neglect. Upon arrival, he was malnourished and had muscle atrophy which prevented him from standing. He was treated and his condition improved and thus was re-evaluated with CCF's herd and found to work extremely well. He was rehomed as a working dog on 14 June 2021. See section, Dog Health, for more information.
- Sheperd (SB#688), a working dog on a communal farm, was returned on 30 March 2021 due to his owner passing away. He appeared at CCF with poor body condition and lots of missing hair due to a poor diet. He was treated by CCF staff and re-evaluated with CCF's herd and found to work well. He was placed on his new farm on 19 July 2021.
- Ugab (SB#710), a working dog on a resettled farm, was confiscated on 20 April 2021 due to persistent neglect after multiple warnings with little to no improvement. His condition was improved and was re-evaluated with CCF's herd and re-homed as a working dog on 12 May 2021.
- Wagter (SB#769), a working dog on an emerging commercial farm, was sent back to CCF because the farmer reported he was no longer going out with the herd. He was tested with our herd and found to work well, and so on 4 August 2021 he was sent to a communal farm as a working dog.
- Simba (SB#440), a working dog on a commercial farm, was returned to CCF on 7 September 2021 because of a large mass on her belly. The mass was removed, but due to the dog's age it was decided to retire her. She was rehomed as a pet dog at CCF on 14 October 2021.
- Repet (SB#507), an onsite working and retired breeding female, was rehomed to a commercial farm on 13 September 2021 as a working dog.
- Snefel (SB#655), a working dog on a commercial farm, was returned on 13 September 2021 as she bonded with the other working dog on the farm. The two dogs would play with each other instead of going out with herd. We advised the farmer keep only one dog with the herd as to prevent distractions, but the farmer paid no heed to our advice. She was re-evaluated and re-bonded with CCF's herd and re-homed as a working dog 22 October 2021.
- Wolf (SB#816), a working dog on a commercial farm, was returned on 22 November 2021 due to the owner complaining about work ethic. He was sent straight to another farm as he was in perfect condition; he is now a working dog on a commercial farm.

Other than routine vaccinations, CCF provides de-worming tablets, veterinary supplies for minor injuries, and topical anti-parasitic 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 ecto-parasite 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 a healthy body weight. The following are some of the special cases CCF's veterinary team dealt with during this reporting period;

- Defender (SB#756), a working dog on a resettled farm was injured in the field due to unknown causes on 13 March 2020. The owner took the dog to a state vet closer to their house in Windhoek (away from the farm) and the dog was under house rest while his wounds healed. The wound never healed fully and thus the dog remained in Windhoek. We agreed the owner would receive a puppy in exchange for treating the dog because of the unfortunate circumstances. The dog was returned to CCF on 8 December 2020, his wound had nearly closed but the scarring of the tissue around the wound meant further healing was not possible. The wound was reopened and investigated by CCF's vet team on 16 December 2020 to allow for full tissue regrowth and he was stitched up thereafter. Acriflavine and F10 ointment were applied to the wound as it healed from December 2020 until the 18 April 2021, when the wound finally healed and had closed. He is currently in the process of being homed as a pet dog.
- Boethos (SB#539), a working dog at CCF, got into an altercation with another male dog at CCF (Brooks SB#814) and sustained an injury to his right ear on 21 February 2021. The vet team cleaned the wound and prescribed him a course of antibiotics and anti-inflammatories. Once healed, he was placed as a working dog on a commercial farm 24 March 2021.
- Robyn (SB#568), a pet dog, was confiscated due to her being lethargic and in poor body condition on 17 March 2021. She was covered in ticks and the clinic team diagnosed her with tick bite fever. She was treated with a course of doxycycline; however, no improvement was seen. Unfortunately, on 12 May 2021 she was found dead in her pen. A necropsy was completed and numerous tumours on the lungs and spleen were found. The necropsy result was concluded that she passed away due to haemangiosarcoma.
- Sheperd (SB#688), a working dog on a commercial farm, was confiscated and brought in for medical treatment due to suspected mange on 29 March 2021. The vet team tested him for mange and the tests came back negative with no abnormal findings. He was given a course of ivermectin as a precaution and is currently waiting placement on a new farm.
- Katira (SB#809), CCF's resident breeding dog, was out with the dairy herd on 6 April 2021. On return from the herd, it was noticed that she had an irritation with her eyes. It was presumed that she had come across a zebra cobra which had spat in her eyes. She was immediately rushed to the clinic where her eyes were flushed with 2L of fluids, and given a steroidal anti-inflammatory. She will be monitored over time to see if any other problems occur from the venom.
- Bella (SB#788), CCF's resident breeding dog, was on a scheduled walk with a CCF intern on 28 April 2021, during the walk they came across a zebra cobra which managed to spit into Bella's eyes. She was immediately rushed to the clinic where her eyes were flushed with 6L of fluids, and given a steroidal anti-inflammatory. She will be monitored over time to see if any other problems occur from the venom.

- Sheperd (SB#599), a working dog at CCF, was brought to the clinic because of a lump on his right knee joint on 14 April 2021. The vet team sedated him for an X-ray and found a growth on his knee joint which was believed to be an osteosarcoma. However, on reversal, Sheperd became very lethargic, depressed and did not recover properly. The clinic team then decided to do an ultrasound and took bloods. The ultrasounds showed potential abnormalities in his liver and the blood results showed he had pancreatitis and leucopenia. Sheperd was then monitored in the clinic post-sedation and started on a course of corticosteroid treatment until his condition improved. However, he stopped eating and two days had gone by and there was no significant sign of improvement. The decision was made to euthanise him due to a decline in health, on 16 April 2021.
- Ben (SB#609), a working dog on a commercial farm, was brought in for medical examination on 15 April 2021 due to a deep puncture wound to his chest. The vet team examined him and took X-rays and found that he had a severe haemothorax. A thoracocentesis was performed, however, he unfortunately died on the table. A necropsy was completed and found a fluid filled thorax due to the puncture wound.
- Aleya (SB#424), an onsite retired breeding and working dog was found to have two hard teats on her left side which were believed to be hematomas on 12 May 2021. The vet team aspirated the growths and found tumorous cells and it was discovered her three caudal teats had suspected mammary tumours. A mastectomy of her left teats was completed on the same day to prevent further spread. She will be monitored over time to see if any further growths are noted.
- Kuvvet (SB#799), an offsite breeding dog on a communal farm, was confiscated on 20 May 2021 due to her owner breaking the contractual agreement between himself and CCF. She was in very bad condition and had been bred at around 8 months of age. She underwent an ultrasound and was swabbed by the vet team who found some fluid in her uterus and the swab had shown a suspiciously high WBC count. She was placed on a strong course of antibiotics to help her secrete some of the fluid in her body and to help with her pain and discomfort. She was monitored over time to see if there would be any further developments. After a few weeks a new ultrasound was completed and showed her condition had improved.
- Fluffy (SB#372), a working dog on a communal farm, was confiscated due to severe neglect on 12 April 2021. During his return he jumped off a moving car and dislocated his patella which meant he could not stand for the first five days of his arrival. The vet team managed to put his patella back into place and a vet physiotherapist outlined a treatment plan to get him walking again. He was given a course of anti-inflammatories and training regime and his condition improved. He rehomed as a working dog on 14 June 2021.
- Bully (SB#702), a working dog on a communal farm, was rushed in for medical treatment due to a suspected snake bite on 3 June 2021 noted by his farmer. He had abnormal swelling around his neck which was cleaned, shaved, and then X-rayed by the vet team. On the X-ray a clear bite could be seen so his body was immediately flushed with fluids, and he was placed on a course of steroidal anti-inflammatories. His neck was also drained of fluids, and this persisted for 7 days. His condition improved and was able to be sent back his farm on 21 June 2021.
- Snefel (SB#655), a working dog on a commercial farm, was confiscated and brought in for medical treatment due to suspected mange on 4 June 2021. The vet team tested her for mange and the tests came back negative with no abnormal findings. However, the vet team later discovered that she had enlarged submandibular lymph nodes, mild lymphocytosis, and popliteal lymph nodes, and is currently on a course of antibiotics and anti-inflammatories with her condition improving daily.
- Boy-Boy (SB#690), a working dog on a communal farm, was brought in for medical examination on 10 June 2021 as his farmer had contacted us saying he was acting depressed with no appetite. CCF's vet team checked him over and found infections on his two front feet as well as stitches in his ear that should have been removed. He was given a course of antibiotics and anti-inflammatories and his appetite has increased and condition continues to improve.
- Tika (SB#718), CCF's resident breeding and working dog was seen with an abnormal discharge coming from her vulva on 14 June 2021. She was monitored closely for a few days, as it is normal for breeding females to have a mild yeast or urinary infection during/after their heat cycle. The problem

persisted longer than usual, and she underwent an ultrasound and was swabbed – CCF’s vet team found some fluid in her uterus and the swab had shown a suspiciously high white blood count (WBC). She was placed on a strong course of antibiotics and soon after improved.

- Bolt (SB#660), CCF’s resident breeding male, was found to have an abscess on his back right foot on 21 June 2021. The abscess was flushed and cleaned, and he was given a course of antibiotics. The foot continues to improve and will be continued to be monitored until fully healed.
- Tiger (SB#796), a working dog on a commercial farm, showed signs of lethargy and had no appetite on 28 June 2021. Our CCF East location were contacted by her farmer, and she was taken to a private vet. She was diagnosed with tick bite fever and intestinal infection. She was given a course of antibiotics and anti-inflammatories. She remains with our CCF East team until her condition improves.
- Kiri (SB#451), CCF’s resident ambassador and retired breeding female, was taken in for a thoracic x-ray on 2 July 2021, she had a suspicious opaque object on her heart base and a heart murmur. She was diagnosed with a mitral valve disease and was given heart medication. On 2 August she returned to the vet clinic for a follow up and her murmur was found to be less distinct. However, on 10 September 2021 she was rechecked, and her condition had worsened thus she will be closely monitored.
- Murize (SB#693), a working dog on a resettled farm, was brought in on 16 July 2021 with a big penetrating wound on his front left paw. CCF’s vet team sedated him to clean and complete a proper examination of the wound. He was placed on a course of antibiotics and anti-inflammatories. He was kept onsite until his paw completely healed and was able to be sent back his farm 04 August 2021.
- Repet (SB#507), a working dog on a commercial farm and retired breeding female, developed a hernia form her spay surgery which was discovered from abdominal palpations. CCF’s vet team performed a correctional surgery on 24 July 2021. She was monitored and the surgery was successful, and no further hernias have appeared. She was then brought back in on the 27 December 2021 for a tooth extraction after her farmer noticed she wasn’t eating well. This surgery was also successful and was able to be sent back to her farm the next day.
- Meisie (SB#726), a working dog on a communal farm, came in on 23 August 2021 with ticks on her paw. The clinic team diagnosed her with tick bite fever. She was treated with a course of doxycycline and anti-inflammatories. She was sent home on 1 September 2021.
- Brooks (SB#814), CCF’s resident breeding male, was brought to the clinic on 22 August 2021 because of a bad cough and diarrhoea. The clinic team took x-rays and diagnosed him with pneumonia. He was put on cough syrup and probiotics. On 10 September 2021 he went back for follow-up, and it was found that the pneumonia persisted. He was put on a strong antibiotic treatment for 10 days. After treatment his condition greatly improved.
- Katira (SB#809), a working and future breeding dog at CCF, was brought to the clinic on 2 September 2021 with a skin irritation on her neck that was not improving. A skin scraping was undertaken and lots of bacteria were found. On 9 September 2021 it was found that the wounds were improving, but also spreading. She was then treated with a course of strong antibiotics, and on 17 September 2021 her condition had greatly improved.
- Simba (SB#440), a pet dog on a commercial farm, came in with large growth/mass on her stomach on 7 September 2021. CCF’s vet team performed a surgery to remove it and received pain medication and anti-inflammatories post-surgery. She will be monitored over time to see if any further growths are noted.
- Owca (SB#765), a working dog on a commercial farm, came in on 28 September 2021 due to a bee sting and had a very swollen face. CCF’s clinic team gave her antihistamines and pain medication. She was kept here for monitoring until her facial swelling went down and left for her farm on 1 October 2021. She unfortunately came back to CCF three days later, on 3 October 2021, with a baboon wound on her right hind thigh. The vet team cleaned and sutured the wound and gave her anti-inflammatories, antibiotics, and more pain medication. She was returned to her farm on 10 October 2021.

- Robin (SB#742), a working dog on a communal farm, was brought in on 11 October 2021 because he wasn't eating. CCF examined the dog and found he had a fever with a temperature of 40 °C and a high WBC count. They took X-rays and found bones and sand in his intestines that were fortunately small enough to pass through his system. He was given antibiotics and put on one spoon of sunflower cooking oil. He was also positive for canine ehrlichiosis and was prescribed doxycycline for 28 days. He improved and left for his farm on 30 October 2021.
- Ugab (SB#710), a working dog on a commercial farm, came into the clinic on 12 October 2021. X-Rays were performed, and it was found that he had bones and stones in his stomach and intestines. He was prescribed antibiotics, probiotics, and laxatives.
- Nahanni (SB#833), a working and future breeding resident dog at CCF, had red and irritated eyes on 19 October 2021. On 22 October 2021 she was given an eye serum and meloxicam. The irritation and redness reduced quickly, and she was back working on the 25 October 2021.
- Bowie (SB#832), a working and future breeding dog here at CCF, was brought into the clinic on 5 November 2021 because it was noticed she was limping on her right front leg. She was prescribed meloxicam. She continued to limp, and on 11 December 2021 an x-ray was performed. She had a hairline fracture on her left front leg, and it was placed in a splint. The splint was removed after 3 weeks, and although she continues to have a small gait difference it has healed, and she is going out with the herd again.
- April's unnamed puppy (SB#839) was found to have an entropion, and therefore an eye tuck was performed on 21 November 2021. He was prescribed PetCam and an eye serum. All follow-ups showed the eye had healed well and no further surgery is needed.
- Zombie (SB#662), a pet dog on an emerging commercial farm, was brought in on 25 November 2021 with blood coming from his nose and anus. He was diagnosed with canine ehrlichiosis. He was prescribed doxycycline for 28 days and kept at CCF for monitoring. He returned to his farm on 24 December 2021.
- Mia's unnamed puppy (SB#854) was brought into the clinic because she was choking on something on 30 November 2021. A piece of hay was found in her trachea, which was removed. She was put on cough syrup and dextrose. On 6 December 2021 it was reported she still had excess mucus but was picking up weight. On 09 December 2021 she stopped picking up weight, and on 11 December 2021 another x-ray was performed. She still had inflammation but there was no sign of pneumonia or infection. She slowly improved and is now developing as expected with no further problems.
- Koda (SB#772), a resident working and breeding dog, was found to have a swelling between her vulva and anus on 03 December 2021. She was treated with sugar water and an anti-inflammatory cream. She gave birth soon after the swelling was discovered which irritated the area, but the swelling did reduce a few days later and no further irritation or swelling is present.
- April's unnamed puppy (SB#844) was brought into the clinic on 07 December 2021 because of a very swollen eyelid. The eye was thoroughly flushed, and she was treated with eye ointment and dextrose by the clinic team. The swelling subsided and the eye has no lasting damage. She has now been placed on her farm.
- Spucky (SB#711), a resident working dog, was found to have balanitis on 09 December 2021. He was treated with antibiotics, and his genitals were flushed every day until he improved. While his infection got better, he refused to eat, and was treated with subcutaneous fluids and cerenia. He began eating normally again after a couple of days.
- Bolt (SB#660), a resident breeding male, was brought in for an x-ray on 15 December 2021 as it was noticed he seemed to be in extreme pain. The x-rays showed he had a broken L1 vertebrae. He was placed on prednisone and gabapentin and moved to a smaller enclosure to reduce any excessive exercise. He will have a follow up X-Ray in January to monitor how it is healing.

- Wagter (SB#759), a working dog on a commercial farm, was found to have infected genitals on 17 December 2021. His genitals were flushed with saline for several days and he was placed on a course of antibiotics. He returned to his farm soon thereafter in good health.
- Ana (SB#810), a working and breeding dog on a commercial farm, was treated for a puncture wound on her front left paw on 24 December 2021. It was flushed and cleaned thoroughly. On 28 December 2021 it was noticed it suddenly swelled up, and it was cleaned and bandaged, and she was treated with a course of meloxicam. The foot continues to heal and will be closely monitored until fully better.
- Leeu (SB#701), a pet dog at CCF, was bitten by a black mamba on 24 December 2021. He was placed under anaesthesia overnight, and four vials of antivenom were administered. After this his condition seemed to improve. However, the next day he relapsed, and another 5 vials of antivenom were acquired. He was given another two and his condition seemed to improve again. On the 26 December he was given another vial, as well as multiple fluid bags. Unfortunately, over the next few days his temperature began to rise and fall suddenly, and he began losing his appetite and became paralysed. His condition continued to worsen, and so the decision to euthanise him was made on 31 December 2021.

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 9 October 2021 another biopsy was taken and a resection was performed as well.
- Ranger (SB#623), a working dog on a communal farm was experiencing trouble eating in January 2018 and was losing body condition and weight. The farmer contacted CCF asking for assistance. CCF brought the dog in and evaluated his tongue. His case is quite severe as the tongue is very inflamed and painful. He has undergone nine treatments. Two of the biopsies from his 1st and 2nd treatment have been analysed and confirmed SCC and shows the cancer has worsened. He improved for a short time, but he was brought into CCF again on 28 June 2021, and another biopsy and treatment were performed. It was discovered that another mass from the previous treatment had fallen off, leaving very little tongue. On 18 July 2021 it was reported he had not eaten for 2 weeks and the decision was taken to euthanise him. Another biopsy was taken.
- 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.

- 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.
- 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.
- Bully (SB#702), a working dog on a communal farm, appeared to show signs of sun damage on his tongue in 2019 as he had been excessively drooling during his visits, but the case was not an issue until 2020. The dog was brought in for the first tongue treatment and biopsy in November 2020. On 18 May 2021, another biopsy was performed and it was determined that a partial (5cm) resection of the tongue was necessary. Bully was treated on 17 August 2021 with Depo-Medrol, but on 19 August 2021 he was unfortunately euthanized due to the severity of the case.
- Boy-Boy (SB#690), a working dog on a communal farm, appeared to show signs in 2019. In 2021, the condition of his tongue had worsened quite severely so the dog was brought in for treatment on 23 May 2021. During his biopsy, three samples were taken for diagnosis, and it was determined that a partial (5cm) resection of the tongue was necessary. Unfortunately, on 03 August 2021 he was euthanised due to the severity of the cancer.
- 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.
- 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.

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 9 provides an overview of CCF's livestock.

Table 9: CCF livestock from January - December 2021.

	Stock Start	Born	Purchased	Sold	Died	Slaughtered/ CCF use	Stolen	Stock End
Cattle	500	240	2	87	10	0	0	645
Boer Goats	81	57	1	32	8	0	0	99
Damara Sheep	93	82	0	70	13	0	0	92
Dairy Goats	220	112	0	82	26	0	0	224
Donkeys	16	0	45	0	3	40	0	18
Horses	10	0	35	0	2	31	0	12

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.

Assistant Large Stock Manager, Bessie Simon retired in March 2021. CCF is extremely grateful for the service in helping make farming at CCF a success.

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 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. This reporting period, we received average to above average rainfall with good grazing availability.

As of December 2021, CCF has 645 cattle compared to 500 at the end of 2020. Total cattle production for 2021 included 240 calves born (130M, 110F), and 87 sold (45M, 42F) (Table 9). CCF also rents grazing land to two farmers for their cattle (approximately 600 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 are 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. Good results were also obtained during the annual weaner auctions.

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 depredation.

In addition to the 18 adult Anatolian shepherd and Kangal dogs mentioned in the previous section, as of 31 December 2021, the kraal contains 224 (34M, 190F) Dairy goats, 99 (1M, 97F, 1W) Boer goats, and 92 (2M, 90F) Damara sheep.

In 2021, 184 small stock were sold, 82 (7M, 36F, 39W) Dairy goats, 32 (2M, 10F, 20W) Boer goats, and 70 (36M, 34W) Damara sheep bringing in a total of N\$175,078.

Boer Goats

The Boer goat herd stood at 99 (1M, 97F, 1W) at the end of this reporting period, up from 91 at the end of 2020. Out of the 80 Boer goats that were bred between September and October 2020, 29 females gave birth between March and April 2021 to a total of 57 kids (Table 10).

Table 10: Boer goat births from 1 January 2021 to 31 December 2021 (cM = castrated male, iM = intact male).

SB #	Tag #	Sex	Date of Birth	Dam	Sire	Alive or Dead
749	1-21	M	7-Mar-2021	5-13	14-197	Dead
750	2-21	M	7-Mar-2021	5-13	14-197	Dead
751	3-21	M	20-Mar-2021	8-15	14-197	Alive
752	4-21	F	20-Mar-2021	8-15	14-197	Alive
753	5-21	M	21-Mar-2021	2-13	14-197	Alive
754	6-21	M	21-Mar-2021	2-13	14-197	Alive
755	7-21	M	21-Mar-2021	2-13	14-197	Alive
756	8-21	F	21-Mar-2021	10-16	14-197	Alive
757	9-21	F	21-Mar-2021	10-16	14-197	Alive
758	10-21	M	22-Mar-2021	41-15	14-197	Alive
759	11-21	F	22-Mar-2021	41-15	14-197	Alive
760	12-21	F	23-Mar-2021	11-16	14-197	Alive
761	13-21	F	11-Mar-2021	11-16	14-197	Alive
762	14-21	F	23-Mar-2021	62-15	14-197	Alive
763	15-21	F	23-Mar-2021	57-15	14-197	Alive
764	16-21	F	23-Mar-2021	57-15	14-197	Alive
765	17-21	M	23-Mar-2021	14-15	14-197	Alive
766	18-21	M	23-Mar-2021	14-14	14-197	Alive
767	19-21	F	23-Mar-2021	14-14	14-197	Alive
768	20-21	M	24-Mar-2021	11-15	14-197	Alive
769	21-21	M	24-Mar-2021	11-15	14-197	Alive
770	22-21	M	24-Mar-2021	UNK	14-197	Alive
771	23-21	F	24-Mar-2021	UNK	14-197	Alive
772	24-21	M	25-Mar-2021	16-13	14-197	Alive
773	25-21	M	25-Mar-2021	16-13	14-197	Dead
774	26-21	M	25-Mar-2021	61-15	14-197	Alive

775	27-21	F	25-Mar-2021	61-15	14-197	Alive
776	28-21	M	25-Mar-2021	71-15	14-197	Alive
777	29-21	M	25-Mar-2021	71-15	14-197	Alive
778	30-21	F	25-Mar-2021	52-15	14-197	Alive
779	31-21	F	25-Mar-2021	52-15	14-197	Alive
780	32-21	F	25-Mar-2021	33-13	14-197	Alive
781	33-21	F	25-Mar-2021	33-13	14-197	Alive
782	34-21	F	26-Mar-2021	15-13	14-197	Alive
783	35-21	F	26-Mar-2021	15-13	14-197	Alive
784	36-21	F	27-Mar-2021	2-16	14-197	Alive
785	37-21	F	27-Mar-2021	2-16	14-197	Alive
786	38-21	F	27-Mar-2021	44-15	14-197	Alive
787	39-21	F	27-Mar-2021	44-15	14-197	Alive
788	40-21	M	27-Mar-2021	35-15	14-197	Alive
789	41-21	F	27-Mar-2021	35-15	14-197	Alive
790	42-21	M	27-Mar-2021	58-15	14-197	Alive
791	43-21	F	27-Mar-2021	58-15	14-197	Alive
792	44-21	M	28-Mar-2021	67-15	14-197	Alive
793	45-21	M	28-Mar-2021	67-15	14-197	Alive
794	46-21	F	28-Mar-2021	UNK	14-197	Dead
795	47-21	M	28-Mar-2021	UNK	14-197	Alive
796	48-21	F	29-Mar-2021	31-14	14-197	Alive
797	49-21	F	29-Mar-2021	31-14	14-197	Alive
798	50-21	M	29-Mar-2021	23-14	14-197	Alive
799	51-21	M	29-Mar-2021	23-14	14-197	Alive
800	52-21	F	29-Mar-2021	16-14	14-197	Alive
801	53-21	F	29-Mar-2021	16-14	14-197	Alive
802	54-21	M	30-Mar-2021	18-14	14-197	Alive
803	55-21	F	30-Mar-2021	18-14	14-197	Alive
804	56-21	M	1-Apr-2021	25-15	14-197	Alive
805	57-21	F	1-Apr-2021	25-15	14-197	Dead

In 2021, eight Boer goats (4M, 4F) died due to causes listed in Table 11.

Table 11: Boer goat deaths from 1 January 2021 to 31 December 2021.

Studbook #	Tag #	Sex	Date of Death	Cause of Death
222	5-13	F	3-Mar-2021	Poisonous Plant
749	1-21	M	3-Mar-2021	Premature
750	2-21	M	3-Mar-2021	Premature
773	25-21	M	25-Mar-2021	Veterinary procedure
805	57-21	F	1-Apr-2021	Stillborn
776	28-21	M	10-Apr-2021	Bacterial infection
794	46-21	F	30-Apr-2021	Pneumonia
TBD	TBD	M	19-Oct-2021	Euthanised – Dislocated Shoulder

CCF's Boer goats are managed for meat production and castrated males and old or inferior does are sold at auction. Between January and December 2021, 32 goats (2M, 10F, 20W) were sold, amounting to N\$14,678. Table 12 provides an overview of CCF's Boer goat sales. One new Boer buck (SB#806) was purchased on 8 October 2021 for N\$13,500. He is a 3-year-old male who was born in January 2018. He came from Stephen Botes (Farm Congella, No.10) and underwent a period of quarantine upon arrival at CCF. He will become an important part of CCF's Boer goat breeding program.

Table 12: Boer goat sales from 1 January - 31 December 2021 (M = male, F = female, U = wether).

Studbook #	Tag #	Sex	Date of Birth	Date of Sale	Price
795	47-21	F	28-Mar-2021	5-Apr-2021	N\$0.00
755	7-21	W	21-Mar-2021	15-Jun-2021	N\$700.00
762	14-21	F	23-Mar-2021	15-Jun-2021	N\$550.00
772	24-21	W	25-Mar-2021	15-Jun-2021	N\$700.00
774	26-21	W	25-Mar-2021	15-Jun-2021	N\$700.00
777	29-21	W	25-Mar-2021	15-Jun-2021	N\$700.00
784	36-21	F	27-Mar-2021	15-Jun-2021	N\$550.00
785	37-21	F	27-Mar-2021	15-Jun-2021	N\$550.00
787	39-21	F	27-Mar-2021	15-Jun-2021	N\$550.00
804	56-21	M	1-Apr-2021	18-Jun-2021	N\$500.00
751	3-21	W	20-Mar-2021	25-Jun-2021	N\$308.00
753	5-21	W	21-Mar-2021	25-Jun-2021	N\$308.00
754	6-21	W	21-Mar-2021	25-Jun-2021	N\$308.00
758	10-21	W	22-Mar-2021	25-Jun-2021	N\$308.00
765	17-21	W	23-Mar-2021	25-Jun-2021	N\$308.00
766	18-21	W	23-Mar-2021	25-Jun-2021	N\$308.00
768	20-21	W	24-Mar-2021	25-Jun-2021	N\$308.00

769	21-21	W	24-Mar-2021	25-Jun-2021	N\$308.00
770	22-21	W	24-Mar-2021	25-Jun-2021	N\$308.00
788	40-21	W	27-Mar-2021	25-Jun-2021	N\$308.00
790	42-21	W	28-Mar-2021	25-Jun-2021	N\$308.00
792	44-21	W	28-Mar-2021	25-Jun-2021	N\$308.00
793	45-21	W	28-Mar-2021	25-Jun-2021	N\$308.00
798	50-21	W	29-Mar-2021	25-Jun-2021	N\$308.00
799	51-21	W	29-Mar-2021	25-Jun-2021	N\$308.00
802	54-21	W	30-Mar-2021	25-Jun-2021	N\$308.00
752	4-21	F	20-Mar-2021	28-July-2021	N\$550.00
760	12-21	F	23-Mar-2021	28-July-2021	N\$550.00
778	30-21	F	25-Mar-2021	28-July-2021	N\$550.00
780	32-21	F	25-Mar-2021	28-July-2021	N\$550.00
803	55-21	F	30-Mar-2021	28-July-2021	N\$550.00
744	0027A	M	1-Jan-2017	10-Sept-2021	N\$1,500.00
				Total:	N\$14,678.00

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 92 (2M, 90F) at the end of this reporting period, down from 93 at the end of 2020.

Of the 75 Damara sheep ewes that were bred between August and September 2020, 73 females gave birth from January to February 2021 to a total of 82 lambs (39M, 42F) (Table 13).

Table 13: Damara sheep births from 1 January 2021 to December 2021 (cM = castrated male, iM = intact male).

Studbook #	Tag #	Sex	Date of Birth	Dam	Sire	Dead or Alive
620	1-21	UNK	7-Jan-2021	7-19	Meatmaster 2	Dead
621	2-21	M	21-Jan-2021	16-19	Meatmaster 2	Alive
622	3-21	M	23-Jan-2021	4-16	DS6204	Alive
623	4-21	M	23-Jan-2021	52-18	Meatmaster 2	Alive
624	5-21	F	23-Jan-2021	52-18	Meatmaster 2	Alive
625	6-21	F	23-Jan-2021	46-16	DS6204	Alive
626	7-21	F	24-Jan-2021	47-18	Meatmaster 2	Alive
627	8-21	F	24-Jan-2021	UNK	UNK	Alive

628	9-21	M	24-Jan-2021	72-16	DS6204	Alive
629	10-21	M	24-Jan-2021	35-18	DS6204	Alive
630	11-21	F	25-Jan-2021	50-18	Meatmaster 2	Dead
631	12-21	M	25-Jan-2021	36-19	Meatmaster 2	Alive
632	13-21	F	25-Jan-2021	36-19	Meatmaster 2	Dead
633	14-21	F	25-Jan-2021	10-18	DS6204	Alive
634	15-21	F	26-Jan-2021	48-16	DS6204	Dead
635	16-21	F	26-Jan-2021	27-19	Meatmaster 2	Alive
636	17-21	M	26-Jan-2021	17-21	DS6204	Alive
637	18-21	F	26-Jan-2021	22-18	DS6204	Alive
638	19-21	M	26-Jan-2021	53-18	Meatmaster 2	Alive
639	20-21	M	26-Jan-2021	17-15	DS6204	Alive
640	21-21	F	26-Jan-2021	17-15	DS6204	Alive
641	22-21	M	27-Jan-2021	18-17	DS6204	Alive
642	23-21	F	27-Jan-2021	18-17	DS6204	Alive
643	24-21	M	27-Jan-2021	17-19	Meatmaster 2	Alive
644	25-21	M	27-Jan-2021	3-13	DS6204	Alive
645	26-21	F	27-Jan-2021	25-14	DS6204	Alive
646	27-21	M	28-Jan-2021	13-19	Meatmaster 2	Alive
647	28-21	F	28-Jan-2021	28-19	Meat master 2	Alive
648	29-21	M	29-Jan-2021	34-19	Meatmaster 2	Alive
649	30-21	M	29-Jan-2021	22-14	DS6204	Alive
650	31-21	F	29-Jan-2021	2-19	Meatmaster 2	Alive
651	32-21	F	29-Jan-2021	33-14	DS6204	Alive
652	33-21	F	30-Jan-2021	12-16	DS6204	Alive
653	34-21	M	30-Jan-2021	32-19	Meatmaster 2	Alive
654	35-21	F	30-Jan-2021	23-15	DS6204	Alive
655	36-21	F	31-Jan-2021	44-16	DS6204	Alive
656	37-21	M	31-Jan-2021	19-18	DS6204	Alive
657	38-21	M	31-Jan-2021	31-18	DS6204	Dead
658	39-21	F	31-Jan-2021	31-18	DS6204	Alive
659	40-21	M	31-Jan-2021	60-18	DS6204	Dead
660	41-21	M	31-Jan-2021	60-18	DS6204	Dead
661	42-21	M	1-Feb-2021	36-16	DS6204	Alive

662	43-21	M	1-Feb-2021	65-15	DS6204	Alive
663	44-21	M	1-Feb-2021	39-16	DS6204	Alive
664	45-21	M	1-Feb-2021	33-16	DS6204	Alive
665	46-21	M	1-Feb-2021	26-19	Meatmaster 2	Alive
666	47-21	F	2-Feb-2021	13-16	DS6204	Alive
667	48-21	F	2-Feb-2021	6-19	Meatmaster 2	Alive
668	49-21	M	2-Feb-2021	30-19	Meatmaster 2	Alive
669	50-21	F	2-Feb-2021	14-19	Meatmaster 2	Alive
670	51-21	F	3-Feb-2021	39-17	DS6204	Alive
671	52-21	M	4-Feb-2021	12-14	DS6204	Alive
672	53-21	F	4-Feb-2021	68-16	DS6204	Alive
673	54-21	M	4-Feb-2021	52-16	DS6204	Alive
674	55-21	F	4-Feb-2021	55-18	Meatmaster 2	Alive
675	56-21	F	5-Feb-2021	25-19	Meatmaster 2	Alive
676	57-21	M	6-Feb-2021	42-15	Meatmaster 2	Alive
677	58-21	M	7-Feb-2021	20-18	DS6204	Dead
678	59-21	F	7-Feb-2021	13-18	DS6204	Alive
679	60-21	F	7-Feb-2021	14-16	DS6204	Alive
680	61-21	M	8-Feb-2021	55-17	DS6204	Alive
681	62-21	F	8-Feb-2021	55-17	DS6204	Alive
682	63-21	F	8-Feb-2021	8-19	Meatmaster 2	Alive
683	64-21	M	8-Feb-2021	22-19	Meatmaster 2	Alive
684	65-21	M	8-Feb-2021	49-15	DS6204	Alive
685	66-21	F	8-Feb-2021	74-16	DS6204	Alive
686	67-21	F	8-Feb-2021	29-14	DS6204	Dead
687	68-21	F	8-Feb-2021	29-14	DS6204	Dead
688	69-21	F	8-Feb-2021	51-18	Meatmaster 2	Alive
689	70-21	M	10-Feb-2021	15-16	DS6204	Alive
690	71-21	M	10-Feb-2021	15-16	DS6204	Alive
691	72-21	F	11-Feb-2021	25-15	DS6204	Alive
692	73-21	M	11-Feb-2021	27-16	DS6204	Alive
693	74-21	F	12-Feb-2021	65-16	DS6204	Alive
694	75-21	F	13-Feb-2021	11-15	DS6204	Alive
695	76-21	F	13-Feb-2021	39-19	Meatmaster 2	Alive

696	77-21	F	13-Feb-2021	23-19	Meatmaster 2	Alive
697	78-21	M	14-Feb-2021	51-15	DS6204	Alive
698	79-21	F	16-Feb-2021	9-16	DS6204	Alive
699	80-21	M	16-Feb-2021	45-16	DS6204	Alive
700	81-21	M	22-Feb-2021	3-19	Meatmaster 2	Alive
701	82-21	F	22-Feb-2021	12-19	Meatmaster 2	Alive

In 2021, 13 sheep (4M, 8F, 1U) died due to causes listed in Table 14.

Table 14: Damara sheep deaths from 1 January 2021 to 31 December 2021.

Studbook #	Tag #	Sex	Date of Death	Cause of Death
620	1-21	Unknown	7-Jan-2021	Stillborn
632	13-21	Female	25-Jan-2021	Stillborn
630	11-21	Female	28-Jan-2021	Premature
657	38-21	Male	31-Jan-2021	Stillborn
660	41-21	Male	31-Jan-2021	Stillborn
659	40-21	Male	2-Feb-2021	Bloat
677	58-21	Male	7-Feb-2021	Euthanised - Deformed at birth
549	17-19	Female	4-Mar-2021	Enterotoxemia
340	12-16	Female	7-Mar-2021	Ingested poisonous plants
540	8-19	Female	16-Mar-2021	Internal parasites
686	67-21	Female	22-Mar-2021	Unknown
687	68-21	Female	22-Mar-2021	Unknown
634	15-21	Female	9-May-2021	Ingested poisonous plants

CCF's Damara sheep are managed for meat production and castrated males and old or inferior dams are sold at auction. Between January and December 2021, 70 sheep (37M, 33W) were sold, totalling N\$67,100 in sales. Table 15 provides an overview of CCF's Damara sheep sales.

Table 15: Damara sheep sales from 1 January 2021 to 31 December 2021 (M = male, F = female, U = wether).

Studbook #	Tag #	Sex	Date of Birth	Date of Sale	Price (NS)
626	7-21	F	24-Jan-2021	5-May-2021	650.00
633	14-21	F	25-Jan-2021	5-May-2021	650.00
651	32-21	F	29-Jan-2021	5-May-2021	650.00
652	33-21	F	30-Jan-2021	5-May-2021	650.00
666	47-21	F	2-Feb-2021	5-May-2021	650.00
667	48-21	F	2-Feb-2021	5-May-2021	500.00
669	50-21	F	2-Feb-2021	5-May-2021	500.00
678	59-21	F	7-Feb-2021	5-May-2021	500.00
682	63-21	F	8-Feb-2021	5-May-2021	500.00
621	2-21	W	21-Jan-2021	1-Jun-2021	660.00
622	3-21	W	23-Jan-2021	1-Jun-2021	660.00
623	4-21	W	23-Jan-2021	1-Jun-2021	200.00
628	9-21	W	24-Jan-2021	1-Jun-2021	660.00
629	10-21	W	24-Jan-2021	1-Jun-2021	660.00
636	17-21	W	26-Jan-2021	1-Jun-2021	660.00
638	19-21	W	26-Jan-2021	1-Jun-2021	660.00
639	20-21	W	26-Jan-2021	1-Jun-2021	200.00
641	22-21	W	27-Jan-2021	1-Jun-2021	520.00
643	24-21	W	27-Jan-2021	1-Jun-2021	200.00
644	25-21	W	27-Jan-2021	1-Jun-2021	660.00
646	27-21	W	28-Jan-2021	1-Jun-2021	660.00
648	29-21	W	29-Jan-2021	1-Jun-2021	660.00
649	30-21	W	29-Jan-2021	1-Jun-2021	660.00
653	34-21	W	30-Jan-2021	1-Jun-2021	660.00
656	37-21	W	31-Jan-2021	1-Jun-2021	660.00
661	42-21	W	1-Feb-2021	1-Jun-2021	660.00
662	43-21	W	1-Feb-2021	1-Jun-2021	660.00
663	44-21	W	1-Feb-2021	1-Jun-2021	660.00
664	45-21	W	1-Feb-2021	1-Jun-2021	660.00
665	46-21	W	1-Feb-2021	1-Jun-2021	660.00
668	49-21	W	2-Feb-2021	1-Jun-2021	660.00
671	52-21	W	4-Feb-2021	1-Jun-2021	660.00

673	54-21	W	4-Feb-2021	1-Jun-2021	660.00
676	57-21	W	6-Feb-2021	1-Jun-2021	660.00
680	61-21	W	8-Feb-2021	1-Jun-2021	660.00
683	64-21	W	8-Feb-2021	1-Jun-2021	660.00
684	65-21	W	8-Feb-2021	1-Jun-2021	660.00
689	70-21	W	10-Feb-2021	1-Jun-2021	200.00
690	71-21	W	10-Feb-2021	1-Jun-2021	200.00
691	72-21	F	11-Feb-2021	1-Jun-2021	660.00
697	78-21	W	14-Feb-2021	1-Jun-2021	660.00
699	80-21	W	16-Feb-2021	1-Jun-2021	660.00
700	81-21	W	22-Feb-2021	1-Jun-2021	660.00
220	3-13	F	09-May-2013	18-Sept-2021	1,550.00
245	22-14	F	26-Jan-2014	18-Sept-2021	1,550.00
248	25-14	F	29-Jan-2014	18-Sept-2021	1,550.00
252	29-14	F	30-Jan-2014	18-Sept-2021	1,550.00
256	33-14	F	2-Feb-2014	18-Sept-2021	1,550.00
275	11-15	F	8-Jan-2015	18-Sept-2021	1,550.00
287	23-15	F	1-Mar-2015	18-Sept-2021	1,550.00
289	25-15	F	15-Jan-2015	18-Sept-2021	1,550.00
330	65-15	F	14-Feb-2015	18-Sept-2021	1,550.00
269	39-16	F	12-Feb-2016	18-Sept-2021	1,550.00
373	46-16	F	25-Feb-2016	18-Sept-2021	1,550.00
401	74-16	F	16-Mar-2016	18-Sept-2021	1,550.00
423	18-17	F	19-Feb-2017	18-Sept-2021	1,550.00
454	55-17	F	17-Mar-2017	18-Sept-2021	1,550.00
521	51-18	F	20-Mar-2018	18-Sept-2021	1,550.00
282	17-15	F	12-Jan-2015	12-Oct-2021	1,550.00
316	51-15	F	25-Mar-2015	12-Oct-2021	1,550.00
341	13-16	F	03-Feb-2016	12-Oct-2021	1,550.00
342	14-16	F	05-Feb-2016	12-Oct-2021	1,550.00
343	15-16	F	30-Jan-2016	12-Oct-2021	1,550.00
369	33-16	F	15-Feb-2016	12-Oct-2021	1,550.00
375	48-16	F	29-Feb-2016	12-Oct-2021	1,550.00
480	13-18	F	13-Jan-2018	12-Oct-2021	1,550.00

488	20-18	F	19-Jan-2018	12-Oct-2021	1,550.00
490	22-18	F	21-Jan-2018	12-Oct-2021	1,550.00
491	23-18	F	22-Jan-2018	12-Oct-2021	1,550.00
503	35-18	F	30-Jan-2018	12-Oct-2021	1,550.00
				Total:	67,100.00

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 224 (34M, 190F) at the end of this reporting period, down from 220 at the end of 2020.

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 2021, 54 does were bred with two breeding males; Picasso (SB#256), Michel (SB#580) and Zinfandels Boy (SB#139). Thirty-five of the 54 does bred gave birth to a total of 60 kids (24M, 35F, 1U) between July and September. Another 54 does (including six who did not kid in August), were bred between July and August 2021 to breeding males; Michel (SB#580), Picasso (SB#256) and Zinfandel's Boy (SB#139). Thirty of the 54 does gave birth to a total of 52 kids (29M, 23F) in November and December 2021 (Table 16).

Table 16: Breeding and kidding months for 80 Dairy does from the 1 January 2021 to December 2021. (Abo = aborted, NP = not pregnant).

Goat	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Ablonia			Bred					Kid				
Ada			Bred					Kid				
Anne-Bolyne			Bred					Kid				
Archie			Bred					NP				
Astrid			Bred					Kid				
Barolo			Bred				Bred					Kid
Beulah			Bred					Kid				
Bianca			Bred									
Blanc			Bred					Kid				
Blush			Bred					NP				
Camellia			Bred					NP				
Chenin Blanc			Bred				Bred					NP

Chianti			Bred					Kid				
Claret			Bred					Kid				
Constanti a			Bred					Kid				
Crystal			Bred					Kid				
Elsa			Bred					Kid				
Emerald			Bred					Kid				
Halali			Bred					Kid				
Henrietta			Bred					Kid				
Kylie			Bred				Bred					NP
Lena			Bred					NP				
Lily 2			Bred				Bred					NP
Lizzie			Bred					Kid				
Lolita			Bred				Kid					
Lora			Bred					NP				
Lotus			Bred					Kid				
Louise			Bred				Bred					Kid
Madeira			Bred					Kid				
Marie- Antoinette			Bred					Kid				
Marigold			Bred					Kid				
Meredith			Bred					Kid				
Moyo			Bred					Kid				
Nicole			Bred					Kid				
Nutmeg			Bred					Kid				
Olifa			Bred					Kid				
Onyx			Bred					NP				
Petrina			Bred					Kid				
Petunia			Bred					NP				
Poppy			Bred					Kid				

Quartz			Bred					Kid				
Rioja			Bred					NP				
Rosemary			Bred					Kid				
Selena			Bred					Kid				
Snow			Bred				Kid					
Soini			Bred					NP				
Tina 2			Bred					Kid				
Tonga			Bred					Kid				
Topaz 2			Bred					Kid				
Tulip			Bred				Bred					NP
Whinnie			Bred					Kid				
Zara			Bred					Kid				
Amber							Bred					Kid
Aune							Bred					NP
Brenna							Bred					NP
Bridget							Bred					NP
Brier							Bred					NP
Burgandi							Bred					Kid
Caitlin							Bred			Kid		
Charlotte							Bred					NP
Chive							Bred					Kid
Chloe							Bred					Kid
Daisy							Bred					NP
Denali							Bred					NP
Diamond							Bred					Kid
Dominique							Bred					Kid
Eleanor							Bred					Kid
Erin 2							Bred					NP
Glory							Bred					NP

Helena							Bred					NP
Joan							Bred					Kid
Julia							Bred					Kid
Kir							Bred					Kid
Maggie							Bred					Kid
Malbec							Bred					Kid
Marsala							Bred					Kid
Mary 2							Bred					Kid
Matilda							Bred					NP
Nigella							Bred					NP
Nolana							Bred					Kid
Orchid							Bred					NP
Pearl							Bred					NP
Pepper							Bred					NP
Petit							Bred					NP
Primrose							Bred					Kid
Princess Beatrice							Bred					Kid
Princess Eugenie							Bred					Kid
Queen Elizabeth							Bred					Kid
Robin							Bred					Kid
Rose							Bred					NP
Ruacana							Bred					Kid
Simone							Bred					Kid
Sophie							Bred					Kid
Stella							Bred				Kid	
Takue							Bred					NP
Tayla							Bred					NP
Veneto							Bred				Kid	

Violet							Bred					Kid
Vistoria							Bred					Kid
Wendy							Bred					NP

In 2021, 112 (54M, 57F, 1U) dairy kids were born (Table 17).

Table 17: Dairy goat births from 1 January 2021 to December 2021 (M = male, F = female, U = unknown).

Studbook #	Name	Sex	Date of Birth	Dam	Sire	Alive or Dead
689		F	26-July-2021	Snow	Picasso	Dead
690		F	26-July-2021	Snow	Picasso	Dead
691		F	26-July-2021	Snow	Picasso	Dead
692		M	31-July-2021	Lolita	Picasso	Sold/Alive
693	Minnie	F	31-July-2021	Lolita	Picasso	Alive
694		U	31-July-2021	Lolita	Picasso	Dead
695		M	01-Aug-2021	Marie-Antoinette	Zinfandel's Boy	Sold/Alive
696		M	01-Aug-2021	Marie-Antoinette	Zinfandel's Boy	Sold/Alive
697		M	01-Aug-2021	Marie-Antoinette	Zinfandel's Boy	Sold/Alive
698		M	01-Aug-2021	Marie-Antoinette	Zinfandel's Boy	Sold/Alive
699	Lilibet	F	01-Aug-2021	Anne-Boleyn	Zinfandel's Boy	Alive
700	Baby-Llama	F	01-Aug-2021	Anne-Boleyn	Zinfandel's Boy	Dead
701		M	02-Aug-2021	Marigold	Picasso	Sold/Alive
702	Hazel	F	02-Aug-2021	Marigold	Picasso	Alive
703	Lazuli	F	02-Aug-2021	Emerald	Zinfandel's Boy	Alive
704		M	03-Aug-2021	Tina 2	Zinfandel's Boy	Sold/Alive
705		M	03-Aug-2021	Tina 2	Zinfandel's Boy	Sold/Alive
706	Natasha	F	03-Aug-2021	Tina 2	Zinfandel's Boy	Alive
707	Pansy	F	03-Aug-2021	Poppy	Picasso	Alive
708	Lilac	F	03-Aug-2021	Poppy	Picasso	Alive
709	Martha	F	04-Aug-2021	Whinnie	Picasso	Alive
710	Kaarina	F	04-Aug-2021	Whinnie	Picasso	Alive
711		M	04-Aug-2021	Lotus	Michel	Sold/Alive

712	Oshana	F	04-Aug-2021	Moyo	Zinfandel's Boy	Alive
713	Fransina	F	05-Aug-2021	Petrina	Zinfandel's Boy	Alive
714	Lauren	F	05-Aug-2021	Petrina	Zinfandel's Boy	Alive
715	Molly	F	05-Aug-2021	Lizzie	Picasso	Alive
716	Dallas	F	05-Aug-2021	Lizzie	Picasso	Alive
717		F	05-Aug-2021	Claret	Michel	Dead
718		M	05-Aug-2021	Olifa	Zinfandel's Boy	Sold/Alive
719		M	05-Aug-2021	Olifa	Zinfandel's Boy	Sold/Alive
720		M	05-Aug-2021	Halali	Zinfandel's Boy	Sold/Alive
721	Mariental	F	05-Aug-2021	Halali	Zinfandel's Boy	Alive
722		M	05-Aug-2021	Ada	Picasso	Sold/Alive
723		M	06-Aug-2021	Rosemary	Zinfandel's Boy	Sold/Alive
724		M	06-Aug-2021	Nicole	Zinfandel's Boy	Sold/Alive
725		M	07-Aug-2021	Henrietta	Zinfandel's Boy	Sold/Alive
726	Ana	F	07-Aug-2021	Henrietta	Zinfandel's Boy	Alive
727		M	08-Aug-2021	Nutmeg	Zinfandel's Boy	Sold/Alive
728		M	09-Aug-2021	Blanc	Picasso	Sold/Alive
729		M	09-Aug-2021	Blanc	Picasso	Sold/Alive
730	Marble	F	09-Aug-2021	Quartz	Zinfandel's Boy	Alive
731		F	11-Aug-2021	Constantia	Picasso	Sold/Alive
732	Modesta	F	11-Aug-2021	Beulah	Zinfandel's Boy	Alive
733		F	11-Aug-2021	Beulah	Zinfandel's Boy	Dead
734	Kunene 2	F	12-Aug-2021	Tonga	Michel	Alive
735		M	14-Aug-2021	Crystal	Michel	Sold/Alive
736	Beryl	F	14-Aug-2021	Crystal	Michel	Alive
737		M	14-Aug-2021	Selena	Zinfandel's Boy	Sold/Alive
738	Marina	F	14-Aug-2021	Zara	Zinfandel's Boy	Alive
739		M	16-Aug-2021	Madeira	Picasso	Sold/Alive
740	Bambi	F	17-Aug-2021	Elsa	Picasso	Alive

741	Flint	F	20-Aug-2021	Topaz 2	Zinfandel's Boy	Alive
742		M	22-Aug-2021	Chianti	Picasso	Dead
743	Margarita	F	22-Aug-2021	Chianti	Picasso	Alive
744	Lisa	F	24-Aug-2021	Astrid	Zinfandel's Boy	Alive
745	Albertina	F	24-Aug-2021	Astrid	Zinfandel's Boy	Alive
746	Gize	F	25-Aug-2021	Ablonia	Zinfandel's Boy	Alive
747		M	27-Aug-2021	Meredith	Zinfandel's Boy	Alive
748	Rosalia	F	27-Aug-2021	Meredith	Zinfandel's Boy	Dead
749		M	24-Nov-2021	Stella	Michel	Alive
750		F	24-Nov-2021	Stella	Michel	Alive
751		F	24-Nov-2021	Stella	Michel	Alive
752		M	24-Nov-2021	Caitlin	Picasso	Alive
753		F	27-Nov-2021	Veneto	Michel	Alive
754		M	04-Dec-2021	Joan	Picasso	Alive
755		M	04-Dec-2021	Joan	Picasso	Alive
756		F	05-Dec-2021	Julia	Michel	Alive
757		F	05-Dec-2021	Julia	Michel	Alive
758		M	06-Dec-2021	Vistoria	Michel	Alive
759		F	06-Dec-2021	Vistoria	Michel	Alive
760		M	06-Dec-2021	Amber	Michel	Alive
761		F	06-Dec-2021	Primrose	Michel	Alive
762		M	08-Dec-2021	Princess Eugenie	Michel	Alive
763		F	08-Dec-2021	Princess Eugenie	Michel	Alive
764		F	08-Dec-2021	Princess Eugenie	Michel	Alive
765		M	08-Dec-2021	Simone	Michel	Alive
766		F	08-Dec-2021	Simone	Michel	Alive
767		M	08-Dec-2021	Dominique	Michel	Alive
768		M	11-Dec-2021	Marsala	Picasso	Alive
769		F	11-Dec-2021	Marsala	Picasso	Alive

770		M	11-Dec-2021	Diamond	Michel	Alive
771		M	11-Dec-2021	Diamond	Michel	Alive
772		F	11-Dec-2021	Burgandi	Michel	Alive
773		F	11-Dec-2021	Burgandi	Michel	Alive
774		M	12-Dec-2021	Malbec	Michel	Alive
775		M	12-Dec-2021	Malbec	Michel	Alive
776		M	13-Dec-2021	Nolana	Michel	Alive
777		F	13-Dec-2021	Nolana	Michel	Alive
778		F	13-Dec-2021	Nolana	Michel	Alive
779		F	14-Dec-2021	Princess Beatrice	Michel	Alive
780		F	16-Dec-2021	Barolo	Michel	Alive
781		M	16-Dec-2021	Mary 2	Michel	Alive
782		F	16-Dec-2021	Mary 2	Michel	Alive
783		M	17-Dec-2021	Chive	Michel	Alive
784		M	17-Dec-2021	Violet	Zinfandel's Boy	Alive
785		M	17-Dec-2021	Violet	Zinfandel's Boy	Alive
786		M	18-Dec-2021	Maggie	Zinfandel's Boy	Alive
787		M	18-Dec-2021	Maggie	Zinfandel's Boy	Alive
788		M	18-Dec-2021	Maggie	Zinfandel's Boy	Alive
789		F	19-Dec-2021	Kir	Picasso	Alive
790		F	22-Dec-2021	Ruacana	Picasso	Alive
791		M	22-Dec-2021	Robin	Zinfandel's Boy	Dead
792		M	22-Dec-2021	Sophie	Michel	Alive
793		F	22-Dec-2021	Sophie	Michel	Alive
794		M	25-Dec-2021	Chloe	Michel	Alive
795		M	25-Dec-2021	Chloe	Michel	Alive
796		M	24-Dec-2021	Eleanor	Zinfandel's Boy	Alive
797		M	24-Dec-2021	Eleanor	Zinfandel's Boy	Alive
798		F	24-Dec-2021	Eleanor	Zinfandel's Boy	Alive

799		M	28-Dec-2021	Louise	Zinfandel's Boy	Dead
800		F	28-Dec-2021	Queen Elizabeth	Zinfandel's Boy	Alive

In 2021, 26 (4M, 21F, 1U) Dairy goats died to causes listed in Table 18.

Table 18: Dairy goats that died from 1 January – 31 December 2021.

Studbook #	Name	Sex	Date of Death	Cause of Death
632	Ryan	Male	6-Jan-2021	Unknown
523	Iris	Female	7-Jan-2021	Unknown
45	Yarrow	Female	28-Jan-2021	Euthanised
462	Riita	Female	21-Feb-2021	Ingested poisonous plants
620	Aurora	Female	4-Mar-2021	Ingested poisonous plants
52	Zinfandel	Female	5-Mar-2021	Internal parasites
566	Buttercup	Female	16-Apr-2021	Internal parasites
687	Omega	Female	9-May-2021	Ingested poisonous plants
380	Jade	Female	19-May-2021	Euthanised
610	Kei	Female	23-July-2021	Choke and Asphyxiation
689		Female	26-July-2021	Premature
690		Female	26-July-2021	Premature
691		Female	26-July-2021	Premature
275	Snow	Female	28-July-2021	Ruptured Uterus
694		Unknown	31-July-2021	Stillborn
300	Anne-Boleyn	Female	6-August-2021	Pneumonia
733		Female	11-August-2021	Stillborn
717		Female	13-August-2021	Pneumonia
742		Male	31-August-2021	Pasteurella
700	Baby Llama	Female	27-Sep-2021	Internal Issues
748	Rosalia	Female	6-Nov-2021	Intestinal Volvulus with Chronic Purulent Bronchopneumonia
505	Tonga	Female	19-Nov-2021	Pneumonia
295	Mary 2	Female	17-Dec-2021	Internal Parasites
422	Eleanor	Female	25-Dec-2021	Emergency C-Section and Chronic Mastitis
791		Male	28-Dec-2021	Unknown
799		Male	30-Dec-2021	Euthanised

CCF's Dairy goats are managed for milk production and castrated males and inferior bucks are sold at auction. Between January and December 2021, 82 Dairy goats (7M, 36F, 39W) were sold, amounting to sales of N\$93,300.

Table 19 provides an overview of CCF's Dairy goat sales.

Table 19: Dairy goat sales from 1 January to 31 December 2020 (M = male, F = female, U = wether).

Studbook #	Name	Sex	Date of Birth	Date of Sale	Price
49	Indira	F	31-Oct-2010	11-Jan-2021	N\$500.00
74	Edelweiss	F	2-Oct-2011	11-Jan-2021	N\$500.00
105	Mirabai	F	31-Jul-2012	11-Jan-2021	N\$500.00
48	Safire	F	22-Oct-2010	15-Jan-2021	N\$500.00
53	Chardonnay	F	21-Nov-2010	15-Jan-2021	N\$500.00
56	Kimberley	F	24-Jan-2011	15-Jan-2021	N\$500.00
107	Princess Saba	F	2-Sep-2012	15-Jan-2021	N\$2,500.00
181	Trycolyn	F	5-Dec-2014	15-Jan-2021	N\$2,500.00
303	Onyx	F	2-Nov-2016	16-July-2021	N\$2,500.00
366	Isla	F	15-Sep-2017	15-Jan-2021	N\$2,500.00
395	Raven	F	30-Oct-2017	15-Jan-2021	N\$2,500.00
448	Katie	F	26-Oct-2018	15-Jan-2021	N\$2,000.00
474	Barbera	F	11-Nov-2018	15-Jan-2021	N\$2,500.00
121	Hannah	F	12-May-2013	22-Jan-2021	N\$2,000.00
226	Syrah	F	15-Aug-2015	22-Jan-2021	N\$2,000.00
341	Bianca	F	23-Aug-2017	16-July-2021	N\$2,500.00
353	Hilma	F	31-Aug-2017	22-Jan-2021	N\$2,500.00
368	Omao	F	16-Sep-2017	22-Jan-2021	N\$2,500.00
386	Camellia	F	15-Oct-2017	16-July-2021	N\$2,500.00
392	Lina	F	26-Oct-2017	22-Jan-2021	N\$2,500.00
404	Ali	F	26-Mar-2018	22-Jan-2021	N\$2,500.00
406	Kate	F	31-Jul-2018	22-Jan-2021	N\$2,500.00
407	Megan	F	31-Jul-2018	22-Jan-2021	N\$2,500.00
411	Moss	M	2-Aug-2018	22-Jan-2021	N\$2,000.00
418	Dahlia 2	F	5-Aug-2018	22-Jan-2021	N\$2,500.00
420	Spinel	F	6-Aug-2018	22-Jan-2021	N\$2,500.00
431	Merlot	F	9-Aug-2018	22-Jan-2021	N\$2,500.00

442	Mireille	F	25-Oct-2018	22-Jan-2021	N\$2,500.00
449	Army	F	26-Oct-2018	22-Jan-2021	N\$2,500.00
507	Archie	F	11-Aug-2019	16-July-2021	N\$2,500.00
518	Lena	F	15-Aug-2019	16-July-2021	N\$2,500.00
528	Rioja	F	17-Aug-2019	16-July-2021	N\$2,000.00
532	Lora	F	18-Aug-2019	16-July-2021	N\$2,500.00
539	Soini	F	27-Aug-2019	16-July-2021	N\$2,500.00
545	Blush	F	30-Aug-2019	16-July-2021	N\$2,500.00
547	Saima	F	21-Jan-2019	22-Jan-2021	N\$2,500.00
560	Jasper	M	14-Dec-2019	16-July-2021	N\$3,000.00
578	Petunia	F	27-Aug-2019	16-July-2021	N\$2,500.00
647	-	W	27-Nov-2020	7-Feb-2021	N\$200.00
650	-	W	29-Nov-2020	7-Feb-2021	N\$200.00
653	-	W	1-Dec-2020	7-Feb-2021	N\$200.00
654	-	W	2-Dec-2020	7-Feb-2021	N\$200.00
655	-	W	2-Dec-2020	7-Feb-2021	N\$200.00
656	-	W	2-Dec-2020	7-Feb-2021	N\$200.00
657	-	W	3-Dec-2020	7-Feb-2021	N\$200.00
658	-	W	3-Dec-2020	7-Feb-2021	N\$200.00
659	-	W	3-Dec-2020	7-Feb-2021	N\$200.00
660	-	W	3-Dec-2020	7-Feb-2021	N\$200.00
661	-	M	3-Dec-2020	17-Sept-2021	N\$2,500.00
663	-	W	4-Dec-2020	7-Feb-2021	N\$200.00
665	-	W	11-Dec-2020	7-Feb-2021	N\$200.00
667	-	W	11-Dec-2020	7-Feb-2021	N\$200.00
668	-	W	12-Dec-2020	7-Feb-2021	N\$200.00
669	-	W	15-Dec-2020	7-Feb-2021	N\$200.00
675	-	W	21-Dec-2020	7-Feb-2021	N\$200.00
679	-	W	22-Dec-2020	7-Feb-2021	N\$200.00
680	-	W	23-Dec-2020	7-Feb-2021	N\$200.00
684	-	W	25-Dec-2020	7-Feb-2021	N\$200.00
692	-	W	31-July-2021	2-Oct-2021	N\$220.00

695	-	W	1-Aug-2021	18-Sept-2021	N\$220.00
696	-	W	1-Aug-2021	18-Sept-2021	N\$220.00
697	-	W	1-Aug-2021	2-Oct-2021	N\$220.00
698	-	W	1-Aug-2021	18-Sept-2021	N\$220.00
701	-	M	2-Aug-2021	2-Oct-2021	N\$400.00
704	-	M	3-Aug-2021	2-Oct-2021	N\$400.00
705	-	W	3-Aug-2021	2-Oct-2021	N\$220.00
711	-	W	4-Aug-2021	18-Sept-2021	N\$220.00
718	-	W	5-Aug-2021	18-Sept-2021	N\$220.00
719	-	W	5-Aug-2021	18-Sept-2021	N\$220.00
720	-	M	5-Aug-2021	18-Sept-2021	N\$400.00
722	-	W	5-Aug-2021	2-Oct-2021	N\$220.00
723	-	W	6-Aug-2021	2-Oct-2021	N\$220.00
724	-	W	6-Aug-2021	18-Sept-2021	N\$220.00
725	-	W	7-Aug-2021	2-Oct-2021	N\$220.00
727	-	W	8-Aug-2021	18-Sept-2021	N\$220.00
728	-	W	9-Aug-2021	2-Oct-2021	N\$220.00
729	-	W	9-Aug-2021	18-Sept-2021	N\$220.00
731	-	W	11-Aug-2021	2-Oct-2021	N\$220.00
735	-	W	14-Aug-2021	18-Sept-2021	N\$220.00
737	-	M	14-Aug-2021	2-Oct-2021	N\$400.00
739	-	W	16-Aug-2021	2-Oct-2021	N\$220.00
747	-	W	27-Aug-2021	2-Oct-2021	N\$220.00
				Total:	N\$93,300.00

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 2021, up to 72 goats were milked every day for a total production of 42,090.38kg of milk. Of this milk, 180kg were used to raise goat kids as per the new bottle raising protocol which means 41,910.38kg were supplied to the creamery (Table 21).

Table 20: Goats milked, amount produced (kilograms), and how much allocated to kids and creamery in 2021.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Goats milked	71	59	59	58	58	57	39	70	70	72	41	59
Total Produced	3815.53	3839.50	4199.67	4166.40	3998.01	3123.30	2979.53	3564.95	3692.77	3328.12	2556.44	2826.16
Used to Raise Kids	0	24	0	83	73	0	0	0	0	0	0	0
To Creamery	3815.53	3815.50	4199.67	4083.4	3925.01	3121.30	2979.53	3564.95	3692.77	3328.12	2556.44	2826.16

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 21 shows amount of milk production per goat per month, and Figure 26 displays the number of goats milked each month and the total milk production per month.

Table 21: Milk production (kilograms) per goat per month from 1 January 2021 to 31 December 2021.

Goat	SB#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Ablonia	492	-	-	-	-	-	-	-	4.78	12.65	52.80	54.55	58.00
Ada	482	-	-	-	-	-	-	-	16.20	15.91	53.96	59.28	82.25
Amber	553	-	-	-	-	-	-	-	-	-	-	-	5.72
Anne-Boleyn	300	83.34	85.15	78.03	62.04	54.38	11.24	-	-	-	-	-	-
Astrid	293	90.40	91.09	96.51	95.01	83.70	46.91	-	16.57	7.50	63.66	73.07	56.10
Beulah	342	0.35	-	-	-	-	-	-	37.46	35.82	84.93	74.84	80.63
Bianca	341	43.71	40.37	43.03	43.66	37.49	2.94	-	-	-	-	-	-

Blanc	315	85.45	80.69	89.37	77.10	64.42	7.47	-	5.85	1.41	50.72	72.70	105.04
Brenna	182	8.97	39.85	51.67	58.94	63.86	81.45	80.39	79.69	83.66	39.35	-	-
Bridget	277	110.48	98.84	112.97	90.92	84.87	89.76	93.95	86.39	94.84	38.88	-	17.63
Brier	364	69.92	54.63	63.59	74.92	81.20	88.34	97.70	103.69	91.43	44.12	-	1.94
Burgandi	354	3.46	19.41	37.75	43.91	42.54	41.30	49.19	49.27	42.39	9.69	-	1.52
Caitlin	132	5.18	28.25	36.87	39.44	44.86	50.31	59.20	52.60	63.51	7.97	4.016	3.15
Camellia	386	113.01	97.60	88.79	90.10	74.34	43.87	-	-	-	-	-	-
Chenin Blanc	100	52.07	37.67	42.28	32.26	38.95	8.82	-	-	-	-	-	-
Chianti	384	91.17	82.03	89.32	88.12	109.63	53.01	-	11.30	65.77	115.00	115.79	112.15
Chloe	434	9.84	67.01	87.98	84.03	83.32	92.00	117.67	120.50	115.21	46.47	-	-
Claret	383	108.33	83.20	78.77	68.66	66.03	13.35	-	100.63	165.30	176.58	151.55	145.94
Constantia	514	-	-	-	-	-	-	-	4.24	1.47	49.14	66.67	82.34
Crystal	510	-	-	-	-	-	-	-	3.37	7.04	64.67	71.30	92.11
Daisy 2	468	77.11	88.52	85.16	86.55	88.91	83.96	104.78	111.08	103.09	48.81	-	-
Denali (SA)	257	1.78	23.34	30.11	62.51	86.99	101.86	109.73	113.65	102.26	42.66	-	-
Diamond	291	7.54	43.53	78.50	69.62	72.93	73.93	82.36	85.57	75.27	14.28	-	1.24
Diana	59	12.58	12.46	12.13	8.30	7.42	7.09	8.15	10.43	9.53	9.20	8.67	9.74

Dominique	554	-	-	-	-	-	-	-	-	-	-	-	2.09
Edelweiss	74	19.068	-	-	-	-	-	-	-	-	-	-	-
Eleanor	422	78.93	69.93	66.59	54.50	53.87	41.44	31.70	29.78	22.09	1.05	0.12	-
Elsa	478	-	-	-	-	-	-	-	2.47	-	40.53	52.48	53.80
Emerald	405	97.13	75.64	75.03	64.80	78.90	12.65	0.16	26.91	27.94	66.70	57.75	41.22
Erin 2	203	58.45	52.38	54.79	54.75	56.69	61.96	62.53	59.62	62.94	20.10	-	-
Glory	370	108.05	91.95	93.15	87.56	95.20	101.60	104.91	105.17	101.17	14.67	-	-
Halali	279	50.79	49.04	52.36	43.39	33.62	5.41	-	4.53	6.85	61.49	65.78	67.48
Hannah	121	34.84	-	-	-	-	-	-	-	-	-	-	-
Helena	433	95.59	103.04	103.74	99.84	107.93	101.13	115.18	119.10	100.61	46.95	-	0.27
Henrietta	296	-	-	-	-	-	-	-	-	-	0.22	63.81	132.22
Hilma	353	49.04	-	-	-	-	-	-	-	-	-	-	-
Indira	49	17.97	-	-	-	-	-	-	-	-	-	-	-
Jade	380	8.15	103.78	108.74	106.13	49.70	-	-	-	-	-	-	-
Joan	357	5.70	35.54	36.46	50.75	63.21	70.31	85.72	95.99	91.96	10.26	-	3.15
Julia	563	-	-	-	-	-	-	-	-	-	-	-	2.34
Katie	448	19.34	-	-	-	-	-	-	-	-	-	-	-

Kimberley	56	15.90	-	-	-	-	-	-	-	-	-	-	-
Kir	346	7.57	46.25	67.82	100.01	106.81	122.71	122.71	106.80	126.74	123.37	2.56	
Lizzie	289	-	-	-	-	-	-	-	1.30	0.73	66.14	73.75	91.59
Lolita	289	125.63	114.74	110.24	109.91	92.39	11.51	-	0.55	6.11	74.77	77.57	79.61
Lotus	484	-	-	-	-	-	-	-	0.72	28.72	93.14	81.22	82.36
Madeira	522	-	-	-	-	-	-	-	15.27	24.10	61.64	70.74	85.23
Maggie	265	101.91	79.96	81.78	66.00	71.26	71.31	79.67	87.63	77.37	9.37	-	-
Malbec	317	119.39	99.92	106.56	101.13	105.41	109.67	97.54	106.29	100.52	23.01	-	9.86
Marie-Antoinette	473	79.81	68.55	88.47	68.77	28.66	2.49	-	16.85	59.27	138.81	115.45	55.26
Marigold	284	-	-	-	-	-	-	-	5.02	5.14	70.03	85.35	79.88
Marsala	301	8.45	58.45	84.84	87.39	85.63	85.60	90.42	89.34	74.82	6.22	0.42	6.07
Mary 2	284	61.11	58.77	62.14	55.83	54.60	44.78	42.02	36.63	36.50	5.18	-	-
Matilda	356	2.90	15.07	18.76	34.85	37.62	35.56	42.78	44.95	45.50	6.11	-	1.61
Megan	295	41.43	-	-	-	-	-	-	-	-	-	-	-
Meredith	498	-	-	-	-	-	-	-	0.65	12.60	62.33	80.65	95.78
Mirabai	451	18.85	-	-	-	-	-	-	-	-	-	-	-
Moyo	512	-	-	-	-	-	-	-	1.05	5.99	65.30	75.07	82.16

Nicole	513	-	-	-	-	-	-	-	18.11	40.19	107.68	93.00	85.78
Nigella	407	96.52	88.56	85.84	74.27	82.00	81.78	81.85	91.48	88.65	25.08	-	1.69
Nolana	105	8.80	25.71	46.05	75.65	81.45	75.06	85.06	107.31	103.99	25.33	-	0.17
Nutmeg	520	-	-	-	-	-	-	-	25.45	59,85	103.60	98.97	91.13
Olifa	271	65.35	60.78	75.23	80.88	54.29	8.75	-	10.71	54.92	136.55	128.20	150.31
Onyx	371	51.09	66.61	76.96	83.36	79.28	51.74	-	-	-	-	-	-
Orchid	280	5.31	21.87	42.85	68.77	84.72	79.08	72.17	76.84	68.84	17.09	-	1.79
Pearl	368	6.04	46.29	103.61	105.67	89.30	106.15	96.17	94.13	90.53	40.49	-	-
Pepper 2	303	86.94	91.12	68.27	45.07	42.74	50.24	74.71	110.27	113.29	14.79	-	-
Petrina	385	169.77	142.22	136.42	123.68	101.36	14.22	-	11.20	11.87	71.11	76.42	78.00
Poppy	186	95.16	83.57	87.37	80.45	73.65	8.62	-	1.80	2.98	36.68	85.38	81.53
Primrose	413	5.26	28.44	28.24	46.85	53.90	61.61	72.24	97.25	93.37	23.95	-	5.74
Princess Adela	336	6.02	16.70	0.31	-	-	-	-	-	-	-	-	-
Princess Beatrice	137	95.72	95.51	99.46	99.12	97.79	96.20	97.85	107.70	90.31	24.58	-	-
Princess Eugenie	138	87.19	78.31	88.45	92.16	90.12	92.37	86.66	89.53	83.04	16.87	-	5.24
Princess Saba	152	35.70	-	-	-	-	-	-	-	-	-	-	-

Quartz	515	-	-	-	-	-	-	-	7.56	2.41	46.32	58.84	61.71
Queen Elizabeth	158	86.83	61.98	73.89	90.03	73.74	51.57	32.35	41.35	39.90	3.89	-	-
Riita	319	4.41	18.53	-	-	-	-	-	-	-	-	-	-
Robin	107	2.87	55.09	75.54	76.10	73.80	72.85	83.13	89.76	88.90	20.65	-	0.16
Rose	417	71.80	61.42	73.28	66.03	67.95	65.95	66.50	61.05	62.92	19.11	-	-
Rosemary	489	-	-	-	-	-	-	-	18.91	10.32	45.55	50.56	64.86
Ruacana	462	-	-	0.28	39.19	34.98	23.53	30.18	32.56	31.32	10.98	-	-
Selena	487	-	-	-	-	-	-	-	22.53	35.20	62.23	77.70	92.73
Simone	572	-	-	-	-	-	-	-	-	-	-	-	1.05
Snow	453	66.60	57.72	61.26	67.93	52.00	1.18	-	-	-	-	-	-
Sophie	307	84.51	77.27	76.61	68.36	76.67	80.50	96.14	112.82	115.82	55.39	-	-
Stella	144	1.38	22.79	21.86	37.79	47.74	52.45	46.64	35.55	19.96	1.09	4.92	4.81
Tina 2	124	-	-	-	-	-	-	-	1.25	2.92	50.21	65.56	97.73
Tonga	505	-	-	-	-	-	-	-	3.27	0.36	37.92	8.12	-
Topaz 2	511	-	-	-	-	-	-	-	12.11	31.58	84.08	79.28	72.75
Tulip	275	92.07	79.06	83.99	65.97	57.30	10.87	-	-	-	-	-	-
Veneto	570	-	-	-	-	-	-	-	-	-	-	3.08	5.77

Violet	548	88.38	88.50	85.23	82.77	83.37	93.17	94.26	112.95	105.10	10.77	-	-
Vistoria	562	-	-	-	-	-	-	-	-	-	-	-	0.97
Wendy	359	83.16	66.01	83.01	88.23	82.18	79.72	83.72	90.94	85.59	49.38	-	3.00
Whinnie	124	113.06	125.24	124.21	61.05	23.64	0.27	-	-	2.74	16.06	21.40	36.19
Yarrow	45	0.08	-	-	-	-	-	-	-	-	-	-	-
Zara	543	-	-	-	-	-	-	-	7.56	1.07	44.76	49.85	53.95
Zemba	309	102.82	83.55	87.15	85.32	86.70	89.68	101.44	103.11	102.95	45.65	-	1.62
Zinfandel	52	2.01	-	-	-	-	-	-	-	-	-	-	-
Total (kg)	-	3815.5	3839.5	4199.7	4166.4	3998.0	31213.3	2979.5	3564.0	3692.7	3328.2	2556.4	2826.2

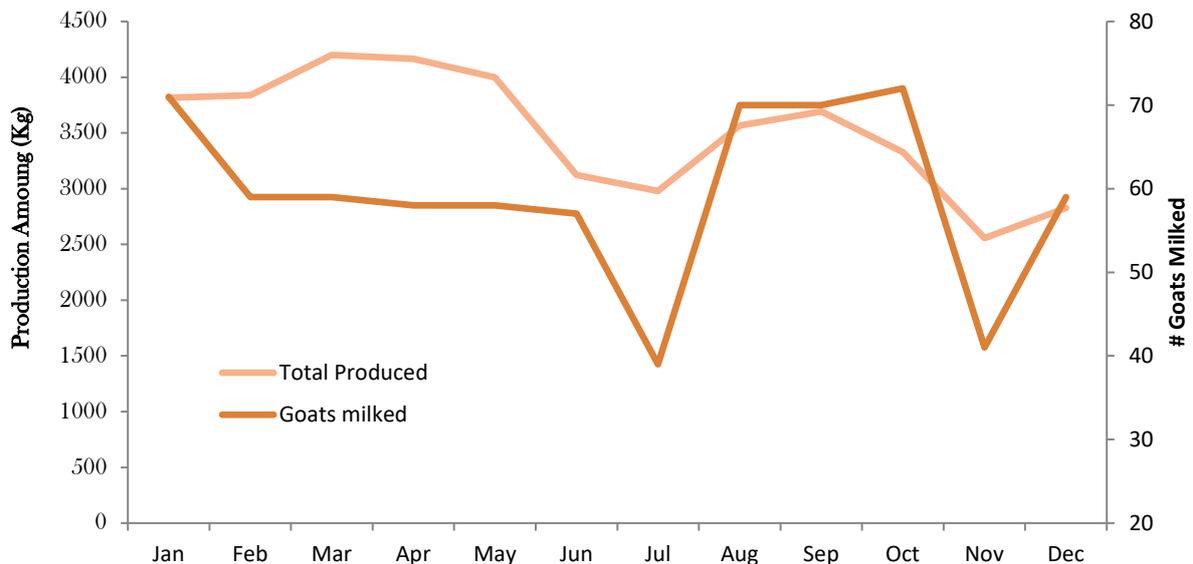


Figure 24: Milk production versus goats milked from 1 January 2021 – 31 December 2021.

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 26 shows the amount of feed used for each type during this reporting period.

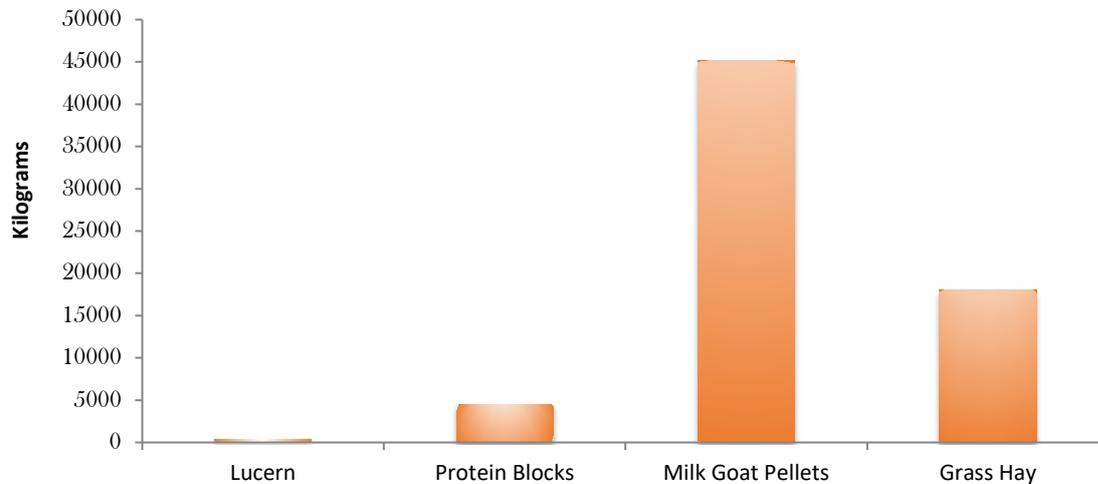


Figure 25: Amount of feed provided to CCF small stock in 2021.

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; anthelmvheiclintic 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 lymphadenitis (*Corynebacterium pseudotuberculosis*) – also known as cheesy gland.
 - o 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.
 - o 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 emphysematosa*), clostridial metritis, bloodgut, and infections.
 - o All new-borns are vaccinated at four weeks old, then a booster after a month and then annually thereafter.
 - o Adult animals are vaccinated annually.
- Brucellosis – for the control of *Brucella* and *Brucella melitensis*, a bacterial infection of the reproductive tract.
 - o 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 *Chlamydia psittaci*, 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 2021, CCF produced 800 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 27 below displays the amount of wild game removed for consumptive use for this reporting period.

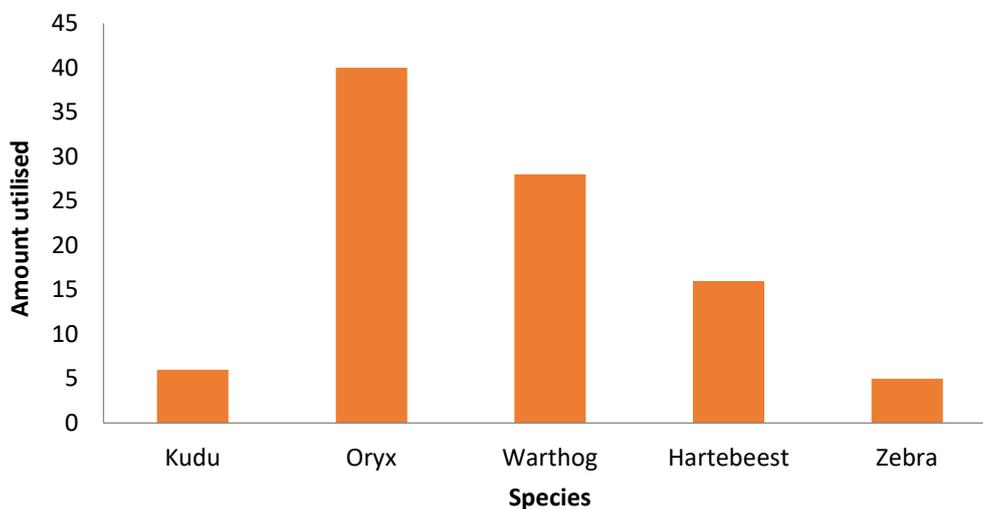


Figure 26: Amount of game utilised by CCF in 2021.

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 cofounder 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 28) 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 27: Certified Wildlife Friendly logo.

2. Bushblok

Block production

Processing of raw wood for export continued. BUSHBOLK production in 2021 amounted to 382 tonnes, with sales of 400 tonnes. Production increased by 65 tonnes during this reporting period. Table 22 shows the monthly block production during this reporting period.

Table 22: Monthly block production in 2021.

Month	Amount (tonnes)
January	15
February	15
March	30
April	30
May	35
June	39
July	40
August	43
September	40
October	45
November	30
December	20
Total	382

Fuelwood production

Fuelwood production in 2021 amounted to 197.17 tonnes with 100% sales. Table 23 shows the fuelwood production during this reporting period.

Table 23: Monthly fuelwood production in 2021.

Month	Amount (tonnes)
January	0
February	28.90
March	2.00
April	29.63
May	4.12
June	31.73
July	1.43
August	2.00
September	5.25
October	27.38
November	34.44
December	30.30
Total	197.18

General Information

The Biomass Technology Centre (BTC) at CCF was in full operation. The former BUSHBLOK factory in Otjiwarongo continued operations as the CCF depot. Additionally, the final bush feed mixture was produced there under direction of Farms Manager Johan Britz.

A fourth shed was under construction at the BTC: this incorporates wood labs, a classroom, and a workshop area. New equipment included a small skidsteer, 2 wood chippers and a small wood-pellet production line. The annual Forest Stewardship Council (FSC) inspection concluded with re-certification.

David Shipingana continued as the Forestry and Safety Officer in 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.

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. Dr. Brewer presented at the first Namibian Biomass Symposium at the Namibian University of Science & Technology (NUST).

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 2021, there were 168 dairy goats at CCF with up to 88 being milked daily for a daily average of 106 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 long-term intern Simeon Heita. 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 42,090 kg of milk, however, due to human error, spilling and different/faulty scales, only 38,825 kg of milk was actually used in the creamery. Of the total milk used for creamery products, 21.7% was used to produce two of the Creamery's original cheeses, feta and chèvre. Table 24 shows amounts of milk allocated to the production of each creamery product.

Table 24: Milk allocation per product in 2021.

Product	Milk Used (kg)
Feta	5,892
Chevre	2,514
Ricotta	590
Mozzarella	231
Hard cheese	3,046
Yogurt	5,774
Fudge	1,899
Ice cream	297
Soap	4,815
Milk to farm staff	11,074
Cream cheese	1,391

Halloumi	1,050
Milk	253
Total	38826

Table 25 shows the amounts of two of these varieties produced each month in 2021. In addition, the Creamery produced a total of 222 kg of fudge, 446 kg of ice cream, 53 kg of ricotta and 21 kg mozzarella cheese, 724 hard cheese, 122 kg cream cheese, and 56,693.50 kg yoghurt. The creamery started producing a new semi-hard cheese called Halloumi, for which 1,050 kg of milk was used to produce 94,473kg. All cheeses that were produced were used at the staff kitchen, Cheetah Café and the Cheetah View Lodge.

Table 25: Feta and Chèvre monthly production (kilograms) in 2021.

Month	Feta	Chèvre	Total
January	7.56	0.00	7.56
February	63.54	11.79	75.33
March	60.66	25.92	86.58
April	20.88	23.40	44.28
May	77.58	41.40	118.98
June	15.66	4.68	20.34
July	35.03	10.58	45.61
August	47.61	19.26	66.87
September	41.04	18.27	59.31
October	42.03	15.84	57.87
November	51.30	17.01	68.31
December	63.81	36.27	100.08
Total	526.70	224.42	751.12

Expenses

Creamery expenses such as cheese cultures, packaging, labelling, herbs, labour, gas, and electricity are estimated at N\$18,136.36 for this period, averaging N\$1.27 per kilogram of product. Total milk costs amounted to N\$38,676.10. The average amount of milk required to produce a kilogram of cheese is 11.11kg, whereas ice cream required 0.67kg.

Table 26 shows the breakdown of costs for the various creamery products as well as the total cost per kilogram of product.

Table 26: Production costs (N\$) of creamery products in 2021.

Product	Production (kg)	Milk per kg	Total Milk Used (kg)	Total Milk Cost	Total Other Cost	Total Production Cost	Total cost per kg
Feta	526.70	11.19	5,892.25	58,922.50	364.12	59,286.62	112.56
Chevre	224.42	11.20	2,513.50	25135.00	155.14	25,290.14	112.69

Ricotta	53.10	11.11	590	5900.00	36.71	5,936.71	111.80
Mozzarella	20.79	11.11	231	2310.00	14.37	2,324.37	111.80
Hard cheese	274.16	11.11	3046.25	30462.50	189.53	30,652.03	111.80
Yogurt	5693.50	1.01	5773.5	57735.00	3936.04	61,671.04	10.83
Fudge	222.00	8.55	1898.5	18985.00	153.47	19,138.47	86.21
Ice cream	445.50	0.67	297	2970.00	307.98	3,277.98	7.36
Soap	7222.65	0.67	4815.1	48151.00	4993.18	53,144.18	7.36
Milk to farm staff	11074.3	1.00	11074.3	110743.00	7655.90	118,398.90	10.69
Cream cheese	122.31	11.11	1359	13590.00	84.56	13,674.56	111.80
Halloumi	55.45	18.93	1049.7	10497.00	38.33	10,535.33	190.00
Milk	285	0.48	136	1360.00	197.03	1,557.03	5.46
Total	26,219.88		38,676.10	38,6761.00	18,126.36	404,887.36	

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 revenue from creamery products in 2021 was N\$56,272.00, which saw a 4% increase from sales in 2020 at N\$54,300.51. Creamery product amounts totalled 16,493.50 kg, while 63.73 kg were distributed as promotional samples and gifts at events such as agricultural shows, farmer's markets, and tourism fairs (Table 27).

As shown in Table 27, during this period the Creamery supplied the Gift Shop with 3,587.18 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 11,175.92 kg of ice cream, fudge, cheese, yoghurt, milk and soap.

Table 27: Creamery product sales (N\$) in 2021. Figures in red do not indicate profit from products.

Product	Kg	Cost/Kg	Total Cost	Revenue	Profit
Feta	18.7	112.56	2,104.91	3,000	895.09
Chevre	0	112.69	0.00	0	0.00
Ricotta	0	111.80	0.00	0	0.00
Mozzarella	0	111.80	0.00	0	0.00
Hard cheese	22.8	111.80	2,549.10	3,320	770.90
Yoghurt	1291.5	1.00	1,291.50	12,945	11,653.50
Fudge	4.5	86.21	387.95	1125	737.05
Ice cream	0	7.36	0.00	0	0.00
Soap	0	7.36	0.00	0	0.00
Milk to farm staff	0	0.00	0.00	0	0.00
Cream cheese	8.4	111.80	939.14	600	-339.14

Halloumi	0	18.93	0.00	0	0.00
Milk	0	0.48	0.00	0	0.00
Total Stores and Lodges	1,345.90		7272.60	20,990.00	13,717.40
Fudge (Gift Shop)	157.7	86.21	13,595.52	8,310	-5,285.52
Soap (Gift Shop)	36	7.36	264.89	740	475.11
Cheese (Gift Shop)	299.975	112.08	3,3620.46	26,953	-6,667.46
Yoghurt (Gift shop)	2784.5	1.00	2784.50	29037.5	26253.00
Ice cream (Gift Shop)	309	7.36	2273.62	8310	6036.38
Total CCF Gift Shop	3,587.18		52,538.99	73,350.50	20,811.51
Ice Cream (Babson)	51	7.36	375.26	11220	10844.74
Soap (Babson)	0	7.36	0.00	0	0.00
Cheese (Babson)	99.5	112.08	11151.72	14925	3773.28
Yoghurt (Babson)	10	1.00	10.00	248	238.00
Fudge (Babson)	6	86.21	517.27	1500	982.73
Total Babson	166.50		12,054.25	27,893	15,838.75
Ice Cream (Café)	6.2	7.36	45.62	1364	1318.38
Yogurt (Café)	0	1.00	0.00	0	0.00
Cheese (Café)	211.8	112.08	23738.02	31770	8031.98
Total Café	218		23,783.64	33,134.00	9,350.36
Cheese (Hotspot)	54.62	112.08	6121.68	6121.68	0.00
Yogurt (Hotspot)	0	1.00	0.00	0.00	0.00
Ice Cream (Hotspot)	47	7.36	345.83	345.83	0.00
Total Hotspot	101.62		6,467.51	6,467.51	0.00
Milk (Farm staff)	11074.3	10.00	110,743.00	110,743.00	0.00
Total CCF	11,175.92	10.00	117,210.50	117,210.50	0.00
Cheese samples	25.5	112.08	2,857.98	0	-2,857.98
Fudge samples	5.10	86.21	439.68	0	-439.68
Yoghurt samples	15.00	1.00	15.00	0	-15.00
Ice cream samples	18.125	7.36	133.36	0	-133.36
Total Samples	63.73		3,446.02	0	-3,446.02

Total All Products Sold	16,557.22	10.00	216,306.00	272,578.00	56,272.00
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At the end of this period, the remaining inventory in CCF’s freezers was 148.89 kg of cheese, 6 kg fudge, 436.50 litres of yoghurt and 6,885.15 kg of soap, while 38 kg of fudge and 379.32 kg of cheese spoiled (Table 28), due to the decrease in sales resulting from the COVID-19 pandemic.

Table 28: Amount of product left in inventory and those spoiled as of 31 December 2021.

Product	Amount (kg)	Amount spoiled (kg)
Fudge	6	38
Ice Cream	14.18	0
Yoghurt	436.50	1,156
Soap	6,885.15	0
Cheese	148.89	379.32
Total	7,490.72	1,573.32

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 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 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 Magdel Ngandi 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 1,374.80 kg of fresh produce was harvested from the garden between January and December 2021. Figure 29 shows the amounts of various produce harvested during the reporting period. Tomatoes, cucumber and Swiss chard were the most harvested, representing 51% of the overall produce.

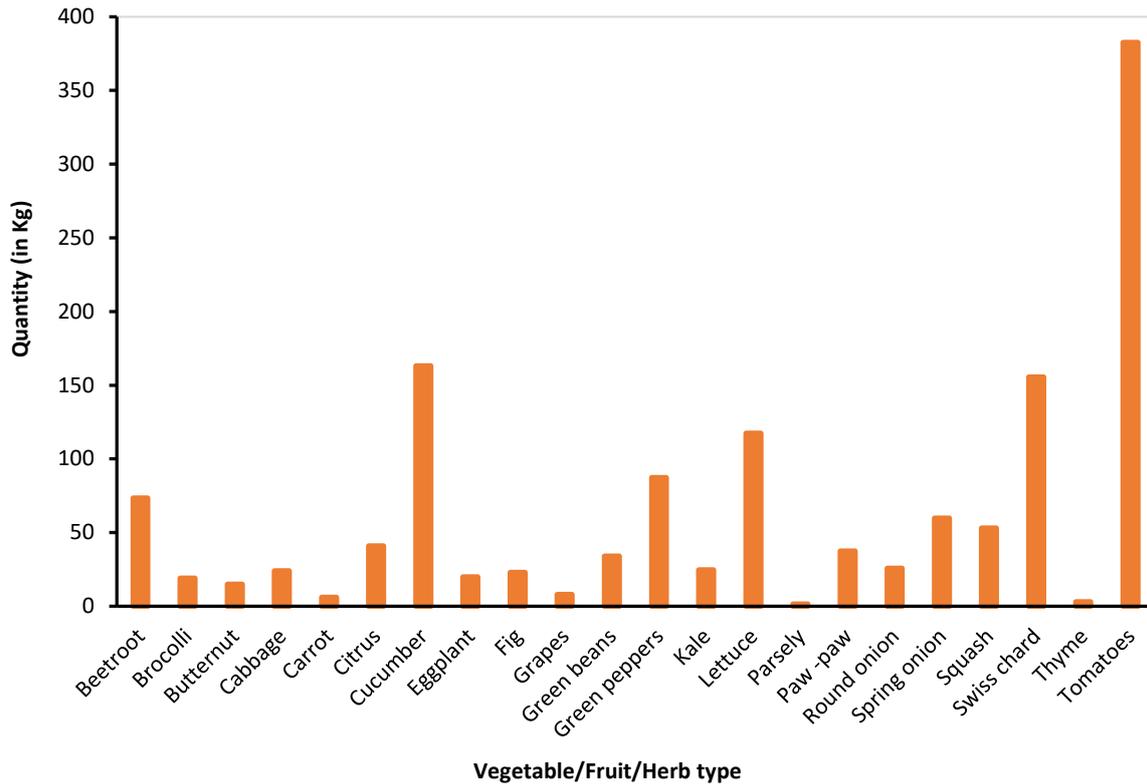


Figure 28: Vegetables, fruits and herbs harvested from the Chewbaaka Memorial Garden in 2021.

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.

The Apiary

CCF’s Apiary was unfortunately destroyed by honey badgers.

CCF Vineyard

The grapes did very well during this reporting period. They were pruned in September 2021 and the new growth looks good.

One hundred and fifty new plants were planted at Boskop and 10 were planted in the CCF garden.

D. Eco-Tourism

Tourism has been one of Namibia's largest growing industries in the past decade, with a large number of developments emerging in the Otjiwarongo area over the past couple of years. CCF 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 with the best hospitality and experience when visiting. CCF's eco-tourism did start to grow a little again from beginning of April 2021 compared to when the COVID-19 pandemic hit globally in mid-March 2020 and the country together with the rest of the world came to a travel standstill. The economic impact for CCF has been devastating in both 2020 and 2021, with half of the capacity in both years compared to 2019.

1. Visitors to CCF

By the end of 2021, CCF had received a total of 2,512 visiting tourists, of which 453 (Cheetah View Lodge & Babson) were overnight tourists. This represents a 30% increase from 1,926 in 2020. In terms of total revenue, this reporting period saw a 42% increase at N\$ 2,582,966.72 compared with N\$ 1,823,257.58 in 2020. In addition to school groups and film crews mentioned separately, CCF hosted many CCF friends, supporters, and collaborators in 2021, many of them on return visits.

CCF hosted friends, supporters, and collaborators throughout 2021. May to December saw an increase in visitors with a big decline when the 3rd wave of Covid-19 (Delta variant) hit the country and red listed as a travel destination. The beginning of July is usually peak season for visiting guests, which was unfortunately not the case in 2021. The following friends, supporters, and collaborators visited CCF during this reporting period;

January

- Dirk and Isabel Lezcano owners of Viajes Africa came for an educational visit. They stayed at Cheetah View Lodge and joined all the activities CCF offers to visitors. They shared their stay on social media and tagged CCF on Instagram and Twitter. We look forward to building a great business relationship with them and hosting many of their guests in future.
- Hein van Zijl, Film and TV professionals, came to do a B-roll and footage for Invisible Island Films. Hein does a lot of work with different media groups in Namibia and around the world.

February

- Long term friend of CCF and a very good veterinarian in Namibia, Dr. Ulf Tubessing and his assistant Mariska stayed at Cheetah View for one night, to do a work up on Daenerys, a cheetah from Erindi who had broken her leg severely, she is currently recovering at CCF but we do hope to release her back Erindi once she is fully recovered.

March

- Stefani & Volker Huemmer from Dessert Hills Swakopmund visited for a night at the Cheetah View Lodge. CCF buys products from them which we sell in the Gift shop. They also sell !Nara dog soap of which a percentage of sales is donated to the LSGD program. They also sell some of CCF's creamery products in their shop in Swakopmund.
- Aydin Apaydin, the TIKA Country Coordinator, visited for a day and was welcomed by Dr. Bruce Brewer. He took a peek at all the different departments of CCF and had a good look at all the donations TIKA has made.

April

- CCF hosted French Ambassador to Namibia, and he participated in a cheetah run and a tour around the facilities. Mr. Sébastien Minot was appointed ambassador of France to Namibia by the President of the French Republic on 20 August 2020.
- Mr. Dave van Smeerdijk (Co-founder of Natural Selections) visited with his family for a night stay at Babson House. His daughter Grace, an absolute cheetah fanatic, got to do a cheetah run for the very first time.

May

- Dr. Regina Jankowitsch & Prof. Daniele Risser are Austrian Nationals who stayed at Babson House. They are very important to a tour company called Five Star Tours and Safaris.
- Alexander Ehrenstrasser and Szofia Andrei visited as fully inclusive guests at Cheetah View Lodge. They have been running an art business in Europe and love cheetahs.
- The British High Commissioner, a friend of CCF Somaliland, Stuart Brown and Ell Brown (his wife) were on their honeymoon in Namibia and CCF Namibia was lucky to host them for a part of it at Babson House.

June

- Gabrielle and Reinhard Lechtape - Grunter, friends of Beth Fellenstein (CCF USA), and Angela Weisskopf from Germany, currently residing in South Africa, visited CCF and joined a Cheetah Run and a Behind the Scenes.
- Art and Bonnie Walker who booked through Namibia Tours and Safaris had an overnight stay at Cheetah View Lodge.
- CCF had the honour of hosting the High Commissioner of India (in Namibia) Mr. Prashant Agrawal, his wife Mrs. Rakhee Agrawal, and their son Ishaan Agrawal, as well as his First Secretary, Mohammad Afsar at Cheetah View Lodge for one night.
- Jeff Muntifering, an old friend and colleague of CCF's and his wife Basilia along with their two children again this year to celebrate their son Kano's birthday. Kano absolutely loves cheetahs and CCF staff enjoyed hosting his birthday for the second year and making it special for him. Jeff is an Adjunct Professor at Namibia University of Science and Technology and a Science Adviser at [Save the Rhino Trust](#).

July

- Dr. Laurie Marker and CCF had the pleasure of hosting return friend and collaborator, Dr Alex Sliwa, Chairman of the European Zoo Associations Field TAG and a Black-footed Cat specialist at Cheetah View Lodge.
- Alison Cotter and her friend Bryn Sementa visited and stayed at Cheetah View Lodge for four nights. Allison is a San Diego Veterinarian and knows CCF US board member Marisa Kenetic and Laura Nachbur, cousin to Dr. Laurie Marker and long-time friend of CCF.

August

- Christine Grey, a veterinarian from the US experienced our fully inclusive program at Cheetah View Lodge. She met Dr. Laurie Marker and Dr. Bruce Brewer for dinner, both nights of her stay.
- CCF finally got to host auction voucher winners, Ms. Evelyn Solórzano and Mr. Jose D. Rivas-Evans at Babson House whose visit had to be postponed a few times because of the Covid-19 pandemic. They were the winners of a voucher in 2018 from the Cheetah in the Spotlight: Meet an Ambassador Cheetah Event in Westport, Connecticut, USA.
- CCF happily welcomed returning Babson House guest, Christoph Schneider and his family. They were a party of eight.
- CCF hosted Wesley Kruger (son of CCF Namibia board member Mary Kruger) and his colleagues for one night.
- Long-time friends and supporters of CCF, Judy Patterson visited CCF for the first time along with CCF supporter and friend, Donna Louie who has been at CCF before.
- Alex Shipp & Alexis Cox-Shipp and Carol "Candy" Cox stayed at Babson House at the end of August. Alex and Alexis are big supporters of CCF. Alexis is a veterinarian who has volunteered in Somaliland. One of the reasons they visited was for the arrangements that had been made with Beth Fellenstein and the CCF Namibia team to honour Alexis's late father and Candy's late husband. CCF gladly put up a plaque in his memory.

September

- Michael Thomsen, a Diplomat of the American Board of Veterinary Practitioners of the Canine and Feline Practice in the USA and his wife Nikki Thomsen visited and stayed at Babson House for two

nights. They both showed interest in all CCF programs and enjoyed all activities, so much that Nikki watched the cheetah run three times! CCF looks forward to a long-term collaboration with them.

October

- Matilde Venturi visited and brought along donations from Italy. Matilde used to be part of CCF Italy and is a great friend and supporter of CCF.

November

- Caroline Ramsay & Nutan Chada, CCF Big Cat Party Auction voucher winners and supporters of CCF visited and stayed at Babson House.
- Mr. Michael Beets and Mrs. Geertruida Veerhoek from the Netherlands were the first guests from the All of Nature Tourism company collaboration and package we have with them for a fully inclusive two-night stay and visiting a Livestock guarding dog owner and his farm. They were both very pleased with their first visit.

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 21.5% in day visiting tourists, from 1,695 in 2020 compared to 2,059 in 2021 (Figure 30).

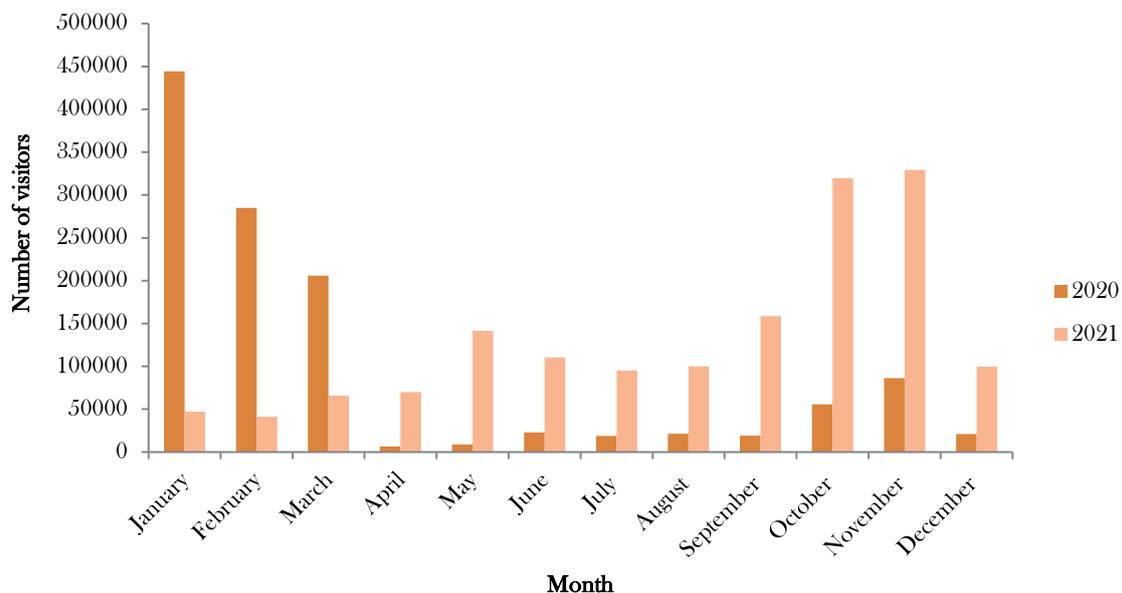


Figure 29: Number of visitors to CCF per month in 2020 versus 2021.

The predominant language spoken by visitors during this period was German (32%), followed by French (26%) and English (10%). During this reporting period, more local visitors were received who spoke local languages; Otjiherero, Afrikaans and Damara (Figure 31). The majority of day visitors were from the following nationalities; Germany (27%), France (24%), and Namibia (23%) (Figure 32).

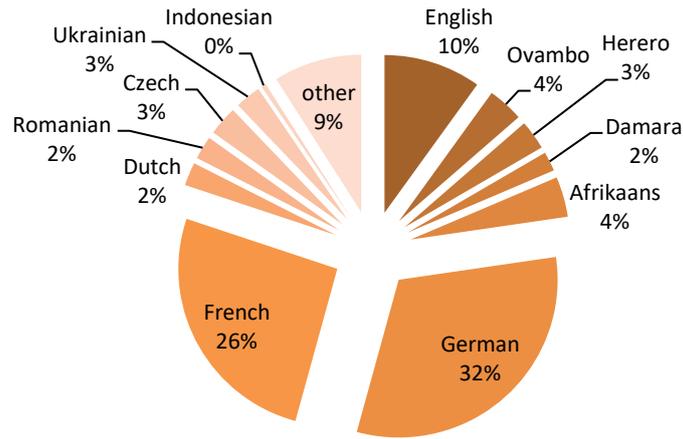


Figure 30: Languages spoken by visitors in 2021.

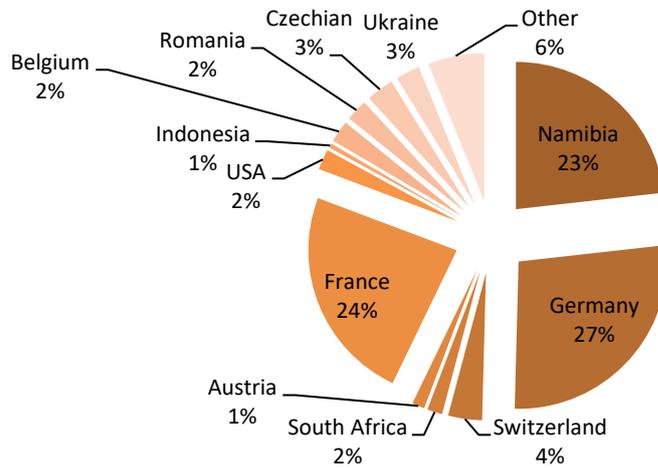


Figure 31: Percentage of visitors per country in 2021.

Most visitors continue to be walk-ins at 77%, including direct bookings from our reservation office, Exclusive Reservations, who also represent 5% of bookings from tour operators (Figure 33).

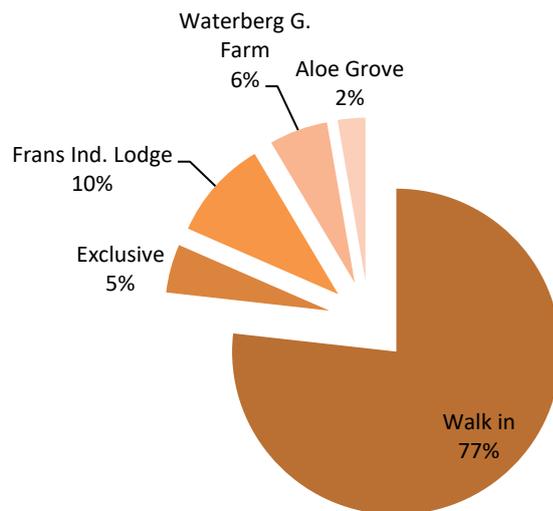


Figure 32: Source of Visitors in 2021.

Financial

In terms of tourism revenue from day visiting guests, CCF saw an increase of 32% in revenue for 2021 at N\$1,578,160.21, compared to N\$1,195,265.58 in 2020 (Figure 34).

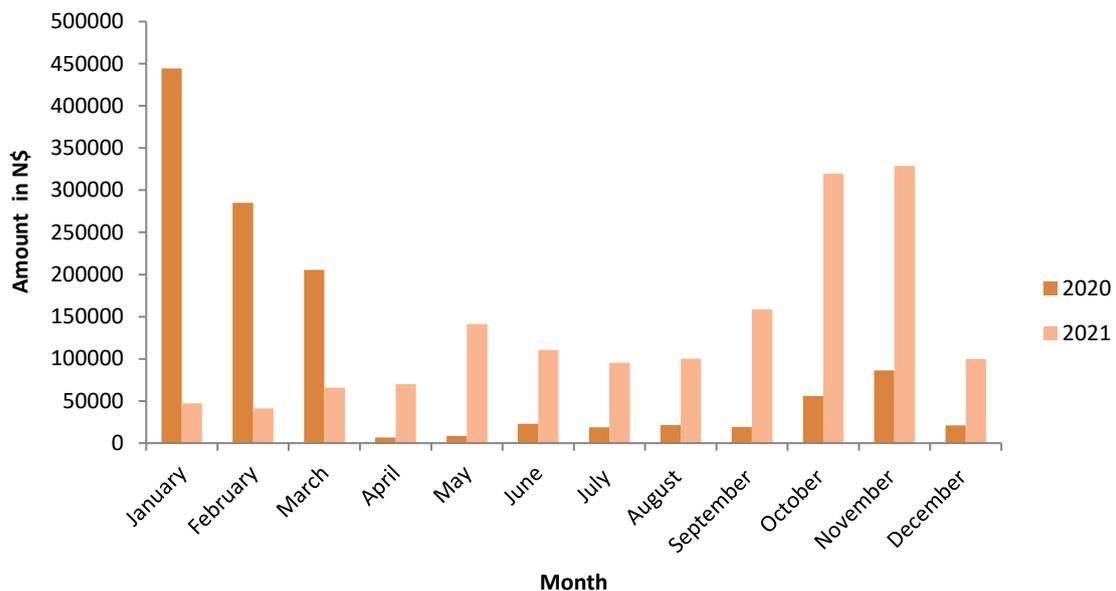


Figure 33: Tourism income (N\$) comparison during 2020 versus 2021.

Table 29, 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 December at N\$1,042.27 and the lowest month was April with N\$534.23. The average amount spent by visitors at CCF shows an 8.7% increase in 2021 with N\$766.47 compared to N\$705.17 in 2020. Cheetah Drives (Elands) still represented the highest income source during this period, at 35.87% of the total income with an amount of N\$566,150.55. Gift Shop revenue showed a 36.7% increase at N\$406,709.00 in 2021 compared to N\$297,434.00 in 2020 and places Centre Tours/Entrance fees as the third-highest revenue driver at 9.21%.

Table 29: Breakdown of revenue in 2021 based on activity.

ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	%
CHEETAH DRIVE	11,020. 00	10,830. 00	1,7505. 75	20,492. 50	45,020. 50	39,062. 25	32,563. 00	34,073. 50	68,572. 75	116,719. 00	139,458. 00	30,833. 00	566,150. 55	35.9
GIFT SHOP	19,771. 00	19,142. 00	22,634. 00	16,568. 00	47,880. 00	25,270. 00	22,278. 00	28,212. 00	41,859. 00	65,647. 00	77,081. 00	20,367. 00	406,709. 00	25.8
ED CENTER	4,840. 00	4,510. 00	17,349. 00	11,055. 00	14,949. 00	6,336. 00	4,565. 00	8,921. 00	12,595. 00	27,054. 00	25,575. 00	7,590. 00	145,339. 00	9.2
RUN	6,057. 00	1,210. 00	1,658. 75	4,053. 50	9,192. 00	18,303. 25	4,660. 00	7,757. 50	17,291. 50	39,767. 00	24,032. 00	1,989. 00	135,972. 00	8.6
ACCOM	0.00	0.00	0.00	5,400. 00	13,675. 00	150. 00	1,400. 00	600. 00	300. 00	47,500. 00	30,295. 00	1,050. 00	100,370. 00	6.4
CAFÉ	1,837. 00	1,974. 00	3,021. 00	3,948. 00	5,926. 00	5,046. 00	6,650. 00	4,627. 00	6,461. 00	10,868. 00	18,601. 00	6,737. 00	75,696. 00	4.8
SERENGETI	0.00	0.00	0.00	0.00	700.00	8,193. 50	3,740. 00	4,581. 50	2,618. 00	655. 00	0.00	3,927. 00	24,414. 50	1.6
BEHIND THE SCENES	0.00	0.00	0.00	0.00	0.00	3,750. 00	8,325. 00	0.00	0.00	1,275. 00	0.00	0.00	13,350. 00	0.9
DONATIONS	0.00	0.00	1,000. 00	1,000. 00	1,000. 00	0.00	0.00	0.00	0.00	0.00	1,000. 00	0.00	4,000. 00	0.3
OTHER	0.00	0.00	0.00	3,163. 55	210. 00	0.00	8,080. 00	8,500. 00	290. 00	3,074. 00	7,637. 46	25,486. 15	56,441. 16	3.6
CHEESE	3,710. 00	3,355. 00	2,660. 00	4,303. 00	2,680. 00	4,370. 00	3,120. 00	2,955. 00	8,475. 00	6,845. 00	5,365. 00	1,880. 00	49,718. 00	3.2
TOTAL	47,235. 00	41,021. 00	65,828. 50	69,983. 55	141,232. 50	110,481. 00	95,381. 00	100,227. 50	158,462. 25	319,403. 80	329,044. 96	99,859. 15	1,578,10. 21	100
VISITORS	83	61	107	131	194	106	98	129	202	421	409	118	2,059	
Avg. Exp/ Visitor	569.10	672.48	615.22	534.23	728.00	1,042.27	973.28	776.96	784.47	758.68	804.51	846.26	766.47	

Cheetah View Lodge

Cheetah View Lodge hosted 414 guests in 2021 compared to the 216 in 2020, a 91.7% 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 574 beds compared to 317 in 2020, representing an 81.1% increase (Figure 35).

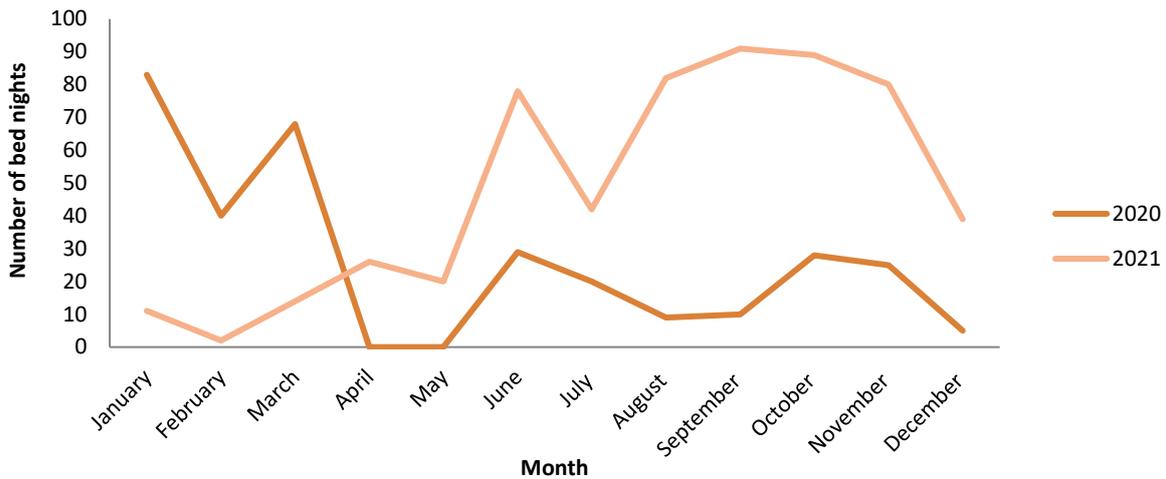


Figure 34: Number of bed nights at Cheetah View Lodge comparing 2020 vs. 2021.

Revenue from the Cheetah View Lodge saw an increase of 65.3%, from N\$502,440.00 in 2020 to N\$830,533.51 in 2021 (Figure 36).

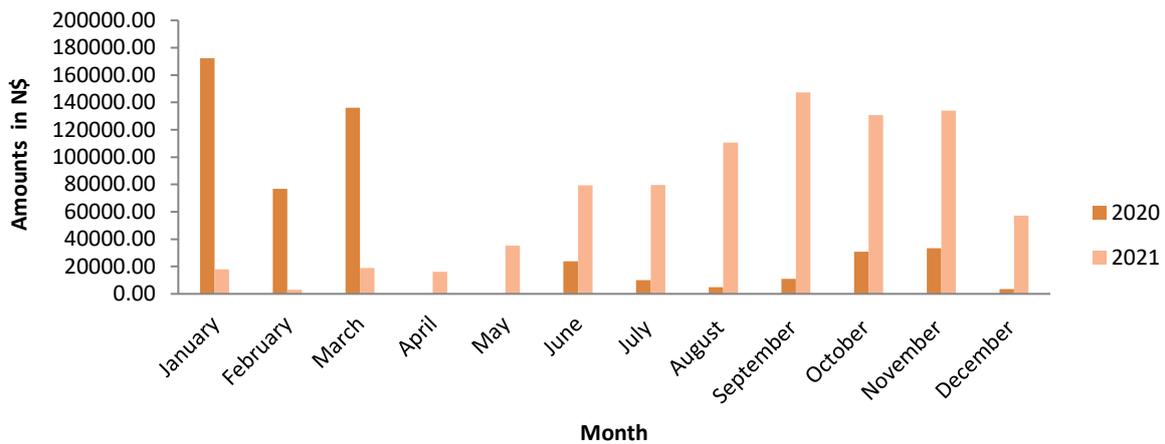


Figure 35: Revenue from the Cheetah View Lodge comparing 2020 vs. 2021.

Visitors were booked by various companies with the majority booking through our reservation office, Exclusive Reservations, representing 38% with 155 bookings. Direct private CCF bookings and from the CCF website, as well as private enquiries makes up a total of 15% at 59 bookings, including donors, friends of CCF, and Board Members. CCF received a total of 404 confirmed bookings throughout this reporting period (Figure 37). 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 32 bookings for 2021), Abenteur Afrika, Damarana Safaris, Namibia Tracks and Trails and others such as Wilderness Safaris, Mango Safaris, Infinite Safaris, Abentuer Afrika Safaris, Compass Travel, Sense of Africa, Cardboard box Travel Shop, Nambia Tours & Safaris, Nam Click, Natures Friend and Namibia Tracks and Trails.

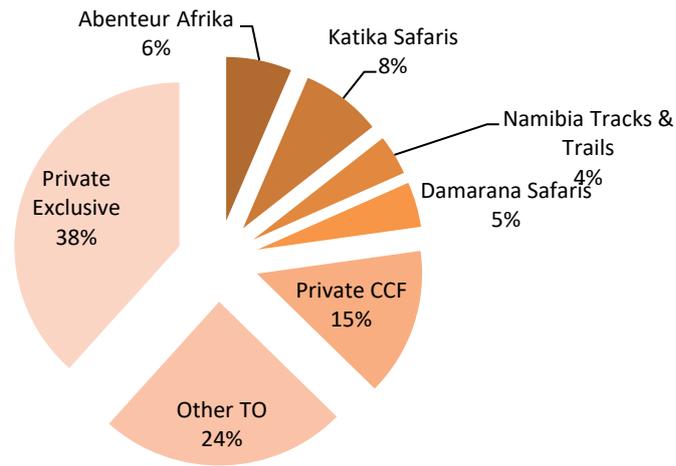


Figure 36: Booking sources for Cheetah View Lodge in 2021.

In terms of nationalities, most guests at Cheetah View Lodge were from German (24%), followed by France (21%) and the USA (11%) (Figure 38).

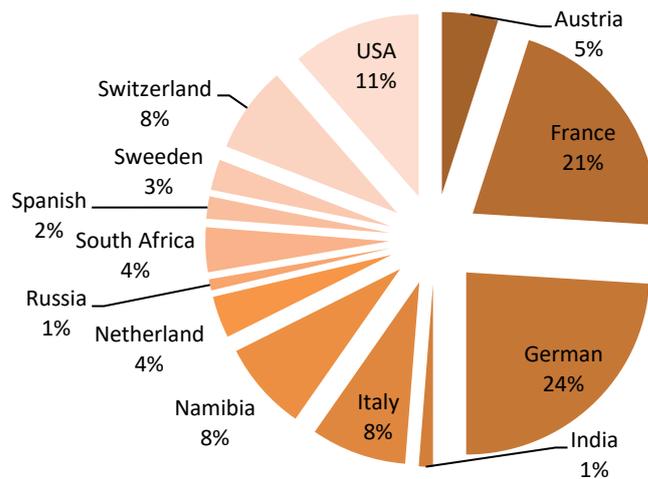


Figure 37: Nationalities of visitors staying at Cheetah View Lodge in 2021.

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 months of the year, with guests expected as of May to November 2021. CCF hosted a total of 39 guests at Babson House in 2021, compared to 15 guests in 2020 representing a 160% 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 70 in 2021, compared to 28 in 2020 (Figure 39).

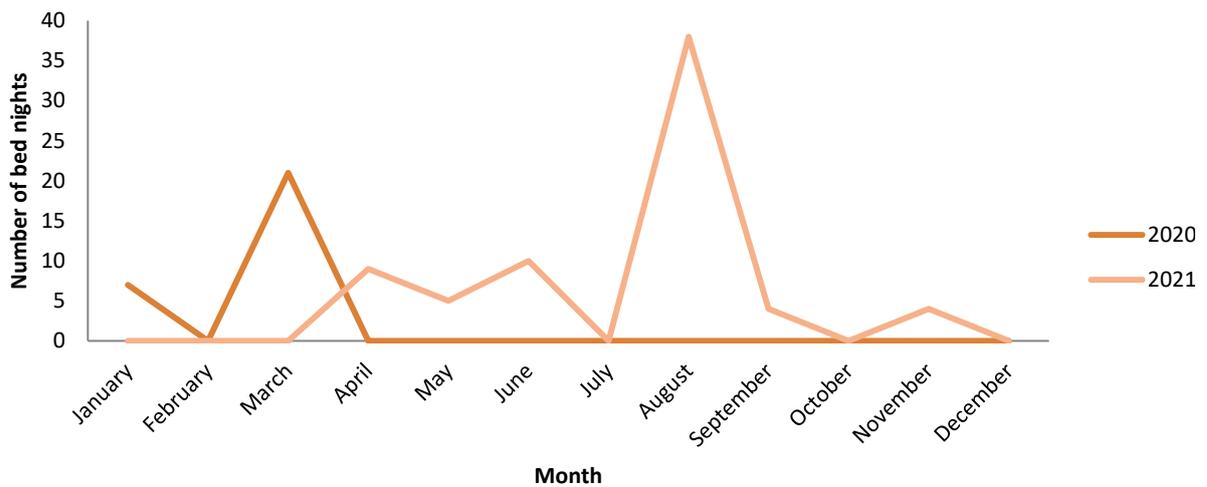


Figure 38: Number of bed nights for Babson House comparing 2020 vs. 2021.

Revenue from the Babson House saw an increase of 40%, from N\$125,552.00 in 2020 to N\$175,273.00 in 2021 (Figure 40).

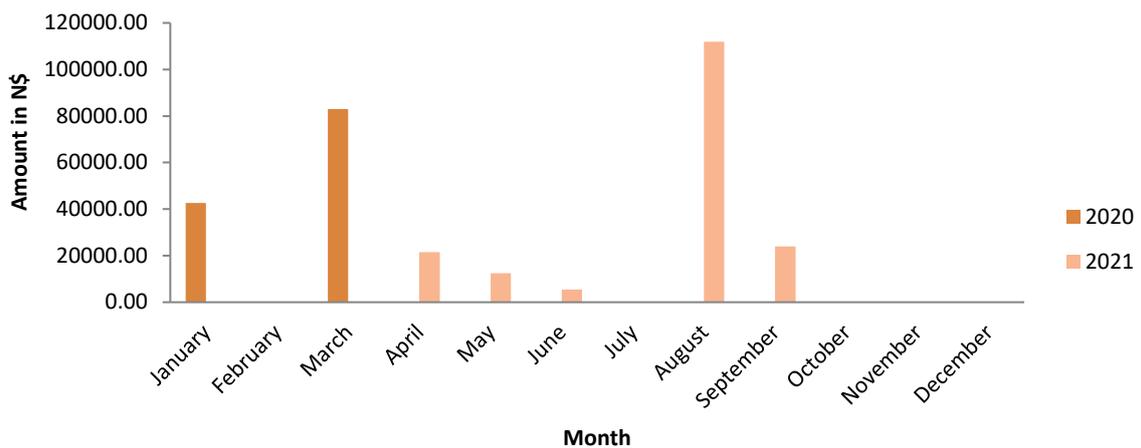


Figure 39: Revenue from Babson House comparing 2020 versus 2021.

Most Babson House bookings were private Exclusive Reservations/CCF bookings at 37%. CCF received a total of 11 bookings for this reporting period. The majority (37%) of Babson House guest bookings were private or were from Exclusive Reservations, followed by Booking.com (also handled by Exclusive Reservations) at 27%, and tour operators by Exclusive were Infinite Safaris, Mango Safaris, Five Stars Tours and Safaris and the Gondwana Collection each representing 9% of the bookings (Figure 41).

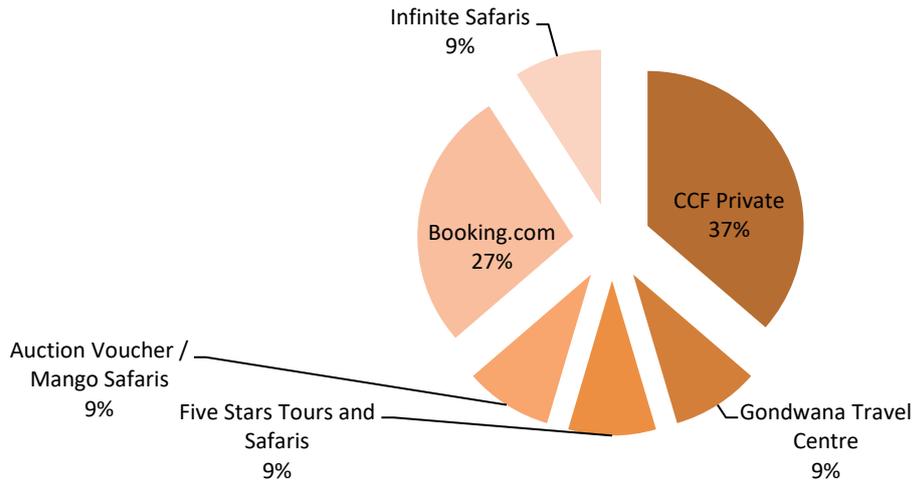


Figure 40: Sources of Babson House bookings in 2021.

Most overnight visitors at Babson House came from the USA (31%), followed by Namibia (23%) and Germany (21%) (Figure 42).

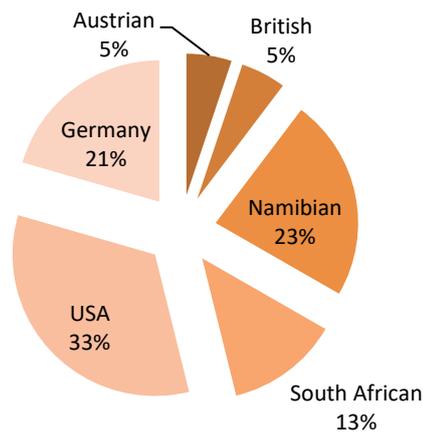


Figure 41: Nationalities of overnight visitors at the Babson in 2021.

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 30 shows the number of lunches and dinners that were cooked at CCF's community dining room, the Hot Spot, each month. A total of 17,595 meals were cooked during January to December 2021 for an average of 45 meals per day.

Table 30: Number of meals served at CCF's Hot Spot from January to December 2021.

Meal	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lunch	455	550	568	675	722	762	800	711	796	869	981	772
Dinner	539	568	605	714	721	776	815	714	802	862	1009	809
Total	994	1,118	1,173	1,389	1,443	1,538	1,615	1,425	1,598	1,731	1,990	1,581

Average/day	33	37	39	46	48	51	54	48	53	58	66	53
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A majority (59%) of the meals served at the Hot Spot were for CCF staff members. Volunteers and interns represented 34%, while Working Guests (WG) and other guests represented 7% (Figure 43).

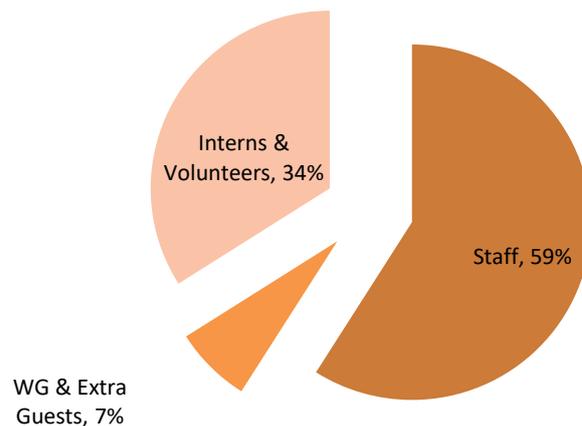


Figure 42: Overall categories of people served at the Hot Spot in 2021.

4. Marketing

Unfortunately, due to not having as many guests in 2021 and not many of them leaving feedback on TripAdvisor, CCF did not receive an award for 2021. Only four feedbacks were received all at a 4 star or excellent rating.

Between January and June 2021, CCF had agents from Namibia Tours and Safaris, Mr. Dirk and Ms. Isabel Leezcano Macherey visit for one night. They are the owners of ViajesAfrica.es Smart Touring, a tour company in Spain and came to do a full site inspection and get first-hand experience of what their guests could expect when staying with us at Cheetah View Lodge and taking part in CCF activities.

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 organising meetings for companies based in Swakopmund. They also sent CCF's updated 2022 rates 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, which were all cancelled due to the pandemic. Exclusive also organised 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 familiarise the tour operators with CCF's work as an education and research centre.

In June 2021, CCF would have attended the four-day Annual Tourism Expo, starting off with a Networking conference and marketing CCF throughout Expo, this was moved to November 2021, where Exclusive Reservation represented CCF. Also in June, CCF had planned to go to the annual Hospitality Association of Namibia's (HAN's) Hospitality Tourism Trade Forum (HTTF) & Gala. Unfortunately, this got moved to February 2022.

Throughout 2021, CCF has continued its advertising partnerships with numerous publications and online channels adding a few new ones to the accommodations. These included Brochures Namibia, Where to Stay,

Namibia Travel Info, NamibiaTourism.NET, and the Namibia Tourism Trade Directory. CCF had to cut a few down due to the loss of income and concentrate on one or two companies.

CCF is trying to boost the local advertising and marketing on social media. CCF got invited by a company from South Africa called Choose Africa, to join an exciting initiative they are working on. The Choose Africa Campaign is a collaborative initiative aimed at assisting the revival of sustainable tourism in Africa, as well as placing focus on promoting the many amazing outreach and conservation programs that run in various countries.

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 promotes 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.

A lightning fire that took place on 16 October 2013 destroyed CCF's Visitor Centre building, which housed the Cheetah Café. After this, the Café had to operate from a small room in the Cheetah Museum building until its re-opening in June 2017. It has been beneficial to CCF and also Lodge guests, as they 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 were N\$75,696.00 down from N\$84,473.00 during the same period in 2020 (Table 31). Tour Operator bookings lunch bookings were only received for September.

Table 31: Cheetah Café sales (N\$) in 2021.

Month	Pre-Booked	A la Carte	Total
January	0	1,837.00	1,837.00
February	0	1,974.00	1,974.00
March	0	3,021.00	3,021.00
April	0	3,948	3,948.00
May	0	5,926	5,926.00
June	0	5,046	5,046.00
July	0	6,650	6,650.00
August	0	4,627	4,627.00
September	1,200	5,261	6,461.00
October	0	10,868	10,868.00
November	0	18,601	18,601.00
December	0	6,737	6,737.00
Total Sales	1,200.00	74,496.00	75,696.00

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 2014 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 organisations 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 reduce human wildlife conflict (HWC). A farmer hotline is available at CCF and an LCMAN email exists to ensure constant communication with farmers or other people when they have questions or conflict with large carnivores in or near their farms.

LCMAN held three ordinary meetings during 2021 on 18 May, 10 August and 30 November. The AGM was also held on 30 November 2021. All meetings were held virtually via Zoom as a result of the ongoing Covid-19 pandemic. Holding the meetings virtually has allowed for remote LCMAN members to attend the meetings that they would otherwise not have been able to attend. The virtual meetings have allowed these members to be more active with LCMAN.

Each meeting and the AGM had good representation from the different member organisations including CCF. Along with Laurie's and Lauren's attendance at the LCMAN meetings, CCF's Assistant Director of Ecological Research, Bogdan Cristescu, has also been an active member with LCMAN this year. At each meeting, member organisations shared their technical reports from their organisations. LCMAN also discussed the ongoing Carnivore Red Data Book project plus the development of a LCMAN working group with MEFT as a way to be more involved with the ministry again. MEFT's involvement with LCMAN has decreased in recent years but LCMAN is looking at re-establishing the partnership with MEFT through the new working group. During the AGM, members discussed LCMAN's financial contribution towards publishing the Carnivore Red Data Book and the focus areas for 2022.

2021 LCMAN Focus Areas

LCMAN's main focus for 2021 has been the ongoing work with the Namibian Carnivore Red Data Book, a comprehensive scientific book on the 34 Namibian carnivore species. The work on the Red Data Book has been an ongoing project since the idea was suggested during the National Action Plans Symposium in November 2017. The Red Data Book has been coordinated by LCMAN, the Namibian Chamber of Environment (NCE), with input from MEFT. For each Namibian carnivore species, historic and current distribution maps, conservation status and current knowledge has been compiled. The Red Data Book is nearing publication, with hopes the book can be launched in early 2022. CCF staff has been active in the production of the Red Data Book with CCF's Nadja Le Roux, Matti Nghikembua, Lauren Pfeiffer, Anne Schmidt-Kuentzel and Laurie Marker being recognised authors for the cheetah and African wild dog chapters. CCF's Stijn Verschueren is also recognised for his contributions towards the cheetah chapter.

LCMAN's other focus for 2021 has been the development of the Carnivore Working Group with MEFT. The idea was proposed during the second half of 2021, and LCMAN members have welcomed the opportunity to again work closer with MEFT on carnivore research and conservation within Namibia. The Carnivore Working Group would be chaired by MEFT with LCMAN being the Vice-Chair and anyone interested in large carnivore conservation and management will be welcome to join the working group. It is planned that the Carnivore Working Group will be launched during the first quarter of 2022.

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

In April 2020 MEFT registered a select number of field staff with various organisations as essential service providers in HWC and anti-poaching, of which CCF's Community Coordinator and three Community Game

Guards were registered, allowing the team to continue activities and support in the field. CCF continued to work with MEFT in 2021.

3. Communal Conservancy Development

Human-Wildlife Conflict in Eastern Communal Conservancies in Okakarara District

African Wild Dogs (AWDs) are Namibia's most critically endangered large carnivore with an estimated population of less than 350 adults and subadults mostly occurring in Eastern Namibia. AWDs that live outside of National Parks are highly persecuted.

Within the Eastern Otjozondjupa and Omaheke communal lands, human-wildlife conflict is escalating due to recurring drought which is exacerbated by the COVID pandemic. Farmers' anxieties have increased due to concerns about sustaining their herds. This anxiety is manifested by having little or no tolerance for predators therefore resulting in more killings.

The Namibia Nature Foundation (NNF) together with CCF in partnership with the Kalahari African Wild Dog Conservation Trust have launched a Wildlife Credits (WC) project. This project aims to source additional revenue that will help further incentivise communities to better tolerate problem causing species.

Field visits were undertaken outside the denning season to consult with conservancy committees and farmers to investigate, confirm and document presence and persecution of AWDs. Dens were confirmed within the conservancies, indicating that there is an established population. Additionally, AWDs are reported to move from Namibia's Eastern border with Botswana causing HWC.

Initial findings have been based on local knowledge of presence and recent past denning sites, as well as investigations of persecution incidents. Persecution was confirmed in Ondjou and Eiseb Conservancies, and reported in Okamatapati Conservancy. Okamatapati indicated less AWD conflict, and reported more eastern presence, with Brown hyena conflict reported to be higher. This is likely due to better rain in early 2021 with water pans to the east retaining water, and subsequently AWDs may have denned in the further Eastern sides of their denning territories.

Both Nyae Nyae and N#a Jaqna Conservancies and members have indicated that tolerance of AWDs is at a tipping point, as more commercial cattle farming is moving into the area. Cattle farming is present in the north eastern areas of Nyae Nyae, very close to the Khaudum border.

Persecution

- 2021 – Identified three resident Packs in Nyae Nyae, one resident Pack in N#a Jaqna (confirmed persecution in both areas)
- 2021 – Confirmed destroyed dens and persecution in Ondjou & Eiseb Communal Conservancies
- 2021 – Confirmed two destroyed dens in Okakarara Communal Conservancies
- 2021 – Reports & investigations between Okakarara, Ondjou & Eiseb CBO's confirmed seven dens destroyed and full litters of pups killed.

Based on estimates of 10 pups per den & adults presumed to have been killed, we estimate that 70+ AWDs were killed in 2021.

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 CCF's presence in Namibia is known as CCF East – Carnivore Conflict Field Station.

CCF decided to create a base in the east after noticing an increase in conflict with livestock and game farmers towards both cheetahs and African wild dogs due to severe drought during the past couple of years, which in 2019 Namibia's President, Dr. Hage Geingob, declared as a National State of Emergency. Livestock in particular have been severely affected as they have had to look for grazing further away from protective kraals and homesteads and in a weakened state have become easier targets for predators.

From this location, CCF has provided immediate support for farmers in response and advice as well as look at management strategies to reduce conflict and encourage co-existence. CCF teams have built relationships with farmers in these areas and have begun ecological research on carnivores to help farming communities develop a better understanding of livestock, wildlife and rangeland management. This knowledge will help inform farmers and stakeholders to come up with solutions and create a balance between wildlife and livestock farming. CCF's environmental education program for schools will be more active from this location soon.

The CCF East Station is currently operated by Dr. Hanlie Winterbach (CCF Carnivore Researcher) and Veisy Kasaona (CCF Community Development Officer).

CCF has been building relationships with farmers in the Omaheke Region since 2018, assisting with the mitigation of human-wildlife conflict (HWC) matters, and working closely with the Gobabis office of the Ministry of Environment, Forestry and Tourism (MEFT) for investigating conflict reports and in the translocation of possible problem cheetahs.

Visibility is critical to any organisation; it allows for more information sharing, generates more support, and thus makes possible a larger impact. Being part of the Gobabis community, CCF East remains in contact with farmers constantly, representing CCF even when going out to dinner or shopping.

Farmer Association / Conservancy Meetings

During 2021, the Covid-19 pandemic again reduced the number of meetings that were held and the number that could be attended by the CCF East staff. Table 32 below lists meetings attended during this reporting period.

Table 32: Meetings attended by the CCF East team in 2021.

Date	Meeting Name	CCF Staff Attended	Reason
02-Feb-21	Black Nossob Conservancy	Dr H Winterbach, V Kasaona	CCF East Presence
20-Apr-21	Summerdown FA	Dr H Winterbach, V Kasaona, T Hofmann	Presentation: Estimating carnivore occurrence and density using multiple non-invasive survey techniques project (T. Hofmann)
15-Sep-21	Hochfeld FA	Dr H Winterbach, V Kasaona, S Verschuren	Presentations: Introduce CCF conservation activities and CCF East Field Station (Dr H Winterbach), and introduce the Estimating Carnivore Occurrence and Density project (S. Verschuren)
10-Nov-21	Agribank Farmers Information Day - Gobabis	Dr H Winterbach, V Kasaona	Presentation: Key factors involved in large carnivore conservation & investigating HWC incidents (H Winterbach); Livestock management practices to minimize livestock losses (V Kasaona).
11-Nov-21	Agribank Farmers Information Day - Aminius	Dr H Winterbach, V Kasaona	Presentation: Human-wildlife conflict and Livestock management practices to minimize livestock losses (V Kasaona).
17-Nov-21	Summerdown FA	Dr H Winterbach, V Kasaona	CCF East Presence
04-Dec-21	Otjombinde Conservancy AGM	V Kasaona	Presentation: Human-wildlife conflict and Livestock management practices to minimize livestock losses (V Kasaona).

Ministry of Environment, Forestry and Tourism (MEFT)

CCF East was invited by Mr. Eben Nowaseb (MEFT Gobabis) to give a joint presentation with MEFT on HWC at the Agribank Farmers Information Day at Farm Ben-Hur on 10 November 2021 and at Corridor 13 on 11 November 2021 (Figure 44).

The interest and requests for more information by the attending farmers prompted the organiser of this event to request CCF East to participate in future Farmers Information Days going forward.



Figure 43: Members of CCF East team and MEFT.

Integrated Livestock and Wildlife Management to Reduce and Mitigate HWC

HWC Incidents

During 2021, a total of 28 HWC incidents were reported to the CCF East Station. The majority (79%) of the incidents reported were by farmers contacting CCF East directly (Figure 45).

The four HWC incidents referred to CCF East by the Ministry of Environment, Forestry and Tourism MEFT office in Gobabis concerned three reports of livestock depredation by cheetah, black-backed jackal and African wild dogs and farmers wanting more information on livestock protection against predators, and one HWC incident concerned a cheetah cub caught in a trap cage.

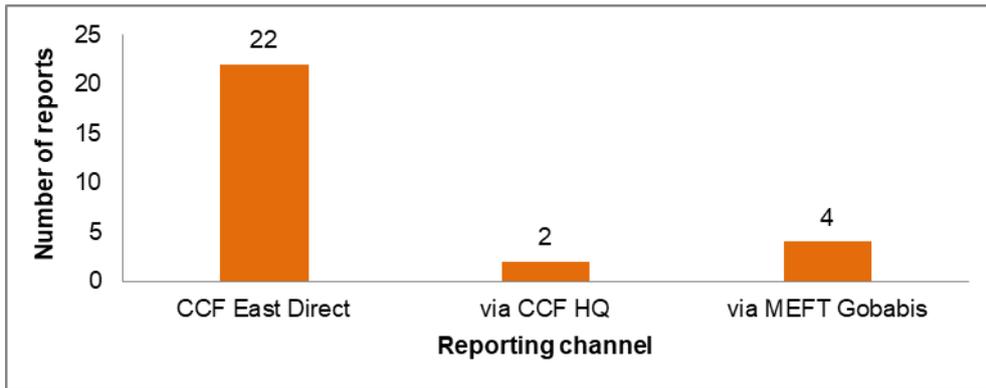


Figure 44: Channel of HWC reports in 2021.

The majority (68%) of HWC incidents reported involved livestock losses (Figure 46). The two incidents of predators killed both involved cheetahs, and the five incidents of predator rescues involved animals caught in trap cages (one young female leopard and a total of eight cheetahs). The presence report included six adult African wild dogs on Farm Elandspan in the north-western part of Omaheke Region. The farmer reported dogs did not cause any livestock losses, and moved on from the farm a few days later. One HWC incident involved a porcupine which caused damaged to pipes.

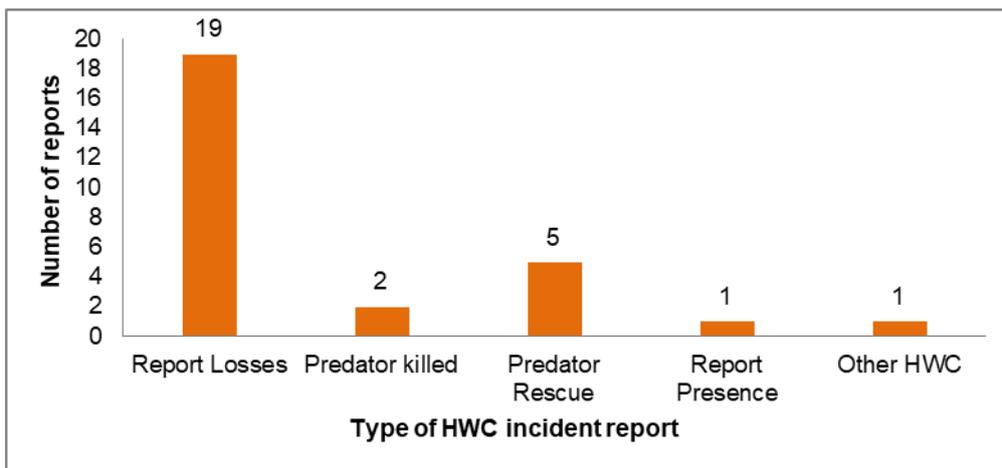


Figure 45: Types of HWC incident reports received by CCF East in 2021.

The majority (55%) of the HWC incidents reported involved cheetahs (Figure 47). The HWC incident reports involving African wild dogs were from the Eiseb Conservancy and the Otjombinde Conservancy, both located close to the border with Botswana.

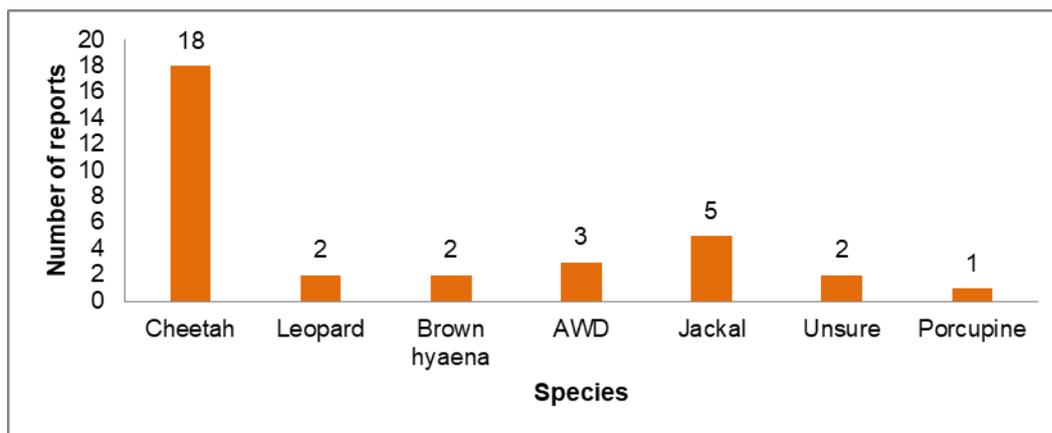


Figure 46: Various predator species involved in reported HWC incidents in 2021.

Interesting HWC Incidents

- A young female leopard was caught in a trap cage, and the farmer contacted CCF East to enquire if the leopard could be translocated. As Namibia is reluctant to allow predators being kept in captivity, MEFT Gobabis could not recommend a facility for the leopard to be kept legally, and this was communicated to the farmer. However, the farmer did not want to kill the animal, and so released the young leopard from the trap again.
- Two reports involving a brown hyaena were both from the same farm, located approximately 13km outside of Gobabis. The farmer had first reported livestock losses in 2020, and after CCF East and MEFT Gobabis visited the farm together, it was verified to be a brown hyaena from the tracks. When the farmer again reported livestock losses in 2021 due to brown hyaena, MEFT Gobabis requested CCF East to try and capture the problem animal for live removal. Camera traps and a trap cage were then set up, but the animal had presumably moved on.
- Two reports involving cheetahs from the same farm, where it was reported that five cheetahs (two adults and four young) killed 9 sheep during the first incident and 6 sheep during the second incident. Both times the cheetah entered the sheep camp at the same location. (Also, see Camera Trap Survey).

Cheetah Rescue

Farm Auheib #408/1: The CCF East team collected two cheetah cubs (one male and one female, both around eight months old) caught in a trap cage (Figure 48). The farmer reported five cheetahs (two adults and three cubs) on his farm, and set the trap cage after suffering livestock losses. This farm is only about 32 km east of the town of Gobabis.

CCF East contacted MEFT Gobabis and discussed the issue of the remaining three cheetahs on the farm. It was agreed to remove the two cubs if the farmer will leave the other three cheetahs on the farm, as the loss of three calves over four months did not indicate the cheetahs were habitual livestock killers. After discussing this with the farmer together with the fact that removing predators do not solve livestock losses, he agreed.



Figure 47: Two eight-month cubs rescued from a farm Auheib near Gobabis.

Farm Okatjongora #236: The CCF East team collected three cheetahs, one adult female (confirmed mother of sub-adults) with two sub-adults of between 1½ - 2 years old (one male and one female), captured in two trap cages after they killed a calf inside the cattle kraal (Figure 49). The three cheetahs were transferred into three separate travel boxes, and loaded on the trailer with the kind help of the farm workers, while some cattle were looking on with interest. They were then transported to CCF Otjiwarongo with the help of Tim Hofmann and Stijn Verschu.ren.

The farmer agreed that the three cheetahs could be fitted with GPS radio collars and released on his farm as part of the Early Warning System Project.



Figure 48: Three cheetahs rescued from Okatjongora farm.

Farm Freiheit Ost #80/1: The CCF East team collected a male cheetah cub (about 5 months old) captured in a trap cage, and after efforts to catch the adult female and remaining two cubs failed, the farmer contacted MEFT Gobabis (Figure 50). The cheetah was provided with shade, ample water, and fed Guinea fowl, beef and game, and was in good condition. Permission was granted by MEFT to transport the cheetah to CCF Otjiwarongo.

The farmer was informed of the Nature Conservation Act regarding keeping wild animals in captivity, and the CCF East team provided the farmer with a CCF human-wildlife conflict questionnaire in order to obtain more insight into the HWC on the farm, and discussed the importance of not removing non-livestock hunting cheetahs from the farm to avoid the entry of dispersing (younger) cheetahs into the area and increasing livestock losses.



Figure 49: The five-month cheetah cub rescued from farm Freiheit Ost.

Farm Quinta #976: The CCF East team assisted in collecting two adult male cheetahs (approximately 4 years old) caught in a trap cage after the farmer suffered livestock losses (Figure 51). These two males were seemingly in a coalition of four males that caused the loss of 20 calves (2-4 weeks old) and one cow that broke her neck against an anchor post when fleeing from the cheetahs, during a period of one month.

Dr Winterbach discussed cheetah ecology/conservation and livestock management issues with the farmer, and the latter completed a CCF HWC questionnaire.



Figure 50: Two adult male cheetahs rescued from Farm Quinta.

Farm Brakputz #114: The CCF East team was contacted by the farmer of Brakputz and asked for assistance in removing four captive cheetahs which he had for about seven years, as he could not keep them anymore. On 7 May 2021, CCF was granted permission to relocate the four cheetahs to their facility in Otjiwarongo, temporarily, until a permanent location was decided upon by MEFT Windhoek.

Three of the cheetahs, one female and two males, all around seven years old, were kept in a 3ha enclosure, and an old female (around 13 years of age) was kept in a 1.5ha enclosure. All four cheetahs had ISO transponders.

One of the male cheetahs was darted on 22 May 2021 by the CCF Veterinary Team (Dr Ana Basto, assisted by Dr F Samuntu, and Dr Bogdan Cristescu; CCF Otjiwarongo). Mr Eben Nowaseb (MEFT Gobabis) was also present. The male was put in a travel box and awakened before it was transported to CCF Otjiwarongo the same day (Figure 52 and Figure 54).



Figure 51: The CCF team along with MEFT’s Eben Nowaseb during the collection of four captive cheetahs from farm Brakputz.

The oldest female was caught on 7 July 2021 by using a trap cage. She was moved to a travel box on 8 July 2021 and transported to CCF Otjiwarongo. She had a blind eye, and as her teeth were very worn, she could only be fed soft pieces of meat (Figure 53).

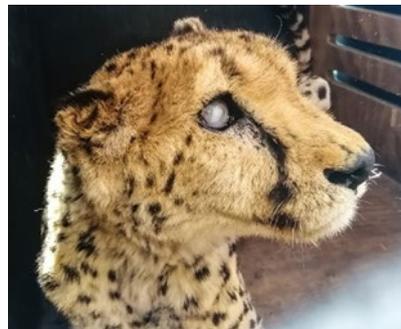


Figure 52: The 13-year-old female cheetah rescued from farm Brakputz.

The second male cheetah was easily caught in the trap cage in the late afternoon on Friday 9 July 2021 (Figure 54). He was moved to a travel box that same afternoon and provided with meat and water inside the box. The trap cage was immediately activated again in an effort to catch the second female, and the last of the four cheetahs. However, by the 12 July 2021 she had not gone into the cage despite the meat provided. The second male cheetah in the travel box was then transported to CCF Otjiwarongo on the 12 July 2021.



Figure 53: The first and second male cheetahs rescued from farm Brakputz.

The Cattle Country Veterinary Practice in Gobabis offered their free assistance to dart the last remaining cheetah, the second female, on the 13 July 2021 (Figure 55). The female was put in the travel box, woken up, and transported to CCF Otjiwarongo the same day.



Figure 54: Darting of the last female cheetah removed from farm Brakputz with the assistance of the Cattle Country Veterinary Practice.

Case #1: Between 27 December 2019 and 2 January 2020 an adult female and four cubs (\pm 7 months old, comprising of two males and two females), were caught on Farm Horing #379 in the Steinhausen area, which the CCF East team moved to CCF Otjiwarongo.

As per instruction from MEFT Gobabis, the adult female was fitted with a GPS radio collar, and she, together with her four cubs, were released on CCF's farm Elandsvreugde in January 2020. By 30 April 2020, the collared female, presumably with her four cubs, had travelled around the Waterberg Plateau Park and headed back in the direction of her capture site.

Between May 2020 and December 2020, the collared female moved around mostly in the south-western and western part of Hochfeld, but never moving further south towards her capture site (Figure 56).



Figure 55: The collared female cheetahs movement.

Around 25 June 2021, the collared female moved north (Figure 57), and on 13 July 2021 she was killed in a HWC incident on Farm Wilton (# 220) in the Okahandja District. The cheetah had injured a calf (which later died) and killed two sheep inside the kraal close to the homestead.

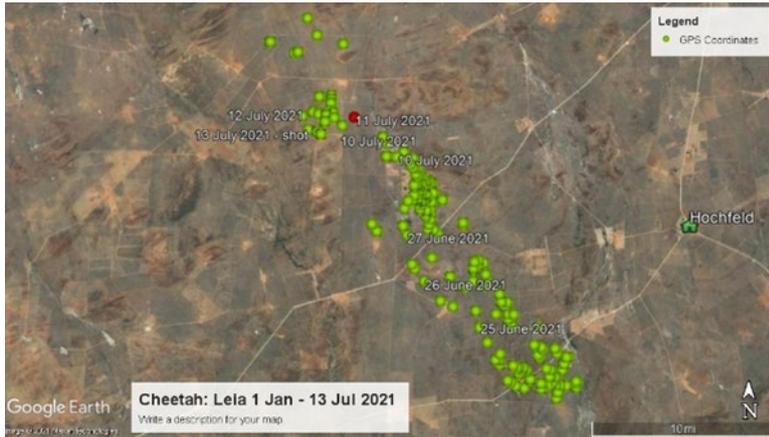


Figure 56: The collared female cheetah’s movements before she was killed in a HWC incident with a farmer.

Since the farmer was Afrikaans speaking, Dr Winterbach from the CCF East team contacted him and managed to retrieve the radio collar. The farmer reported the cheetah had lost the toes on her one foot, seemingly from having been caught in a gin trap, and the wound was not healed yet. This kind of injury would have hampered the cheetah from hunting, and probably caused her to turn to livestock as easier prey. The farmer also reported no signs were observed of the four younger cheetahs.

Case #2: A farmer called to report he killed an adult male cheetah after suffering 12 calf losses during the past month. The male cheetah seemed to be part of a coalition of four, and the farmer estimated them to be between 3-4 years old (Figure 58). The male had an old wound across his abdomen, seemingly from being caught in a wire trap. Apart from this wound, the animal was in excellent condition.



Figure 57: The cheetah dead cheetah implicated in the killing of 12 calves.

Camera Trap Survey

A camera trap survey was done on Farm Appelblaar after the farmer reported multiple sheep depredation events inside the grazing camp by six cheetahs (two adults and four younger animals). As the farm falls inside the CCF Cheetah Survey study grid, it was decided to place a LGD on loan on the farm until a suitable LGD for permanent placement was available. The LGD on loan (Repet) was placed on the farm on 11 May 2021.

The CCF East team also set up three remote camera traps with the aim to obtain cheetah identities and determine their suitability for collaring (Figure 59). The cameras were programmed to take three consecutive pictures, followed by a 10 seconds video, when movement was detected, and were set up at three waterpoint locations: 1. Bees Pos (Cattle Post), 2. Jakkals Pos (Jackal’s Post), and 3. Water hole near Jakkals Pos (Figure 59).



Figure 58: Repet, the LGD that had been placed on farm Appelblaar (left) and remote camera traps set up at various locations to help identify the cheetahs on farm Appelblaar.

Results from Camera Trap Survey

A total of 14,920 pictures and videos were recorded during the 19 days of operation. However, no cheetahs were recorded at any of the three locations.

A summary of the camera trap recording data is in Table 33.

Table 33: Summary of results from the Camera Trap Survey on farm Appelblaar.

Location	Number of days operated	Number of photos + videos recorded	Number of wildlife species recorded (excluding birds)
Bees Pos	19	7,278	9
Jakkals Pos	19	1,835	7
Water hole	11	5,807	7
	Total	14,920	

The total number of wildlife species (excluding birds) that were recorded (species richness) were twelve, and are listed in Table 34 below

Table 34: Wildlife species captured on camera trap on farm Appelblaar. The X indicates species presence at camera trap location.

Wildlife species recorded	Bees Pos	Jakkals Pos	Water hole
Black-backed jackal	X	X	X
African wild cat (Groukat)	X	X	X
Honey-badger	X		
Caracal (Rooikat)	X	X	
Small-spotted genet	X		
Bat-eared Fox			X
Warthog	X	X	X
Oryx	X	X	X
Duiker	X	X	X
Steenbok		X	
Tsessebe	X		
Porcupine		X	X

The capture frequency for each wildlife species at the three camera trap locations are shown in the figures below. Capture frequency is a measure of how often the species was recorded with at least a period of 1 h between photographs in order to make sure that events were independent.

Bees Pos: At the Bees Pos, warthogs were captured most frequently (57%), especially a group of four warthog (two adults and two piglets). Jackals were captured the second most frequently (29%). Oryx were never seen drinking from the water supply, but only walking by, and a group of eight Tsessebe was captured once, also only walking by (Figure 60 and Figure 61).

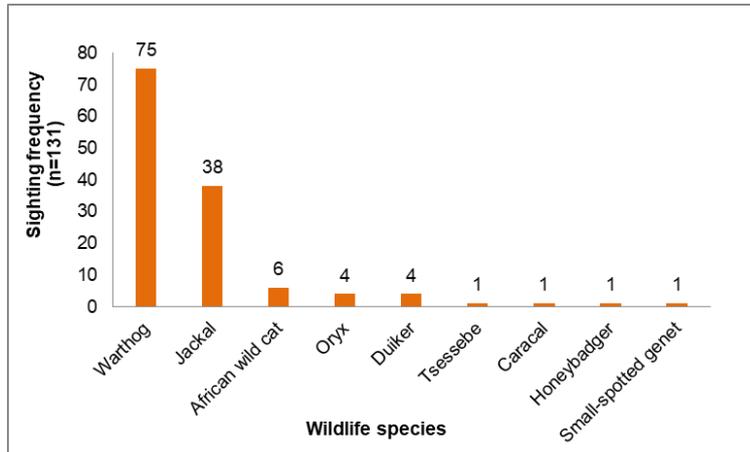


Figure 59: Wildlife caught on the camera trap at the Bees Pos location.



Figure 60: Some of the wildlife species caught on camera trap at the Bees Pos location.

Jakkals Pos: At Jakkals Pos, Oryx were capture most frequently (30%), followed by warthog (23%) and duiker (19%). Steenbok was recoded only once during the camera trap survey, and only at Jakkals Pos (Figure 62 and Figure 63).

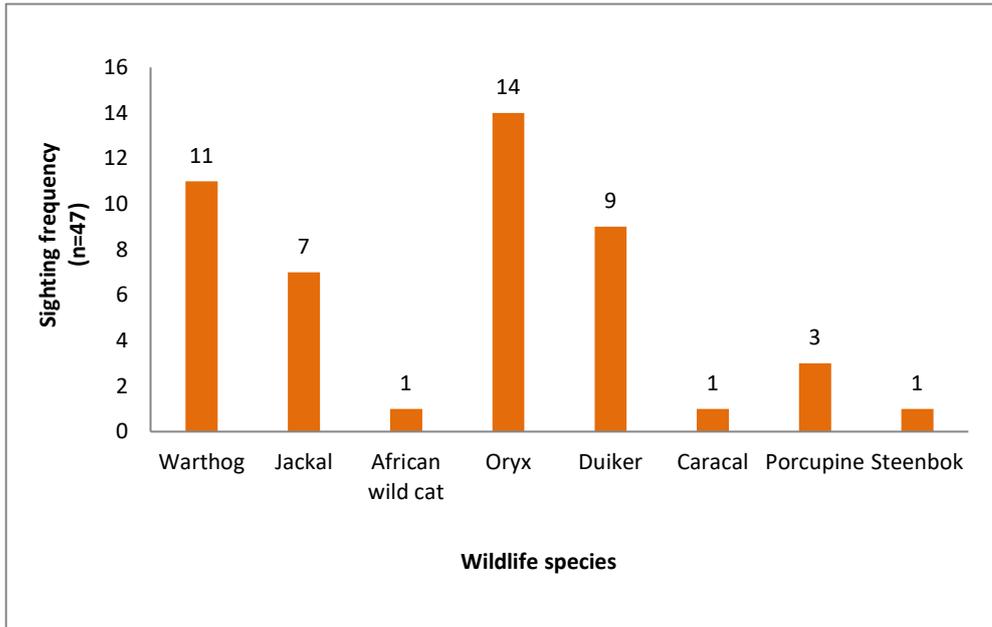


Figure 61: Wildlife caught on camera trap at the Jakkals Pos location.

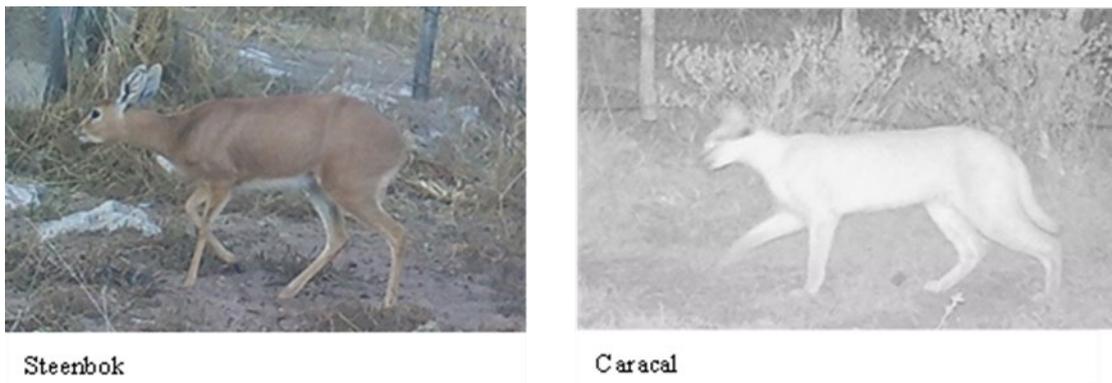


Figure 62: Some wildlife species caught on camera trap at the Jakkals Pos location.

Water hole at Jakkals Pos: The camera trap could not be placed close to the water hole, and the water was not visible. Only 25 independent capture events of wildlife species (excluding birds) were recorded at the water hole comprising seven species. Jackal were recorded most frequently (32%), followed by Oryx (16%). Bat-eared fox were recorded on three occasions at the water hole location (Figure 64 and Figure 65).

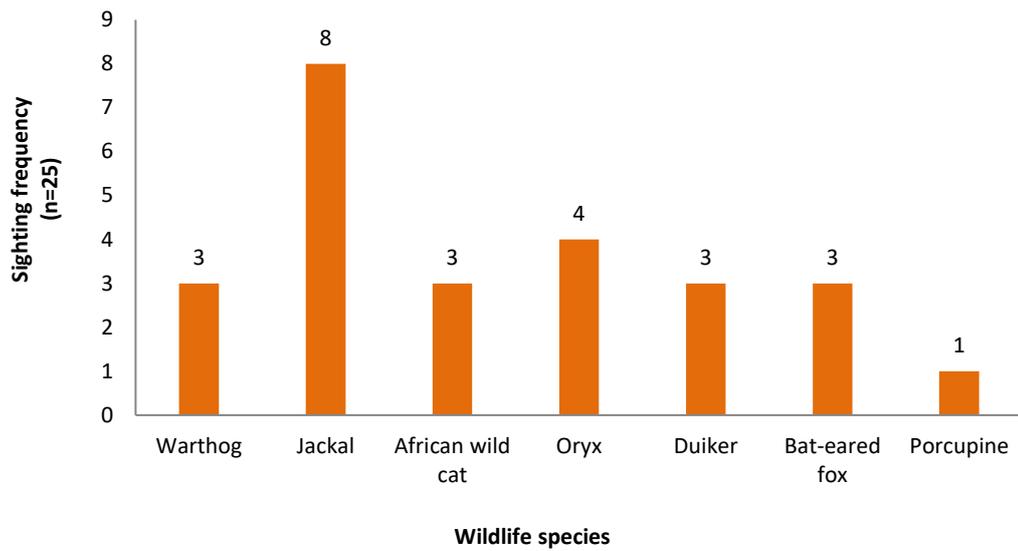


Figure 63: Wildlife species caught on camera trap at the water hole at Jakkals Pos.

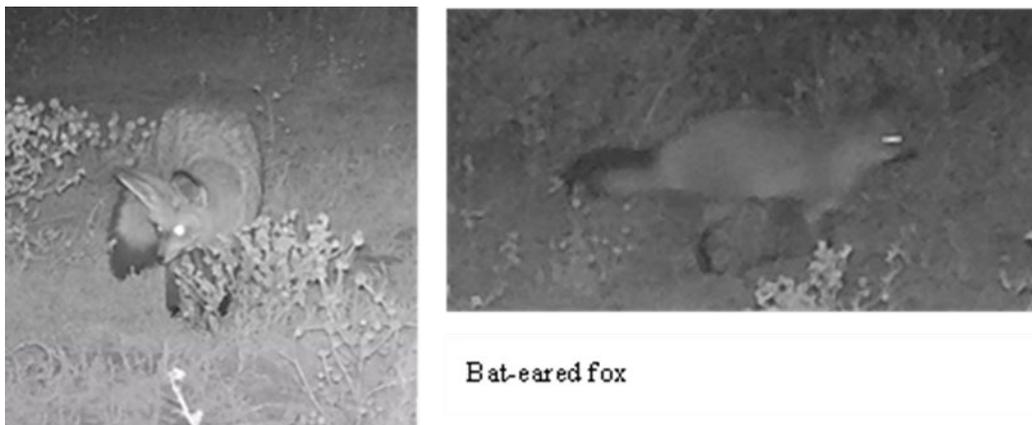


Figure 64: Some wildlife caught on camera trap at the water hole at Jakkals Pos.

A total of 19 sheep (ewes) were lost within a period of just over two months, seemingly by one group of six cheetahs, consisting of two adults and four younger animals (Table 35).

Table 35: Summary of livestock lost at the Jakkals Pos location.

Date	Livestock losses	Location and time	Predator species
6 May 2021	9 ewes	Inside grazing camp, late afternoon	4 young cheetah
9 June 2021	5 pregnant ewes	Inside grazing camp, between 15h00 and 15h30	Tracks of 2 adults and 2 younger cheetahs
20 June 2021	5 ewes	Inside grazing camp, late afternoon	2 adults and 4 younger cheetahs

On all three occasions, livestock were killed inside the grazing camp, and in the middle to late afternoon during daylight hours. The cheetahs also seemingly approached the grazing camp from the same direction each time, and entered at the same location between Jakkals Pos and the workers' houses. In this area, a number of dead brush heaps are located that might afford the cheetahs enough cover to attack the sheep (Figure 66). The farm worker was advised to remove this brush.



Figure 65: Grazing camps in which cheetahs had killed livestock at the Jakkals Pos location.

LGD Program

There are currently 34 working dogs in the Omaheke Region. They are all working well and in good health condition. However, there were 5 cases of dogs staying home or biting unfamiliar livestock reported by farmers in 2021. The reason for these types of behavioural problem is not yet known but it is linked to these LGDs receiving less care and being found in poorer body condition. Unwanted ecological impacts of wildlife killings by LGDs merit further investigation, but occurrence of behavioural issues reduced over time, suggesting a targeted and adaptive management approach to increase performance. Addressing behavioural issues, increasing LGD lifespans, and understanding LGD performance under different conditions will be crucial for optimising LGD management, leading to better performance.

Highlights of LGD Programme in Omaheke Region

- CCF East visited a LGD at Rooibult, SB# 735. The worker told us the dog once carried a baby goat (kid) from the field back when the mother gave birth in the field. On another occasion, the dog didn't return home with the herd and the worker went to look for it the field. He found the dog lying next to an injured sheep, protecting it from jackals.
- SB #803: CCF East assisted a farmer with his LGD's medical cost and treatment.
- Tiger, a 1-year-old LGD, had been placed on the farm already for the period of nine months, when farm workers reported he was obviously quite sick. CCF East picked the dog up from the farm and took him to the veterinarian in Gobabis, where he was diagnosed with the start of Tick Bite Fever and a heavy intestinal infection. The veterinarian treated Tiger and kept him overnight on an intravenous drip. Tiger was kept at the CCF East house for another few days until he was eating properly and had recovered his active demeanour. He was then returned to the farm, where he was very happy to be reunited with his goat flock.
- The CCF East Home has an ideal dog enclosure where LGDs can be safely kept, for example before placement, if they are brought to Gobabis late in the day, and cannot be placed the same day. This enclosure is completely walled with two gates, has a big area of sand surrounded by paving, and its quiet and away from people and other home dogs.

Returned Dogs Livestock Guarding Programme

Six working dogs were returned to CCF due to reasons listed in Table 36.

Table 36: Summary of LGD that were returned to CCF.

Dogs's Name	SB Number	Place	Reason for returning
Wagter	759	Toligos	Injuring calves
Gift	710	Groot Ruigte	Injuring neighbours' calves

Bondera	731	Okomukaru	Not sure
Lexi- Rehome Dog	765	Xain Quaz	Staying home
Wagter	660	Heatherbelle	Staying home
Wolf	816	Wendelstein	Biting sheep tails

The number of LGDs that are being returned from farms is a big concern. Most of the return cases are re-homed dogs, however, we also had a one-year-old returned because of behavioural problems. We believe LGD owners need to be reminded during our annual visits about the importance of training and nurturing dog to optimise performance and how to discourage bad behaviour.

There has been an increase in cases of LGD biting calves on farms. The reason for this is not yet determined, but we believe they do that to protect their herd. It is very unfortunate for a dog owner that has to return their LGD to avoid conflict between their dog and cattle owners.

General

The CCF East team drove an of average 1,211 km per month to deal with HWC incidents and visiting the LGDs (Figure 67).

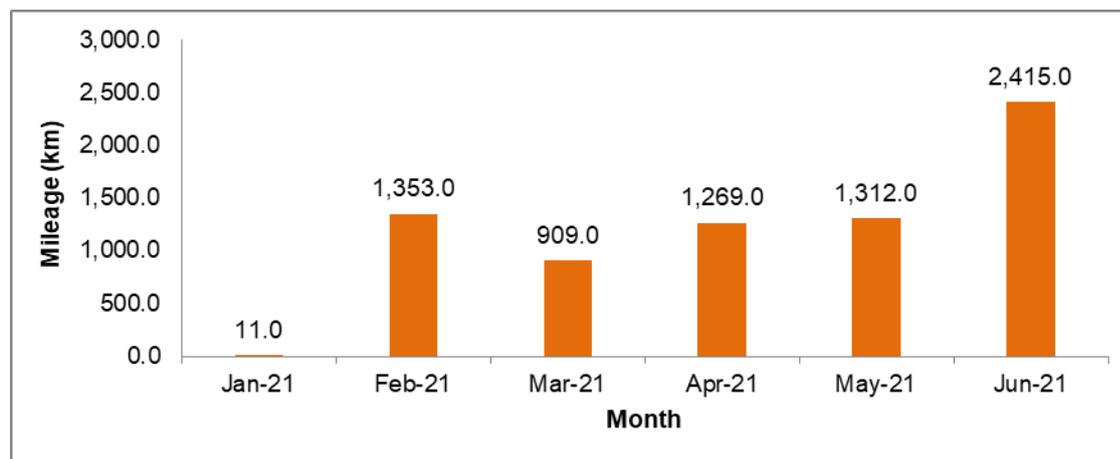


Figure 66: Mileage covered by CCF East to deal with HWC incidents.

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 International Species Inventory System (Species360) and personal communications.

The 2020 studbook has recently been published, and the 2021 studbook is currently in progress. In 2020, 200 (95.94.11) 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 2020 but had not been reported until after the publication of the 2019 Studbook. Captive-born cubs from known breeding facilities totalled 146 (69.66.11) born in 46 litters in 26 facilities in 12 countries. The captive cheetah population on 31 December 2020 was 1,851 (946.889.6) animals in 272 known facilities in 46 countries (Figure 68).

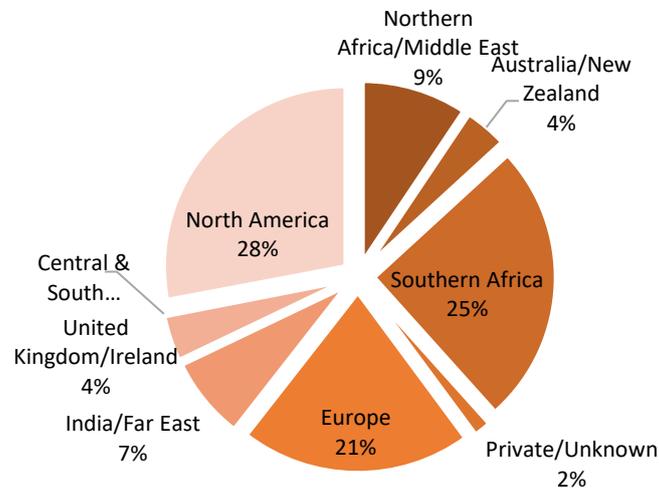


Figure 67: Captive cheetah populations by region, 2020: 1851 (946.899.6).

2. Illegal Wildlife Trade (IWT).

Confiscations

During 2021, CCF recorded 19 events related to cheetah poaching, trade and trafficking (Figure 69). Of those, 11 involved confiscations/seizures of live cheetahs (Figure 70). The other eight were reports of cheetah cubs being held in private hands but never confiscated by authorities. These events include a total of 26 cheetahs confiscated, and at least 13 are not confiscated.

Of these 19 events, five were recorded in the first half of 2021, the other 14 took place between August and December 2021.

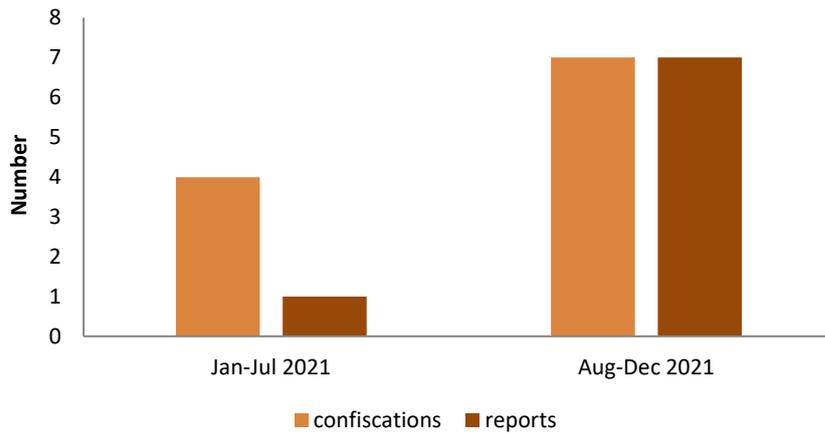


Figure 68: Confiscations vs reports between two periods in 2021.

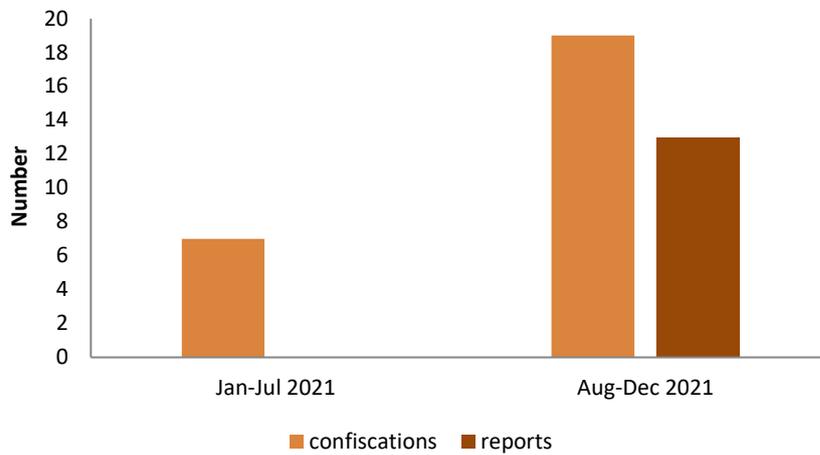


Figure 69: Confiscations vs reports involving cheetahs between two periods in 2021.

Confiscation of Cheetah Cubs

A total of 26 live cheetah cubs were confiscated by authorities during 2021 in 11 events, or cases. In six of these 11 cases, a clear motivation to sell the cubs was identified when interviewing farmers/traders involved (Figure 71). In three of the 11 cases, both sale of the cubs and human-wildlife conflict/hope for monetary compensation by government for lost livestock were recorded in interviews. These 11 incidents included in total 22 of the 26 confiscated cheetah cubs: 17 in Somaliland, and four in Ethiopia. Two of the Somaliland cubs died before reaching the Somaliland CCF Safe House (new arrivals to the safe house in 2021 thus totalled 15). Of the four in Ethiopia, three died post-confiscation while in local authorities' hands and one was transferred safely to the Born Free Sanctuary in the country. CCF assisted Born Free and the Ethiopian authorities in organising this transfer. One additional cheetah was confiscated in Iran.

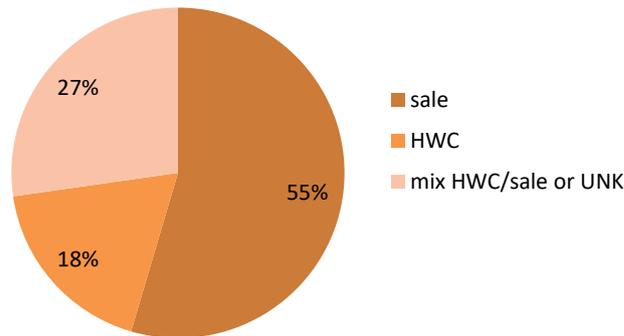


Figure 70: Confiscation events by motivation as revealed through interviews with involved persons (farmers, traders, MoERD/MoECC officials).

The other two cases, involving four cheetah cubs, were recorded in Puntland and were the result of human-wildlife conflict incidents (Figure 72). Unfortunately, three of these cubs died while being held by authorities, and the remaining cub died enroute to the CCF Safe House. CCF veterinarians were unable to revive it due to its dire condition.

When examining confiscation locations, it is noteworthy that confiscations in Somaliland – a common source country – occurred only in the second half of 2021 (Figure 72). These Somaliland incidents accounted for the majority of cheetahs confiscated in 2021 (15/26).

A closer look at location of confiscations reveals that five of the six Somaliland confiscations occurred in eastern Somaliland and, temporally, after a government-sponsored awareness conference was held in the eastern region and a LICIT enforcement workshop was conducted in Hargeisa. These two awareness/training events held by/coordinated with CCF seemed to have focused MoERD’s (now Ministry of Environment and Climate Change – MoECC) eastern regional coordinators on illicit poaching/holding of cheetahs. In fact, one of these coordinators identified 13-16 cubs being held illegally in private hands while he was attending the Hargeisa September workshop. Follow up of this information by CCF and the Ministry is thought to have led to the five confiscations from eastern Somaliland. That being said, as one of the confiscations was from the western Awdal region, and as more confiscations have occurred as of the writing of this report (well into 2022), it will be important to continue monitoring the trade countrywide in Somaliland to learn of actual trends (for instance, looking at the age of any new cheetahs confiscated after January 2022 and comparing to a possible capture prior to September 2021, is key to learning if these are “old” poaching cases or new ones).

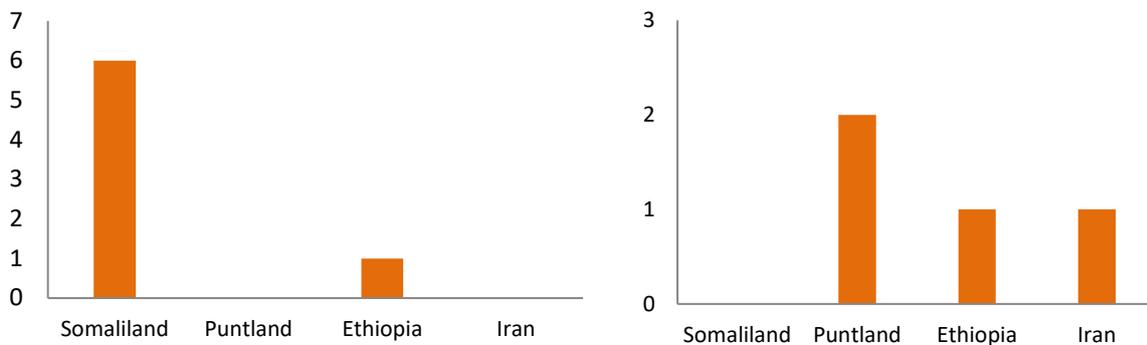


Figure 71: Confiscation events by geographic location. Left (January – June 2021), right (July – December 2021).

Of the 26 confiscated cheetahs, 12 are male, eight are female, and the gender of six remains unknown, as they died while in authorities’ hands before sex was established/recorded (Figure 73).

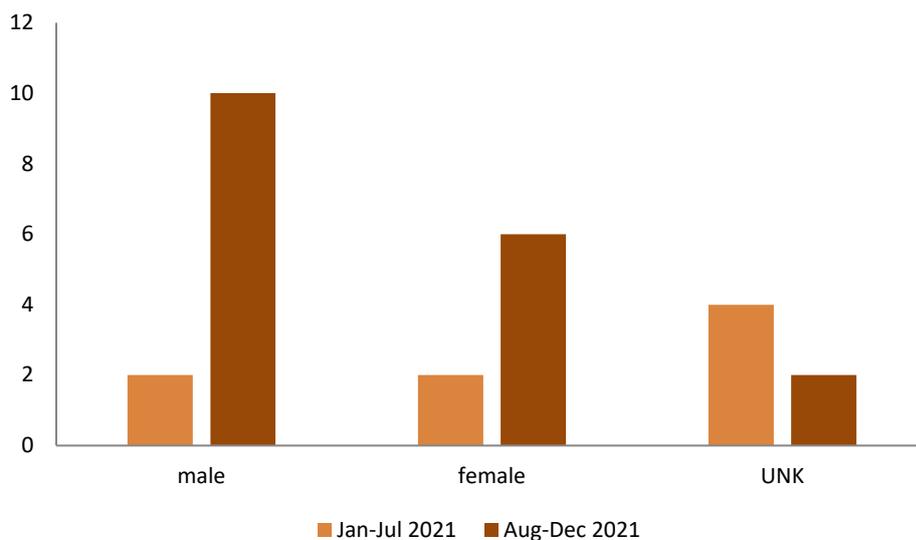


Figure 72: Sex of confiscated cheetahs.

Reports

Of the eight reported cases of cheetahs held in private hands but not confiscated, six originated in Ethiopia's Somali Regional State, one in Puntland, and one in Somaliland's eastern region. Of these eight cases, only one was reported in the first half of 2021 (in June); the others emerged from July to December 2021. The last of the reported cases of 2021 was that of a cheetah of unknown sex/age held in late December by authorities in Ethiopia's Somali Regional State. The CCF team is still working to transfer this cat to the Born Free sanctuary where it can live out its life in safety.

Analysis

CCF's mid-year IWT report for 2021 expressed hope that trade was diminishing. That hope was based on the fact that only two IWT events were recorded by CCF between January and July 2021, neither of which occurred in Somaliland. As CCF, at that time, did not monitor online advertisements or sales, it was difficult to determine whether this apparent decrease was reflected on the demand side as well. However, during the second half of 2021 CCF recorded not only 17 new cases of IWT but also some that had occurred during the first half of 2021, of which CCF was not aware of at the time of the mid-year report. Discovery of these additional cases made it clear that the perceived downward trend in the first half of the year was not based on enough data points. CCF is still collecting more information and there is still a need to monitor any future confiscation cases to determine whether the eastern Somaliland confiscations in the second half of 2021 were actual new cases or "old" poaching events that took place prior to CCF's awareness-raising/training efforts.

Looking back, 2020 closed with 21 IWT events – including 18 confiscations with 14 occurring in Somaliland. In 2021, there were 11 confiscations with 6 occurring in Somaliland and 2 in Puntland. While this shows a downward trend, it is too early to say if there was a true reduction in cheetah illegal poaching, trading, or trafficking during 2021 (especially as two new cases have come in early 2022 as this report was being written). 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, focusing on the upcoming CCF Cheetah Global Summit to be held in March 2022.

As stated in the mid-year report, any shift in wildlife crime trends can be the result of multiple reasons ranging from true reduction of crime to changes in enforcement attention or reduced demand. CCF will enhance its monitoring and investigating activities during 2022 to determine the actual trend and respond accordingly.

As of 31 December 2021, 60 cheetahs were housed at the CCF Safe House in Hargeisa, twice the number housed at the end of June 2021.

Demand: Purchasing and Ownership

In 2019, CCF discontinued its online trade monitoring program, which has made new trends difficult to estimate. CCF looked for new ways to monitor the trade to fill this gap and has recently signed an MOU with an internationally recognised entity which will join hands with CCF for online cheetah trafficking monitoring.

In addition, CCF's engagement with authorities in demand countries revealed that official attention to cheetah and other wildlife trade and illegal possession has increased, specifically in the top two cheetah demand countries, Saudi Arabia and the United Arab Emirates:

- Dubai formed a joint Task Force of the Dubai police (the Environmental and Archaeological Crimes Division) and Dubai Municipality in June 2021 to crack down on wildlife trade and possession¹. Dubai's 2016 federal law (Federal Law No. 22) prohibits people "from owning, possessing, trading or breeding dangerous animals", with a maximum penalty of six months in prison and/or a 500,000 dirham (\$136,000) fine. Reports reveal that despite creation of this Task Force, private ownership is still common in the UAE, meaning that much work is yet to be done².

Saudi Arabia passed a new Environmental Law (by Royal Decree, on 10 June 2020) which replaced almost all prior environmental regulations in the Kingdom. The new law and its associated bylaws contain high penalty provisions that can be applied to environmental violations, including imprisonment for a period of up to 10 years and a fine of up to 30 million Saudi Riyals (USD \$800,000) for trafficking endangered wildlife and their derivatives/products, or killing/hunting them. Further work needs to be done to ensure enforcement of the new law, including capacity building for wildlife and other enforcement authorities. CCF's new partnership with Saudi Arabia's newly established Arabian Leopard Fund and the proposed inclusion of cheetahs in the Fund's Program of Work will allow progress to be made on these pending issues.

The increased attention of demand countries' governments on illegal trade and possession of cheetahs and other wildlife is encouraging, with CCF's work to build relationships with these entities proving impactful. However, given that published reports state that demand for exotic pets, including cheetahs, in the Arabian Peninsula (including Saudi and the UAE) is still high, both stronger efforts by authorities and engagement by CCF are more important than ever.

CCF is now preparing for a Global Cheetah Summit in Dubai which will cover, amongst other top cheetah conservation priorities, the illegal trade in cheetah cubs. The Summit, postponed from January to March 2022, is focused on harnessing the power of both public and private sectors to fight the demand for wild cheetahs as pets.

As of the date of this report all 15 cheetah cubs arriving at the CCF Safe House in Hargeisa over the past year are alive and cared for by the CCF Somaliland staff (Table 37). They joined the existing 54 cheetahs for a total of 69 cheetahs at the end of 2021.

Table 37: Overview of IWT in Cheetahs for 2021.

2021 IWT Events	
Total IWT events	19
Total confiscation events	11
Total "reports only" events	8
Total cheetahs confirmed to be in trade (confiscated & reported but not confiscated)	39
Confiscations – a closer look	
Total confiscated	26
Confiscation location	
Somaliland	17
Puntland	4

¹ <https://gulfnnews.com/uae/crime/new-section-in-dubai-police-to-combat-crimes-against-wildlife-1.79932282>; Animals covered under the law include big cats, snakes, ostriches, scorpions, primates, lizards, seagulls, spiders and some breeds of dogs.

² <https://www.bellingcat.com/news/mena/2021/02/08/how-instagram-celebrities-promote-dubais-underground-animal-trade/>

	Ethiopia	4
	Iran	1
Total in Somaliland – a closer look (n = 17)		
Status on Arrival to CCF		
	Alive	15
	Dead ³	2
Confiscations Mortality Rate (total)		12%
Confiscations Mortality Rate at CCF (total)		0%

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-Küntzel, 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 analyse 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 are preparing them for shipment to Canada and Namibia, respectively, to commence the study in early 2021.

CCF-led Projects

LICIT – Legal Intelligence/Cheetah Illicit Trade

Launched in July 2019, the UK DEFRA-funded LICIT project entered its final year in 2021-22. LICIT (“Legal Intelligence for Cheetah Illicit Trade”) is designed to identify and fill gaps in legislation and raise awareness of existing wildlife crime laws amongst enforcers, prosecutors and judges. In addition, this project sets out to build law enforcement, investigative, and judiciary capacity through training sessions and the establishment of national and regional networks for collaboration. Finally, LICIT aims to provide knowledge and skills in the emergency care of cheetahs to confiscating authorities and local caregivers.

LICIT is led by CCF in partnership with Legal Atlas (LA) and the International Fund for Animal Welfare (IFAW), as well as a number of non-financial government partners. These include the Horn of Africa Wildlife Enforcement Network (HAWEN), the Ethiopia Wildlife Conservation Authority (EWCA), the Somalia Directorate of Wildlife, the Somaliland Ministry of Environment & Climate Change (MoECC) (formerly the

³ Two cubs from an October confiscation in Somaliland were reported to be confiscated but died prior to reaching CCF (from Little Hamza's confiscation)

Ministry of Environment and Rural Development), and the Ministry of Water and Environment, Environmental Protection Authority, of Yemen.

Despite the challenges raised by the ongoing Covid pandemic and the outbreak of civil conflict in Ethiopia, implementation of the LICIT project continued throughout 2021. Having completed its analysis of international and national laws that pertain to cheetahs and trafficking in the four project countries, LA turned to the next phase of its work providing technical assistance in drafting/revising wildlife laws to fill gaps identified by its analysis. To facilitate these efforts, CCF obtained formal requests for legal reform from government stakeholders that confirmed their endorsement of the process and set out their priorities in relation to the LICIT project analysis. All four jurisdictions and a sub-jurisdiction (Ethiopia's Somali Regional State) submitted letters of request. Yemen and Somalia exceeded expectations by requesting support or a complete overhaul of their national wildlife legislation. LA initiated the legal reform process with policy questionnaires to refine and confirm priorities and is expected to begin a drafting process in 2022. Due to the extensive requests for support by the project country governments, CCF will need to find additional funding to support completion of this work.

After several pandemic-related postponements, CCF and partners were able to hold one of the two training/capacity building workshops in Somaliland in September 2021. The second workshop, also delayed, was set for November 2021 in Ethiopia, however a further postponement became necessary when the Ethiopian government declared a national emergency due to the growing civil conflict with the Tigray region. This workshop, for participants from Ethiopia, Somalia, and Yemen, has been rescheduled for February 2022. A third workshop, to build regional cooperation, will be organised later in the year.

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.

In 2021, CCF carried out five tours in Somaliland, four in the Awdal Region and one in the eastern part of the country. The remaining two tours will take place in Ethiopia's Somali Regional State in 2022. CCF is already working closely with the Regional State authorities to finalise dates and plans for these events. CCF project staff will travel to Jigjiga, Ethiopia, the capital of the Regional State, where they will coordinate with regional government counterparts. The CCF/government team will then travel to 2-3 communities per day in four key zones (counties). The zones were selected based on existing knowledge of either cheetah presence or prevalence of poaching/illegal trade in cheetahs.

Due to delays in LICIT Project implementation caused by the pandemic and other events, CCF and its partners requested DEFRA to extend the LICIT project period beyond three years to allow sufficient time to complete project activities. DEFRA agreed and granted a six-month extension which resets the project end date to 30 September 2022. The extension is on a "no cost" basis, however, so CCF and partners will need to cover any costs beyond the original project budget from their own funds.

The LICIT project was chosen by DEFRA to undergo a mid-term review process. Working closely with Project Manager Edwin Brown, the appointed reviewer examined project materials and interviewed stakeholders. In March 2021, CCF received the results of this review. DEFRA found the quality of project delivery and technical assistance to be of a high standard. Project coordination and management was also found to be excellent with "core project staff [being] experienced, knowledgeable, enthusiastic and... committed to project goals". The project's sustainability was also assessed to be good, and a formal recommendation was offered for CCF and project partners to submit a proposal for a follow-up project in the next IWT Challenge Fund round, which was announced in Fall 2021. CCF's project team developed and submitted a follow-on proposal that is now under

review by DEFRA. In addition, based on the mid-term reviewer’s comments, and changes resulting from the COVID-19 pandemic, CCF submitted a revision of the project LogFrame to ensure alignment with activities as planned and implemented.

CMS-IGAD Legal Harmonization Project

In 2021, CCF completed the first part of its collaborative project with the Convention on Migratory Species (CMS) and Legal Atlas, the CMS-IGAD Legal Harmonization Project. 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. The project was originally conceived as an expansion of the legal assistance element of the LICIT Project, due to the strong interest of the LICIT Project countries, and the perceived benefits of expanding this activity to all IGAD member countries. The project was designed in phases. The 6-month Phase I included legal assessments of IGAD member countries Djibouti, Ethiopia, Kenya, Somalia, the Sudan, South Sudan and Uganda. The legal assessment focused on protected areas, wildlife conservation and illegal wildlife trade.

Over the six months of the project, partners worked with national authorities of participating countries to conduct a comparative analysis of target countries’ legislation as it relates to five areas of focus, as chosen by the CMS:

1. Migratory Species Status
2. TFCA Designation
3. National IWT Task Forces
4. Wildlife Repatriation Mechanisms
5. Wildlife Crime and Anti-Money Laundering

Analysis was followed by extensive consultations with IGAD’s Program Manager for the Environment, Dr. Debalkew Berhe and CMS representative, Dr. Andrea Dekrout. The result was a Harmonization Proposal submitted to the IGAD Secretariat and HAWEN country focal points for review. This proposal was based on findings of the comparative analysis when compared with international best-practices.

Based on the success of Phase I, and with support received from IGAD countries at the 4th Meeting of the Horn of Africa Wildlife Enforcement Network (HAWEN) Executive Committee, held virtually in October 2021, CMS called for CCF and Legal Atlas to develop a follow-up project, focusing on the drafting of an IGAD protocol on Trans Frontier Conservation Areas (TFCAs). A project proposal and budget were submitted for CMS’ consideration in late 2021 and is awaiting approval.

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 1975⁴. 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 countries are not Parties to CMS.

At CITES, the illegal trade in cheetahs was viewed as a concern as far back as 2014, when it was raised as potential threat to the species by the CITES Animals Committee in July of that year⁵. Throughout the years, resolutions and decisions attempting at curbing the trade and were offered and accepted by Parties. However, at the last CITES Conference of the Parties, CoP18 (Geneva, August 2019), cheetah-related decisions agreed at previous CITES conferences had been proposed for deletion due to an erroneous perception that the trade was limited and of no major impact on the species’ survival. This, despite CCF’s continuous attempts to raise awareness and garner support for source countries fight against the trade. Unfortunately, the proposed deletions were adopted, and cheetahs remained outside of species-specific actionable resolutions at CITES.

⁴ 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”.

⁵ <https://cites.org/eng/300-Science-Experts-Review-Sustainability-of-CITES-Wildlife-Trade>

Recognising the importance of reviving the discussion on the illegal cheetah trade and not wanting to wait until the next CITES CoP, CCF led an NGO-coordinated⁶ strategy focused on the interconnectedness of the CITES and CMS conventions, through the newly established Joint CITES-CMS African Carnivores Initiative (ACI). The strategy was presented at the Convention of Migratory Species (CMS) Scientific Council's meetings at Bonn in November 2019. It proposed measures that mandated both CITES and CMS to recognise the live trade in cheetahs and mobilise resources to combat it. The strategy proved successful, with the Scientific Council approving all of the NGO cheetah coalition proposals. This opened a new path for discussion of cheetah trade matters in subsequent meetings of both conventions.

The next step was to attend the 13th CMS Conference of the Parties (CoP) (February 2020, Gandhinagar, India) where Drs. Marker and Yashphe witnessed the adoption of Resolution 13.4 on the African Carnivores Initiative (ACI)⁷ containing the proposed additions from the Scientific Council. This means the ACI now needs to include all threats to cheetah survival, including illegal take and trade, in its program of work.

During 2021, the CMS and CITES secretariats worked alongside range states to develop the ACI's Program of Work (PoW). A draft PoW⁸ was presented to Parties the SC73 meeting held virtually on 5 – 7 May 2021 (postponed due to COVID from October 2020). To discuss edits presented by Parties and observers, an in-session Working Group was struck. CCF was overall happy with the PoW as presented but offered its comments to the Standing committee and in-session WG members to ensure that cheetahs are properly included in all facets of work. Edits were received by the Chair (Germany) by the end of June 2021 and the revised PoW was then sent for approval through postal procedure by CITES Parties and to the 52nd meeting of the Standing Committee of the CMS (September 2021) for approval there. The postal procedure was finalised on September 13th, 2021, and with the CMS Standing Committee approving it as well, 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 finalised and is to be discussed at the 2nd ACI Range State Meeting (date: TBD).

In the meantime, a second CITES initiative – the CITES Big Cats Task Force, was also proposed as an avenue through which cheetah trade could be tackled. The Big Cats Task Force Terms of Reference and Modus Operandi was supposed to be presented and finalised during the CITES Standing Committee 73rd meeting in May 2021. Unfortunately, due to a shortage of time and it being the last agenda item, it was moved for finalisation through notifications and email approaches to Parties. CCF submitted an extensive list of edits to ensure that this Task Force follows international best practices in wildlife crime. CCF also lobbied SC members and other Parties to support the finalisation of the ToR and MO earlier than SC74, however, the timeline did not change. Comments received by Parties and Observers were incorporated to a revised version of the ToR and MO which is to be discussed as agenda [item #69: CITES Big Cats Task Force \(Felidae spp.\): Report of the Secretariat \(Decision 18.248 paras a and d\)](#).

As matters are delayed both with the ACI and the BCTF and with the trade continuing and cheetah numbers dwindling, CCF and the Cheetah NGO Coalition decided to offer a new intervention under CITES. Working with Ethiopia, Kenya, Somalia, and Yemen, CCF worked on the drafting of a document to be submitted to the 74th CITES Standing Committee, to be held in March 2022. The document offers that an in-session meeting will be held where source and demand countries discuss an urgent approach to the illegal trade in cheetahs. If approved by Standing Committee members, this meeting might help build much needed momentum for urgent action.

The importance of enhancing the dialogue between source and demand countries is also a leading element of CCF's strategy in working with IGAD.

IUCN

On 3 September 2021, Drs. Marker and Yashphe, joined by CCF's international team from Italy, France, and Germany, attended the [7th IUCN World Conservation Congress](#), a nine-day event in Marseilles, France. CCF shared its knowledge, sought new ways to protect the cheetah, its habitat and its fellow species, and joined in

⁶ CCF NGO coalition includes the Wildlife Conservation Society (WCS), Born Free Foundation (BFF), the Zoological Society of London (ZSL), and the World Wildlife Fund (WWF), the International Fund for Animal Welfare (IFAW).

⁷ https://www.cms.int/sites/default/files/document/cms_cop13_res.13.4_cites-cms-carnivores-initiative_e.pdf

⁸ <https://cites.org/sites/default/files/eng/com/sc/73/E-SC73-14.pdf>

discussions of the two existential threats generation is facing: Climate Change and the biodiversity crisis. Realising that mitigating the impacts of climate change without protecting Earth's biodiversity is doomed to fail, leaders and decision-makers gathered to share knowledge and search for joint solutions.

The Congress usually meets every four years and was supposed to occur in early 2020. However, with the COVID-19 pandemic closing borders, it was postponed without a clear timeline as to when it could realistically be held. As the virus spread, governments had to focus on dealing with the global health crisis and resultant economic shifts. Yet, in the background, the speed at which species are lost did not diminish; neither did the speed at which our planet's temperature is rising. This made holding the Congress as soon as possible more important than ever.

CCF followed the preparations of the Congress very closely. In normal times, IUCN Members - governments, civil society, indigenous peoples, business, and academia – offer motions for discussion and adoption. These are voted on during the Congress and usually span diverse topics ranging from indigenous communities' needs to wetland protection.

For this Congress, CCF co-sponsored three motions. One called for the removal of barriers to rights-based voluntary family planning to support conservation measures ([Motion 87](#)); the second supported the recognition by countries of organised environmental crime as a 'serious crime' within the scope of the United Nations Convention against Transnational Organized Crime ([UNTOC](#)), which could lead to higher penalties for wildlife traffickers ([Motion 47](#)); the third called for implementation of international efforts to combat the sale of illegal wildlife products online ([Motion 50](#)). It was important for us to see these motions passed.

As the pandemic raged on, IUCN decided to not postpone matters further and to hold votes on as many issues as possible electronically. Through this process, by October 2020, 109 resolutions and recommendations were adopted through an electronic vote by the IUCN membership, including CCF's three motions. While CCF's motions were accepted virtually, recognition of the importance of face-to-face engagement with leaders and stakeholders led to CCF's decision to attend the Congress in person as well.

Arriving at the Congress, the CCF team – Dr. Laurie Marker, Dr. Shira Yashphe, Betty Von Hoening (CCF Italy), Andrea Melandri (CCF Italy), Tess Robitschko (CCF Germany), Christian Barbaud (CCF France), were joined by over 6,000 onsite and 3,500 online participants, all discussing ways to stop the loss of species and finding new ways to work with nature instead of against it.

French President Emmanuel Macron spoke at the opening ceremony, leading the way with France's conservation commitments. These included France's commitment to: achieve 30% of protected areas nationally by 2022; have 5% of its Mediterranean maritime area under strong protection by 2027; organise with the UN a One Ocean Summit to advance ocean protection; fight imported deforestation; promote a treaty on plastic pollution; include financial risks linked to biodiversity loss in economic and financial analyses; and strengthen biodiversity-positive investments, particularly in [Nature Based Solutions \(Nbs\)](#).

These followed by commitments by the Greek government, promising to reduce overfishing by establishing no-take zones in 10% of its territorial waters by 2030 and to reduce marine plastic pollution by 60%.

During the nine days of the Congress, Members met in for discussions, lectures, and negotiations on remaining motions which were awaiting decision at the Congress. CCF hosted Congress attendees in our Cheetah Conservation Pavilion, kindly offered to CCF by the [Margaret Pyke Trust](#), which could not participate at the last moment. CCF is grateful to have such generous colleagues, reinforcing CCF's conviction that only through collaboration between organisations would nature be saved.

Dr. Marker also participated in a press conference organised by the IUCN Human Wildlife Conflict Specialist Group. Her [statement](#) emphasized the importance of finding new ways to live alongside nature, protect biodiversity and habitat, while still allowing for economic security and growth.

CCF held lectures both in the pavilion, led by Dr. Marker, and at the IUCN Reverse the Red pavilion, led by Betty Von Hoening. Colleagues from Saudi Arabia accepted our invitation to speak of the new [Global Fund for the Arabian Leopard](#), which plans to pursue cheetah conservation projects as well. Through the pavilion, CCF was able to reach new audiences, ranging from youth and university students to fellow conservationists and political leaders. CCF's presence at the Congress was evident, with Congress-goers actively seeking out Dr. Marker and the Cheetah pavilion to learn more about our work.

Being chosen amongst other candidates, Dr. Marker also took an active part in the drafting of the [Marseille Manifesto](#), the main outcome document summarising the conclusions and recommendations of the Congress. The Manifesto highlights that the climate and biodiversity emergencies are two sides of the same coin and therefore should be tackled together. It calls for a fundamental change in society, where nature is valued and protected.

The Congress closed on 11 September 2021 with 28 new resolutions passed and Members making commitments to: establish the [Great Blue Wall Initiative](#) in the western Indian Ocean for the protection of marine resources; support and prioritise the implementation of the first [IUCN Global Indigenous Agenda for the Governance of Indigenous Lands, Territories, Waters, Coastal Seas and Natural Resources](#) – the outcome of over 6 years of work incorporating Indigenous People’s Organisations into the IUCN membership; and establish a partnership with the [UNFCCC High-Level Champions for Climate Action](#) to enhance and accelerate global and regional net-zero initiatives.

The Congress also saw the private sector making commitments to protect biodiversity. Kering, Holcim, L’Occitane, LVMH, and Pernod Ricard committed to work with IUCN to restore and enhance biodiversity through nature-positive corporate strategies and actions. Other interesting commitments include that of the International Hydropower Association committing to never allow operations within World Heritage Sites for any of its members; Germany committing to allocating €20 million to IUCN to establish a Forest Landscape Restoration technical expert hub; and El Salvador, Belize, Pakistan, Chile, and Région Sud, France committing to restore a collective total of 5.5 million hectares of degraded and deforested landscapes, increasing the total Bonn Challenge commitments to over 215 million hectares.

All in all, the Congress highlighted the need to promote Nature Based Solutions and multilateralism and how these principles must be included in any post-COVID-19 recovery plans. The Cheetah Conservation Fund continues its commitment to these principles and will continue to engage IUCN Members and other stakeholders, teaching our proven conservation best-practices and encouraging the development of new solutions.

Annex: Confiscated Cubs 2021

Date of Confiscation	Type of Event	Country of confiscation	Number of animals involved	Species	Sex	Age
Feb/2021	confiscation	Puntland, Somalia	2	Acinonyx jubatus	M	2w
12/Apr/2021	confiscation	IRAN	1	<i>Acinonyx jubatus</i> (UNK sub-species)	UNK	3-4m
8/Jun/2021	confiscation	ETH	3	Acinonyx jubatus	UNK	7m
Jun/2021	report	ETH	UNK	Acinonyx jubatus + other species?	UNK	UNK
10/Jul/2021	report	ETH	1	Acinonyx jubatus	UNK	6m
25/Jul/2021	report	ETH	3	Acinonyx jubatus	UNK	UNK
Jul/2021	report	Puntland, Somalia	1	Acinonyx jubatus	UNK	UNK
Jul/2021	report	ETH	3	Acinonyx jubatus	UNK	UNK
3/Sep/2021	confiscation	SLD	4	Acinonyx jubatus	M	3w
3/Oct/2021	confiscation	SLD	3	Acinonyx jubatus	M	6-7w
10/Oct/2021	confiscation	SLD	3	Acinonyx jubatus	M	6-8w
12/Oct/2021	confiscation	Somaliland	3	Acinonyx jubatus	M	5-6w
26/Oct/2021	report	ETH	3	Acinonyx jubatus	UNK	cubs
6/Nov/2021	confiscation	SLD	2	Acinonyx jubatus	M	4m

Date of Confiscation	Type of Event	Country of confiscation	Number of animals involved	Species	Sex	Age
11/Nov/2021	report	SLD	UNK	Acinonyx jubatus	N/A	UNK
1/Dec/2021	confiscation	ETH	1	Acinonyx jubatus	F	UNK
11/Dec/2021	confiscation	SLD	2	Acinonyx jubatus	M	3m
25/Dec/2021	report	ETH	1	Acinonyx jubatus	UNK	UNK

3. CCF Somaliland

For the first time since CCF has been working on the ground in Somaliland, there were no confiscations reported in the first eight months of 2021. Instead of cub intake, CCF directed its energy to stopping the cubs from leaving the landscape in the first place, addressing illegal wildlife trade and human-wildlife conflict by engaging with local communities where prior incidents took place and venturing into the eastern regions of the country for the first time. In the west, awareness campaigns were conducted in the entire region of Awdal, with emphasis placed on known hot spots for trade and conflict, including the border regions of Ethiopia and Somaliland, between Xariirad, Somaliland and Wajale, Ethiopia, and the coastal towns of Awdal. CCF also took significant steps forward with the development of the Somaliland Cheetah Rescue and Conservation Centre (CRCC), including bringing the designer to Somaliland, identifying the water source, finalising the Master Plan and hiring a Somaliland lawyer to help with rights documentation. In December 2021, CCF signed a Memorandum of Understanding for the development and operations of the CRCC with the Ministry of Environment and Climate Change (MoECC), formerly the Ministry of Environment and Rural Development (MoERD), and then broke ground at the site on 16 December 2021 (Figure 74). The MoECC name changed in the fourth quarter of 2021, with Minister Shukri H. Ismail remaining on as Minister.



Figure 73: Dr. Marker passes the shovel to Somaliland Head of Mission to the USA, Bashir Goth, at the ground-breaking ceremony for the CRCC, 16 December 2021.

Facilities

COVID-19 reached Somaliland in March 2020, and it has been a problem since then. Despite the challenges arising from the pandemic, work continued to improve both facilities and cheetah care. CCF's cheetah census during this reporting period stands at 68 cheetahs and one African leopard. The cheetahs under CCF Somaliland's care are in three Safe House facilities built and maintained by CCF in Hargeisa. CCF finished rebuilding its Safe House 1 at the beginning of the year following the completion of Safe House 3 in November 2020. By June 2021, all the cubs from Safe House 1 had been moved to Safe House 3. Safe House 1 has been used as intake for cheetahs coming in from confiscations.

In February 2021, CCF used its new residential compound as a training facility for the first time, bringing in two groups of livestock veterinarians for training in wildlife care, with an emphasis on cheetahs (Figure 75). The goal was to initiate a network of skilled professionals that can assist CCF with cheetah rescue missions in the field. CCF veterinarians, Dr Karina Flores Pineda and Dr Mahesh Bhatt along with Dr Laurie Marker helped organise the training with help from CCF part time Somaliland veterinarian Dr Asma Bile and Dr Ahmed Yusuf. Both the CCF Somaliland veterinarians also helped deliver the information and translate the information to the trainees.



Figure 74: CCF Somaliland veterinarian Dr Ahmed Yusuf and CCF international veterinarian Dr Mahesh Bhatt lead a group of veterinary trainees on a tour of the CCF Safe House facilities.

Cheetah Rescue and Conservation Centre (CRCC) at Geed-Deeble

In February 2021, Dr Laurie Marker and designer Matt Renninger came to Somaliland to conduct site visits at Geed-Deeble and work on the Master Plan for the Cheetah Rescue and Conservation Centre (CRCC). While in Hargeisa, they met with the Ministry of Environment and Climate Change (MoECC), the Hargeisa Water Agency (HWA), and Maurizio Gatti of Terra Solidali (TS), an Italian NGO that advises Somaliland on water sourcing issues. Conversations about the possible locations for borehole drilling and water catchments to supply the CRCC year-round were initiated. Dr. Marker and Matt presented a 95% complete Master Plan, allowing for input from those they met with in Hargeisa.

Following the site visits, Matt returned to Lusaka, Zambia, where he incorporated the comments, added photos and an expanded introduction section with CCF timeline in the Master Plan. In May 2021, CCF began sharing final versions of the document with persons involved with the project in Somaliland and its internal teams. CCF hired Dr Amal Ali of AQN Law Firm to draft the legal document for the land and development of the CRCC between MoECC and CCF.

CCF met with HWA at the project site to assess locations for borehole drilling (Figure 76). With advice of Terra Solidali (TS), CCF found the best location that will supply the CRCC with clean water. TS advises HWA, which is a government agency that supplies water to Hargeisa. As per the agreement with MoECC, HWA will supply the CRCC with clean, fresh water at no charge. CCF is responsible for the borehole drilling, operation and maintenance. CCF and TS signed a separate MoU in November 2021 for the drilling of the borehole and piping of the CRCC.



Figure 75: Drilling for the CRCC borehole began on 18 November, 2021.

CCF selected Babul Rayan as the contractor to start construction of staff and support facilities (Figure 77). Golis Solar, a Somaliland energy company, visited the project site in June 2021 to gather data and will provide an engineered energy plan. Clear Sky Solar also visited the site and was selected to provide solar energy to the borehole pump system and to the CRCC project.



Figure 76: Commencement of the construction of staff and support facilities.

Staff

To keep pace with the responsibilities that come with managing growing numbers of animals and CCF's construction projects, CCF continued to add both foreign and local staff to the project in 2021.

Veterinarians

- Dr. Karina Flores Pineda, who has been the main international veterinarian for the project over the past two years on a rotating basis, has returned to her home in the UK.
- Dr. Mahesh Bhatt, a veterinarian from the UK, joined CCF Somaliland team in September 2020 and left in March 2021, providing CCF with six months of assistance. Mahesh did much of the planning for the veterinary training in February.
- Dr. Laura Ryan, a freshly graduated veterinarian from Edinburgh University in Scotland, joined the Somaliland team in August 2020 for a three month stay, but extended until the end of January 2021.
- Dr. Kenreth Carter from Grenada arrived in March 2021 and left the project in June. He was instrumental in starting the spay and neuter clinics for packs of street dogs and cats in the neighbourhood near the CCF facilities.
- In April, Dr. Anahi Hidalgo from Ecuador joined the project for six months but has decided to stay on for a full year.

- In May, Dr. Iman Memarian from Iran arrived in Hargeisa to work with CCF for three months. He has many years of experience as a wildlife veterinarian in Iran and has spent time training at CCF Namibia. He left in August 2021.
- In September Dr. Calum Cairns, a veterinarian from the UK arrived.
- In October, veterinarian, Dr. Justin Keulen, formally from the Netherlands, joined the project.

Project Managers

Joe Botteglieri vacated the position of Project Manager/Head Cheetah Keeper in March 2021. During the same month, Mark Natt from the United States came to Somaliland to visit the project and spend time with Dr. Marker. In May 2021, Mark and his wife Stephanie Jochum-Natt, signed two-year contracts to serve as the CCF Project Manager and Animal Care Manager and relocated to Hargeisa from Utah. Mark is a former Great Ape zookeeper with a background in plumbing, construction and facilities maintenance. Stephanie was an Animal Care Supervisor at the Utah's Hogle Zoo working with big cats for 24 years.

Cheetah keepers

- Kaita Ivan from Uganda (who doubled as CCF Somaliland Education Manager) arrived in 2020 and left the project in May.
- Jason Miller from the U.K arrived in December 2020 and remained with the project through the end of June.
- In December 2020, Emma Reasoner, a MSc student at CCF Namibia, joined the Somaliland team as a cheetah keeper and ecologist for about four months, while her visa was being sorted out in Namibia. She left in March 2021.
- In June, Melanie Lippert and Tyler Kwaak joined the project from the United States. Melanie was a volunteer at White Oak Conservation Centre in Florida, and spent three months being trained in Namibia before coming to Hargeisa. Melanie is also working on education projects for CCF Somaliland. Tyler was a keeper at Turtle Back Zoo for five years in New Jersey, and he volunteered at the project in Hargeisa in 2019. Tyler worked alongside the veterinarians as a veterinary technician. Melanie left the project in November 2021 and Tyler left in December 2021.
- Yoana Martin from Spain, started as a volunteer in 2020, and joined CCF as a full-time cheetah keeper. She was previously with the Iberian Lynx Breeding Centre in Spain for 10 years and has a lot of experience raising and caring for cubs.
- In December, Joaquin Garcia-Menacho de Vargas, a professional animal keeper from Spain joined the animal care team.

Volunteers

- Due to the challenges of travel during the pandemic, CCF Somaliland had only 4 volunteers participate in the project during the first half of 2021. In March and April, we had two volunteers from the Netherlands, Lea and Lex, zookeepers from the Gaia Zoo. Lea had volunteered before at CCF Somaliland and CCF Namibia. CCF UK volunteer Kristina Grant, who lives in Kenya, travelled to Hargeisa and spent the month of April with the cheetah project. Also in April, Suubiye, a volunteer from Hargeisa spent the month helping in accounting and office work.
- During September and October, Nicole Ammon, who has animal care experience, arrived from Florida, and helped care for cheetah cubs confiscated by the government during these months.
- In August through September, Marketa Firesova, a veterinary student from the Czech Republic came to support the CCF Veterinary staff. Then in October Adela Kocianova, a veterinary student from the Czech Republic volunteered with the veterinarians for three weeks.
- From September through December, Abdullah Abdulkareem, a recent High School graduate and nephew of Lady Fatima of Somaliland Parliament, volunteered in animal care.
- CCF also had ongoing part-time volunteers from several international NGOs in Hargeisa.

Local Staff

CCF hired additional local Somaliland staff to assist with food preparation and care for the resident cheetahs. CCF also as hired an assistant education officer and a part-time bookkeeper. As of June 2021, CCF began offering healthcare insurance coverage to local Somaliland staff and long-term international staff.

- Operations Manager - Hamze Ahmed Yusuf
- Bookkeeper - Abdi Diiye who took over from Kaltun who has been with CCF since 2019
- Animal keeper/Education – Ladan Abdillahi
- Animal keeper/Clinic and Education - Dr. Ahmed Yusuuf
- Safe House 1 and 2 Sanitation/Meat Prep - Farah Abdi Wali
- Meat Prep/Handyman/Driver - Khalid Mawlid Saxardiid
- Meat Prep/Handyman - Jamal Wali Aw Abdi
- Meat Prep/Handyman - Idris Ciise Axmed
- Housekeeper/Cook - Hamda Mahamed
- Housekeeper/Cook - Faisa Xassan Yusuf
- Housekeeper/Animal Laundry/Meat Prep Assistant - Billiso Mawlid Saxardiid

Cheetah Rescues

There were no confiscations during the first half of 2021. For the first time since CCF has been assisting MoECC with cheetah rescues on the ground in Somaliland, nine months passed without a single confiscation. CCF attributes this to the education and awareness that CCF and MoECC has been conducting for the past two years. The last incident was the high-profile bust of a professional smuggling ring caught with 10 cubs in October 2020 that led to the gang leader's conviction in November 2020. According to MoECC, news of the arrest has reached the communities where cheetah cubs originate or pass through, and this has had a chilling effect on illegal taking. MoECC also cited the publicity generated from the multiple rescue missions during the summer of 2020, increased awareness of the law, and a drop in demand for exotic pets from Gulf States (due in part to COVID) as the reasons for no confiscations during this nine-month period.

In September 2021, following a conference held in the Eastern Regions of Somaliland, the Ministry of Environment and Climate Change regional coordinator from Sool came forward with information about cubs being held by community members in the region. At the same time, CCF received a report of “cubs in the East” from Rachel Bale, a National Geographic reporter, while almost at the same time, Stephanie Joachum-Natt received a phone call mentioning “cubs in the East”, and Dr. Marker heard reports of a man going around the region offering money for information about cubs. CCF remains concerned about well-intentioned interventionists creating secondary markets by offering money in exchange for information, which can sometimes be interpreted as money in exchange for animals and results in cubs being taken from the landscape.

A team from the Somaliland Ministry of Environment and Climate Change (MoECC) including its Regional Coordinator from the Sool Region, Republic of Somaliland, in collaboration with Cheetah Conservation Fund (CCF), rescued eleven cheetah cubs taken from the wild in four separate incidents during September and October. The cubs were rounded up during a sweep of Sool and Saraar based on intelligence generated during a conference for Eastern Regions leadership held in Burao, Somaliland, from 26 - 27 July 2021. Eight of the cubs were rescued in Sool, while three were rescued in Saraar.

On 5 September, CCF received the first cheetah cub confiscation for 2021. Two males and two females from the Laascaanood region. Below are more confiscations and cubs arriving at CCF;

- 4 October - one male and two females from Laascaanood.
- 10 October - one male from the Sool region.
- 12 October - three males from Anyabo.
- 6 November - two males from Awdal region.
- 12 December - one male and one female from the Sool region.
- 22 December - full leopard pelt from a Der As Salaam from recorded human/livestock and wildlife conflict.

Somaliland Resident Cheetah Health

Medical Examinations of Cheetahs

Overall health evaluations can be performed at a distance or while interacting with the cheetahs during their daily feeding or enrichment sessions. Evaluations were conducted daily in animals that were under treatment. Provided that the animals allowed it, hands-on physical examinations were performed in cheetahs that were reported to have any physical or behavioural abnormalities that were noted by the staff; these examinations were also carried out in sick individuals, when close monitoring was required to adjust treatment regimens or to perform any other diagnostic testing.

New Arrivals

Since September 2021 we have performed a total of 6 confiscations, which has given us a total of 15 new cubs (10M, 5F) (Figure 78).

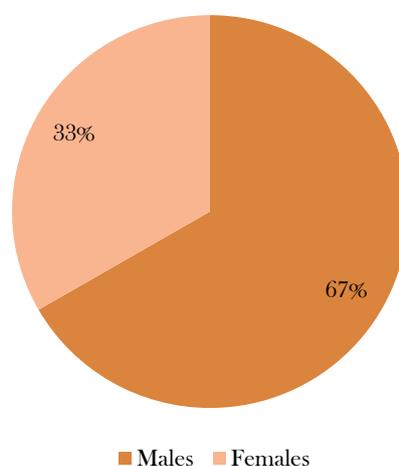


Figure 77: Sex of cubs on which medical examinations were performed.

Their most common health issues at arrival were dehydration that varied from mild/moderate (5-7%) to severe (>7-10%), mild to severe malnutrition that presented clinically as underweight (typically BCS 2-3/9), and fair to poor skin/hair condition (alopecia, superficial wounds, abscess, maggots, ectoparasites and more) (Table 38). Most of the health problems were corrected within 2-5 days by administering fluid therapy (SC fluids in cases of mild to moderate dehydration, and IV fluids in severe cases). Malnutrition was corrected over a longer period of time (several weeks to months), while mineral and vitamin supplementation has been essential, especially calcium. Also, coccidiosis has been identified as a contributing factor to the onset of diarrhoea within 7 days of arrival, coinciding with inappetence, and in a few cases vomiting/regurgitation (Table 38).

Table 38: Common health issues for cheetahs at arrival at CCF Somaliland.

ITAJU	Name	Sex	Age	Health condition
2041	Azaar	M	3 weeks	Moderate dehydration, slightly underweight
2042	Yaku	M	3 weeks	Moderate dehydration, slightly underweight
2043	Amaterasu	F	3 weeks	Moderate dehydration, slightly underweight
2044	Pacha	F	3 weeks	Moderated to severe dehydration, severe underweight and under size
2045	Boqor	M	6-8 weeks	Moderate dehydration, severe underweight, poor skin and hair condition
2046	Dhiirin	F	6-8 weeks	Moderate dehydration, severe underweight, poor skin and hair condition
2047	Delphina	F	6-8 weeks	Moderate dehydration, severe underweight, poor skin and hair condition
2048	LH	M	8 weeks	Moderate dehydration, slightly underweight

2068	Jabari	M	5 weeks	Moderate dehydration, underweight
2069	Bilane	M	5 weeks	Moderate dehydration, underweight
2070	Gashan	M	5 weeks	Moderate dehydration, underweight
2049	Sahmiye	M	6-7 mths	Mild to moderate dehydration, slightly underweight, fair hair condition
2071	Nasib	M	5-6 mths	Mild to moderate dehydration, moderately underweight
2072	Bashir	M	3 months	Mild to moderate dehydration, severely underweight, fair to poor hair condition
2073	Bishaaro	F	3 months	Mild to moderate dehydration, severely underweight, fair to poor hair condition

The age at arrival has varied a lot, as has the pack number. The youngest arrivals were 3 weeks old in the youngest group, to 6-7 months in the oldest group. The pack number has varied from one individual to four siblings. Also, most of the cubs (13 cubs according to the age of arrival) are estimated to have been born between mid of Aug and mid of September 2021 (Figure 79).

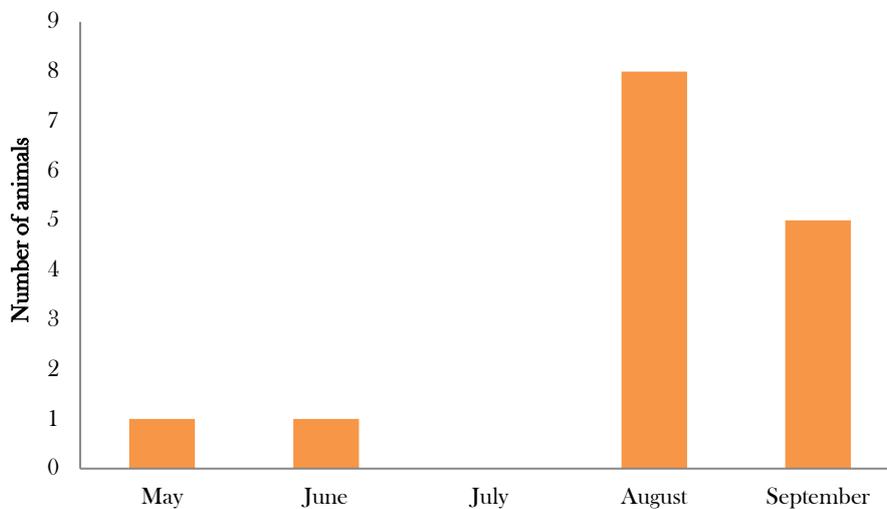


Figure 78: Birth date of the new individuals.

Neurological signs with rapid progression in Elements group, treated with antibiotic therapy (Clindamycin and Enrofloxacin [changed] → Cefotaxime). The progression stopped as soon as treatment started and all neurological signs disappeared after 1-2 weeks, we continued treatment for one month as a precaution in case of any possible bacterial meningitis.

Bone diseases were found in the cubs during this period. Absence of femoral head from R femur was noted in YAKU (ITAJU 2042), PACHA (ITAJU 2044) and Delphina (ITAJU 2047). Bone deformation as VARUS presented on PACHA (ITAJU 2044) since arrival but the degree of it had improved with time. Osteopenia in several individuals (ELEMENTS, COLORS, GREMLINGS, SAHMIYE and NASIIB), produced complications in AMATERASU (ITAJU2043) causing a pathologic folding fracture of her R humerus and a subluxation of the axillary joint (Figure 80).



Figure 79: R Femoral head absence in YAKU (A), PACHA (C) and Delphina (D). Pathologic folding fracture of AMATERASU R humerus and a subluxation of the axillary joint (B).

. Gastric problems are also frequent as diarrhoea caused by coccidias most of the time, nevertheless round and tapeworms have also cause watery faeces. Gastric obstruction/impaction was present in the DELPHINA (ITAJU 2047), BOQOR (ITAJU 2045), DHIRIIN (ITAJU 2046) and LH (ITAJU 2048) due to bigger size of chunk pieces for the age/size of the individuals accompany with tapeworms in the case of DELPHINA. In the case of JABARI (ITAJU 2068), BILANE (ITAJU 2069) and GASHAAN (ITAJU 2070) apart from an anti-coccidiostat, an antibiotic per 7 days was necessary due to presence of blood in several discharges.

Small skin wounds have sporadically been found in some of the cubs, GASHAAN (ITAJU 2070), DHIIRIN (ITAJU2046), LH (ITAJU2048) and in YAKU (2042) after an abscess in the inguinal part explode. Most of them healed after cleaning, disinfection and ointment/honey/cream topical application, and antibiotics in the abscess case.

Medical Examinations under anaesthesia

During this reporting period, CCF Somaliland performed a total of 36 medical examinations under anaesthesia and three surgical procedures on 19 individuals (13M, 6F, Table 39). The primary reasons for these procedures were due to orthopaedic, oral, neurological or respiratory issues. Other anaesthetic procedures were performed to allow further diagnostics or to perform health examinations that were not possible on conscious patients.

Table 39: Examination under anaesthesia during January to December 2021.

ITAJU	SEX	NAME	DATE	REASON FOR ANESTHESIA
1933	M	GUHAD	01-Jan-21	Thorough examination and diagnostic workup, including imaging and sample taking.
1842	F	FEATHER	19-Jan-21	Thorough examination and diagnostic workup, including imaging and sample taking.
1933	M	GUHAD	01-Feb-21	Light sedation for blood sampling and follow up tests.
2039	F	ARTEMIS	23-Feb-21	Thorough examination and diagnostic workup, including imaging and sample taking.
2039	F	ARTEMIS	25-Feb-21	Emergency exploratory laparotomy
1993	F	KUSH	28-Feb-21	Thorough physical exam, sample taking and diagnostic imaging.
1993	F	KUSH	02-Mar-21	Thoracentesis, thoracic X-rays, blood sampling for monitoring.
1933	M	GUHAD	03-Mar-21	Thorough physical exam, blood sampling for monitoring and skin sample taking for diagnostics.
1999	M	FREYA	19-Mar-21	Emergency thoracentesis
2013	M	YASIR	12-Apr-21	Seizure therapy infusion
1950	F	JANET	01-May-21	Thorough physical exam, blood sampling and diagnostic imaging.
2001	F	SIF	20-May-21	Emergency diagnostic imaging due to possible fracture, thorough physical exam and fracture stabilization.
2007	M	ASTUR	26-May-21	Sample taking, physical exam, blood sampling and body measurements taking.
2001	F	SIF	04-Jun-21	Orthopaedic assessment, recast and x-rays
2011	M	HANUMAN	08-Jun-21	Wound management
1999	M	FREYA	24-Jun-21	Emergency thoracentesis
2001	F	SIF	02-Jul-21	Orthopaedic assessment, recast and x-rays
1984	M	DARTH	05-Jul-21	Orthopaedic examination and diagnostic x-ray of the hip joint and right femur. Together with an ophthalmic examination with fluorescein.
2038	M	APOLLO	10-Jul-21	Radiographs and replace IV catheter
2001	F	SIF	18-Jul-21	Orthopaedic assessment, cast removal and x-rays
1999	M	FREYA	19-Jul-21	CT scan for better diagnosis
1944	M	JOHNY	24-Jul-21	Emergency oral cavity examination
2004	F	JALEELO	09-Aug-21	Oral examination
1950	F	JANET	23-Sep-21	Emergency radiographs for suspected fracture of calcaneus. Bandage and external fixation.
1950	F	JANET	01-Oct-21	Bandage change and radiographs
2038	M	APOLLO	02-Oct-21	Fine Needle Aspiration (FNA), ultrasound and Euthanasia

1950	F	JANET	06-Oct-21	Orthopaedic surgery to correct the calcaneus fracture.
1984	M	DARTH	07-Oct-21	Orthopaedic surgery to correct and alleviate his pain. And corrective surgery of prepuce adhesion to the penis.
2004	F	JALEELO	12-Nov-21	Biopsy + cytology
2068	M	JABARI	24-Nov-21	Emergency oral cavity examination due to asphyxiation
1962	M	EMMET	07-Dec-21	Oral inspection and dental radiographs.
1961	M	RAJO	07-Dec-21	Oral inspection and dental radiographs.
1940	M	MAX	19-Dec-21	Veterinary workup due to neurological and orthopaedic signs.
1936	M	ORION	19-Dec-21	Veterinary workup due to neurological and orthopaedic signs.
1940	M	MAX	22-Dec-21	Meningitis test was required, CSF
1940	M	MAX	25-Dec-21	Placement of nasogastric tube for feeding purposes

Orthopaedic surgeries were performed to correct a calcaneus fracture in JANET (ITAJU 1950), and to alleviate pain from an old fracture and poor femoral head development in DARTH (ITAJU 1984).

JOHNNY (ITAJU 1944) required an emergency anaesthesia to perform an oral examination; he presented with difficulties closing the mandible and a reduced ability to eat. During the procedure, a camel trachea was found to have encircled his tongue, constricting the muscle and causing necrosis of the ventrolateral part of the tongue. The camel trachea was removed, and the tongue was debrided.

The anaesthesia of APOLLO (ITAJU 2038) was performed to take a Fine Needle Aspiration (FNA), perform an ultrasound examination, and reassess the welfare of the animal depending on the results of the examination. A poor prognosis was concluded, due to aspiration of excessive fluid from the kidneys (> 300ml), extravasation of renal fluid to the abdominal cavity, and biochemistry showing renal and liver failure; the decision was made to euthanise Apollo during the procedure.

Due to neurological and orthopaedic signs in several individuals, workups were performed on MAX (ITAJU1940) and ORION (ITAJU 1936). Investigations and diagnostics performed in Somaliland did not confirm a possible cause of the symptoms. Radiographs showed no abnormalities, CBC and Biochemistry AMY elevated but no other abnormalities, Abdominal ultrasound identified mild enteritis. Joint palpation revealed no abnormalities. Urine examination showed traces of blood and urine specific gravity was 1.020, IMMUNOCOMB FCoV results were S3 for both animals. Samples were sent to the US for further diagnostics.

Medical Examinations Without Anaesthesia

As part of the daily routine, the veterinary team conducted visual checks of all animals from distance. Most of the captive cheetahs at CCF Somaliland allow human contact due to the high exposure to humans from such a young age, in turn this allows the veterinary team to perform basic close-up visual examinations, administer vaccines, and give treatment without anaesthesia. Depending on the individual temperament and the type of medical procedure, some of the animals are examined and treated without anaesthesia. Cubs and adults that do not allow this were placed into squeeze cages when needed to receive treatment (injections or fluid therapy). Most cubs have been accustomed to being touched in the neck, shoulder blade and base of the tail area while feeding, with the intention of being able to give injections or medications easily when needed. As much as possible, individuals have been trained to go into a squeeze cage, and undergo conditioning for medical purposes, such as physical assessment, voluntary blood collection, radiographs and others.

Medical Conditions in Captive Cheetah

Calicivirus and Herpesvirus

During early 2021 CCF Somaliland dealt with a Feline Calicivirus outbreak in almost all cubs (28 cubs in total, 12 M and 16 F, Table 40).

Table 40: Animals affected during the Feline Calicivirus outbreak at the beginning of 2021.

ITAJU	Sex	Animal
1993	F	Kush
1994	F	Zero
1996	M	Major
1997	M	Serge
1998	M	Frigga
1999	M	Freya
2001	F	Sif
2002	F	Sol
2003	F	Galiil
2004	F	Jaleelo
2005	F	Kariir
2008	M	Idris
2009	F	Elba
2012	F	Ayaan
2013	M	Yasir
2015	F	Teresa
2027	M	Amin
2028	M	Amir
2029	F	Olivia
2031	F	San
2032	M	Link
2033	F	Zelda
2034	M	Mars
2035	M	Pluto
2036	F	Saturn
2037	F	Venus
2038	M	Apollo
2039	F	Artemis

The first signs were observed in Venus (ITAJU 2037) on the 28 January 2021. Overall, cubs were less active, developed mouth sores involving tongue, gums, and palate; cubs were drooling, with lip smacking movements, reluctant to eat and some ate slowly. Some individuals were more susceptible and developed complications such as bacterial infection in the mouth and a couple of them developed pneumonia (Kush ITAJU 1993 and Freya ITAJU 1999).

The cubs without the previously mentioned complications received palliative therapy depending on each case that included subcutaneous fluid therapy, pain medication, probiotics and nutritional supplementation (vitamins and amino acids). These individuals recovered from the disease after approximately 15 days.

The cubs that developed mild oral bacterial infection (fetid odour in mouth) were treated with antibiotics and recovered favourably from all ailments (Kush ITAJU 1993, Major ITAJU 1996, Serge ITAJU 1997, Vicki 2 ITAJU 1995, Zero ITAJU 1994).

Fifteen and 21 days after being apparently recovered from Calicivirus infection, Kush ITAJU 1993 and Freya ITAJU 1999 respectively developed respiratory signs such as laboured breathing and coughing. In addition, Kush presented anorexia and mild depression. Both cubs developed pleural effusion. Unfortunately, Kush died during thoracentesis procedure. Freya recovered after thoracentesis and intensive medical treatment but one of her right lung lobes was observed with damage in the thoracic radiographs as a sequel of her pneumonia. In late June 2021, Freya developed pleural effusion again and has been under treatment since then. A CT scan was performed on July 2021, showing a probable parasitic cyst or abscess in the middle lobe at the sternum (Figure 81).

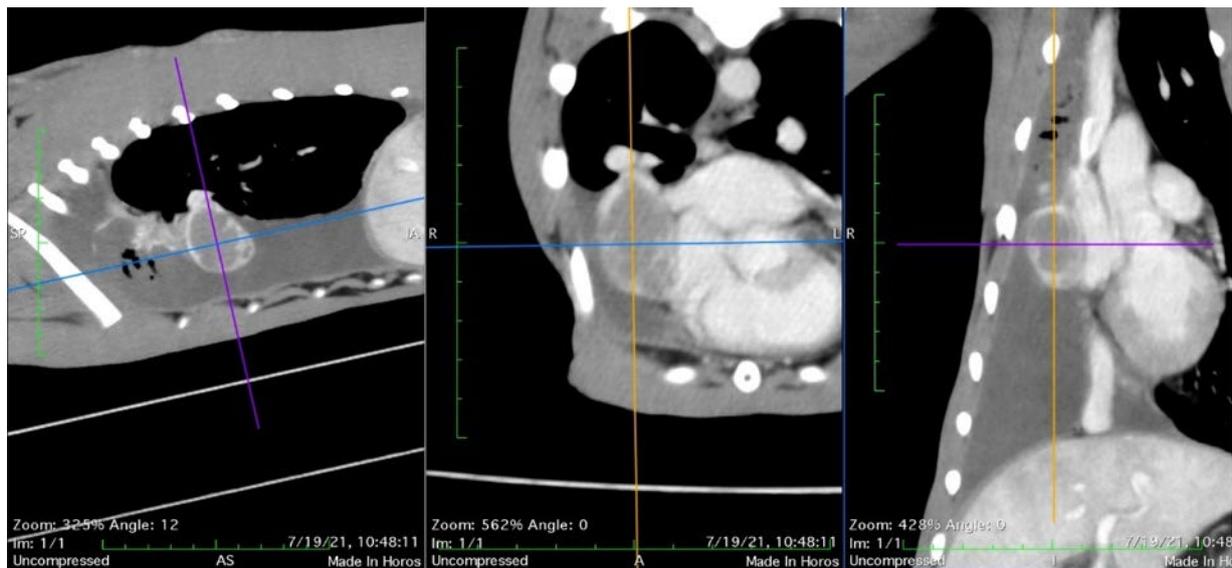


Figure 80: Freya (ITAJU 1999), CT scan photos from thorax cavity.

In early August 2021, Feline Stomatitis was found in JALEELO (ITAJU2004) during an oral examination under anaesthesia, lesion match secondary lesions caused by chronic Calicivirus, Herpesvirus or secondary chlamydia infection.

In the middle of September 2021 CCF Somaliland dealt with a possible Feline Calicivirus outbreak in both SHs. This has not been confirmed by serology or other diagnostic techniques, but the clinical signs and development point to possible secondary chlamydia infections due to calicivirus or/and herpesvirus were present. The first signs were observed in VICKI II (ITAJU 1995) on 11 September 2021 -- she started with repetitive lip-smacking movements, slightly decreased appetite and tongue ulcers were observed after a couple of days. Her sibling (MAJOR ITAJU 1996, SERGE ITAJU 1997, ZERO ITAJU 1994) also presented tongue ulcers after a couple of days. A quickly visual assessment was performed in SH2 and SH3 identifying the Plants with similar clinical signs: JALEELO (ITAJU 2004), KARIIR (ITAJU 2005) and GALIIL (ITAJU 2003). Both groups were treated with antibiotics (amoxicillin + clavulanic acid) per 14-21 days until the complete resolution of the ulcers. Due to the possible outbreak, a booster vaccination of Fel-O-Vax + Calicivirus was perform in the rest of the 47 captive cheetahs.

In the case of JALEELO (ITAJU 2004) she was treated with Marbofloxacin for 3 weeks due to possible resistance to amoxi-clav. There was a reduction of size and inflammation of the ulcers, but it was decided to change antibiotic to cefazolin for 10 days. After still no complete resolution, an examination under anaesthesia was required for better diagnoses.

Feline Coronavirus and FIP

Containment of Feline Coronavirus (FCoV) is a daily priority and ever-present challenge in the handling and management of the cheetahs. Biosecurity measures include use of foot baths and disinfection of clothes, footwear and hands before and after entering to enclosures. Zonal changes have been made, having identified high FCoV shedder individuals or groups in SH2, and assigned specific staff members to work in the respective SHs. However, despite all efforts the virus has continued to spread. Certain individuals in our “clean area”, SH3, tested slightly positive in rapid test IMMUNOCOMB FCoV after two major events: the transfer of a group of individuals (Serge group) from SH2 to SH3; and a change of meat management/diet preparations from SH1 to SH2 meat preparation area. Therefore, surveillance and monitoring the animals with regular sampling and testing is essential. This allows evidence-based decision making for the management of the groups and individuals.

Despite all the efforts, there have been cases of sick cheetahs associated to FIP this year (Moxie ITAJU 1965, Feather ITAJU 1842 and Guhad ITAJU 1933), which presented very high serum titers for FCoV. These cases are going to be briefly described below in this document, all of them were euthanised due to debilitating health. The results for FIP from WADDL and the histopathology reports confirmed that the three of them were positive.

Pulmonary/Respiratory Problems

FREYA (ITAJU1999) experienced recurring pleural effusion due to a possible parasitic cyst on the thoracic cavity diagnosed by a CT scan. After a long course of antibiotic and diuretic treatments, the patient has remained stable with no recurrence of pleural effusion, no dyspnoea, no sneezing, and no coughing for several months. Nevertheless, R caudal lung lobe appears abnormal in radiographs with suspected consolidation. Periodic x-rays are still being performed and the patient is constantly being monitored.

Digestive Problems

Many of the captive cheetahs under our care have developed various gastro-intestinal problems. Some of them were present before their arrival to CCF, while other issues started since arrival and have been sporadically observed.

During January 2021, undigested meat was observed in faeces of a groups of cubs, faecal tests had been negative for parasites and routine deworming is carried out in all cheetahs anyway. By recommendation of our consultant vets, treatment for gastritis was initiated in all the cubs as one of them initiated (FRIGGA ITAJU 1998) and after some days, the rest followed the same pattern (FREYA ITAJU 1999, SIF ITAJU 2001, SOL ITAJU 2002). Treatment was finished and signs resolved but unfortunately this group was affected by Calicivirus just after having recovered from the gastrointestinal ailments.

In late April 2021, some individuals of another group of cubs presented mild signs of gastrointestinal disturbances. TERESA (ITAJU 2015) presented anorexia and ate slowly, received treatment and signs resolved but undigested meat in faeces started to appear in all individuals of her group (AYAAN ITAJU 2012, SAN ITAJU 2031, LINK 2032 and ZELDA ITAJU 2033). Frequent faecal testing resulted negative for parasite presence. Pancreatic enzymes were added in their diet, monitoring and selecting their diet to offer more digestible pieces was established.

In early June 2021, Isospora spp. oocysts and possible Echinococcus spp. were found in faeces of at least three individuals. Treatment with praziquantel 5mg/kg SID with a second dose after 21 days was implemented for all the cheetahs in the safe houses and this will be repeated every 3-4 months.

During April and May 2021, anorexia and vomits were observed in a couple of cubs (Mars ITAJU 2034, Elba ITAJU 2009) that also presented considerable amount of fur in their faeces, this was associated with gastritis due to fur ingestion. They were treated with subcutaneous fluids and gastroprotectant drugs, signs resolved after 2 to 5 days of treatment.

In the second semester, the most common gastro-intestinal problems were diarrhoea / watery faeces from score 4-5 and sporadically vomit/regurgitation. The groups more affected with diarrhoea were KURRO group and ORION group, followed by intermittent problems in EMMET group and JJM group. Another problem observed was the presence of undigested meat in the faeces, with FFSS group being most affected.

Direct and flotation faecal analyses have been performed, with no parasites found in the majority of the examinations. Diff-Quik stains of fresh samples were also performed to search for Clostridial spores (possible *C. perfringens*) but they were negative on all occasions. On a few occasions a moderate to severe infestation of coccidias were found and treated as recommended (Toltrazuril 15-30mg/kg per 3 consecutive days).

Gastritis and Feline Inflammatory Bowel Disease (IBD) were another of the problems observed in JOHNNY (ITAJU 1944) at the end of November 2021. Different gastric treatment has been trialled in an attempt to improve and resolve the conditions mentioned above. One of them (Probiotic, Lansoprazole and Clarithromycin) helped with the undigested meat from FFSS group only, but none of the other regimens have helped with the diarrhoea.

Oral/Dental Problems

EMMET (ITAJU 1962) – during oral inspection under anaesthesia, teeth 304 and 404 were identified to be missing, 404 with open dental canal, palate and tongue erosion fracture canine. RAJO (ITAJU 1961) lower right canine unwrapped, during oral inspection under anaesthesia a moderate to severe enamel degeneration of several molars and lower R canine plus a tongue erosion was found. LEO (ITAJU 1928) had a small tongue ulcer that resolved completely after 7 days of antibiotic treatment.

Some animals had small tongue ulcerations, feline stomatitis or small abrasions in the oral cavity explained previously in the section of Calicivirus and Herpesvirus due to their causative pathology.

Ophthalmic problems

MARS (ITAJU 2034) and DARTH (ITAJU 1984) underwent ophthalmologic examination including fluorescein testing to identify causes of abnormalities detected in the eyes such as watery eye or eye squinting. In some cases, superficial corneal ulcers were detected, and animals successfully recovered after treatment.

Nevertheless, DARTH got a new corneal ulceration treated with tetracycline ophthalmic ointment for 3 weeks, which fully resolved few days before ending the treatment.

Nictitating membrane protrusion

Since Nov 2021 a total of 12 individuals have been affected by a bilateral protrusion of the nictitating membrane (9F, 3M, Table 41) – the cause is unknown. The degree of protrusion varies daily and, on some occasions, has been accompanied by diarrhoea in the enclosures where one or more animals had become affected.

Improving hydration, giving an anti-inflammatory (meloxicam), putting eye drops or eye ointment did not lead to an improvement. By the end of the year just one animal AYAAN (ITAJU 2012) had completely resolved, however further testing is needed for a proper diagnosis and treatment.

Table 41: Individuals affected with of nictitating membrane protrusion.

ITAJU	SEX	NAME	DATE OF START	DATE OF RESOLUTION
2012	F	AYAAN	1-nov-21	15-Dec-21
1837	F	MIST	6-nov-21	ongoing
2001	F	SIF	9-nov-21	ongoing
2002	F	SOL	20-Nov-21	ongoing
1998	M	FRIGGA	8-Dec-21	ongoing
1999	M	FREYA	30-Nov-21	ongoing
1839	F	MOONLIGHT	14-Dec-21	ongoing
1838	F	LITTLE STAR	20-Nov-21	ongoing
2031	F	SAN	7-Dec-21	ongoing
2033	F	ZELDA	22-Dec-21	ongoing
2032	M	LINK	23-Dec-21	ongoing

Skin problems

MEEKO (ITAJU 1960) had raised circular mass of approximate diameter of 1-2 cm on left side of chin – mobile firm consistency, within subcutaneous layer, not attached to other structures. Inflammatory cells were found with in-house cytology – the decision was made not to surgically excise the mass at the moment.

Traumatic / Orthopaedic / Neurological problems

Often cubs, as MARS (ITAJU 2034) and VENUS (ITAJU 2037) are examined due to lameness that usually resolves after a couple of days, sometimes requiring pain medication and/or restriction in smaller enclosures. Radiographs were taken on VENUS while conscious to rule out fractures or other musculoskeletal ailments.

In occasions, mild abrasions were detected in cheetahs associated with trauma with the enclosures, playing or fighting between them. Some individuals presented moderate to severe skin lesions that required topical treatment and/or partial wound closure (LIBBO ITAJU 1926, SOL ITAJU 2002, HANUMAN ITAJU 2011; Figure 82). Others, as SAN (ITAJU 2031) have been treated chronically for wounds that they had since their arrival with satisfactory recovery (Figure 82).

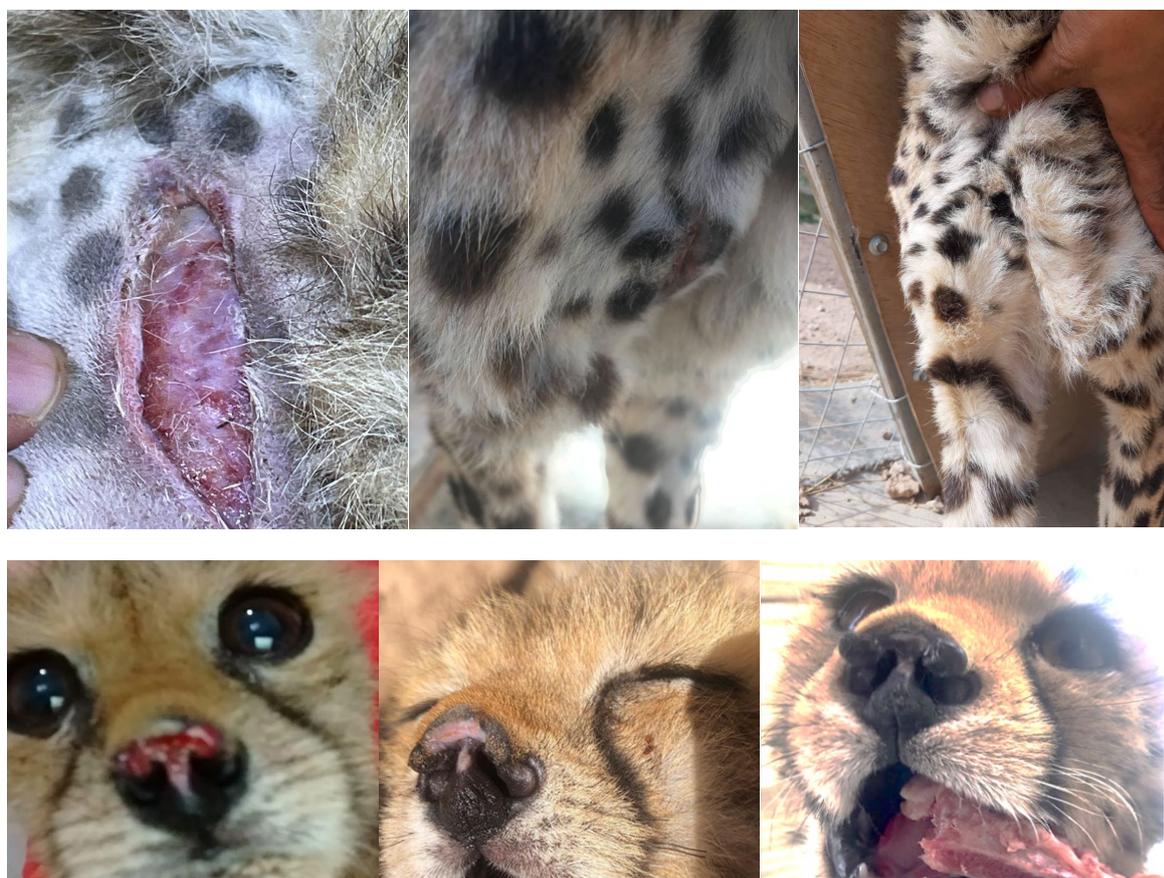


Figure 81: SAN (ITAJU 2031), wound improvement over time after chronic wound treatment; HANUMAN (ITAJU 2011), wound healing by secondary intention after partial wound closure and topical treatment.

In late June 2021, APOLLO (ITAJU 2038) presented gastrointestinal (GI) signs such as anorexia, decreased GI motility and abdominal distension along with severe lameness in left hind limb. Abdominal X rays showed increased gas in the GI tract (Figure 83a). After medical treatment gastrointestinal signs resolved but lameness persisted. Radiographs revealed changes suggesting inflammatory reaction in the left stifle joint (Figure 83b). Anti-inflammatory treatment was initiated and adjusted according to the progress of the patient, follow-up radiographs in early July 2021 revealed periosteal changes consistent with osteomyelitis (Figure 83c) and

antibiotic treatment was initiated. The musculoskeletal affection and the infection are associated with a possible traumatic injury. Probably the gastrointestinal initial condition was secondary to musculoskeletal pain.

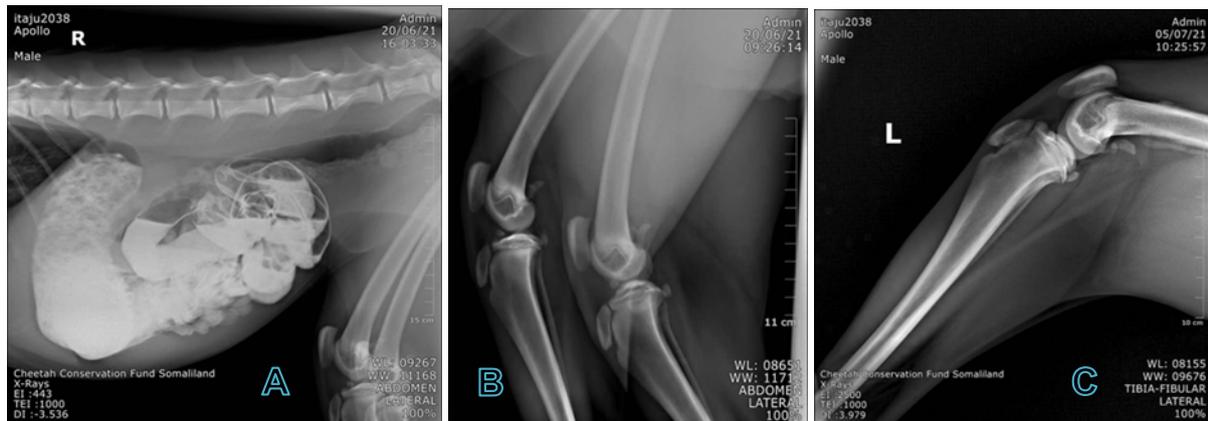


Figure 82: APOLLO (ITAJU 2038), abdominal contrast radiography revealing increased intestinal gas content (A), radiographic changes observed in the left stifle joint suggesting inflammatory reaction (B) and periosteal reaction in distal left femur suggesting active osteomyelitis (C).

SIF (ITAJU 2001) had a complete transversal fracture of the radius and ulna of the right front limb in late May 2021, the fx was corrected with external fixation/ fiber glass cast, it had to be changed several times during the healing process. After complete ossification of the fx she received physiotherapy for two months (originally occurred on 20 May 2021, cast removal on the 18 July 2021) (Figure 84).



Figure 83: SIF (ITAJU 2001) complete transversal fracture radius and ulna of the right front limb.

SAN (ITAJU 2031) had a small contact abrasion in the middle portion of the nose, which was successfully treated (daily cleaning + antibiotic cream) and completely healed after some weeks. DUMA (ITAJU 1939) and CLOUD (ITAJU 1836) are constantly being monitored – no changes have been noticed in this semester.

DARTH (ITAJU 1984) and JANET (ITAJU 1950) were treated with gabapentin, tramadol, meloxicam and clindamycin (+ amoxi-clav for Janet due to the open fracture) after their respective orthopaedic surgeries. DARTH's due to a Chronic femoral head fracture/luxation, with marked dorsal displacement (Smaller head and misshapen compared to the contra lateral side) (Figure 85). The surgery has resulted in relief of the pain and discomfort that he previously experienced, although the gait has not improved and now has a more lateral movement. Nevertheless, JANET's surgery was not as successful – her fracture is a non-union and further surgery will be required to rectify this.



Figure 84: DARTH (ITAJU 1984) x-rays previous to the surgery. Blue line: shows the pelvis is in the proper position. Red: the normal hip in its proper position. Yellow: the top of the femur in the affected limb with significant dorsal advancement. Blue circle shows a normal joint, while red circle shows the affected limb is not connected to the joint. And over time the joint may also change its shape.

In the middle of December 2021, different animals from different enclosures but from the same safe house (SH2) presented varying neurological signs with possible multifocal involvement. These signs were observed in ORION (ITAJU1936), MAX (ITAJU1940), JAMES (ITAJU 1943), MICKEY (ITAJU 1945), JOHNY (ITAJU 1944), KARIIR (ITAJU 2005), GALIIL (ITAJU 2003), JALEELO (ITAJU 2004), with presentation being more severe in some individuals compared to others.

The signs observed were:

- Vestibular signs: Head tilt, unbalanced, wide based forelimb stance
- Ataxia: Cerebellum / Spinal
- Seizures
- Mentation variability
- Vision: Anisocoria

The same animals had some orthopaedic issues as well as: Generalised pain (due to polyarthritis, myositis, nutritional or panosteitis) and rigidity/stiff gait.

Deaths, Euthanasia, and Necropsies

Between 1 January to 31 December 2021 seven of the cheetahs at CCF Somaliland came to pass and one individual did not make it to the facilities (Table 42).

Table 42: Summary of animals that passed away in 2021.

ITAJU	Name	Death / Necropsy	Age	Cause of death
1965	MOXIE	14-Jan-21	2 yrs. 5 mth	Euthanasia- Poor condition (hypothermia, obtundation, suspected intussusception and sepsis). Ongoing chronic disease with poor prognosis.
2039	ARTEMIS	25-Feb-21	2 yrs 4 mth	Euthanasia - Poor prognosis. Severe lesions observed in organs during exploratory laparotomy.
1842	FEATHER	28-Feb-21	1 yr 5 mths	Euthanasia - Poor condition (prostration, uncontrolled limb movements). Chronic disease (lameness with progression to prostration, chronic intermittent diarrheas, hyporexia, anorexia, low body condition, poor response to treatments in last days) with poor prognosis.

1993	KUSH	2-Mar-21	7 mths	Severe pneumonia probably due to Calicivirus. Died during thoracentesis procedure due to pleural effusion.
2013	YASIR	12-Apr-21	9 mths	Euthanasia - Poor prognosis and poor response to treatment, epilepsy of unknown cause.
1933	GUHAD	26-Apr-21	12 mths	Euthanasia - Poor condition (severe dyspnea and weak pulse). Ongoing chronic disease with poor prognosis.
2040	PUNTLAND	25-Jul-21	5-6 mths	Death - Poor prognosis, severe dehydration >15%, cachectic. Histopathology diagnosis was Oxalate nephrosis
2038	APOLLO	2-Oct-21	1 yr 8 mths	Euthanasia - Poor prognosis. Aspiration of excessive fluid from the kidneys (> 300ml), extravasation of renal fluid to the abdominal cavity, and biochemistry showing renal and liver failure
2003	GALIIL	29-Dec-21	2 yrs	Death - Poor prognosis, hypothermia, severe panleukopenia, biochemistry TBIL and AMY elevated. Histopathology not conclusive, leading to metabolic or intoxication problems.

- MOXIE (ITAJU 1965):** Moxie presented musculoskeletal signs (lameness and hip swaying) and intermittent hyporexia since last year, however nothing was observed in physical examination or radiographs. In early January 2021 she also presented undigested meat in faeces. Supportive treatment was given including fluid therapy, nutritional supplements, gastroprotectants and anti-inflammatory drugs. Intensive care was established because her condition was worsening, unfortunately her condition continued deteriorating presenting hypothermia, obtundation, suspected intussusception and probable sepsis. Euthanasia was decided due to poor prognosis. Necropsy revealed fibrinous plaques on the surface of abdominal and thoracic organs, enlarged lymph nodes, hepatomegaly and ileocaecocolic intussusception. Retrospective analysis of serum revealed high FCoV antibody titers. FIP is highly suspected in this case with secondary intussusception and probable sepsis as complicating affections. Results from veterinary histopathologic analysis are pending.
- ARTEMIS (ITAJU 2039):** In late February 2021 Artemis was reported to be bloated, radiographs revealed ascites, white/red opaque fluid was aspirated. Analysis of the fluid revealed chylous effusion. Double antibiotic scheme and supportive treatment was initiated. Initial improvement was seen but then coughing and dyspnoea was observed. Almost 800ml of white/red opaque fluid were aspirated from thorax with patient under sedation, then exploratory laparotomy was carried out as decided by the veterinary team and the consultant vets. Severe lesions were observed in organs including adhesions throughout abdomen and around all organs, multiple lacerations (tears) in liver and fibrinous adhesions in subcutaneous abdominal tissue. Transurgical euthanasia was decided due to grave prognosis. Acute splenitis and perinephric purulent inflammation were reported in the results of the analysis from the human pathologist where samples were sent. Earlier in February 2021 she presented signs compatible with Feline Calicivirus, so this is suspected to be implicated in the latter severe condition of the patient. Results from veterinary histopathologic analysis are pending.
- FEATHER (ITAJU 1842):** Feather was under treatment with corticosteroids since November last year after having detected low body condition score and having received antibiotic therapy for inflammatory changes in blood tests. Attempts to wean her from corticosteroids were made but Feather presented hyporexia and hypoactivity every time the dose was reduced. Despite various antibiotic treatments, inflammatory changes persist in blood tests. In early February 2021 mild dragging of right hindlimb and loss of balance when turning were detected along with Hypertrophy of thigh musculature in left hindlimb, atrophy of thigh musculature in right hindlimb. Nothing abnormal was detected in radiographs taken with conscious patient and no pain was detected when palpating lumbar region or distal limb. Supportive treatment was initiated but Feather's condition deteriorated, suddenly one day she was observed with prostration, uncontrolled limb movements and abnormal mentation. Euthanasia was decided due to her poor condition. Necropsy revealed severe hepatomegaly and probable granulomatous lesions in both kidneys. Mild acute hepatitis, acute intestinal nephritis and pulmonary alveolar proteinosis without bacterial presence were reported in the results of the analysis from the human pathologist where samples were sent. Retrospective analysis of serum revealed high FCoV antibody titers (maximum reported: 1:15625). Dry FIP is highly suspected in this case. Results from veterinary histopathologic analysis are pending and immunohistochemistry for FIP was confirmed positive by WADDL.

- **KUSH (ITAJU 1993):** In late February 2021 (3 weeks after apparently having recovered from Calicivirus infection) Kush was reported to be breathing fast, with anorexia and mild depression. Since she was not very manageable, she was lightly sedated for thoracic X-rays, she received injectable antibiotic therapy, dexamethasone SC fluids and was reversed. Intensive therapy continued including antibiotic therapy, anti-inflammatory drugs, and nebulisations. Her radiographs showed thoracic fluid and because she did not show improvement with medical treatment, mild sedation and thoracentesis was attempted two days after first signs were reported. Unfortunately, Kush presented cardiorespiratory arrest during thoracentesis procedure, cardiopulmonary resuscitation was initiated but she did not respond. During the necropsy, lung lesions were observed. Acute alveolar haemorrhage was reported in the results of the analysis from the human pathologist where lung samples were sent. This lesion is suspected to be secondary to Calicivirus infection.
- **YASIR (ITAJU 2013):** Yasir presented neurological signs since his arrival at the CCF's Safehouse (i.e. tracking objects with eyes inconsistently, abnormal stance, sometimes slow reaction to noises). Three months later he presented behavioural changes (biting conspecifics and sudden mood changes). Impaired eyesight progressed with time; muscle twitching was detected in various body parts. Several tests were carried out but no definite diagnosis could be determined. Treatment for toxoplasmosis was given and a more complete nutritional supplementation was initiated. Yasir did not improve and started presenting seizures that were refractory to treatment schemes with gabapentin and phenobarbital. His condition deteriorated and he presented cluster seizures with very evident muscular spasms. Poor prognosis was established and euthanasia was decided after two days of antiepileptic therapy with constant intravenous infusion without improvement. Necropsy did not reveal any obvious anomaly, results from histopathologic analysis are pending.
- **GUHAD (ITAJU 1933):** Guhad was reported with one episode of hyporexia in late December 2020 and was sedated for a complete work up on 1 January 2021. Blood tests revealed inflammatory changes and antibiotic treatment was initiated. Monitoring tests revealed persistent inflammatory changes with tendency to increase. Antibiotic was changed but Guhad presented hypoactivity, low body condition despite good appetite and slow movements. Monthly follow up work ups were carried out and in March 2021, skin alopecic areas were detected along with an infection in the tip of the fingers of the forelimbs. Antibiotic therapy was changed accordingly and lesions were cleaned during sedation, samples were also collected. Guhad presented peripheral vestibular signs after his last sedation, supportive therapy was initiated and patient presented mild improvement. Guhad's condition slowly deteriorated despite treatment and suddenly one day he was observed with severe respiratory effort, weak pulse and obtundation. Euthanasia was decided due to his poor condition. Necropsy revealed pulmonary edema, hepatomegaly with subcapsular haemorrhages and probable granulomatous lesions in both kidneys. Retrospective analysis of serum revealed high FCoV antibody titers. Dry FIP is highly suspected in this case with neurological and ocular affection. Results from histopathologic analysis are pending.
- **PUNTLAND (ITAJU 2040):** Poor prognosis, severe dehydration >15%, cachectic. Histopathology showed that it is one of the worst cases of oxalate nephrosis, although kidney damage is not severe. Binding of calcium by the crystals could have significantly reduced blood calcium levels which would have made the cheetah weak. Moderate to marked acute tissue congestion and pulmonary edema were present. Extremely large numbers of oxalate crystals in the renal tubules are associated with mild renal tubular epithelial necrosis, and moderately dilated, variably regenerative tubular epithelium. Associated findings include moderate numbers of oxalate crystals in bladder blood vessels and on the mucosa; moderate acute diffuse cerebral edema. In addition, moderate chronic renal disease (cortical and medullary rays of interstitial fibrosis, mild tubular atrophy and very mild multifocal subacute lymphoplasmacytic interstitial nephritis); mild hepatic veno-occlusive disease; moderate neutrophilic and histiocytic interstitial pneumonia; moderate diffuse likely stress-induced adrenocortical hyperplasia; moderate focal acute neutrophilic and necrotising enteritis were present. Incidental findings include infiltration of the skeletal muscle, tongue and myocardium with small numbers of adipocytes; marked lymph node sinus histiocytosis and mild amyloidosis of post-reactive lymphoid follicles; marked pancreatic zymogen granule depletion (possibly due to recent anorexia); moderate splenic haemosiderosis.
- **APOLLO (ITAJU 2038):** Displayed signs of progressive chronic renal failure- polyuria, polydipsia, lethargy and depressed demeanour evident, especially in final 7-10 days pre-mortem. Anaesthetise for FNA where we found excessive fluid coming from the kidneys (> 300ml), extravasation of renal fluid

to the abdominal cavity, and biochemistry showing renal and liver failure; the decision was made to euthanise Apollo during the procedure. Multi-organ failure with end-stage renal failure. Based on biochemistry and imaging performed in the 2-4 weeks prior to death. Cannot rule out genetic or drug-induced causes, given history of prolonged antibiotic usage and death of sibling (ARTEMIS, ITAJU) in February 2021. The biggest feature found in the necropsy was left and right kidneys: grossly enlarged and fused together (significant adhesions), tissue friable, minimal differentiation between cortex and medulla. Profuse blood accumulation in both kidneys. Right kidney – 2 firm fluid filled capsules found in renal capsule

- GALIIL (ITAJU 2003): Acute onset of lateral recumbency, still responsive to noise but menace reduced to absent. White superficial spots on serosal surface of lungs (approx. 1mm diameter), some forming nodules in the interstitium, peribronchial following the main bronchi. Small intestines filled with orange liquid contents, possibly fibrinous inflammation, depletion of lymphatic zones (Peyer's patches). Two intestinal intussusceptions (possibly post-mortem). Ecchymoses in mucosal lining of urinary bladder. Eventual cause of death probably sepsis as congestion observed in multiple organs. Histopathology showed that Galiil had a terminal septicaemia. The cause of the underlying weakness and death is not clear, despite a full set of well-preserved tissues. The histology in these cases is as unrewarding as the clinical investigation and necropsy findings. There is no sign of feline infectious peritonitis (corona virus infection), herpes virus infection (skin or brain), calici virus infection, toxoplasmosis, cryptococcosis, neospora, cysticercosis, canine distemper virus infection, typical cheetah chronic kidney disease, oxalate nephrosis, transmissible spongiform encephalopathy or leukoencephalopathy. I saw no sign of rabies. There was no sign of enteritis, myositis, steatitis, encephalitis or pneumonia. The post-reactive lymphoid tissue may indicate a previous infection, but no sign of its location is visible. The weakness and death were likely due to a functional disorder, which pathology unfortunately is not a very useful tool for diagnosis. Functional lesions are frustrating to investigate; many toxins, metabolic or electrolyte disturbances, atypical reactions to drugs, and nutritional (excesses/deficiencies) do not cause specific lesions. Testing tissues for lead (or other traces of heavy metals).

Butchery inspections

During butchery inspection the veterinarians assess the organs and carcasses to prevent the spreading of potential zoonotic disease. The more common findings are parasitic cysts and abscess in liver and lungs of camels and goats. Filarias (round worms) were found constantly in goat livers. Hematomas and congestion in heart, kidneys and lungs were also observed. Lymphadenopathies with redness of all the musculature of the carcasses were a common feature from July to September.

In late September 2021, suspected tuberculosis lesions were observed in one of the three camel carcasses that we received. Ziehl-Nielsen stain and histopathology results were consistent with tuberculosis and none of those carcasses were used for consumption by the animals.

Summary of Cheetah Confiscations in Somaliland (2005-2021)

Cheetah Confiscations

A total of 183 (80M, 75F, 28U) cheetahs were confiscated in Somaliland between 2005 and 2021. The cubs ages were estimated at the time of arrival, and of the cheetah confiscations recorded, 74% (n=136) were 12 weeks and younger. The youngest cubs to be confiscated were 2 weeks old. Over half (60%; n= 109) of the cheetah cubs confiscated in the 16 years were between the ages of 6 and 12 weeks (Figure 86).

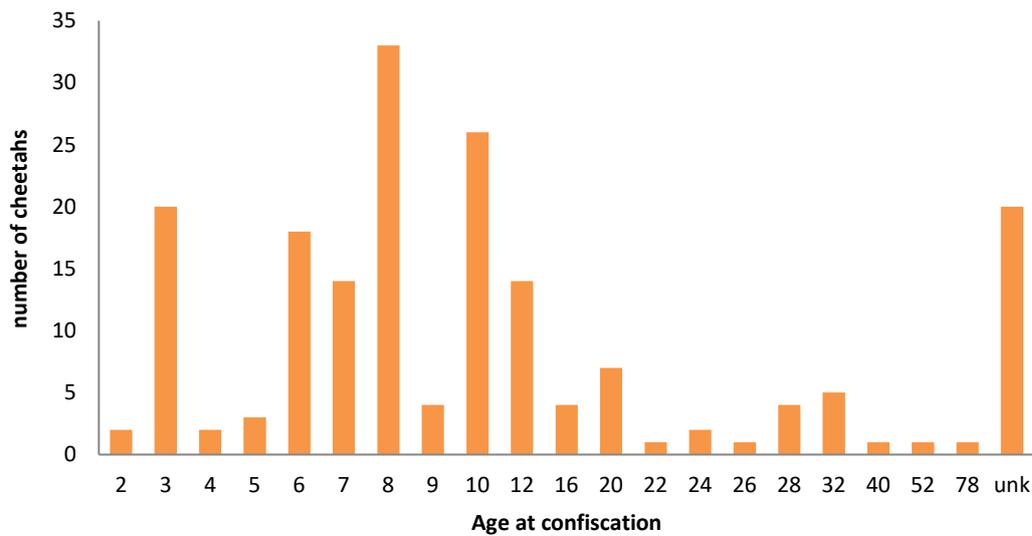


Figure 85: Age of cubs at time of confiscation.

Estimating the birth month of the cubs showed that 42% (n=77) of all confiscated cheetah cubs throughout the years were born between June and August, with August having the highest number of cubs (Figure 87). There appears to be two peak seasons for cheetah births (January-February and June – August), during which 61% (n=111) of confiscated cheetah cubs were born. Approximately half, (62%, n= 113) of confiscations happened between June and October, with the peak month being October.

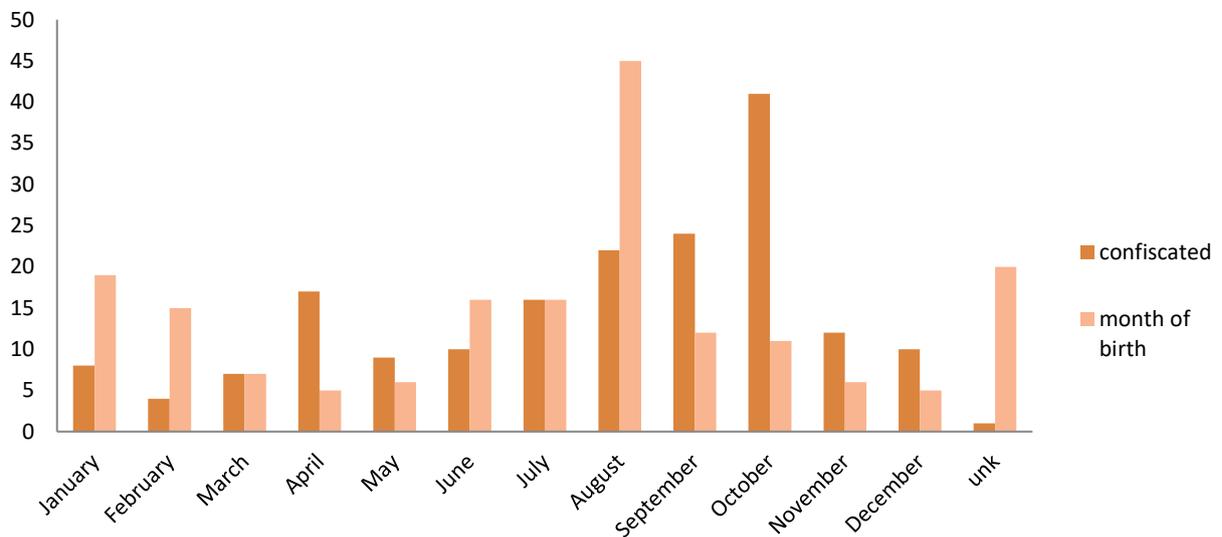


Figure 86: Number of cheetahs confiscated per month with estimated birth months in 2021.

The number of cheetahs confiscated has risen significantly from 2016 to 2019 (Figure 88). However, there was a decrease from 2019 to 2020 and from 2020 to 2021, which can be related to the outreach programme performed every year.

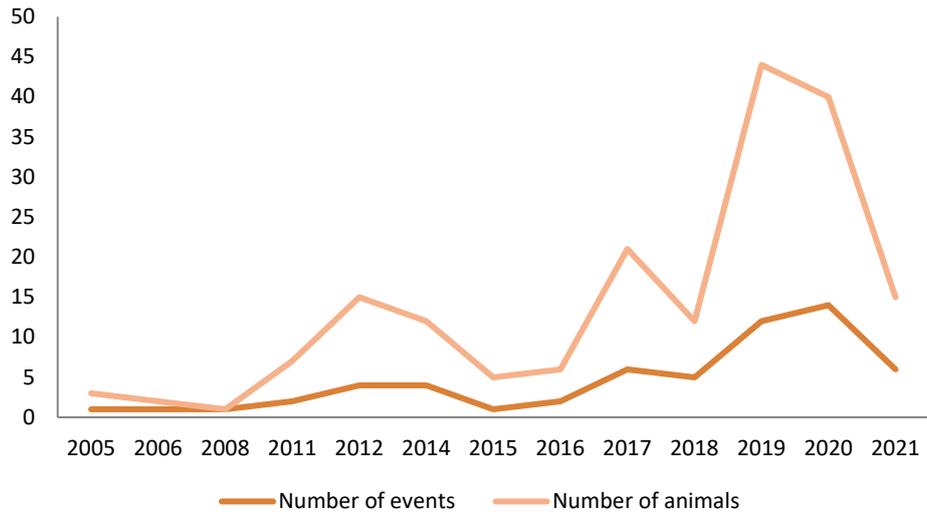


Figure 87: The number of confiscation events and cheetahs confiscated per year.

Cheetah Deaths

A total of 86 (29 M, 37F, 20U) cheetah deaths were recorded between 2006 and the end of 2021 (Figure 89). The highest number (28%; n=22) of deaths was recorded in 2019.

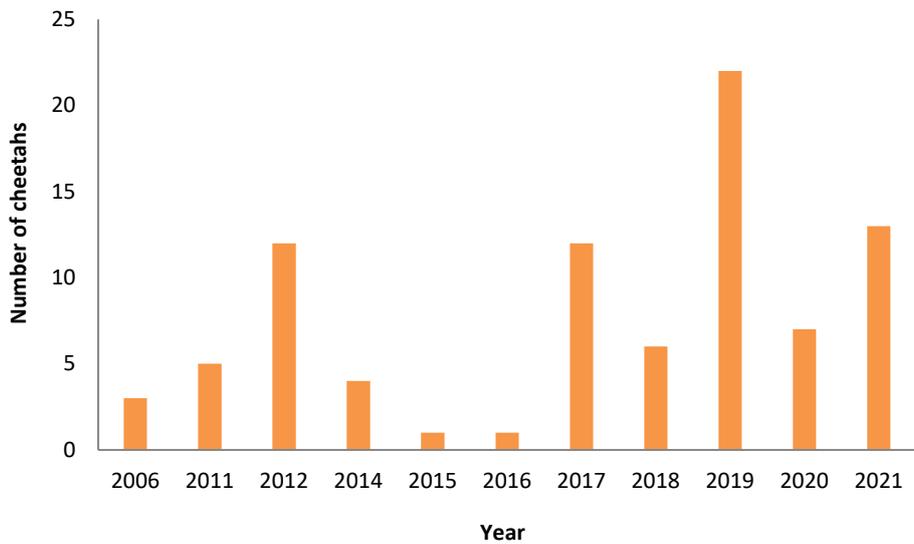


Figure 88: Number of cheetah deaths per year.

Live Cheetahs

At the end of 2021, there were 107 (54M, 46F, 8U) of the confiscated cheetahs alive. The highest number of live cheetahs were recorded in 2021 and 65% (n=70) of the live cheetahs were located at the Cheetah Conservation Fund in Somaliland (Figure 90). There are currently more males (59%) than females (41%) (Figure 90).

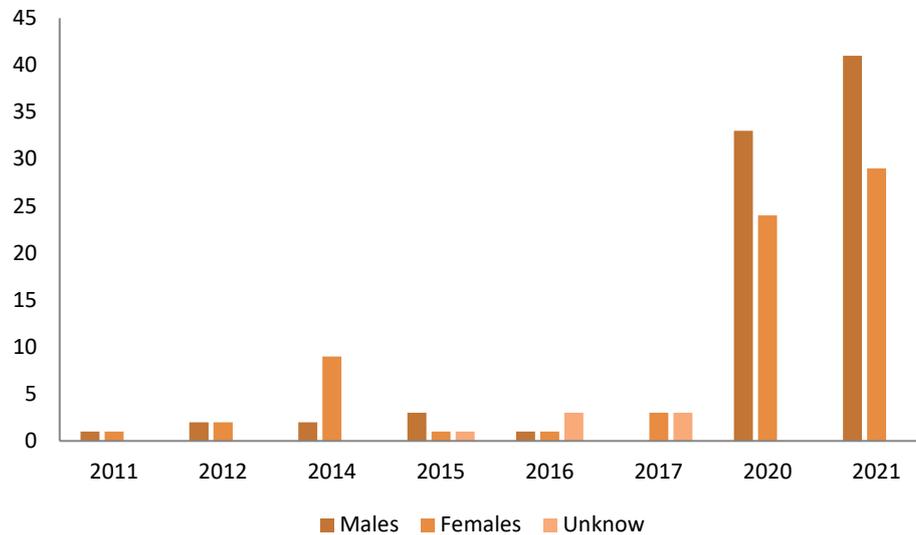


Figure 89: Number of live cheetahs by sex per year.

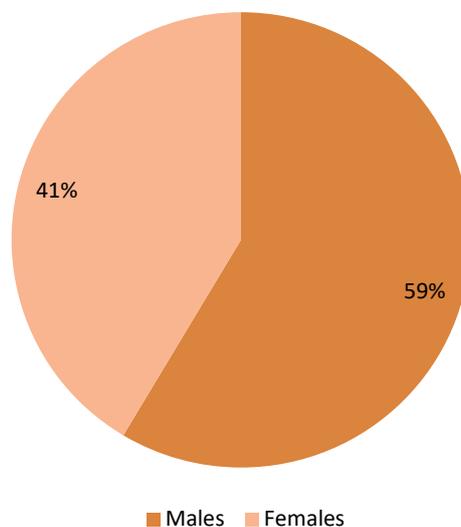


Figure 90: The percentage of live cheetahs by sex in 2021.

Developing capacity in Somaliland veterinarians

Beginning in April 2020, CCF SL local veterinarians have accompanied the MoECC Wildlife Officer on rescue missions involving intercepted cheetah cubs. The purpose of them tagging along is to provide emergency care to animals from the point of confiscation. CCF is working to deepen its involvement with the veterinary sector in Somaliland. With a growing need to build up local capacity in cheetah caregiving, CCF set out to train promising local livestock veterinarians in wildlife veterinary medicine and practice. CCF veterinarians, Dr. Karina Flores Pineda and Dr. Mahesh Bhatt along with Dr. Laurie Marker helped organise the training with help

from CCF part time Somaliland veterinarian Dr. Asma Bile and Dr. Ahmed Yusuf. Both the CCF Somaliland veterinarians also helped deliver the information and translate to the trainees.

Dr. Asma Bile, CCF Somaliland veterinarian and head of the Somaliland Women Veterinarian's Association (SOWVET), helped CCF identify eight candidates in Somaliland representing the different regions of the country for training. She also helped organise and deliver the training along with CCF Somaliland veterinarian Dr. Ahmed Yusuf, which took place from 12 - 14 February (Figure 92).

The following week, 19 - 21 February, eight trainees from the Somali Regional State of Ethiopia travelled to Hargeisa and participated in the same training workshop (Figure 92).

CCF plans to continue delivering training for veterinarians throughout Somaliland and Ethiopia as part of its mission.



Figure 91: CCF held trainings for Somaliland and Ethiopian livestock veterinarians utilizing the cheetah Safe House facilities and new CCF Training House compound.

CCF Somaliland Education and Awareness

In February and March, Dr. Marker spent two weeks in western Somaliland traveling to villages in the Awdal region where cheetah trade and human-wildlife conflict are known to occur. She visited with village elders, mayors and teachers, and she gave presentations at several schools in small towns (Figure 93). She also surveyed farmers and gave impromptu lectures in the towns for crowds of citizens. Dr. Marker travelled with a team from MoECC, which was led by its regional coordinator of Awdal, Khadar Yasin Aden and Mr. Mohamed Abdiqadir Department of Wildlife Conservation Representative in Awdal Region and was assisted by CCF's MSc intern based in Namibia, Emma Reasoner, Dr. Ahmed Yusuf, and CCF's operations assistant, Hamze Ahmed Yusuf, and the Director of Wildlife, Abdnassir Hussein who went on half the awareness trip. In addition, a representative from the Ahmod University travelled with the team, as well as a local free-lance photographer (Figure 94).



Figure 92: The awareness team.



Figure 93: CCF and the MoECC team visited a girl's school in Lughaya and a village in Bown, Somaliland, to raise awareness for Somaliland wildlife.

CCF Awareness Summary

Between 16 - 28 February 2021, an awareness campaign around Illegal Wildlife Trade and cheetahs was conducted in the Awdal region of Somaliland (Figure 95 and Figure 96) by the Ministry of Environment and Rural Development (MoECC) and the Cheetah Conservation Fund (CCF).

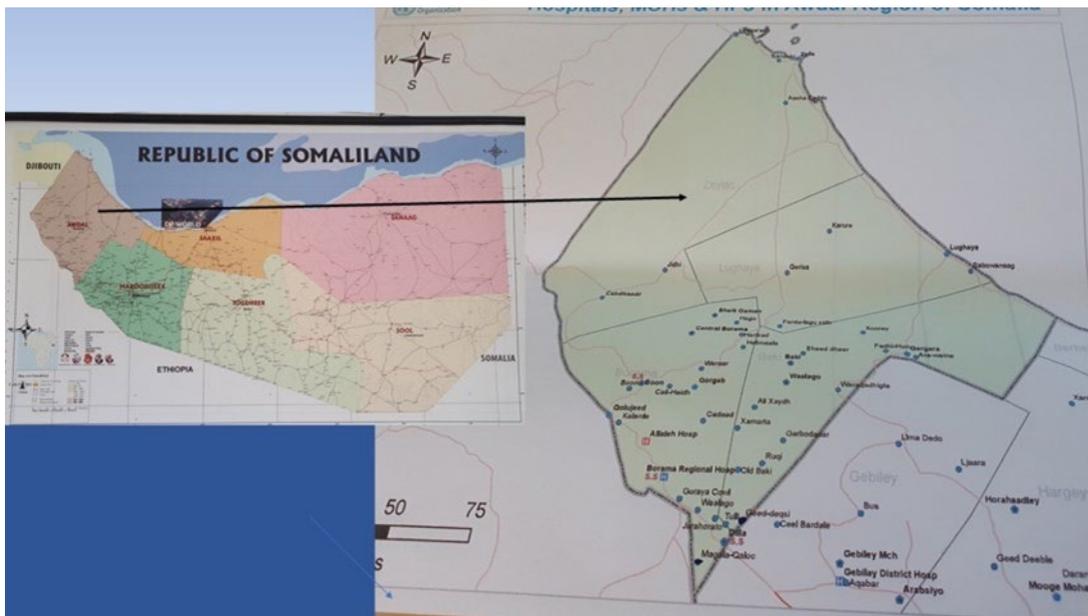


Figure 94: Awdal Region in relation to Somaliland.

The Awdal Regional Coordinator of Ministry Environment and Rural Development opened the campaign kick meeting and welcomed the CCF team and other wildlife stakeholders safeguarding around the region including decision makers, academic institution, researchers, faith leaders, and media reporters, and line ministries; “I am very happy to open this campaign kickoff as we are Awdal regional representatives, we warmly welcome this education and awareness campaign against cheetah illegal poaching of and trade, we were waiting this for long time fortunately we are happy to get this chance again”. Dr Laurie Marker, Cheetah Conservation Fund (CCF) Founder and Executive Director took the speech and she deeply explained the surrounding issues related to wildlife in general, and in particular the cheetah. Further the regional authorities including the Mayor and Deputy Governor declared that they will do everything to sacrifice for protecting, responding and supporting, and wish everyone who attended the camping kickoff to do their best and work with the ministry and CCF team.



Figure 95: Dr. Laurie Marker, CCF staff and various stakeholders at the awareness campaign around Illegal Wildlife Trade and cheetahs.

Finally, the General Director of Ministry of Environment and Climate Change concluded the campaign kickoff by stating that, “As a ministry we are trying to come up with an urgent plan focusing on wildlife conservations and enhancing the local communities to understand better about the surrounding issue to our wildlife. Therefore, this local community campaign will be part of empowering and to build capacity for wildlife saving, and from now the program has full permission to take place in Awdal region.”

Following the kickoff meeting, a needs assessment for the local communities was conducted by CCF using an expert opinion questionnaire survey. The objectives of this campaign were to raise awareness about the illegal wildlife trade to stop the trafficking of cheetahs and other wildlife in Somaliland. Other objectives were to

educate communities on managing habitat, conserving wildlife species, and management of livestock to prevent conflict with wildlife.

The region covered by the CCF Borama Awareness Campaign consists of 62 villages from the coastal villages to the city of Borama in Somaliland (See Figure 97 and Figure 98 below). CCF visited a total of 15 villages covering 16 primary locations in the various villages. A short oral expert questionnaire was conducted at each location, engaging elders and leaders of the village. Educational messages about the wildlife, as well as listened and recorded their concerns and ideas about their local wildlife and the illegal wildlife trade.

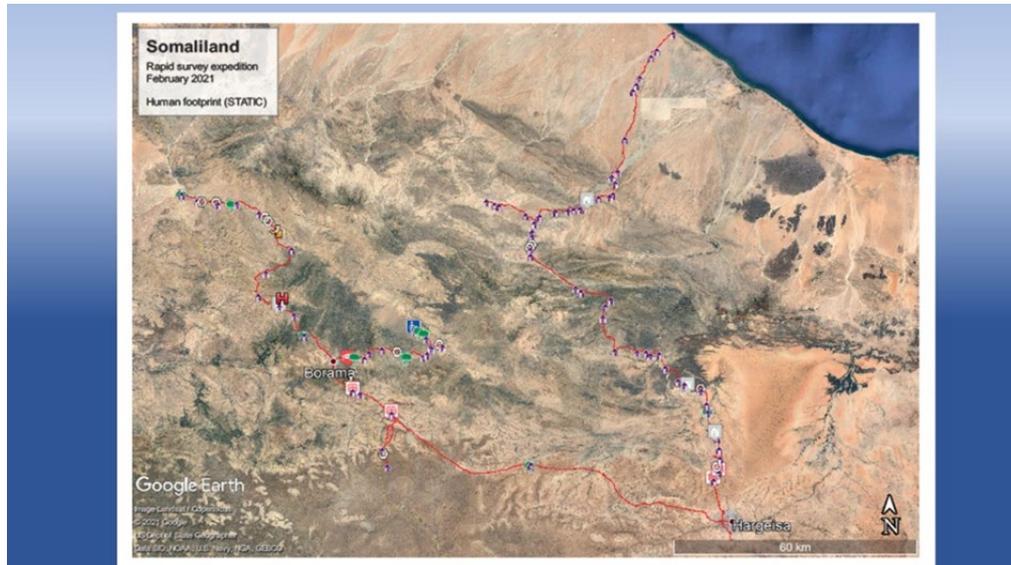


Figure 96: Somaliland rapid survey expedition February 2021, Human footprint.



Figure 97: Somaliland rapid survey expedition February 2021, Wildlife sightings.

Two-hundred and fifteen elders and village leaders (both men and women) participated in our short oral survey. Participants were asked about how they co-exist with wildlife, specifically predators like cheetahs and other information about their livestock and livelihoods. Some of the questions evaluated in the expert opinion questionnaire included: occupation, livestock ownership, threats to livestock, knowledge of wildlife and the illegal wildlife trade and conflicts with predators.

The average number of households within each village was 560 with an average of seven people per household, totalling approximately 3,920 people per village. Most villagers were livestock or agriculture pastoralists. Fifty-six percent ($n = 9$) of villages were livestock pastoralists, 38% ($n = 6$) were agriculture pastoralists, and 18% ($n = 3$) were both livestock and agriculture pastoralists. The most common livestock owned by villagers were

sheep (63%, n = 10), followed by goats (56%, n = 9), and camels (44%, n = 7) (Table 43). Herd sizes ranged from 10 to 400. Other livestock species included cattle, donkey, and chicken. Lidhraika village reported to have all livestock species, while villages: Rugi, Laghya, Kalawla and Gergera did not report any livestock (Table 43).

Table 43: Livestock species owned by villagers.

Village	Goat	Sheep	Camel	Chicken	Donkey	Cattle
Boon	✓	✓	✓	×	×	×
Xiirad	✓	✓	×	×	×	×
Gaorycawl	✓	✓	×	×	×	×
Tuli	✓	✓	×	×	×	✓
Magalo-qalooc	×	✓	✓	×	×	✓
Iidhraika	✓	✓	✓	✓	✓	✓
Amoud	✓	✓	✓	✓	×	✓
Old Baakie	✓	✓	✓	×	×	✓
Baki	✓	✓	×	×	×	×
Rugi	×	×	×	×	×	×
Unnamed	×	×	×	×	×	×
Laghaya (Survey 1)	×	×	×	×	×	×
Laghaya (Survey 2)	×	×	×	×	×	×
Kalawla	✓	×	✓	×	✓	×
Gergera	×	×	×	×	×	×
Tuurk	×	✓	✓	×	×	×
Total Present:	9	10	7	2	2	5

✓ = present

× = absent or n/a

Threats to livestock included drought, disease and predators. Fifty-percent (n = 8) villages indicated disease as being a threat while 31% (n = 5) and 19% (n = 3) indicated drought and predators respectively (Figure 99). Although only 19% (n = 3) indicated that predators were a threat to their livestock, 31% (n = 5) indicated that they had issues with predators, with some farmers in Xiirad losing up to 30% of their livestock, and those in Unnamed losing up to three animals per month.

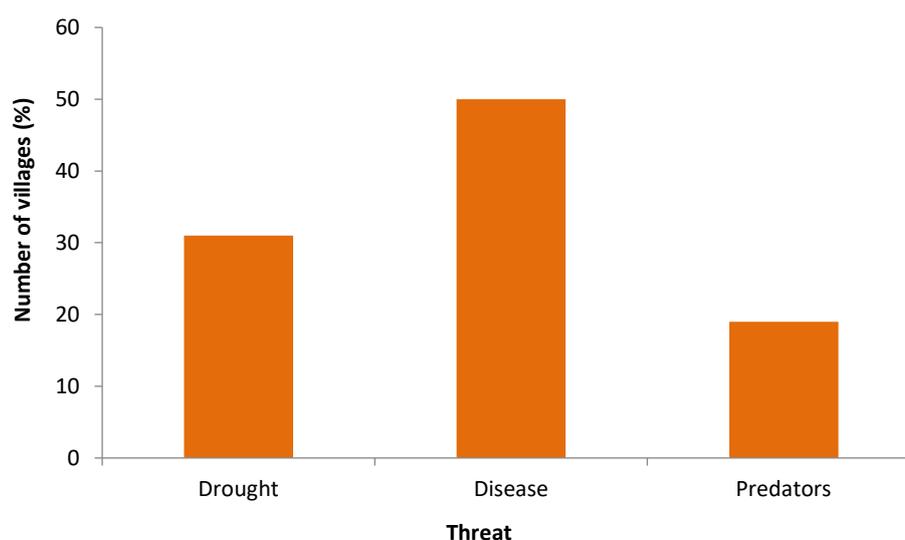


Figure 98: Threats posed to villagers' livestock.

Farmers reported cheetah, jackal, hyena, caracal, and leopard to be the main cause of human-wildlife conflict. The most common problematic predator was the hyena (50%, n = 8), followed by the jackal (38%, n = 6) and cheetah (19%, n = 3) (Figure 100).

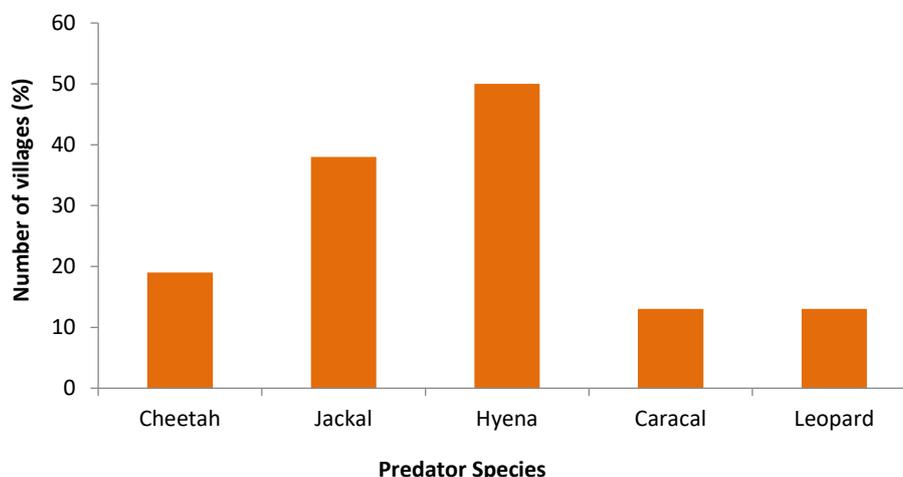


Figure 99: Predator species causing issues for farmers.

Although only three villages, Boom, Xiirad and Baki, had conflict with cheetahs, eight (50%) villages had indicated they had seen a cheetah (Table 44).

Table 44: Villages that had a cheetah problem versus those who have seen a cheetah.

Village	Cheetah problem	Seen a cheetah	Prey species seen	Livestock species
*Boon	Yes	Yes	So. gazelle, gerenuk, dik-dik	Goat, sheep, camel
Xiirad	Yes	Yes	None listed	Goat, sheep
Gaorycawl	No	Yes	None listed	Goat, sheep
Old Baakie	No	Yes	Gerenuk, dik-dik	Goat, sheep, camel, cattle
Baki	Yes	Yes	None listed	Goat, sheep
Rugi	No	Yes	Gerenuk, dik-dik, rabbit	None listed
Sheed Dheer	No	Yes	Sp. gazelle, aardvark, baboon, rabbit, dik-dik, kudu, So. gazelle	None listed
Kalawla	No	Yes	Dik-dik	Goat, camel, donkey

* Had witnessed a cheetah being killed or had killed a cheetah in retaliation to livestock loss to cheetah.

A total of 10 different prey species (i.e. dik-dik, gerenuk, Speke's gazelle, Soemmerring's gazelle, rabbit, bat-eared fox and baboon), and 12 predator species (i.e. cheetah, jackal, hyena, caracal, leopard and brown hyena), were seen in the various villages and surrounding areas. The most common prey and predator species are listed in Table 45, with dik-dik (56%, n = 9) being the most common prey species and hyena (50%, n = 8) the most common predator species.

Table 45: Common prey and predator species observed in the villages and surrounding areas.

Common prey species		Common predator species	
Species	No. of villages encountered (%)	Species	No. of villages encountered (%)
Dik-dik	9 (56)	Hyena	8 (50)
Gerenuk	5 (31)	Cheetah	7 (44)
Spekes gazelle	4 (24)	Jackal	5 (31)

Most (69%, n = 11) villages indicated they had a ‘Good’ knowledge of wildlife. Responses to the question on how villages view wildlife were divided into three broad groups; ‘Can live with wildlife’, ‘Can benefit from wildlife’, and ‘Wildlife can reduce human-wildlife conflict’. Of the seven villages who responded to this question, 57% (n = 4) responded that they ‘Can live with wildlife’ and ‘Can benefit from wildlife’, and 29% (n = 2) responded ‘Wildlife can reduce human-wildlife conflict’ (Figure 101).

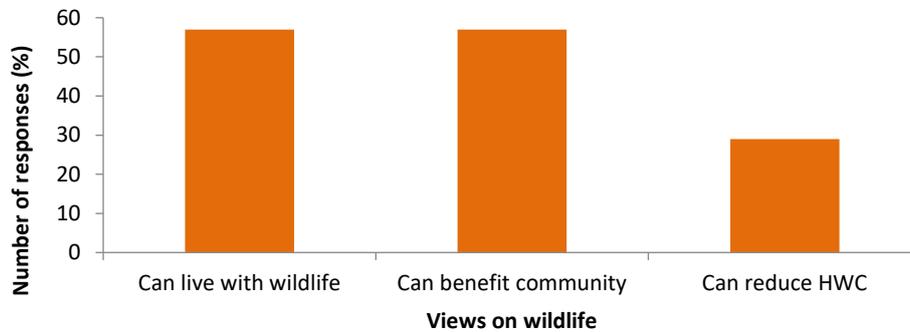


Figure 100: Responses on how villages view wildlife.

Responses to the question on ‘Knowledge about illegal wildlife trade (IWT)’ were grouped and the most popular responses revolved around; ‘IWT can be stopped by changing’; attitudes, education & training (56%, n = 5), and protecting the environment (33%, n = 3). Additionally, 33% (n =3) responded that cheetahs were being sold as IWT or that cheetahs were being trafficked. One (11%) village responded that they did not know selling wildlife was illegal.

Of the 12 villages that responded to the question on whether they had heard about IWT, 92% (n = 11) responded ‘Yes’ and 8% (n = 1) responded ‘No’ (Figure 102).

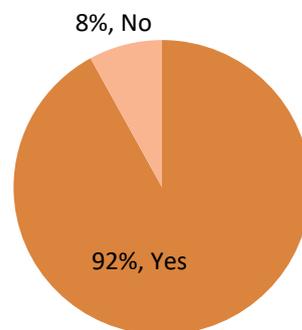


Figure 101: Responses to the question, 'Have you heard of IWT'.

Of those villages that responded to the question on whether they want more training, 100% (n = 5) responded they would like training.

Summary of Awareness Results

- Four villages (Rugi, Unnamed, Laghaya (1&2), and Gergera) had no livestock recorded
- Those with livestock did not see livestock farming as an occupation (n/a recorded for interviewees with livestock)
- Lidraika had all six livestock species (goat, sheep, camel, chicken, donkey, cattle)
 - Disease was the recorded as the only threat to livestock
 - Types of predators causing issues were hyena and caracal
 - Reported not having seen cheetahs, but also mentioned someone had tried to sell 3 cheetahs but the cubs had come from Jigiga
- Sheed Dheer had the most diverse predator and prey species, and no livestock species

- Laghaya survey 1 responded 'n/a' to the majority of questions
 - responded 'No' to the question 'Have you heard of IWT', although 15 people were interviewed in this village, 6 of whom were police and security officers. Presence of police and security officers might have intimidated other interviewees
- Laghaya survey 2 did not respond to all questions except 'Yes' to having a predator problem (jackal & hyena)

Villages with a cheetah problem

- Xiirad and Baki had a cheetah problem, had livestock (goats and sheep) but had no record of the presence of prey species
- Boon had a cheetah problem, had livestock (goats, sheep and camel), and had no record of prey species

Villages with no cheetah problem

- Gaorycawl had livestock (goats and sheep) and no prey species recorded, however they had not recorded having a predator problem but had seen cheetahs.
- Old Bakkie and Kalawla had no cheetah problem, but they had seen cheetahs. These two villages also had livestock and reported having seen prey species
- Sheed Dheer and Rugi had no cheetah problem but had seen cheetahs. They mentioned having seen prey species but had no livestock.

Conclusion of Awareness Campaign

- Villages that had a cheetah problem recorded no small-stock and no prey species, and others that had no cheetah problem and no livestock reported to have prey species. This suggests that predators such as cheetahs prey on small-stock when there is a lack of natural prey species available.
- Presence of prey species/absence of livestock causes less/no conflict
- In some rare cases, conflict is also possible when both livestock and prey species are present
- There is a positive association between wildlife seen and knowledge of wildlife
- Villages with a high natural prey and predator diversity also recorded no livestock ownership

In April, CCF's senior veterinarian, Dr. Iman Memarian, began teaching weekly classes in wildlife medicine for students at the Gollis University veterinary school. Dr. Ahmed Yuusuf started a WhatsApp group for students to receive information pre-and-post class.

Ministry of Environment and Climate Change - Eastern Regions Conference

MoECC's [Consultation conference on environmental protection and biodiversity conservation in the Eastern Regions of Somaliland](#) brought together leaders from Sahil, Toghdeer, Saraar, Sool, Sanaag, Daadmadhedh and Buhodle to discuss a variety of environmental issues, including charcoal production, establishment of new settlements and illegal private enclosures in the communal range land. CCF co-sponsored the conference, and Dr. Laurie Marker, CCF's Founder and Executive Director, travelled to Burao to speak. Dr. Marker gave a presentation on the illegal nature of poaching, possessing and trading cheetah cubs and the detrimental impacts to the Somaliland landscape, the wild cheetah population and people. She also addressed the issue of human-wildlife conflict and the role it plays as a driver and root cause of illegal trade (Figure 103). Minister Shukri H. Ismail of MoECC spoke about the importance of communication and network building.

No information on human-wildlife conflict or livestock predation was collected during the sweep. However, in the case of four cubs confiscated in September, community members pointed to livestock predation as the primary motivation for taking them. Evidence CCF has gathered during other missions indicates conflict between pastoralists and predators is a key driver of offenses against wildlife in Somaliland's rural areas. Future CCF interventions include animal husbandry training for livestock farmers and wildlife education for young learners, to support law enforcement and instil a cultural appreciation for Somaliland's wild species.



Figure 102: Dr. Laurie Marker addresses leaders of Somaliland's eastern regions on 26 July 2021.

Hargeysa International Book Fair

From 24 – 29 July 2021, CCF participated in the 14th annual Hargeysa International Book Fair at the Hargeysa Cultural Centre. CCF's Somaliland team hosted a booth at this six-day fair to educate a global audience about our mission to stop the illegal trade of cheetahs in the horn of Africa and keep cheetahs in the wild. CCF representatives spoke with more than 700 attendees from both Somaliland and a wide array of countries, including Canada, France, Australia, Kenya and Rwanda, with Ethiopia featured as the guest country for 2021. Along with educating attendees, our team also sold a selection of CCF and Dr. Marker's books, including "Chewbaaka" and "A Future For Cheetahs," as well as some of our jewellery that was handcrafted by local communities in Namibia. CCF Staff Member, Melanie Lippert spoke on behalf of CCF, on a panel entitled "Environment and Climate Change," which examined the effects of climate change seen in Africa and solutions to mitigate the damage caused by rapidly changing weather and environmental conditions.

Wildlife Education - School Outreach Hargeysa

In October, CCF hosted a primary school program for Elm School, with a presentation in the Staff house and a short tour of SH2- a group of 30 split into two groups of 15. Ahmed and Hamze gave the tours while Melanie and Ladan did the presentation;

- Sci-Tech Academy presentation at CCF facility with a tour of Safe House Two
- Bright Academy presentation at the school

International Cheetah Day 2021, 4 December

Cheetah Conservation Fund held its third International Cheetah Day Celebration in Somaliland at the Hargeysa Cultural Center. This all-day event included presentations by students from the Bright, Elm and Sci-Tech schools, speeches by Dr. Jama, DG Abdulkarim Ahdi from MoECC, Director of Wildlife Abdinasir Hussein; and Lady Fatima Saeed of Parliament (Figure 104). Panel discussion with Stephanie Joachum-Natt of CCF, Ladan Jama of CCF, Mohamed Abdirahamn-of Geed Beer, Rejo Beer ("Plant a Tree, Plant Hope"), Mohamed Abdilahi Yusuf of HAVOYOCO Horn of Africa Youth Committee, and Adan Ibrahim Jama of Senior Officer of Forest and Range Department Environmental with MoECC. The event included several local storytellers, poets and musical performances.



Figure 103: Students who participated in activities on International Cheetah Day in Somaliland.

U.S. Congressional Delegation

In December, CCF co-sponsored a delegation of high-level U.S. Congressional staff members visiting Somaliland. The first event of a four-day itinerary packed with meetings and tours, CCF's Founder and Executive Director, Dr. Laurie Marker, briefed the delegation on the status of the illegal wildlife trade in cheetahs at its Safe House project in the capital city of Hargeisa. The American government delegation is the highest-level to visit Somaliland in well over a decade. Comprised of staff representing the Senate Foreign Relations, House Foreign Affairs and House Appropriations and Conservation Committees, the delegation included a senior staff member from a sponsor of the Eliminate, Neutralize, and Disrupt (END) Wildlife Trafficking Act, a law CCF helped promote when introduced in 2016 (Figure 105).

The delegation met with members of Somaliland's government and opposition parties, along with Somaliland's civil societies, education, health, and conservation institutions. The itinerary for the trip included a visit to the coastal city of Berbera, its port and the city's recently renovated airport; the University of Hargeisa; Laas Geel, a UNESCO sight featuring rock art estimated to be 20,000 years-old; Abaarso School of Science and Technology, and Barwaaqo University for women, and other key locations of interest. The delegation toured Geed-Deeble, a forest reserve about an hour's drive from Hargeisa, and were present for the ground-breaking ceremony for the Cheetah Rescue & Conservation Centre (CRCC).

Attending:

- Pierro Tozzi, Representative Chris Smith
- Liz Lewis, Senator Jim Risch
- Cole Rojewski, Representative Kay Granger
- Scott Graber, Senator Lindsay Graham
- Chis Del Beccaro, Representative Mike McCaul



Figure 104: CCF staff and the US Delegation at the CCF Safe Houses (left) and at Laas Geel (right).

Grants & Special Projects

In April, CCF was awarded a grant from Explorers Club-Discovery Channel to fund its project “Lost Cheetah in the Gardens of Eden”, that will conduct first-of-its-kind wild cheetah research in Somaliland. CCF will work with local communities to place camera traps and conduct surveys in the areas where human-wildlife conflict and illegal trade are known to occur and where CCF suspects wild cheetah populations exist. The research project will be filmed by CCF staff in the field. It will be covered by a professional camera crew from Discovery Channel and appear in a television series on their networks. The project will begin in the first half of 2022.

In November, CCF was notified that its proposal to IUCN’s Threatened Species Fund for a project to assess the introduction of Community-based Natural Resource Management strategies, including the concept of Community Conservancies, in Somaliland was chosen for funding. Work on this project will begin in February 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 4,245 Namibian students from primary and secondary school levels, as well as 100 teachers in both its outreach and centre-based programmes. CCF only hosted one international school group comprising of two students and one teacher.

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.

School outreach started in late August 2021. The Education Department visited a total of 37 schools in four regions, reaching a total of 4,006 students and 68 teachers (Table 46, Figure 106).

Table 46: Namibian schools reached with CCF's school outreach program, January - December 2021.

Date	Namibian School Outreach Groups	Students	Adults	Total
23 Aug 21	Ekwafo Secondary School	168	3	170
23 Aug 21	Maurits Devinish Private School	14	1	15
23 Aug 21	Oshakati Senior Secondary School	83	1	84
23 Aug 21	Mweshipandeka Secondary School	243	2	245
23 Aug 21	Ongwediva Senior Secondary School	101	1	102
24 Aug 21	Ihenda Senior Secondary School	20	1	21
24 Aug 21	Nangolo Senior Secondary School	48	1	49
24 Aug 21	Eheke Senior Secondary School	134	2	135
24 Aug 21	Evululuko Senior Secondary School	97	1	98
24 Aug 21	Ntuli Junior Secondary School	64	2	65
24 Aug 21	Onamutai Secondary School	57	2	58
25 Aug 21	Dr Sydney Memorial College	47	2	48
25 Aug 21	Mwadhina Gwanambonga Combined School	94	3	95
30 Aug 21	Noordgrens Senior Secondary	72	2	75
30 Aug 21	Rundu Afrikaans Private School	9	2	10

31 Aug 21	Elia M .Neromba SSS	385	3	388
01 Sept 21	Christian J. Haihambo CS	93	3	94
01 Sept 21	Nakazaza Combined School	75	1	76
01 Sept 21	Leevi Hakusembe SSS	197	3	200
01 Sept 21	Rupara Combined School	82	1	83
01 Sept 21	Bunya Combined School	117	2	119
02-03 Sept 21	Rundu Secondary School	249	2	251
03 Sept 21	Romanus Kamunoko Senior Secondary School	212	2	213
03 Sept 21	Dr Romanus Kampungu Secondary School	102	2	103
03 Sept 21	Friendly Private School	32	2	33
06 Sept 21	Namavandi Combined School	53	1	54
06 Sept 21	Olavi Shivhute Kangumbe Combined School	71	2	72
06 Sept 21	Nkurenkuru Senior Secondary School	227	2	228
07 Sept 21	Tondoro Combined School	53	2	54
10 Sept 21	Katjinakatji Senior Secondary School	80	2	81
10 Sept 21	Mururani Combined School	72	2	73
14 Sept 21	Outjo Secondary School	139	2	140
14 Sept 21	Braunfels Agricultural High School	49	2	51
14 Sept 21	Cornelius Goreseb High School	105	1	106
15 Sept 21	Welwitchia Secondary School	69	1	70
16 Sept 21	Putuavanga Seenior Secondary School	179	2	180
16 Sept 21	Mureti High School	114	2	115
Total Namibian School Outreach Groups:		4,006	68	4,054



Figure 105: CCF Education Team on school outreach in 2021.

This reporting period, CCF’s Education Department started collecting extensive data during the outreach programmes, with the objective to understand some of the impacts of the programme on knowledge gain, understanding, and perception & attitude of students. Data is currently being analysed.

2. Centre-based Programme

Organised education programmes at CCF during this reporting period involved five Namibian groups totalling 216 students and 29 teachers (Table 47).

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 47: Namibian school groups participating in centred-based programmes at CCF, January - December 2020.

Namibian Day Visiting School Groups				
Date	School	Students	Adults	Total
18 Mar 21	Namibian National Teachers Union	0	11	11
12 Mar 21	Rosewood Labyrinth	5	5	10
30 Apr 21	Liefie Lyfie Pre-School	11	3	14
20 May 21	Duinesig High School	20	4	24

29 Oct 21	St Michaels Vision Private School	180	6	186
Total Day Visit:		216	29	245

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.

In August 2021, the Education Department promoted and marketed its Conservation Education & Training Project at 27 schools across Namibia. The aim of the project is to educate the next generation of conservationists and to mentor young people in conservation related careers, via Edmodo – reaching students we would otherwise not reach following the pandemic. This project targets grade 10 learners who are at a critical stage in deciding what programs to study in college or university, or what they want to do with their futures. This project is a perfect opportunity to show young people the various career options in conservation. During the marketing phase of this project, 4,006 students and 68 teachers were reached (see Table 46 above). As of 31 December 2021, 514 students signed up for an account on Edmodo, 165 actively participated and 102 completed the online phase of the program.

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 nine-year-old female breeding dog continued her role as Livestock Guarding Dog Programme ambassador (Figure 107). 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 big groups.



Figure 106: Kiri meeting some of the young students during an outreach school visit.

5. Camp Lightfoot

Due to the COVID-19 pandemic, CCF hosted only one international group at Camp Lightfoot during this reporting period. Under the direction of Dr. Bruce Brewer, a bigger kitchen area and four larger cabins were

added to the existing infrastructure at the Lightfoot Camp. This will allow the Education Department to host larger groups.

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 due to the COVID-19 pandemic. Only one group of 23 students and three teachers was able to have a day visit during this reporting period (Table 48).

Table 48: Namibian higher-education groups participating in education programmes at CCF, January - December 2021.

Namibian Day Visit Higher Education Groups				
Date In	School	Students	Adults	Total
10 Apr	DAPP Vocational Training School	23	3	26
Total Day Visit Higher Education Groups:		23	3	26

B. Other Collaboration with Educational Institutions

During this reporting period, CCF Centre hosted the Ross School for a 5-night stay, which was the only overnight group at CCF during this reporting period (Table 49). The group participated in educational programmes, including lectures on HWC, cheetah runs, and tours of CCF's Centre.

Table 49: International groups attending educational programmes at CCF January - December 2021.

Overnight International School Groups					
Date In	Date Out	School	Students	Adults	Total
06 Aug 21	12 Aug 21	Ross School (USA)	2	1	3
Total Overnight International School Groups			2	1	3

C. Working Guests and International Interns

Working Guests are the backbone of CCF and vital in daily operations. And 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 eight working guests.

In addition to eight Namibian student interns, CCF welcomed 14 international student interns from the USA, UK and Germany. The interns were trained in veterinary medicine, zoology, ecology, wildlife science, animal science, environmental studies, international development, and genetics.

D. Future Farmers of Africa

During this reporting period, CCF engaged a total of 117 farmers, community members, community game guards and rangers in the Future Farmers of Africa (FFA) from the Okakarara town, Otjituuo and Okamatapati conservancies in the Okakarara District.

E. Conferences, Workshops and Other Activities

Namibia Environmental Education Network (NEEN)

The NEEN Conference was cancelled for this reporting period due to the COVID-19 pandemic.

NaDEET-MEFT Action and Implementation Workshop on EE/ESD Policy 19-20 October 2021

Annetjie Siyaya and Ignatius Davids were invited and attended a two-day stakeholders workshop held in Windhoek hosted by the Namibia Desert Environmental Education Trust (NaDEET), and MEFT to develop strategic aims and actions for the newly launched National Environmental Education / Education for Sustainable Development (EE/ESD) Policy (Figure 108).



Figure 107: Annetjie Siyaya and Ignatius Davids, and other stakeholders at the stakeholder consultative workshop in Windhoek, Namibia.

International Cheetah Day

Namibian staff celebrated ICD at CCF's Headquarters in Namibia, Otjiwarongo, 'The Cheetah Capital of the World' – the first time ICD has been celebrated with the public at CCF's Research and Education Centre. After inviting the Namibian public to celebrate the iconic cheetah on various (radio, TV, newspaper) Namibian media platforms, there was a good turnout of visitors, the majority of whom were from Otjiwarongo and Windhoek, Namibia's capital. About 100 visitors participated in various activities that comprised of various department booths sharing educational activities through fun games. The visitors were a good mix of both young, youth and old, and included families, youth support groups and radio media personalities.

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:

- Upgrade of campus electrical system. An additional 75kw photovoltaic array was installed, bringing the total PV array size to 225kW. The aging flooded lead-acid batteries and Victron inverterchargers were replaced with a containerized power storage and control system. The new system operates off Lithium Iron Phosphate batteries with a storage capacity of 800kWh, expandable to 1,200kWh. The new system also provides a 500kW inverter capacity, enabling the system to handle up to 500kW of PV arrays in the future.
- The multi-purpose annex was completed and supports Admin, Ecology, Genetics, and Visitor Services. The annex also includes a walk-in freezer and cold-room. Laundry and soap-making activities are also incorporated.
- One of the laboratories at the Biomass Technology Demonstration Centre (BTDC) was outfitted to support visiting bird researchers.
- Work began on a chip bunker shed in support of the EU-supported STEAMBIO project.
- A wastewater treatment plant, with a 5,000L capacity, was established. Located at the BTDC, it will receive waters via a tanker from the septic tanks. Treated water is disbursed for non-root-vegetable crops via a separate tanker.
- A 26km water pipeline from Farm Janhelpman to Farm Elandsvreugde was completed. This much-needed secure supply for the main campus supplies water to Farms Bellebenno, Otjenga, and Bynadaar enroute the campus. Three booster pump stations, with auxiliary storage tanks, were constructed along the pipeline providing the necessary pressure and a total water battery of 120,000L.
- A larger milking parlour and admin offices for the small stock and Livestock Guarding Dog programs was constructed. Extensive renovation of the associated goat yards was completed, including restructuring of all goat enclosures, construction of a new kidding barn and multiple rain shelters.
- A special waterproofing compound was applied to the Rondavels to extend the lifespan of the thatch roof.
- The Stable roof and sidewalls were repaired.
- At Cheetah View Lodge the sundowner nook, Dante's Down the Hatch, was renovated and expanded. The waterhole was re-shaped, and view opened.
- Work was nearly completed on the Depot. This shed will be a receiving area for shipments from Otjiwarongo, and a staging area for disbursement of BUSHBLOK.
- One of the gravel pits at Boskop was mined and gravel distributed for airstrip and road repair.
- The homestead on Farm Padberg underwent extensive renovation and upgrading.
- A 5km section of the Rhino fence was upgraded.

2. Automotive

Vehicles and tyre repair continue to be an expensive and time-consuming problem at CCF. Table 50 lists CCF's vehicles and their condition at the end of December 2021.

Table 50: CCF's vehicle fleet and each vehicle's status at the end of December 2020.

Vehicle	Status
<u>Safari vehicles</u>	
Safari Green cruiser	Running
Safari Small white cruiser	Running
Safari white ford	Running
Safari White Toyota cruiser (new)	Running
<u>Allocated Vehicles</u>	
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 New Education outreach	Running
Toyota legend c/cab New cheetah transport	Running
Nissan N5947OT (EU)	Running
Nissan N4456OT (Tika)	Running
Nissan N7025OT (CCF East/ Gobabis)	Running
Nissan N7032OT (Education)	Running
White Toyota D4D d/cab (husbandry)	Running
1997 Toyota 22R (Tracking)	Running
1987 Toyota 4Y (ecology)	Running
<u>Farm Vehicles</u>	
1987 Toyota 4Y (Farm Vehicle)	Running
White landrover Defender (farm vehicle Jan helpman)	Running
White landrover Defender #2(farm vehicle)	Broken
Green Landrover (Recycling)	Running

Tata s/cab (farm vehicle)	Broken
Silver Toyota D4D (farm vehicle)	Running
Pajero Bruce N1198OT	Broken
White Toyota 3F land cruiser (farm vehicle)	Getting repaired
Toyota 4y (old scat Dog vehicle)	Broken
Mazda s/cab (Jan Helpman farm)	Broken
Toyota raider Petrol Rebuild (Uri) (Jan Helpman farm)	In for repairs
Isuzu Kb Single cab (Jan Helpman farm)	Running
Toyota Raider (Jan helpman farm)	Running
<u>Staff Transporters</u>	
Quantum Minibus #1 (staff transport)	Running
Quantum Minibus #2 (staff transport)	Broken
Isuzu Truck (staff transport)	Running
<u>Trucks</u>	
Mercedes- benz Truck (Jan Helpman Farm) (old)	Running
(Isuzu Truck (Jan Helpman Farm) (new)	Running
<u>Tractors</u>	
Old Messey Furguson 152 (Bynadar farm)	Running
Big John Deere	Running
Small John Deere	Running

B. Staffing

1. CCF Namibia Staff

As of 31 December 2021, CCF Namibia employs technical staff as follows. Additionally, CCF employs 4 cooks, 46 farmhands and domestic workers, 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
- Amanda Englebrecht – Admin Assistant
- 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 and Cheetah keeper
- Himmizembi Kuhango – 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
- Julia Zumbroich – Genetics Lab Technician
- Heike Stackmann - Volunteer Co-ordinator and Public Relations Officer
- Carolina Torres - Ecologist
- Paul Visser – Estate Manager
- Eli Walker – Ecologist
- Annetjie Siyaya – Research and Education Manager
- Johan Gibson - Assistant Farm Manager
- Calum O’Flaherty – Livestock Guarding Dog Program Manager
- Veisy Kasaona - Community Programs Assistant
- Vistoria Tushemwe – Veterinary Technician
- Natasha Bornman – Veterinarian

- Anna Basto - 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 Ducey 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
- Justin Birkhoff - Donor Relations Coordinator
- Edwin Brown - LICIT Project Coordinator
- Lori Ducey - Development Manager - Corporate Giving
- Nicole Gamble - Financial Administrative Assistant
- Susan Kaufmann - Constituent Relationship Manager
- Paula Martin - Executive and Development Assistant
- Heather Ravenscroft - Digital Media and Graphic Design Manager
- Dr. Indrani Sasmal - Development Manager (Grants and Designated Giving)
- Dionne Stein - Development Manager (Events and Special Projects)
- Susan Yannetti - Senior Advisor, Strategic Initiatives

Israel

Shira Yashphe, DVM - Illegal Wildlife Trade Lead

United Kingdom

Faith Ingham - Head of Fundraising

VII. Organisational activities

A. Fundraising

1. Namibia

Board of Governance

CCF Namibia underwent its annual financial audit in May 2021 by the Namibian auditing firm of Grant Thornton and Neuhaus.

Fundraising

Annual Gala Dinner

The Annual Gala Dinner was again cancelled due to the COVID-19 pandemic.

Grants

In the second half of 2021 CCF was a participant in the successful grant submission for the project Steambio Africa. This project will run for the next 3 years, during which CCF will host and operate a wood torrefaction process.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036401.

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 Trustees had two meetings via teleconference: 19 February and 11 June 2021. Six resolutions were passed during these meetings. Resolutions and Dates are listed in Table 51 below.

Table 51: Fundraising goals versus actual funds (USD) from 1 January to 30 June 2021.

Number	Date Passed	Resolution Title
1094	2/19/2021	Resolution to Amend the Conflict of Interest Policy
1095	2/19/2021	Resolution to Recognise Restricted and Designated Funds (4th quarter 2020)
1096	2/19/2021	First Republic Corporate Resolution

1097	6/11/2021	Resolution to amend the charter of the Executive Committee
1098	6/11/2021	Resolution to amend bylaws
1099	6/11/2021	Resolution to Recognise Restricted and Designated Funds (1st quarter 2021)

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. After-effects of Covid-19 have kept most employees working remotely more often, and work product has not suffered as a result. Most CCF employees do not work within commuting distance of the office, so remote work has been a part of the CCF culture prior to Covid-19.

The annual theme for our fundraising events is, “Let’s Keep the Wild, Wild”

In 2021 our fundraising strategy included focusing on:

- Streamlining and Standardisation of Business Practices
 - CCF has retained IT4causes, a non-profit organisation that assists other non-profits in assessing IT needs (gaps in services) and tools and helps make organisations safer and more efficient. As part of their assessment, and with their help, CCF has secured a vendor for volunteer management, secured a 24/7 help desk for technical issues, inventoried all computers and set up a dashboard for Norton Antivirus software protection, investigating options for Public Relations/Media software, developing a social media strategy, and is in the process of developing IT policies and procedures for enforcement.
 - Leigh Leonard, a professional Human Resources manager, has volunteered to help Beth Fellenstein, Director of Operations and Finance, to develop a comprehensive staff handbook.
- Critical Communications
 - As part of IT4 causes scope of work, they are working with Heather Ravenscroft, Digital Media and Graphic Design Manager, on a social media strategy.
 - A FAQ fact sheet is in the draft to help standardise communications about sensitive issues and will be published internally.
 - Brand Guidelines and a Media page have been published on the website outside of navigation and present standards for use of logo, standard language, and use of fonts.
- Founder’s Circle for Donors at the Highest Level
- Challenger Programme
 - In addition to securing \$225,000 for the Chewbaaka Challenge match, during the virtual spring tour, each private event had a challenge donation to be matched. An additional \$10,000 match was available for new donors that donated during the public spring events.
- Corporate Giving
 - A New Development Manager, Lori Ducey, began work in April 2021 and is working on a global corporate strategy along with the UK and Canada. Updates have been made to the Corporate Partner webpage, and three new corporate donors have been secured in 2021
 - Corporate sponsorship opportunities for YouTube videos is being developed

- Targeted Communications -Every two months, CCF will focus communications and cultivation efforts on a select group of donors. This will be highlighted in social media, in e-news, in personal communications and targeted mailings.
 - January through February - Lapsed Donors
 - March through April - New Donors and Crowdfunding
 - May through June - Recurring Gifts
 - July through August - Zoo and Corporate
 - September through October - Matching Gifts
 - November through December - Chewbaaka Society
 - Ongoing - Those that do not get digital communications
- Grants and Designated Giving
 - A new Development Manager - Grants and Designated Giving was hired on 1 May 2021. More emphasis will be placed on finding Government grants. his will require more time focussed on reporting and management of grants.
- Events and Special Projects
 - Because of Covid-19, in person events have not been held. In the spring, the development team focussed on private regional events hosted by board members and high-level donors. Following the private events, public zoom events were available and different members of CCF Namibia staff were invited to present their programmes.
 - New volunteer software has been purchased to help onboard and manage volunteer intake, placement and paperwork.

Finance

CCF’s annual 2020 audit was completed in March by GRF CPAs and Advisors.

The PPP loan received from the US Federal Government through Bank of America as part of the Coronavirus Stimulus package was forgiven in January.

After CCF’s financial advisors, the Will Group left Merrill Lynch, the CCF Investment Committee conducted a search and assessment of other investment groups. The CCF investment accounts were moved to First Republic and will be managed by Mary Hayes. A working group composed of members of the board of Directors and Board of trustees was formed to assess the cybersecurity of CCF.

Fundraising

CCF USA set the goal of raising \$3.8 million for 2021 including revenue from all sources. The total revenue raised toward reaching that goal for Year-End 2021 was \$4,047,662 (unaudited - Table 52).

Table 52: Fundraising goals versus actual funds (USD) raised in 2021.

Campaign	2021 Goal	Actual	Difference
Spring Tour	\$250,000	\$233,955	-\$16,045
Fall Tour	\$400,000	\$136,246	-\$263,754
Designated	\$425,000	\$519,413	\$94,413
Volunteer Initiatives (\$215,000):			\$0
Volunteer Fees to NA	\$40,000	\$5,125	-\$34,875
Brian /Zoo and Community Talks	\$70,000	\$191	-\$69,809
T-Shirt	\$12,000		-\$12,000

Humans for Cheetahs	\$10,000		-\$10,000
Individual Links	\$5,000		-\$5,000
Namibian Crafts/General Merchandise Sales	\$3,000	\$5,861	\$2,861
Chapter Events (Other)	\$25,000	\$1,596	-\$23,404
NY Chapter	\$25,000	\$10,073	-\$14,927
Nor Cal Chapter	\$25,000		-\$5,000
Cheetah Strides/Newsletter	\$25,000	\$64,314	\$39,314
Notes from the Field	\$5,000		-\$5,000
Chewbaaka	\$475,000	\$623,873	\$148,873
Year End	\$700,000	\$953,082	\$253,082
White Mail	\$110,000	\$344,387	\$234,387
Sponsorships	\$120,000	\$106,341	-\$13,659
Book Sales (not in tour)	\$10,000	\$4,061	-\$5,939
Recurring	\$120,000	\$117,297	-\$2,703
Interest	\$5,000		-\$5,000
Fall Campaign	\$60,000	\$79,281	\$19,281
Spring Campaign	\$80,000	\$167,200	\$87,200
Bequests	\$0	\$584,074	
Founders	\$300,000		-\$300,000
Total	\$3,300,000	\$3,956,369	\$72,295
Additional Campaigns:			
Gift in Kinds		\$45,749	
ILWLT			
Tributes		\$15,450	
Endangered Campaign		30,094	
Grand Total:		4,047,662	

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 15,353 USA subscribers was sent March 2021 that included various levels of the high, medium, low and non-donor segmentations. Two versions of the Spring Campaign letter were sent and targeted to annual and recurring donors. The campaign raised US\$167,200.

Chewbaaka Memorial Challenge

An initial mailing to 14,678 USA subscribers was sent on 1 July 2021 that included high, medium, low and non-donors. A second effort was mailed to 2,209 USA subscribers and sent on 10 August 2021. The campaign raised US\$623,873.

Fall Appeal

An initial mailing to 15,233 USA subscribers was sent on 4 October 2021 that included high, medium, low and non-donors. The campaign raised US\$79,281.

Year-End Challenge

An initial mailing to 10,963 USA subscribers was sent on 16 November 2021 that included high, medium, low and non-donors. A second effort was mailed to 4,313 USA subscribers on 15 December 2021 that included high, medium, low and non-donors. The campaign raised \$953,082.

Appeal Totals

The total donation amounts received from 1 January 2021 and 31 December 2021 was US\$4,047,662 (Table 53). This revenue comprised of US\$658,383 received through online donations, US\$3,343,530 was received by in-house mail, wires, and third-party donations. US\$45,749 of the total amount raised was received from in-kind donations.

Table 53: Number of donors giving year-end in each stage in 2020 versus 2021.

Donation Amount in US dollars	Number of Donors Year-End 2020	Number of Donors Year-End 2021
\$1 – 49	1534	1445
\$50 - 99	939	928
\$100 - 249	1155	1104
\$250 - 499	444	477
\$500 -999	297	280
\$1,000 - 2,499	262	274
\$2,500 - 4,999	55	73
\$5,000 - 9,999	49	57
\$10,000 - 19,999	41	43
\$20,000 - 49,000	17	24
\$50,000 - 74,999	2	2
\$75,000 - 99,999	1	3

\$100,000 and above	6	6
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Cheetah Sponsorships

Total revenue from cheetah sponsorships in the USA for 2021 Year-End was US\$106,341. Bi-annual video updates on 32 of CCF’s resident cheetahs as well as CCF’s releasable cheetahs and Livestock Guard Dogs were scheduled and sent out in early July and late December 2021. 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 2021. Issue no. 21 was mailed on 1 March 2021 to 11,416 people in the USA, generating \$23,100. Issue no. 22 was mailed on 14 September 2021 to 14,380 people in the USA, generating \$41,214. Both, generated \$64,314 in revenue.

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 Programme 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 97,889 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 Bidding for Good.

Corporate Giving/Foundations/Organisations

CCF continued to work with existing organisations to steward and cultivate their ongoing support through regular communications. We continue to have good relationships with our organisational donors and their generosity continues to support our research, education and conservation programmes.

In 2021, CCF began an additional funder focus on Corporate Giving to diversify resource streams through collaborations and partnerships to fund CCF programs and that raise awareness about the plight of the cheetah. Corporate Giving will concentrate on securing funding opportunities with new businesses and their foundations that align with our mission. This first year of the Corporate Giving program was focused on understanding existing corporate donors, developing and researching new corporate potential partners, relationship development, database processes and segmentation for better reporting that guides the Corporate Strategy for fundraising.

Additionally, the Corporate Giving program has included CCF International Affiliates to streamline messaging, benefits for support as well as to build capacity and understanding of Corporate Giving for increased revenue generation for CCF education, conservations and research efforts in Namibia and Somaliland. Delineating Corporate/Foundation Giving of funds, goods or services in support of CCF will be segmented beginning in 2022.

CCF Corporate Giving will continue to work closely with Grants/Designated Giving to ensure continuity of information, global prioritised needs and strategies to target funders to achieve our 2022 goals.

2021 continued to be challenging due to the ongoing pandemic, however funders and donors rose to the challenge and continued their generous support of CCF's vital work for which we are most grateful.

Designated Giving/Grants/Awards

CCF continued to submit proposals to increase support for CCF's expanding programs (Table 54). Proposals were well received and we were able to secure funding from the IUCN-SOS program for a two-year project in the amount of €246,500 in December of 2021. The award approved from the IUCN-SOS program has not been reflected in the table below because we did not receive the fund until January 2022. The first phase for the DEFRA-IWT Challenge Grant Round 8 was also submitted in November 2021 requesting funding for LICIT-II: Legal Intelligence and Community Governance for Cheetah Illicit Trade for £593,587 and we were invited to submit a full proposal for the second phase. CCF has also submitted several other proposals in 2021 that are still pending, including a \$27,880 grant proposal to Beauval Nature Zoo for satellite collars for cheetah rewilding project in Namibia, and \$15,000 to Max and Victoria Dreyfus Foundation to re-evaluate and redevelop strategy of social media usage for CCF to increase followers, funding, and awareness towards its mission of saving cheetahs from extinction, and \$660,639 grant proposal to DEFRA for LICIT-II: Legal Intelligence and Community Governance for Cheetah Illicit Trade.

In addition to writing proposals for new grants, CCF also worked on maintaining relationships with previous funders through regular communications and submitting reports. CCF is fortunate that we have many loyal donors who have agreed to provide additional gifts for general operating and capital expenses. CCF donor's generosity along with the secured designated giving and grants provided resources for the research, education and conservation programmes that are essential to save the cheetah from extinction.

CCF is in the process of focusing on pursuing grants of substantial amounts from renowned conservation and wildlife funders all over the world for research, conservation and educational purposes. CCF will concentrate on developing new relationships with Foundations, educational and conservation organisations as well based on a prospect search. CCF will also continue seeking grants of smaller amounts as needed and continue to maintain relationships with former funding organisations. This strategy is to cover funding needs for both Namibia and Somaliland. We appreciate the generosity of everyone who supported CCF during this tough global pandemic year and look forward to your continued support in 2022.

Table 54: Awarded Strategic Ask/Designated Giving and Awarded Grants/Proposals 2021.

CCF USA Spring Tour 2021	Sum of Amount	CCF USA Fall Tour 2021	Sum of Amount
Conservation Conversations	\$1,140.00	C21Chapter	\$435.00
Corporate Sponsor	\$15,000.00	E21FT	\$136,246.17
KID's Conservation Conversation	\$20.00	K21YE	\$20,000.00
Laurie Marker National Zoom	\$345.00	M21IFall	\$49,454.95
Mid-Atlantic Zoom	\$18,851.00	M21INews	\$35,491.28
Midwestern/Central Lakes Zoom	\$16,425.00	Merchandise Sales	\$140.00
Northeast Zoom	\$16,005.00	Recurring	\$17,372.59
Northern CA Zoom	\$55,300.00	SPON2	\$1,780.00
Northwest Zoom	\$13,000.00	W21EC	\$22,397.34

Online Auction	\$28,558.55	W21INews	\$5,732.48
Southeast Zoom	\$8,200.00	W21JFall	\$12,443.60
Southern CA Zoom	\$15,950.00	YBKSales	\$275.00
Southwest Zoom	\$25,000.00	Grand Total	\$301,768.41
VIP Challenger	\$10,000.00		
VIP Match Challenger	\$5,000.00		
Grand Total	\$228,794.55		

Corporate Giving

Corporate Donor strategy continues to develop into a more global and unified revenue stream (Table 55). This includes integrated communications tools, calendarizing global messages and themes for a more impactful global reach, sharing information for more effective and efficient fundraising to better target prospects and steward donors. Corporate giving database processes are being updated to improve reporting and analytics.

Capacity building for affiliates will expand in 2022 giving support and guidance for affiliates to implement and improve processes for donor cultivation and local stewardship.

- Collaborated on a Global Corporate strategy, working primarily with CCF Affiliates in the UK and Canada to create and share tools and processes.
- Developed 2021/22 integrated communications tools (shared campaign/messaging calendar) to bring affiliates into one messaging where possible.
- Tested LinkedIn strategy with an initial 19% increase in following.
- Updated Corporate Giving webpage.
- Reviewed the Blackbaud donor records to develop a corporate donor record strategy.
- Improved reporting of Corporate Giving database processing.
- Collaborated with the development team to grow support by cultivating and stewarding new and current corporate partners.
- Helped two other country affiliates to build their capacity on corporate giving processes, to increase acquisition of new donors and improve local stewardship of existing long-term donors.
- Gathered corporate donor information from Namibia to understand the global goal and build better targeting protocols for prospecting.

Table 55: Corporate/Foundation Donors in 2021.

Recipient	Donor	Value (Funds and In-kind)	Notes
CCF USA	Acoustic	\$5,000	Donor
CCF USA	African Safari Wildlife Park	\$1,763	Donor
CCF USA	Allied Locke Industries	\$1,000	Donor
CCF USA	Allstate Giving Campaign	\$1,000	Donor
CCF USA	Alta Data Technologies LLC	\$1,000	Donor
CCF USA	Amazonsmile	\$5,274	3rd Party Donor
CCF USA	American Express Employee Giving Program	\$50	Donor

CCF USA	America's Charities	\$950	3rd Party Donor
CCF USA	Animal Ark Wildlife Sanctuary	\$2,500	Donor
CCF USA	Artists for Conservation	\$435	Donor
CCF USA	ArtShadow Media	\$120	Donor
CCF USA	Bank of America Matching Gift Program	\$30	Donor
CCF USA	Behavioral Criminology International	\$2,000	Donor
CCF USA	Benevity	\$72,348	3rd Party Donor
CCF USA	Biomimicry for Business	\$400	Donor
CCF USA	Bonfire	\$2,047	3rd Party Donor
CCF USA	Broadcom Matching Gifts	\$150	Donor
CCF USA	Bronx Zoo/Wildlife Conservation Society	\$25,000	Donor
CCF USA	Brown & Brown, Inc.	\$15,000	Donor
CCF USA	Brown & Read Engineering Inc.	\$250	Donor
CCF USA	CafePress.com	\$233	3rd Party Donor
CCF USA	Caldwell Zoo	\$1,000	Donor
CCF USA	Cape May County Zoo AAZK Chapter	\$250	Donor
CCF USA	Capital Group Companies	\$10,000	Donor
CCF USA	Casl Entertainment	\$3,000	Donor
CCF USA	Chantecaille	\$5,000	Donor
CCF USA	Charitable Adult Rides & Services, Inc (CARS)	\$4,526	Donor
CCF USA	Charites Aid Foundation of America (CAF America)	\$1,624	3rd Party Donor
CCF USA	Cheetah Lounge	\$5,000	Donor
CCF USA	Chicagofornia Inc DBA Painting with a Twist	\$376	Donor
CCF USA	Cincinnati Zoo & Botanical Garden	\$554	Donor
CCF USA	Coeur Sports	\$50	Donor
CCF USA	Columbia Sportswear	\$1,495	Donor
CCF USA	Columbus Zoological Park Association	\$2,557	Donor
CCF USA	Community Foundation of Greater Greensboro, Inc.	\$200	Donor
CCF USA	Concierge Unlimited International, Inc.	\$12,500	Donor
CCF USA	Conoco Phillips	\$500	Donor
CCF USA	Conservation OutREACH	\$50	Donor
CCF USA	CyberGrants Inc.	\$160	3rd Party Donor
CCF USA	Dallas Zoological Society	\$5,000	Donor
CCF USA	David W Tate CPA Ltd	\$250	Donor
CCF USA	Dental Warehouse	\$1,000	Donor
CCF USA	Denver Zoo	\$80	Inkind
CCF USA	Department for Environment Food & Rural Affairs (DEFRA)	\$199,403	Donor
CCF USA	Dickerson Park Zoo	\$2,500	Donor

CCF USA	EJF Capital LLC	\$250	Donor
CCF USA	Elm Street Foundation	\$10,000	Donor
CCF USA	Endangered Campaign, LLC	\$2,672	3rd Party Donor
CCF USA	Endowment	\$2,192	3rd Party Donor
CCF USA	Etsy, Inc	\$1,324	3rd Party Donor
CCF USA	Exelon Foundation - Matching Gifts Program	\$25	Donor
CCF USA	Facebook	\$31,417	3rd Party Donor
CCF USA	Feisty Gal Inc.	\$300	Donor
CCF USA	Fidelity Charitable Gift Fund	\$145,612	Donor
CCF USA	Financial Symmetry	\$50	Donor
CCF USA	First Source Auto Finance Inc	\$100	Donor
CCF USA	Fort Worth Zoo	\$32	Donor
CCF USA	Foundation for Human Rabies Education & Eradication (FHREE)	\$24,000	Donor
CCF USA	Four Corners OBGYN	\$500	Donor
CCF USA	Friends of the Baton Rouge Zoo	\$2,000	Donor
CCF USA	Frontstream	\$21	3rd Party Donor
CCF USA	Fusion Graphics Inc.	\$50	Donor
CCF USA	GE Foundation	\$40	Donor
CCF USA	Ginger Labs Inc	\$500	Donor
CCF USA	GlobalGiving Foundation	\$3,922	3rd Party Donor
CCF USA	Greater Cincinnati Foundation	\$610	Donor
CCF USA	Greater Vancouver Zoo	\$106	Donor
CCF USA	Hair by Andrea	\$50	Donor
CCF USA	Hamerton Zoo Park	\$734	Donor
CCF USA	Harry A. Sprague Library Staff	\$193	Donor
CCF USA	Honeywell International Charity Matching	\$200	Donor
CCF USA	Horizon Foundation for New Jersey	\$150	Donor
CCF USA	Impact Assets	\$1,000	Donor
CCF USA	Indianapolis Zoological Society	\$27,087	Donor
CCF USA	Infinite Safari Adventures	\$250	Donor
CCF USA	International Fund for Animal Welfare (IFAW)	\$10,000	Donor
CCF USA	Jay Dickman Photography	\$1,500	Donor
CCF USA	Johnson & Johnson	\$1,200	Donor
CCF USA	Jordan Couture	\$1,500	Donor
CCF USA	JP Morgan Chase Foundation	\$36	Donor
CCF USA	JP Morgan Chase Good Works Employee Giving Program	\$36	Donor
CCF USA	JustGive (JustGiving)	\$5,055	3rd Party Donor
CCF USA	Kansas City Zoo	\$1,000	Donor
CCF USA	The Kong Company	\$1,000	Donor

CCF USA	Lee G. Simmons Conservation Park & Wildlife Safari	\$2,500	Donor
CCF USA	Local Independent Charities	\$15,820	3rd Party Donor
CCF USA	Metazoa Brewing Co.	\$113	Donor
CCF USA	Moon Joggers	\$733	Donor
CCF USA	Moore and Associates	\$100	Donor
CCF USA	Mountain Oxygen & Medical	\$60	Donor
CCF USA	Museum of the Dog	\$500	Donor
CCF USA	MyUS	\$15,000	Donor
CCF USA	Nashville Zoo	\$15,000	Donor
CCF USA	Network For Good	\$8,374	3rd Party Donor
CCF USA	NuVasive	\$5,000	Donor
CCF USA	NV Energy PAC	\$500	Donor
CCF USA	Oklahoma City Community Foundation	\$3,000	Donor
CCF USA	Oklahoma City Zoo and Botanical Garden	\$1,904	Donor
CCF USA	Oklahoma Zoological Society	\$35,351	Donor
CCF USA	PayPal Giving Fund	\$2,885	3rd Party Donor
CCF USA	Pledgeling Foundation	\$3,554	3rd Party Donor
CCF USA	R Lazy J Ranch	\$500	Donor
CCF USA	Red Cheetah Design	\$405	Donor
CCF USA	Roer's Zoofari	\$5,000	Donor
CCF USA	Saint Louis Zoo	\$2,500	Donor
CCF USA	Salesforce.com Foundation	\$100	Donor
CCF USA	Schneider Electric Foundation - Matching Gifts	\$475	Donor
CCF USA	Schwab Charitable	\$84,814	Donor
CCF USA	Setty and Associates	\$150	Donor
CCF USA	Sigma Mfg & Logistics, LLC	\$500	Donor
CCF USA	Small Business Consulting, Inc.	\$50	Donor
CCF USA	Tajiri's Barn Pals	\$676	Donor
CCF USA	Target Corporation Matching Gift Program	\$380	Donor
CCF USA	Teleflex Foundation	\$4,000	Donor
CCF USA	Texas Instruments Foundation	\$400	Donor
CCF USA	The Explorers Club	\$97,225	Donor
CCF USA	The Honolulu Zoo Society	\$1,000	Donor
CCF USA	The Manitou Restaurant	\$450	Donor
CCF USA	The Maryland Zoo in Baltimore	\$600	Donor
CCF USA	The T. Rowe Price Program for Charitable Giving	\$1,000	Donor
CCF USA	The Walt Disney Company Foundation	\$25,550	Donor
CCF USA	The Wilds (I.C.P.W.A. Inc.)	\$1,403	Donor
CCF USA	Thomson Reuters	\$380	Donor

CCF USA	Tides Foundation	\$7,500	Donor
CCF USA	Timken Co Charitable and Ed Fund Matching Gifts	\$200	Donor
CCF USA	Toronto Zoo	\$1,000	Donor
CCF USA	United Way	\$60	Donor
CCF USA	United Way of Columbia-Willamette	\$106	Donor
CCF USA	United Way of Northeast Florida	\$574	Donor
CCF USA	United Way of San Luis Obispo County, Inc.	\$15,000	Donor
CCF USA	Vanguard Charitable	\$56,986	Donor
CCF USA	Walt Disney Foundation	\$15,000	Donor
CCF USA	WedbushCARES Employee Matching Program	\$250	Donor
CCF USA	Wieden and Kennedy	\$1,000	Donor
CCF USA	Wild Felid Advocacy Center of Washington	\$1,000	Donor
CCF USA	Wild Wonders	\$1,801	Donor
CCF USA	Wildlife Conservation Network (WCN)	\$160,662	Donor
CCF USA	Wildlife Protection Solutions (WPS)	\$6,000	Donor
CCF USA	YourCause LLC	\$12,958	3rd Party Donor
CCF USA	Zoo New England (Stone Zoo & Franklin Park Zoo)	\$1,588	Donor
CCF USA	Zoological Association of America	\$5,083	Donor
CCF USA	Zoological Society of N.J., Inc (Turtle Back Zoo)	\$2,500	Donor
CCF USA	Zawadi	\$10,000	Donor

Dr Laurie Marker's Tours

Spring and Fall Tour Emails

During normal times, there would have been multiple targeted e-blasts inviting partners to events with Dr. Marker during her USA Spring Tour. Though the Spring Tour 2021 was cancelled due to the COVID-19 pandemic and alternatively, CCF held webcasts with Dr. Laurie Marker to keep donors updated on CCF projects. There were multiple targeted e-blasts inviting partners to attend these webinars with Dr. Marker, generating \$233,955. Alternately, for the Fall Tour 2021, CCF held webcasts, generating \$136,246 in revenue.

Dr. Laurie Marker's Virtual Spring Tour 2021 and Conservation Conversations

Dr. Marker's North American fundraising tour for 2021 was a virtual event from Namibia supporting the endangered cheetah with eight VIP Zoom events celebrating the theme, Let's Keep the Wild, Wild. The tour started on 20 March 20 and travelled regionally throughout the USA and lasted for six weeks ending on 26 May with two National Zoom events.

The eight VIP Zoom fundraisers were hosted by CCF Board of Directors and Trustees in the following areas: Mid-Atlantic, Mid-Western/Central Lakes, Northeast, Southeast, Northwest, Southwest, Northern California and Southern California. Each sponsoring host of the respective areas donated a special amount ranging from \$5,000 to \$25,000 to be matched by the CCF VIP guests. This VIP challenge match was very successful with a total of 139 attendees with every region reaching its goal for the spring tour challenge.

The two National Zooms had over 90 attendees and had donated to CCF online or via the Spring Appeal. See chart below.

The *Let's Keep the Wild, Wild* fundraising revenue totalled \$228, 794.55

Conservation Conversations

Conservation Conversations with the CCF Namibian Staff and Kid's ZOOMs were celebrated during the 2021 spring, 'Let's Keep the Wild, Wild.' tour with Cheetah TV host Brian Badger, CCF Director of Conservation and Outreach. The live-interactive ZOOMs happened over a span of two months (April and May) where discussions, interviews and presentations were shared about CCF's conservation, research and education programs.

Staff Conservation Conversations = 204 Attendees
Kid's Conservation Conversations = 37 Attendees
CCF spring tour NEW donors and donations = 42 and \$13,417

Cheetah Friend Challenge

A gracious donor has offered to donate \$100 for every NEW donor that gives at least \$25 to CCF between 8 April 2021 to 7 May 2021 (up to \$10,000).

CCF Friend Challenge = 30 (Those who gave over \$25 as new donors 2021).

Online Auction

Let's Keep the Wild, Wild. Spring Online Auction: \$26,000 in Bidding For Good and \$31,817.00 to include duplicate items offered.

CCF Conservation Conversation Schedule:

- 8 April 2021, 12:00 p.m. ET - with Calum O'Flaherty, Livestock Guarding Dog and Small Stock Manager.
- 15 April 2021, 12:00 p.m. ET - with Dr. Ann Schmidt-Küntzel, CCF Assistant Director for Animal Health and Research
- 22 April 2021, 12:00 p.m. ET - with Matti Nghikembua, CCF's Senior Ecologist and Forest Steward, CCF's ecology research and habitat restoration efforts with Bushblok.
- 29 April 2021, 12:00 p.m. ET - with Annetjie Siyaya, Research and Education Manager, to learn about Education, Outreach & the Future Conservationists of Africa.
- 6 May 2021, 12:00 p.m. ET - with Dr. Karina Flores Pineda, CCF Senior Staff Vet Somaliland, to learn about CCF in Somaliland.
- 13 May 2021, 12:00 p.m. ET - with Becky Johnston, Cheetah Keeper and Studbook Assistant, CCF Cheetah Care.
- 15 May 2021 12:00 pm ET - Kid's Conservation Conversations with Cheetah Kids Kristen and Cameron Carver
- 20 May 2021, 12:00 p.m. ET - with Bogdan Cristescu, PhD, Assistant Director for Ecological Research, to learn about CCF Conservation Ecology Research.
- 22 May 2021 12:00 pm ET - Kid's Conservation Conversations with Cheetah Kids Kristen and Cameron Carver
- The event raised \$214,539 in revenue with ticket sales of \$14,800.
- The Live Auction raised \$22,650 and Silent Auction raised \$24,283.
- CCF corporate sponsorships raised \$97,000 with Matching Funds at \$45,000.
- CCF sold 449 tickets
- 345 registered guests, 69 live guests, 102 VIP tickets and 278 streaming guests with a total of 94 active bidders during the evening auctions.

Dr. Laurie Marker's Virtual Fall Tour

Dr. Marker's fall fundraising tour 2021 finally opened up with her travel to the USA after being shut down since March 2020 from the Covid 19 pandemic. Dr. Marker travelled to San Francisco to attend WCN's Expo on 6 October and stayed in California most of the visit until her departure back to Namibia on 29 October 2021.

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, with a special cheetah event at the Oklahoma Zoo on 18 October 2021. This was Dr. Marker's first cheetah event since Covid-19 which was a great success with over 85 guests in attendance raising over \$37,500.

With Covid 19, CCF opted to host unique *Let's Keep the Wild, Wild* stay at home premiere fundraising events in Palm Springs, Washington, DC and Portland, OR. This concept supported CCF's former events namely, the Palm Springs Cheetah Sundowner, the 20th Annual DC Gala, and the Big Cat. Big Party with CCF Directors and Trustees offering over \$35,000 to match by attending CCF donors. The revenue below manifests the success of this special fundraising effort as well as the numerous appeals and donations during the month of October's fall tour.

CCF's Brian Badger, Director of Conservation and Outreach, also hosted a special finale fundraiser with a CCF YouTube Premiere and After-Party honouring Dr. Marker and her return to Namibia on 30 October 2022.

The Let's Keep the Wild, Wild fundraising revenue for fall totalled \$301,768.41.

Chapter Events

Let's Keep the Wild, Wild. Spring Online Auction: \$28,558.55 in Bidding For Good to include duplicate items offered. Supplementing 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 2021 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 2021 totalled \$11,669 that including Brian Badger speaking tours. Note that numbers are not as high due to the country being on lockdown due to COVID-19 pandemic. Most of the Chapter Events and speaking engagements were conducted through video webinars.

2021 Chapter Reporting

Arizona

- 23 March 2021 Chapter Formed
- 8 Chapter Zoom Meetings in 2021
- Chapter 5k Group Fundraiser - Chapter highlighted 13 and 14 November as the "Save the Cheetah" 5k/walk/run weekend (Fundraiser)
- 6 – 26 August, AZ Chapter Iconic Tee Shirts - sold 51, raised \$615 (Fundraiser)
- Iconic Chapter Shirts, 51 sold, raised \$615, (Fundraiser)
- International Cheetah Day – AZ chapter was at the REID Park Zoo in Tucson, AZ with information about cheetahs and CCF. CCF brochures, 'fast fact' bookmarks and CCF stickers were distributed. Names were collected for receiving CCF news. (Education Booth)

California - North

- Joined All Chapter Meeting Zooms
- Supported the spring and fall online auctions, raising \$1,340 (Fundraiser)
- Spring Match (Board Support, Fundraiser)
- Fall Match (Board Support, Fundraiser)
- Iconic Chapter Shirts, 2 sold, \$78.50 (Fundraiser)

California - South

- Joined All Chapter Meeting Zooms
- March Painting with a Purpose - 50% sales to CCF, \$292.50 (Fundraiser)
- Spring Online Auction (Susan McCord) raised \$1,363
- ICD at Living Desert ZOO \$753 (Merchandise, Fundraising, Education, Networking)
- The Explorers Club was hosted by Artemis Fine Art Gallery in La Jolla - art gallery 5% back to CCF (Merchandise, Fundraising, Education, Networking)

Colorado

- 10 Chapter Meetings in 2021
- February, Kong Blog (Corporate Collaboration & Future Development, In-Kind Donations, Fundraiser)
- Spring Auction Participation Art & VR Equipment raised \$575 (Fundraiser)
- In-person gathering with Dave Johnson/Denver Zoo - (PR/Celebration of LGD's to Namibia, Blog, Networking)
- Fall Iconic Tee Shirts, 12 sold, raised \$271.69 (Fundraiser)
- 15 October to 1 December 2021 -Virtual Running Wild Race, 20% benefits CCF (Fundraiser)

Indiana

- 10 monthly meetings in 2021
- Spring Auction participation, Cheetah throw pillow, raised \$310 (Fundraiser)
- Save Cheetah 5k (119 participants in 2021, raised \$732.84 (Fundraiser) (339 participants in 2020, raised \$3615)
- Metazoa Restaurant, raised \$430.14 merchandise, drink proceeds and raffle, 1 new chapter exposure (Fundraiser)

Michigan

- Making Powdered Goat Milk blog added April 2021

New York

- 12 monthly meetings in 2021
- January - kids winter camps (Education)
- 20 February to 20 March (NY Chapter) - 2nd Annual Chillin' for Cheetahs (2021), 64 \$20 Plunge Sponsorships to include a raffle, raised \$2,972 (Fundraiser & Merchandise)
- May supported CCF's online auction, raised \$700+ with art, clothing textiles, bags, gloves and jewellery (Online Fundraiser)
- July - Mindful Movement - Yoga, raised \$350 Participants and 1 new member exposure (Fundraiser & Merchandise)
- August - Kids summer camps (Education)
- Iconic Chapter Shirts, 8 sold, \$266 (Fundraiser)
- October supported CCF's online auction, raised \$2205 with the Bronx Zoo, jewellery and luxury fashion items (Fundraiser)
- October to December - Juried art competitions for children, raised \$640 (Art Education & Fundraiser)
- 5 December – Chillin' For Cheetahs with the Bronx Zoo - ICD raised \$4,555 (Fundraiser with Merchandise)

Oregon

- Attended Chapter Leadership Zooms
- Supported the Spring Online Auction, raising \$500

Texas

- 12 Chapter Zoom Meetings in 21
- Spring online auction with chapter kids' artwork, raised \$31, (Art)
- Supported the Chewbaaka Campaign as a chapter, raised \$500, (Campaign)
- June - Texas Chapter local virtual 5k - raised \$225 (Fundraiser)
<https://www.justgiving.com/fundraising/texas-ccf-run-spring-2021>, (Peer 2 Peer)
- Iconic Chapter Shirts, sold 3, \$107 (Fundraiser)
- Dallas Zoo - ICD participation, Educational, Internal Zoo Collaboration (Internal Education)

Aktionsgemeinschaft Artenschutz (AGA) e.V.

Due to the continued COVID-19 restrictions throughout 2021, it was not possible for AGA for most of the year to set up information booths at fairs and festivals throughout Germany. Venues, fairs and Zoos have mostly been closed for more than 6 months in 2021.

It was at least possible to inform about AGA's work and endangered species at a few Autarkia - Green World Tour exhibitions in July, September, and October 2021. Besides this, three schools have held presentations to inform about the work AGA and CCF do.

On 4 December, AGA's new exhibition about the cheetahs, LGD and conservation work, in general, was shown at Wilhelma Zoo in Stuttgart. The exhibition is made of 20 displays, which inform about cheetahs, their habitats, and the threats to why they are almost extinct. The displays also inform about the work CCFs does, including the lab work, the livestock guardian dogs, the detection dogs and other conservation-related work. It does also show how such conservation programmes can work in other places, for example in Germany to protect wolves.

Besides the exhibition, AGA has been able to update and reprint flyers, which do also inform about cheetah conservation.

Other possible fairs and dates for exhibitions have been postponed to 2022.

Moreover, AGA has held some auctions with Europe's largest online auction platform "United Charity" in March and June. It was possible to raise 2,660 EUR for cheetahs and CCF.

As these auctions were very successful, another few auctions have been held around International Cheetah Day in December to raise another 800 EUR.

Through matched fundraisers, at the online-fundraising platform, betterplace.org AGA was able to raise about 4,500 EUR in June and about 2,500 EUR in December.

We were able to secure a donation of 4,000 EUR from the Serengeti-Park Zoo for the re-wilding of a cheetah and received a donation of 12,000 EUR from the Konrad Mayer & Peter Scheufler Stiftung.

Together with other donations, AGA was able to send 89,000 EUR for cheetah conservation in Namibia and Somaliland.

In addition, the zoo Wilhelma, where AGA is regularly giving presentations about CCF's work and organizing information booths as well for several years, started in 2021 to support the CCF LGP Program with annually 25,000 Euro.

In July 2021 AGA sent two parcels of donations in kind (mainly medical supplies) to CCF Namibia and CCF Somaliland. Unfortunately, one parcel (the one for Namibia) was lost on its way, but the parcel to Somaliland finally arrived after several weeks and with it some special carnivore supplements to help cheetahs in Somaliland.

Throughout the year AGA used its social media channels, a newsletter tool at the online-fundraising page betterplace.org, AGA's mail newsletter, homepage, and e-mail newsletter to inform its donors and raise awareness and donations for CCF.

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.

Cheetah Conservation Fund Australia (CCFA)

Despite the continuing effects of the pandemic on a normal life in Australia, CCFA was able to notch up several achievements in 2021.

Lauren Pfeiffer, Laurie's personal assistant, was able to return to Australia for a few months at the beginning of the year. During this time, she was able to make two presentations at Monarto Safari Park in South Australia (one for keepers and one for volunteers) and one presentation at the Roseworthy campus of Adelaide University also in South Australia. Tayla Green, the Guest Experience Coordinator at the Otjiwarongo CCF, was also in Australia and was able to make a presentation at Murdoch University's veterinary faculty with Laurie's virtual attendance.

We were approached by The Henry and Cecilia Foundation, which have established a partnership and are providing regular donations – AU\$4,500 so far. Our partnership with Zoos South Australia (ZOSSA) continues. We received a donation of AU\$5,000 in 2021, and with regular smaller donors, including Goodwill Wine, we were able to send AU\$10,000 to CCF Namibia.

We produced two newsletters, and ensured our major donors were listed as partners on our website. A survey was sent out to find out how we could improve CCFA, and we received several informative responses and volunteer offers.

International Cheetah Day was celebrated at Monarto Safari Park, SA and at Darling Downs Zoo, in Queensland.

CCFA are looking forward to progressing in 2022.

Cheetah Conservation Fund Canada (Cheetah Canada)

In the last six months, Cheetah Canada has organised several events for Canadians.

In April, Brian Badger was the key speaker to students in a wildlife conservation and management course at Vanier College in Montreal, Quebec. The session provided these students with excellent information about the challenges and rewards of wildlife conservation, using CCF as a primary example.

The outreach to donors has continued and Cheetah Canada gained 10 new donors totalling over \$2,000 in the first half of the year. Cheetah Canada issued our regular newsletter in May highlighting Canadian donors that have been supporting key CCF programmes.

During July, we convened a video conference between Dr. Laurie Marker and the CEO of B2Gold Corp in Vancouver, Clive Johnson. They have renewed their commitment for another \$50,000 donation for 2021, matching last year's donation, which was allocated to the Human-Wildlife Conflict project being led by Dr. Bogdan Cristescu. This year's donation brings B2Gold Corp., located in Vancouver, total support to \$195,000.

Cheetah Canada enrolled a new company to support CCF's work, Cheetah Network, with a \$1,000 contribution. As well, Toronto Zoo renewed its contribution of \$1,300 to the Livestock Guarding Dog programme.

Cheetah Canada has organised two fundraising events this summer: the first online silent auction, featuring a variety of merchandise from sports memorabilia to a two-night stay at CCF Centre. They have organised their first Cheetah Fit Challenge, (7 – 22 August) to raise funds for the care of cheetahs by achieving fitness goals by walking, running or biking. Donations will be matched up to \$2,500.

Cheetah Canada was accepted in the 24 Good Deeds Advent calendar running from 1 – 24 December. Twenty-four charities are featured. This is a first for us.

Cheetah Canada has been a regular user of the Social Media files, created by CCF. Social media has enabled us to share stories and engage Canadians through our four social media platforms, in a very timely and dynamic way.

Virtual Events

During 2021, Cheetah Canada organised a number of online events for supporters across the country: two sessions featuring Dr. Laurie Marker, an invitational roundtable for our significant donors and a full presentation to Canadians.

There were two fundraising events held this past year, two online silent auctions raising \$4.5K and the first Cheetah Fit Challenge, in August, which raised \$10K. Cheetah Canada intend to make this an annual event, likely earlier in the summer, by engaging greater corporate support and community efforts across Canada.

Partnership with Vanier College, Montreal

Cheetah Canada is in the initial phase of the educational partnership between Vanier College (Montreal) and CCF Namibia, which will provide students with a multi-year curriculum, culminating with internships at CCF. The programme will initially be targeted at wildlife management students, with opportunities to expand to other relevant academic disciplines. The programme director travelled to CCF in March to help define the major structure and deliverables of the programme.

Outreach to Canadians

Cheetah Canada issued two regular newsletters in May and October, with a focus on the innovative efforts of Canadian donors in supporting CCF. We want to compliment the newsletters that are produced by CCF USA.

The “24 Good Deeds Advent Calendar” ran for the period from 1 – 24 December. Twenty-four excellent charities were featured, including CCF. This e-calendar has a wide distribution in Canada.

In early December, as part of International Cheetah Day, Cheetah Canada participated along with the Toronto Zoo cheetah team in an online event, organised by “Exploring by the Seat of Your Pants” (connecting classrooms with speakers/virtual field trips on science, exploration and conservation) that brought together 35 classrooms.

Funding for CCF from Canada

This past year, Cheetah Canada transferred \$153.5K to CCF Namibia cheetah care, livestock guarding dogs, and education for farmers and young learners. This amount included \$50K from B2Gold Corp for Year 2 of the Human-Wildlife Conflict Research Project and \$6.5K from the Gordon and Patricia Gray Foundation for the final stage of cabin construction at Lightfoot Camp.

Cheetah Conservation Fund United Kingdom (CCFUK)

Overview

Fundraising and Awareness: CCF UK had a successful fundraising year, generating £325,695, more than double compared to £154,000 in 2020. Specifically, funds raised included £59,000 from Individual Giving, £22,000 from events, £24,800 from Foundations and Corporates, £211,000 from legacies and £3,200 In-Kind. We increased followers on all platforms: 12.7% Facebook, 23% Instagram, 12.9% Twitter and 73% on LinkedIn, as well as reporting high levels of engagement.

Donation to CCF Programmes: CCF UK donated £40,500 to CCF Somaliland (£25,000 for a 4-Wheel Drive, £3,200 for cheetah care, £6,530 for products and £5,770 to co-sponsor an event organised by the Ministry of Environment and Rural Affairs. Another £100,000 will be sent in February 2022 for CCF Somaliland work to pay for 2 vehicles, £35,000 for a community awareness project in Ethiopia to reduce IWT, the remainder for cheetah care. Another £100,000 was sent to CCF Namibia in 2021 that includes over £20,000 for Future Farmers for Africa, £5,800 for cheetah sponsorship and £5,000 for an education project for FCA.

Planning

January and February were spent planning for the CCF UK year March 2021 – February 2022 to align with the financial year. A campaign approach was approved by the Trustees early March 2021, with the first campaign launched in April.

Revenue

Total January to June 2021 is c£68,000 (to be consolidated).

IWT Campaign overview

The financial target for this integrated campaign #EndCheetahTrafficking was £10,000 to support CCF's work tackling the illegal wildlife trade, running from 22 April to 30 June. The campaign included a range of activities: matched fund appeal via the Big Green Give, art events/workshops, the annual Race for Cheetahs participation event, supporter engagement events (Cheetah Chit Chat) and more. A few highlights are:

- Income: Raised more than £33,000 (\$45,000)
- Engagement: More than 300 people joined our Art events or took up our #300Cheetahs art challenge, raising more than £2,000 between them.
- Promotion: Secured support of a pool of companies as 'communication partners' to help extend and amplify our voice to new audiences.
- Participation: Engaged 150 participants in the Race for Cheetahs event, with more than 250 people donating a total of more than £9,700 to support them.
- Donations: 93 donors contributed more than £16,000 via our matched fund appeal or regular/one off contributions via our website.
- Partnerships: Secured c£5,000 of partnership support (a small amount of which went towards the appeal).

All activities were supported by a programme of targeted e-communications and timely digital marketing, via social media. This helped provide prominence to the campaign during peaks of activity, and in between. Overall, the campaign was a huge success and our supporters (existing and new) felt engaged and motivated to support us in the future.

Funds raised will support CCF to deliver community outreach and training programmes in areas impacted by IWT, helping local communities to better understand the importance and value of keeping cheetahs in the wild, versus capturing them and selling them to a trafficker for short-term financial gain. The initial aim was to raise enough to fund one project in the Somali Regional State of Ethiopia, where poverty and lack of community awareness are major drivers for trafficking, but we have raised enough to run the same initiative in other locations.

Digital Marketing

Website: Due to improvements to CCF UK website and campaign traffic from SM, there was a 9% decrease in bounce rate and other web stats continue to improve.

Social Media: Almost 4,000 Facebook followers with 10% increase in first half 2021, close to 2K IG followers with a 10% increase, and an additional 250 Twitter followers, a 20% increase.

Donations & Engagement: CCF UK FB page has been a source of donations after promotion (£400). Followers are more engaged, partially due to our Cheetah Communities supporting the campaign.

The following sections highlight CCF UK's achievements and successes.

Campaigns and challenge events

Two campaigns generated +£45,000 in income. Event delivery was supported by a dedicated team of volunteers and community members.

1. **EndCheetahTrafficking campaign:** April-June 2021. Target was £10,000 with final income of more than £32,000 from activities such as:
 - a. Green Match Fund Appeal: 22 to 29 April and raised >£12k
 - b. Race for Cheetahs: Second year! Huge success raising more than £10k from more than 100 participants, across the UK and other European countries.
 - c. Art for Cheetahs: Two online art events with > 200 people learning to draw cheetahs, reaching new audiences and raising > £2,000 to support IWT. This ran in parallel with #300Cheetahs, compiling 300

drawings/pictures and shared across social media, to symbolise the 300 cheetahs trafficked through the pet trade each year.

2. **#UnitingForCheetahs campaign:** September 2021 to raise funds for tackling human-wildlife conflict. Our target was £10,000 but we raised >£13,000.
 - a. **Big Give Christmas Challenge:** 2nd match fund appeal, raising £4.5k for FFA.
 - b. **Paws for Claws:** Second year. More than 50 people walked dogs in support of LGDs, raising just over £4k and Hasbean coffee paid for the printing of the doggy bandanas.

Special events

CCF UK co-hosted an event at Kensington Palace in September, in collaboration with our partners - Backes and Strauss - in the presence of our Royal Patron, HRH Princess Michael of Kent. This special event brought together key supporters, corporate sponsors, advocates and Ambassadors to celebrate the work of CCF and to put forward our call to action for support. Dr. Marker joined us and gave an address to all our guests.

Youth engagement

We now have 24 dedicated young people engaged as Young Ambassadors and ‘Cheetah Cub’ club members, compared to 9 in 2020. They baked, held garage sales and took part in our national events, to raise awareness and funds to support CCF’s mission. Some of them are even getting airtime on national news channels. We engage with them through virtual Cheetah Cub Club meetings and newsletters.

Partnerships and grants

CCF UK forged many meaningful partnerships this past year with a slight increase in corporate income (£13K) from the previous year (£10K). Product-related partnerships have been the most successful and include Backes and Strauss, Fable and Mane, Fauna Brewing and Licensed to Charm. Corporate donation relationships include Anglo American and WH Ireland (wealth management). We also added to our partner portfolio with the Extreme E team, Veloce - co-owned by CCF Global Ambassador JEV, helping to amplify our voice at a global level.

Likewise, grants continue to be an important income stream for CCF UK in 2021 helped to fund important programmes including Future Farmers of Africa, the Livestock Guarding Dog programme and to support our work in Somaliland. Our Executive Director also plays an important role in developing large-scale bids alongside global colleagues (though income is not counted in the UK accounts).

Other activities

- £25,000 sent to CCF Somaliland in February 2021 to purchase a jeep
- £3,700 restricted income for LGD and Cheetah Sponsorships to Namibia in March 2021
- £2,500 donated by Investors in Species sent to CCF SLD in February 2021
- £700 donated by Investors in Species for Covid relief in May 2021
- £5,000 donated by Anglo American Foundation to continue education project in Namibia
- New Ambassador appointed in February 2021, Dr Julian Norton, Vet and TV Presenter “The Yorkshire Vet”
- New corporate partnerships developed with Fauna (Cheetah Lager), Backes & Strauss (Royal Collection of cheetah watches in partnership with HRH Princess Michael of Kent, 5% of sales to CCF UK), Fable & Mane, Licensed to Charm and Blu Goblin.
- CCF UK converted to a CIO organisation in February 2021 to reduce liability for Trustees

- Proposal to Tusk Trust Award for Conservation in Africa for Dr. Laurie Marker in March 2021, £40,000
- Proposal to Marchig for £10,000 for cheetah vet care in SLD
- Ark launched to link investors with conservation orgs. CCF UK uploaded 4 proposals to the platform in February.
- Legacy of £11,081 received in May.
- Cheetah Chit Chat launched to bring in new supporters – 2 events held online.
- Cheetah Cubs launched with 19 young cheetah supporters, including 9 Young Ambassadors attending events online, some fundraising carried out.
- Cheetah the Movie script developed further; Producer is Gareth Unwin-Ellis of “The Kings Speech” fame. Drama based on the Asiatic cheetah in Iran and the local communities. Jane Galton and Dr. Laurie Marker are members of Conservation, Education and Culture committees, CCF UK supported Kickstarter campaign. Filming started in October.
- Partnership with Formula E team DSTEcheetah developed further with the driver Jean-Eric Vergne to be appointed as Global Ambassador for CCF. His Xtreme-E team “Veloce” will use the CCF logo and a cheetah will be named after him for great SM opportunities. Hopes to visit CCF Namibia.
- Planning for our first face to face event started in September at Kensington Palace, hosted by CCF UK in association with Backes and Strauss and in the presence of HRH Princess Michael of Kent.

Cheetah Conservation France (CCF France)

Due to Covid-19 pandemic, no presentations in schools and training centres in 2021. Two important events planned had to be postponed: the cycling race planned in Mantes-la-Jolie by the Association « Cyclo de l’Intérieur » gathering the Fans of cycling among the Staff of National Police and of Home Security in France, and « Sky and Nature Festival planned in La Flèche by Pascal FOURNIE, Founder and Chair of « Fous de Nature » (Lovers of Nature).

One training session for 2 days for a student in Collège Bienheureux Charles de Foucauld in Puteaux. Maxime had chosen the subject of the Conservation of wild cheetahs. The report he has to submit as part of his studies is evaluated by the College and contributes to the final results of the school year.

Thanks to the actions of Christian Barbaud, Vice-President of CCF France, now President of CCF France since the Annual General Meeting of 18 December 2021, for the first time since 2009 – the date when Amifélins was created – we have signed 3 agreements of Partnerships with private Companies: HUNDRED GIN / TYGER / BUREAU BABYLONE SAS. These Companies will make regular donations to CCF FRANCE corresponding to a percentage of their turnover. This is great progress indeed and should help us to increase our budget to help Cheetah Conservation and CCF always more.

CCF France contributed to CCF IWT World campaign, with a donation of 300 €. We also made a donation of 400 € during the end-of-the-year CCF campaign of donations.

SAFARI-PEAUGRES, an animal Park with cheetahs, made a donation of 5,000 € to CCF. Dr. Christelle VITAUD and her Team are quite involved in the EEP to have births of cheetahs in their Park and thus contribute to genetic diversity and cheetah conservation. This animal Park has regularly given financial support to CCF and is now listed on the CCF Website as a Corporate Donor.

Christian BARBAUD has developed many actions and quite interesting contacts, as Vice-President of CCF France, in charge of Partnerships and Events: A Draft to strengthen cooperation of CCF FRANCE with the Etoile Football Club of Ecquevilly (EFCE), to be implemented as soon as restrictions due to COVID will end.

Among important influential contacts, Christian BARBAUD gained new Ambassadors for CCF: Quentin URBAN, Kayak World Champion in the marathon discipline, a Member of INSEP (National Institute of Sport, Expertise and Performance) during his training, Quentin is linked to the French Olympic teams. Olivier ANRIGO, is a photographer specialising in nature and wildlife, in different regions of the world (Africa, Europe, polar circle) with the support of institutions such as Prince Albert II of Monaco Foundation and Nicolas Hulot Foundation.

The most important event that took place in Marseille, France, in September 2021 was the IUCN World Congress. Dr. Laurie MARKER participated in this Congress, as well as Dr. Shira YASHPHE, in charge of actions to reduce Illegal Cheetah Trafficking. Christian BARBAUD ensured the permanence of the CCF Stand with the CCF Team and CCF Italia for one week. Several Members to join CCF France in 2022. More than 40 new contacts for CCF. 1,500 CCF bracelets (3,000 €) were bought by BIOPARC to be offered for Christmas to the best customers of this animal Park with cheetahs. Further to contacts with BEAUVAL Animal Park, an application file was negotiated for giving financial support to CCF Namibia. This file has been completed by Dr.Laurie MARKER and sent to Beauval. This animal Park with cheetahs makes donations to 20 NGOs for a global amount of 90,000 €.

Christian BARBAUD has set up a Strategic Development Plan for CCF France – 2020-2025 and shared it with Dr. Laurie MARKER and with the Board of CCF France: the priority is to develop our contacts and actions in all the main regions of France. The development is based on actions, animation of local networks (by region), hence the creation of Regional Delegates positions – for the time being, Frank MAIRE is Regional Delegate for the Eastern region.

During the Board meeting following the AGM of 18 December 2021, a Board of Directors has been set up with President - Christian Barbaud, Vice-President - Catherine Ebbs-Périn, Treasurer - Michel Coubard and Secretary - Carine Schmidlin, also in charge of the Instagram page.

The Board also includes Patrice AUBRY, a legal expert, also in charge of FB page, Stéphanie DI MATTIA, Team Coordinator and coordinating also the social networks, Stephanie being in charge of Twitter, and Frank MAIRE as Regional Delegate for the Eastern region.

- President - Christian Barbaud
- Vice President - Catherine Ebbs-Perin
- Treasurer - Michel Coubard
- Secretary - Carine Schmidlin
- Legal Expert - Patrice Aubry
- Team Coordinator - Stephanie Di Mattia
- Regional Delegate, East - Frank Maire
- Regional Delegate, North - TBD
- Regional Delegate, South - TBD
- Regional Delegate, West - TBD

More Members and Donations and More Animations

- Extend Zoo Parks relationships
- Extend SPORTS Network & partnership
- Extend ENTERPRISES Network & partnership
- Extend CCF presence into another Region (today, field activity is only in Paris, Ile-de-France & Rhone-Alpes)
- CREATE a STRUCTURED ANNUAL EVENT for CHEETAH DONATION in PARIS
- 3 video-conferences / year

CCF Italy

2021 has been again a difficult year for scheduled events that had to be postponed, but a very intense year for partnerships and actions within CCF Italia's association.

Again, CCF Italia welcomed new members who voluntarily joined the association with a donation, sometimes with a generous one. It should be stressed that these are all private citizens, because of its transitional situation of not being a charity yet, but this transition will happen very soon, because as of 23 November 2021, the new Italian System for Charities and non-profit associations (RUNTS) has started to operate, and are ready to

register since preparing all the necessary steps. This change is of the utmost importance because they will be able to get institutional funding and grants that were left out of in the past.

CCF Italia organised its meetings on the Zoom platform, so to stay in touch with our members.

13 February, Zoom meeting organised by Chiamamilano and LIPU – Title: Changing the world to save the cheetah on Facebook webinar.

15 February : Zoom event about wildlife trafficking inviting a representative of an Intelligence organisation who explained how Law Enforcement and Intelligence work to stop the extinction of endangered species.

23 March - September 2021 Launch of the World Forum on Democracy Campaign by the Council of Europe, Strasbourg, on “How To Achieve Climate Justice” - Dr Laurie Marker took part as a Guest Speaker on a video during the month of July on the COE platform. Due to Covid-19, there was, unfortunately, no possibility to meet in Strasbourg for the Closing Celebration in November.

9 April : Zoom event with Kel12/National Geographic specialist Omar Fragomeni and Betty von Hoeningg about our “2. Conservation Tour to Namibia and CCF”. Unfortunately, Namibia being closed to Italian tourists, it was impossible to start in 2021. The trip was postponed to 2022.

7 – 20 June 7-20: Some of the CCF Italia members took part in the “Walking For The Cheetahs” run organised by CCF UK, given to CCF UK.

Between June and July, CCF Italia organised the shipment to Somaliland of crucial goods for the Safe House 1/2/3, such as a bone saw, supplements for the cheetahs, medicines listed by the CCF vets and surgical tools donated by our veterinarians. CCF Italia decided to make this effort rather than donate before the end of August, thanks to the cooperation with an Italian NGO TERRESOLIDALI, which helped the container to depart from Italy.

On 3 – 11 September , the Italian delegation (Betty von Hoeningg and Andrea Melandri) joined Dr Laurie Marker in Marseille, to help during the IUCN World Congress. The group of six was very cohesive. The time spent in Marseille and tried to help Dr Marker with practical issues regarding the CCF. This experience showed us once more the incomparable involvement of Dr Marker during all those long days.

In September, CCF Italia launched the calendar for 2022, this time using pictures of many photographers from all over the world, from CCF US, friends of Dr Laurie Marker, and the sale started at the end of September already. We sold all 150 calendars to our faithful followers, and even abroad!

In September, CCF Italia launched the first ‘Drawing for the cheetah’ Contest for Italian High Schools and Design Schools. We got the high patronage of the Ecological Transition Ministry, the Namibian Consulate in Italy and the Namibian Government. CCF Italia’s is inviting 200 participants to send their digital works, which will be voted by a Jury of photographers, artists and wildlife magazines directors. It will take place through 2022 and participants will be informed later in 2022.

In November, CCF Italia prepared a cooperation MOU with the Charity TERRESOLIDALI which was signed in January 2022.

In late November, CCF Italia learned that another container would leave in December, and then answered another request by CCF and sent 20 butcher knives (made in Italy), and 4 pet kennels.

CCF Italia made two donations this last year and got many donations and year fees from members and new members (from Switzerland) which were sent to Namibia.

B. PR, Marketing, and Media

1. Social Media

CCF Facebook

@CCFCheetah: As of 31 December 2021, CCF's Facebook page has 250,362 likes, down from 253,361 on 31 December 2020. Also, during the same time period, CCF's Facebook page saw an increase in followers to 250,842, up from 249,996 on 31 December 2020.

@DrLaurieMarker Fan Page: Dr. Laurie Marker's Facebook page is primarily photos of Dr. Marker with visitors and focuses on sharing the work of CCF from Dr. Marker's perspective. As of 31 December 2021, Dr. Marker's page saw an increase in followers to 5,200, up from 4,961 on 31 December 2020.

Twitter

CCF's Twitter currently has 22,390 up from 22,004 followers in 2021 and CCF's content had 269,500 impressions over the course of this reporting period.

Instagram

Instagram is a social media site for photo/image sharing. Posted photos utilise hashtags to be collected into groups and searchable within the site. As of 31 December 2021, CCF's Instagram has 41,500 followers, up from 40,000 followers on 31 December 2020. The most liked post received 13,400 likes and was a video of cheetahs all grooming in their enclosure.

Pinterest

Pinterest is a social media site where users can collect online content from anywhere on the internet and curate "walls" on which they display this content. Pinterest is used by teachers to collect lesson plans from each other, and by people interested in cooking, DIY (Do it yourself) and crafting. As of 31 December 2021, CCF's Pinterest page has an audience of 166,200 users. CCF's pins had 208,510 impressions and 6,930 engagements during this reporting period.

YouTube

YouTube is a media platform that allows users to post and view video content. As of 31 December 2021, CCF's YouTube Channel has 32,146 subscribers and CCF's content has gotten 2,634,015 views and 10,100 watch hours during this reporting period.

Website

Mobile responsive

Monetising CCF's most valuable online asset - interesting and educational content - to increase funding for CCF's programs.

SEO by device from 1 January 2021 - 31 December 2021:

- 173 thousand Clicks on CCF's content from Google's search engine results across all platforms (desktop, mobile, and tablet)
- 18.8 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 11.9.
 - Mobile position is 6.8
 - Tablet position is 4.3

Site traffic by device from 1 January 2021 - 31 December 2021:

- **51,690 Mobile** users to CCF's site
- **78,990 Desktop** users to CCF's site
- **5,327 Tablet** users to CCF's site decreased by 797 users

Bounce Rate from 1 January - 30 June is 70.15%

For non-profit websites, the industry average bounce rate is between 60% – 70%.

<https://www.williamswhittle.com/>

Cohesion of CCF's international affiliates

Bringing CCF's affiliates under one brand identity.

- Minimise volunteer time in recreation of content from Namibia
- Ensure accuracy of CCF's news and messaging
- Increase user confidence in the overall organisation
- Increase oversight and access to affiliate content
- Apply consistent brand identity across CCF affiliates

CCF staff used CCF USA as the test site for moving internationals forward.

Websites have been created for CCF affiliates in Canada, Australia, and UK. Canada and Australia have moved to the new sites and redirected traffic.

Streamlined navigation

Bringing our best content forward to help users gain a greater understanding of CCF's programming. Making it easier to understand CCF's work - scientifically complex and multifaceted holistic conservation.

Total Pageviews Across Website: 1 January - 31 December 2021 - 310,236 pageviews

- /learn/about-cheetahs: 1 January - 31 December 2021 - 64,765 pageviews
- /kids/cheetah-facts: 1 January - 31 December 2021 - 31,052 pageviews
- /donate: 1 January - 31 December 2021 - 10,272 pageviews

Donation page tracking

Knowing what we do and who we reach to make informed decisions for online fundraising.

CCF's Donation Page: 1 January 2021 – 31 December 2021

- Donate Once: 7,456 unique pageviews
- Donate Sponsor: 2,351 unique pageviews
- Recurring: 446 unique pageviews

2. Media

CCF issued 16 press releases between 1 January - 31 December 2021.

- Smart Parks Establishes World’s First Cheetah Smart Park at Cheetah Conservation Fund Centre - 28 January 2021
- New Cheetah Conservation Fund Study Assesses 25 Years of Livestock Guarding Dog Impact in Namibia - 15 February 2021
- Cheetah Conservation Fund Holds First Training Workshop for Somaliland Veterinarians - 18 February 2021
- Cheetah Conservation Fund Celebrates First Annual Rewilding Day March 20 with the Global Rewilding Alliance and WILD Foundation - 19 March 2021
- With Fewer Than 500 Cheetahs Remaining in the Horn of Africa, Cheetah Conservation Fund Launches Campaign to END Cheetah Trafficking - 22 April 2021
- Cheetah Conservation Fund Co-Sponsors Somaliland Ministry of Environment and Rural Development’s Conference for Eastern Regions - 13 August 2021
- Somaliland’s Ministry of Environment and Rural Development and Cheetah Conservation Fund Note Decline in Cub Poaching - 22 August 2021
- Cheetah Conservation Fund’s Conservation Training and Mentoring Project underway in Oshana, Kavango East, Kavango West, and Kunene regions - 30 August 2021
- BOOTH TALKS – Hall 3/Booth G24 ERASING EXTINCTION: THE NEW TWILIGHT FOR BIG CATS - 6 September 2021
- Demand for exotic pets and human-wildlife conflict drive illegal trade in cheetah cubs and regional cooperation - 16 September 2021
- Cheetah Conservation Fund announces partnership with Extreme E racing team Veloce in bid to save world’s fastest land mammal from extinction - 25 October 2021
- Somaliland Ministry of Environment and Rural Development conducts sweep of eastern regions for cheetahs; confiscates eleven cubs with Cheetah Conservation Fund assistance - 28 October 2021
- Cheetah Conservation Fund Leads Global Celebration of International Cheetah Day, 4 December - 18 November 2021
- Cheetah Conservation Fund Offers Free Admission to Visitors on International Cheetah Day, December 4th - 1 December 2021
- Cheetah Conservation Fund Welcomes U.S. Congressional Delegation in Somaliland - 20 December 2021
- Cheetah Conservation Fund Begins Construction of New Centre for Cheetahs with Somaliland Ministry of Environment and Climate Change - 26 December 2021

3. Media Monitoring

Table 58 below shows media coverage of CCF from 1 January - 31 December 2021.

Table 56: News stories featuring Cheetah Conservation Fund in 2021.

Date	Name of outlet	Title	Author	Link
3-Jan-2021	National Herald	Exciting to think of India as having cheetahs again: Dr Laurie Marker, founder, Cheetah Conservation Fund	Seema Sharma	https://www.nationalheraldindia.com/interview/exciting-to-think-of-india-as-having-cheetahs-again-dr-laurie-marker-founder-cheetah-conservation-fund
1-Jan-2021	the Namibian	Farmers warned of guard dog scam	Absalom Shigwedha	https://www.namibian.com.na/98061/read/Farmers-warned-of-guard-dog-scam
20-Jan-2021	the Namibian	No problem cheetahs, just problem areas'	Adam Hartman	https://www.namibian.com.na/207963/archive-read/No-problem-cheetahs-just-problem-areas

				areas
24-Jan-2021	The Yorkshire Post	The Yorkshire Vet, Julian Norton finds out more about livestock guarding dogs thanks to a patient called Arthur	Julian Norton	https://www.yorkshirepost.co.uk/country-and-farming/the-yorkshire-vet-julian-norton-finds-out-more-about-livestock-guarding-dogs-thanks-to-a-patient-called-arthur-3110268
29-Jan-2021	Namibia Economist	CHEETAH CONSERVATION CENTRE IN OTJIWARONGO EQUIPPED WITH SMART TECHNOLOGY	Donald Matthys	https://economist.com/na/58831/environment/cheetah-conservation-centre-in-otjiwarongo-equipped-with-smart-technology/
29-Jan-2021	xinhuanet	World's first cheetah smart park established in Namibia	huaxia	http://www.xinhuanet.com/english/2021-01/29/c_139707666.htm
2-Feb-2021	South China Morning Post	The dogs on the front line of wildlife conservation, from sniffing whale droppings and detecting invasive species to fighting off predators	Kalpana Sunder	https://www.scmp.com/lifestyle/article/3120141/dogs-front-line-wildlife-conservation-sniffing-whale-droppings-and
7-Feb-2021	MENAFN	CCF Tells US Republic of Somaliland is Not Somalia	Whats App	https://menafn.com/1101561863/CCF-Tells-US-Republic-of-Somaliland-is-Not-Somalia
17-Feb-2021	Namibia Economist	CHEETAH CONSERVATIONISTS CELEBRATE QUARTER CENTURY OF PROTECTING PREDATORS BY PROTECTING LIVESTOCK		https://economist.com/na/59274/environment/cheetah-conservationists-celebrate-quarter-century-of-protecting-predators-by-protecting-livestock/
18-Feb-2021	the Namibian	Dutch firm sets up 'Smart Park' technology	Absalom Shigwedha	https://www.namibian.com/na/208851/archive-read/Dutch-firm-sets-up-Smart-Park-technology
25-Mar-2021	allAfrica	Somalia: Cheetah Conservation Fund Helps Somaliland	Absalom Shigwedha	https://allafrica.com/stories/202103250915.html
15-Apr-2021	The National	More than 4,000 cheetahs caught in illegal wildlife trade since 2009, study finds	Nick Webster	https://www.thenationalnews.com/uae/environment/more-than-4-000-cheetahs-illegally-trafficked-to-gulf-since-2009-study-finds-1.1202013
15-Apr-2021	MENAFN	More than 4,000 Cheetahs Caught in Illegal Wildlife Trade Since 2009, Study Finds	WhatsApp	https://menafn.com/1101910271/More-than-4000-Cheetahs-Caught-in-Illegal-Wildlife-Trade-Since-2009-Study-Finds
24-Apr-2021	The Wenatchee World	30 Under 35 Next question: Jenaia Johnson	Nevonne McDaniels	https://www.wenatcheeworld.com/news/30-under-35-next-question-jenaia-johnson/article_91af9c0e-a22f-11eb-968e-139e1fb7ed0f.html
7-Jun-2021	BBC News	Cheetah: The world's fastest cat is returning to India	Soutik Biswas	https://www.bbc.com/news/world-asia-india-57313563
14-Jun-2021	Down To Earth	What is the history of cheetah re-introduction in India?	DTE Staff	https://www.downtoearth.org.in/video/wildlife-and-biodiversity/what-is-the-history-of-cheetah-re-introduction-in-india--77446
22-Jun-2021	The Yorkshire Post	Everything you need to know about The Yorkshire Vet	Alesia Fiddler	https://www.yorkshirepost.co.uk/country-and-farming/everything-you-need-to-know-about-the-yorkshire-vet-julian-

		Julian Norton		norton-3282584
2-Jul-2021	oneindia	Re-introducing cheetahs in India: What are its advantages and is this a first?	Deepika S	https://www.oneindia.com/india/re-introducing-cheetahs-in-india-what-are-its-advantages-and-is-this-a-first-3280710.html
7-Jul-2021	The Northern Virginia Daily	Woodstock author features his cats in wide world of pet stories	Josette Keelor	https://www.nvdaily.com/nvdaily/woods-tock-author-features-his-cats-in-wide-world-of-pet-stories/article_85d74ffe-d345-58d6-8af6-8dd896424c68.html
26-Jul-2021	LiveScience	Biggest cats in the world	Patrick Pester	https://www.livescience.com/biggest-cats-in-the-world.html
3-Aug-2021	The Dallas Morning News	Purrfectly at home: Cheetahs welcomed back to the Dallas Zoo with addition of 2 brothers	Catherine Marfin	https://www.dallasnews.com/news/2021/08/03/purrfectly-at-home-cheetahs-welcomed-back-to-the-dallas-zoo-with-addition-of-2-brothers/
6-Aug-2021	ScreenDaily	Gareth Ellis-Unwin's UK conservation thriller 'Cheetah' attaches director (exclusive)	Ben Dalton	https://www.screendaily.com/news/gareth-ellis-unwins-uk-conservation-thriller-cheetah-attaches-director-exclusive/5162255.article
16-Aug-2021	Time Out London	This Walthamstow brewery is saving the cheetahs one sip at a time	Jess Phillips	https://www.timeout.com/london/news/t-his-walthamstow-brewery-is-saving-the-cheetahs-one-sip-at-a-time-081621
17-Aug-2021	National Geographic	How trafficked cheetah cubs move from the wild and into your Instagram feed	Rachael Bale	https://www.nationalgeographic.com/animals/article/how-trafficked-cheetah-cubs-move-from-the-wild-and-into-your-instagram-feed
17-Aug-2021	National Geographic	Photos show why cheetahs are at risk—and how people are working to protect them	Rachael Bale	https://www.nationalgeographic.com/animals/article/see-efforts-to-save-cheetahs
17-Aug-2021	The Drinks Business	Drink this beer to help save African wildlife	Jessica Mason	https://www.thedrinksbusiness.com/2021/08/new-beer-launch-safeguards-african-wildlife/
25-Aug-2021	Busiweek	Somaliland Succeeds In Curbing Cheetah Cubs Poaching	Godfrey Ivudria	https://www.busiweek.com/somaliland-succeeds-in-curbing-cheetah-cubs-poaching/
31-Aug-2021	Namibia Economist	CHEETAH PROTECTORS LAUNCH CAREER ORIENTATION PROGRAMME AT SCHOOLS IN OSHANA		https://economist.com.na/64084/environment/cheetah-protectors-launch-career-orientation-programme-at-schools-in-oshana/
31-Aug-2021	Tehran Times	Iranian cheetah in critical condition	Faranak Bakhtiari	https://www.tehrantimes.com/news/464548/Iranian-cheetah-in-critical-condition
16-Sept-2021	The East African	Airlines and social media not doing enough to stop illegal wildlife trade	Rupi Mangat	https://www.theeastafrican.co.ke/tea/news/east-africa/airlines-and-social-media-not-stopping-illegal-wildlife-trade-3552506
17-Sept-2021	AfricaScience	Demand for exotic pets and human-wildlife conflict drive illegal trade in cheetah cubs and regional cooperation		https://africasciencenews.org/demand-for-exotic-pets-and-human-wildlife-conflict-drive-illegal-trade-in-cheetah-cubs-and-regional-cooperation/
21-Sept-2021	Capital News	Demand For Exotic Pets Fuels Illegal Trade In Cheetah Cubs In Somaliland	Muthoni Waweru	https://www.capitalfm.co.ke/news/2021/09/demand-for-exotic-pets-fuels-illegal-trade-in-cheetah-cubs-in-somaliland/
22-Sept-	The National News	African training camp aims to	Nick Webster	https://www.thenationalnews.com/uae/e

2021	UAE	stop cheetah trafficking to the Gulf		nvironment/2021/09/22/african-training-camp-aims-to-stop-cheetah-trafficking-to-the-gulf/
29-Sept-2021	New Era	Dubai Expo expected to be a hit		https://neweralive.na/posts/dubai-expo-expected-to-be-a-hit
1-Oct-2021	Cornell Chronicle	Student-led One Health Symposium tackles humanity's shared health threats	Melanie Greaver Cordova	https://news.cornell.edu/stories/2021/10/student-led-one-health-symposium-tackles-humanitys-shared-health-threats
4-Oct-2021	The Times	Hundreds of cheetahs a year smuggled from Africa as pets for palaces	Melanie Swan	https://www.thetimes.co.uk/article/hundreds-of-cheetahs-a-year-smuggled-from-africa-as-pets-for-palaces-wdmjlbprt
21-Oct-2021	Evening Standard	The seven-year-old Londoner trying to save the planet from his bedroom	Elly Blake	https://www.standard.co.uk/news/london/london-kid-climate-change-david-attenborough-cop26-camberwell-b961524.html
22-Oct-2021	The Norman Transcript	New beer on tap benefits OKC Zoo's conservation efforts		https://www.normantranscript.com/new-beer-on-tap-benefits-okc-zoos-conservation-efforts/article_840c9f90-32a1-11ec-8ba9-5bd670c7df2b.html
26-Oct-2021	Namibia Economist	CHEETAH CONSERVATION FUND, VELOCE RACING PARTNER TO COMBAT SHRINKING HABITAT OF WILD CHEETAHS	Mandisa Rasmeni	https://economist.com.na/65590/environment/cheetah-conservation-fund-veloce-racing-partner-to-combat-shrinking-habitat-of-wild-cheetahs/
29-Oct-2921	OKCFriday	OKC Zoo Celebrates The Arrival Of Its Two New Cheetahs		https://okcfriday.com/okc-zoo-celebrates-the-arrival-of-its-two-new-cheetahs-p16544-229.htm
12-Nov-2021	The Guardian	Cheetah cubs and aerial yoga: Friday's best photos	Paul Bellsham	https://www.theguardian.com/news/gallery/2021/nov/12/cheetah-cubs-and-aerial-yoga-fridays-best-photos
12-Nov-2021	The Jakarta Post	Cheetahs fast running to extinction as cub trade thrives	Nick Perry	https://www.thejakartapost.com/culture/2021/11/12/cheetahs-fast-running-to-extinction-as-cub-trade-thrives.html
12-Nov-2021	Mint Lounge	Cheetahs are edging towards extinction as cub trade thrives		https://lifestyle.livemint.com/smart-living/environment/cheetahs-are-edging-towards-extinction-as-cub-trade-thrives-111636716469944.html
12-Nov-2021	PhysOrg	Cheetahs fast running to extinction as cub trade thrives	Nick Perry	https://phys.org/news/2021-11-cheetahs-fast-extinction-cub.html
12-Nov-2021	Daily Mail	Cheetah cubs are being illegally smuggled into the Gulf emirates, where they're kept as 'status symbol' pets: Crime is further threatening the endangered cats, whose number have dwindled to barely 7,000 worldwide	Dan Avery	https://www.dailymail.co.uk/sciencetech/article-10194125/Cheetahs-fast-running-extinction-cub-trade-thrives.html
12-Nov-2021	eNCA	Cheetah cubs rescued from illegal wildlife trade	Eduardo Soteras	https://www.enca.com/life/cheetah-cubs-rescued-illegal-wildlife-trade
12-Nov-2021	Sharjah24	Cheetahs fast running to extinction as cub trade thrives		https://www.sharjah24.ae/en/articles/2021/11/12/Cheetahs-fast-running-to-extinction-as-cub-trade-thrives
13-Nov-	FirstPost	Saving cheetahs from going		https://www.firstpost.com/photos/saving

2021		extinct, one cub at a time		-cheetahs-from-going-extinct-one-cub-at-a-time-10134141.html
13-Nov-2021	KuwaitTimes	Cheetahs fast running to extinction as cub trade thrives		https://www.kuwaittimes.com/cheetahs-fast-running-to-extinction-as-cub-trade-thrives/
15-Nov-2021	TaiPei Times	Cheetahs fast going extinct as African cub trade thrives		https://www.taipetimes.com/News/world/archives/2021/11/15/2003767913
16-Nov-2021	Africa News	At least 300 baby cheetahs are shipped through Somaliland each year-Cheetah Conservation Fund		https://www.africanews.com/2021/11/16/at-least-300-baby-cheetahs-are-shipped-through-somaliland-each-year-cheetah-conservation-f/
16-Nov-2021	The Swaddle	Cub Trade is Driving Cheetahs Towards Extinction	Devrupa Rakshit	https://theswaddle.com/cub-trade-is-driving-cheetahs-towards-extinction/
25-Nov-2021	South China Morning Post	Cheetahs fast running to extinction as cub trade thrives in Africa		https://www.scmp.com/photos/today-photos/3157356/cheetahs-fast-running-extinction-cub-trade-thrives-africa
28-Nov-2021	The Times of India	International trade nod may delay cheetah translocation in Madya Pradesh further	P Naveen	http://timesofindia.indiatimes.com/article/show/87956562.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst
9-Dec-2021	StarWeekly	Cheetah learns to take check-ups in her stride		https://wyndham.starweekly.com.au/news/cheetah-learns-to-take-check-ups-in-her-stride/
10-Dec-2021	The Star	World Cheetah Day	Gareth Jones	https://www.the-star.co.ke/sasa/travel/2021-12-10-world-cheetah-day/
9-Dec-2021	Columbia Climate School	Alumni Spotlight: Sage Solomine Raises Funds for Big Cat Conservation	Alexis Earl	https://news.climate.columbia.edu/2021/12/09/alumni-spotlight-sage-solomine-raises-funds-for-big-cat-conservation/
10-Dec-2021	Reuters	Cheetah cubs threatened by pet trade, global warming in Somaliland	Katherine Houreld	https://www.reuters.com/business/environment/cheetah-cubs-threatened-by-pet-trade-global-warming-somaliland-2022-02-01/
10-Dec-2021	U.S.News	Cheetah Cubs Threatened by Pet Trade, Global Warming in Somaliland		https://www.usnews.com/news/world/articles/2021-12-10/cheetah-cubs-threatened-by-pet-trade-global-warming-in-somaliland
17-Dec-2021	Roodenpoort Record	Fine art photography + wildlife = exceptional book		https://roodepoortrecord.co.za/2021/12/17/fine-art-photography-wildlife-exceptional-book/
29-Dec-2021	The National UAE	UAE action against wildlife trafficking stifles demand for cheetah cubs as exotic pets	Nick Webster	https://www.thenationalnews.com/uae/2021/12/29/uae-action-against-wildlife-trafficking-stifles-demand-for-cheetah-cubs-as-exotic-pets/
27-Dec-2021	Africa News	Somalia: President 'suspends' powers of PM Mohamed Hussein Roble		https://www.africanews.com/2021/12/27/somalia-president-suspends-powers-of-pm-mohamed-hussein-roble/
23-Dec-2021	bdnnews24	Cheetah cubs threatened by pet trade, global warming in Somaliland		https://bdnews24.com/wildlife/2021/12/23/cheetah-cubs-threatened-by-pet-trade-global-warming-in-somaliland
23-Dec-2021	metro.us	Cheetah cubs threatened by pet trade, global warming in Somaliland	Katharine Houreld	https://www.metro.us/cheetah-cubs-threatened-by/
24-Dec-	Sight Magazine	Cheetah cubs threatened by	Katharine Houreld	https://www.sightmagazine.com.au/news

2021		pet trade, global warming in Somaliland		/23080-cheetah-cubs-threatened-by-pet-trade-global-warming-in-somaliland
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